



Trampling Paradise

Dream Vacation—Environmental Nightmare?

It's a small world after all. At least, that's what the millions of tourists who take to the skies, roads, and paths each year to discover it are finding. Advances in technology and transportation and the emergence of a global economy are providing greater access for unprecedented numbers of travelers to explore the once-remote world around them. Directly and indirectly, however, tourism may often also be harming the very environment that lures so many people



away from home in the first place. Tourism is a key part of the economy in such biodiversity hot spots as the Caribbean, the Amazon basin, and countries such as Mexico, Thailand, and Kenya. Although tourism supplies badly needed income to such areas, there are environmental costs for every visit to the elephants in Kenya, the tortoises in the Galápagos, or the national park nearer to home. The damage comes in the form of noise, air, and water pollution, the usurpation of productive land, natural habitat degradation, and the

disruption of local cultures and economies.

According to The Ecotourism Society, a nonprofit membership group of outdoor travel entrepreneurs, researchers, and conservationists, there is currently an explosion of tourism based on nature, wildlife, and adventure travel. The society estimates that 40–60% of tourists are attracted to natural areas such as coral reefs, savannas, beaches, and forests. In a September 1997 article in *Parks and Recreation*, Alan Ewert and John Shultis estimated the growth in this so-called resource-based tourism at 15–25% per year, compared to 2–4% for conventional tourism.

Tourism of all varieties, however, is on a half-century boom. Tourism is defined as voluntary travel to see and experience new sights, so its volume roughly equals the transportation and hospitality businesses, minus business and personal travel. Direct receipts from 613 million international tourists in 1997 were tallied at \$448 billion, according to the World Tourism Organization.

Intranational tourism, although harder to measure, is a much larger business. The Travel Industry Association of America says tourism is America's third-largest retail sales industry, with \$542 billion in total receipts and nearly 7.6 million direct employees. According to the association, in 1998 tourists made 222 million air trips in the United States alone. The World Travel and Tourism Council estimated the global receipts of

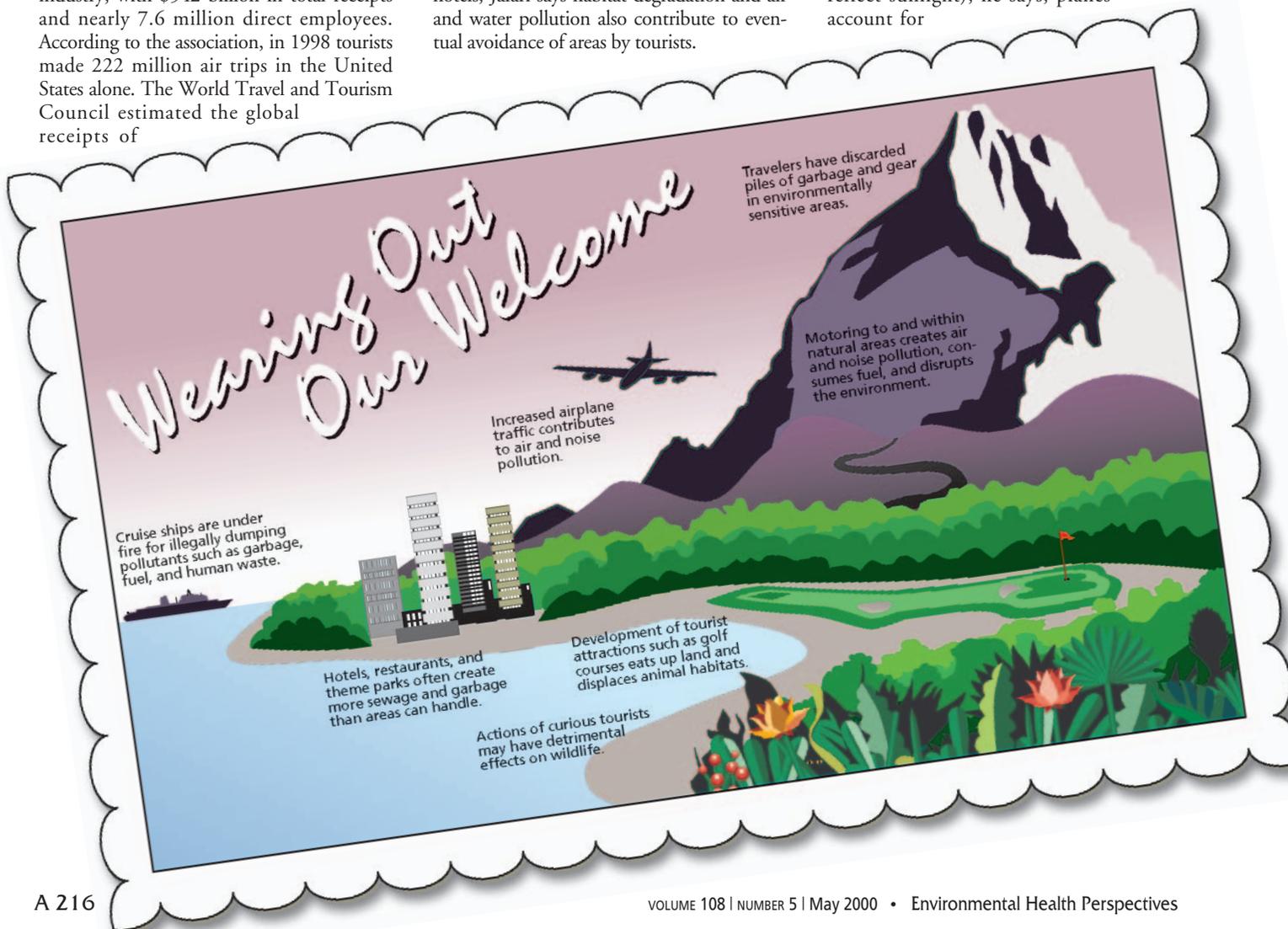
domestic and international tourism in 1998 at \$4.4 trillion; during that same year, the industry employed 230 million people, about 10% of the formal global workforce. If that estimate is correct, the tourism economy is larger than the gross domestic product of every nation except the United States.

Where jobs and money are scarce, tourism's huge economic potential gives the industry considerable clout, even when it conflicts with environmental values. Because so many tourists are attracted to natural, unspoiled destinations, however, the environmental degradation caused by tourism also hurts the tourism industry. Traffic-choked national parks and shorelines damaged by untreated sewage from tourist developments play a major role in the final stage of what tourism researchers call the life cycle of tourist destinations—discovery, development, maturity, and decline. According to Jafar Jafari, editor-in-chief of the *Annals of Tourism Research*, in 50% of the studies published in his journal, environmental problems are the key to the decline of tourist destinations. Although some of the problems are cosmetic, such as beaches lined with high-rise hotels, Jafari says habitat degradation and air and water pollution also contribute to eventual avoidance of areas by tourists.

Planes, Trains, Automobiles . . . and Cruise Ships

It's not just what people do to their destination once they get there that harms the environment—getting there in the first place is also a major culprit, whether it's by air, sea, road, or even by foot. Airplane and car travel contributes to air and noise pollution, cruise ships may dump human and fuel wastes into the oceans, and people exploring fragile ecosystems may trample wildlife underfoot or collect natural souvenirs to take home.

Although it's difficult to estimate the tourist proportion of airplane travel, airplanes in general are a major source of air pollution. Michael Prather, an atmospheric scientist at the University of California at Irvine, evaluated the global warming impact of air travel for the Intergovernmental Panel on Climate Change, which analyzes the global warming issue for the United Nations. Prather says aircraft produce 2–3% of the global emissions of carbon dioxide, the principal greenhouse gas. After adding in the warming effect of contrails (the clouds formed around jet exhaust) and other airplane impacts (such as the emission of sulfur oxides, which tend to reflect sunlight), he says, planes account for



6–7.5% of overall human-caused warming.

In addition to their warming effects, airports rank as high as smokestack industries in the amount of pollution they release into the environment, according to *Flying Off Course*, a 1996 study by the Natural Resources Defense Council. For example, the report says, based on government statistics, airplanes at Los Angeles International Airport were the second largest stationary source of smog in Los Angeles (an oil refinery was the largest source).

And air pollution is not the only problem. The number of noise pollution complaints seems to be rising along with the volume of airplane travel. *Flying Off Course* states that “the [Federal Aviation Administration] reports that 60 of the largest 100 airports in this country are currently proposing to build new runways or runway extensions.” Expansions are encountering opposition—mainly based on the anticipated noise increase—in cities such as Los Angeles, Oakland, Atlanta, Chicago, Boston, and New York. Howard Beckman, a San Lorenzo, California, attorney who is active in airport regulation issues, says the issue has “erupted” in the past two years, fueled by increases in passenger and air cargo traffic.

Arline Bronzaft, a New York City psychologist who studies the effects of noise, admits that although noise cannot be unequivocally linked to health problems, the evidence is highly suggestive of a connection, particularly regarding hypertension. Studies have found that children exposed to aircraft and train noise in classrooms learn more slowly than their nonexposed peers. In 1997, Bronzaft surveyed residents of two communities in Staten Island, one within the flight path of Newark International Airport and one outside, as to their general health and noise. Bronzaft says questions were written in an open-ended manner to avoid biasing the results. For example, one of the few questions that mentioned noise was “Are there things that bother you, like noise?” In the study, published in the January 1998 issue of *Environment and Behavior*, 70% of respondents within the flight path complained about noise. These subjects rated their health as significantly poorer than did those outside the flight path.

Noise from airplanes carrying tourists has also become an annoyance at the Grand Canyon, which 800,000 people view from the air every year. According to a 21 July 1997 article by Michael Satchell in *U.S. News & World Report*, the aircraft create “a droning mantle of noise over a park whose views are already degraded by industrial haze.” Tom Robinson, director of government affairs for the Grand Canyon Trust, a public interest group, says overflights now total 100,000 each year. Although aircraft are not supposed

to fly below the canyon’s rim, the canyon funnels noise, and planes and helicopters are audible for 10 miles inside the normally quiet canyon. Although the 1987 National Parks Overflights Act was supposed to control aircraft flying over the canyon, overflights have doubled since then, Robinson says. “It’s still bad; there’s been no significant improvement since the law was passed.”

Ground travel also causes environmental problems, as floods of tourist cars and other vehicles inundate pristine environments. In popular U.S. parks such as Yellowstone, the Grand Canyon, and Yosemite, roads are gridlocked for much of the summer by tourists eager to visit the natural wonders, producing plenty of exhaust as the cars sit idling. And cars are not the only environmental culprits here. According to Satchell’s article in *U.S. News & World Report*, “In wintertime, as many as 1,000 snowmobiles a day roar into Yellowstone, spewing nitrous oxide and hydrocarbons equivalent to 1.7 million cars.” Some observers say these “crown jewels” of the American landscape are in crisis, with visitation reaching 287 million tourists in 1998. According to the same article, “the snarl and whine of snowmobiles, personal watercraft like Jet Skis, all-terrain vehicles, and sightseeing overflights are destroying the solitude and marring the scenic beauty in dozens of [national] parks.”

In sites that are new to tourism, roads cut for tourist transportation (and for logging and mining) can become pathways for the sprawl of human populations that colonize and disrupt sensitive habitats. Roads can also cause stream sedimentation in mountainous areas, leading to overflow and erosion. In the United States, mounting highway noise has led to the construction of barriers along roadways. Although it’s impossible to separate out the tourist proportion of the traffic, a report by the Federal Highway Administration called *Highway Traffic Noise in the United States: Problem and Response* says that by 1995 the 10 states with the largest barrier programs had built 1,493 kilometers of barriers at a cost of \$1.15 billion in 1995 dollars.

Even on the seas, the transportation of tourists creates environmental costs. Cruise ships have been implicated in ocean dumping of garbage, particularly plastics and human waste. Currently, a coalition of 54 environmental groups has asked the U.S. Environmental Protection Agency (EPA) to develop tougher regulations for monitoring and controlling illegal cruise ship dumping. A 23 March 2000 article in *The New York Times* says that “in a formal petition, the organizations called for tightening longstanding exemptions from the Clean Water Act that allow cruise ships to discharge untreated waste water from sinks, showers,

laundries, and galleys, known as gray water, wherever they choose and for revising rules on other discharges.” While cruise ships can dump gray water anywhere, they must be more than three miles off shore to dump sewage and food waste. “Regulatory loopholes are allowing cruise ships to dump millions of gallons of pollutants directly into our nation’s most sensitive waters,” says Kira Schmidt, a campaign director with the Bluewater Network, one of the parties to the petition. According to the article, the largest cruise companies adopted voluntary standards last year to improve waste treatment and reduce discharges from their ships. The International Council of Cruise Lines, which represents the major cruise companies that operate in U.S. waters, said the industry is discussing its practices and goals with the EPA and state environmental agencies.

Mountains of Waste

Tourism can cause large increases in the number of temporary residents of a tourist area and a resulting surge in sewage (which is often untreated) and garbage wastes. According to *The Green Host Effect*, a 1999 study of ecotourism by the nonprofit Washington, DC–based group Conservation International, only 10% of the sewage from 14 million visitors to the Caribbean in 1994 received any form of treatment. Sewage damages surface and ground waters by odor, nutrient loading, and pathogens, according to the report. In addition, it states, “Poor sewage treatment can lead to pollution of ground and surface water, bacterial growth, the smothering of corals, the accumulation of toxins in aquatic and marine organisms, and algal blooms, which reduce oxygen available to other organisms and can cause biologically dead areas.”

Garbage is another sore spot. Tourists often consume far more packaged and disposable goods than the average resident, and local disposal systems frequently can’t handle all the extra trash. In Zihuatanejo, on Mexico’s Pacific coast, the evening air is often soured by the stench of burning plastic as restaurant owners torch their trash in open pits. Island resorts, where land is inherently limited, are particularly prone to garbage disposal problems. For example, according to a report cited in *The Green Host Effect*, residents and hotel owners on the island of Lesbos, Greece, throw their trash into the water, exacerbating an existing pollution problem.

In the Himalayas, Mount Everest is visited by a growing number of climbers who have traditionally had more energy for packing in supplies than for packing out trash. The camp at 26,000 feet “has become known as the highest junkyard in the world,” accord-

ing to a 4 March 1996 article by Peter Ford in *The Christian Science Monitor*. “Like camps farther down the mountain, it is littered with empty oxygen and cooking gas cylinders, tins, tents, sleeping bags, food, ropes, batteries, plastics, and the frozen corpses of climbers who have died on the mountain.” The government of Nepal now requires climbing groups to submit a deposit that is refunded only after teams return with their trash.

A Room with a View

Tourism development can drastically alter land use, particularly when large numbers of tourists descend on small, fragile environments such as often exist on coastlines. In the Philippines, the 2,500-acre island of Boracay had 2,000 residents in the 1980s; today, up to 20,000 tourists may crowd the island at once. One-tenth of the land is now devoted to a golf course, and in 1997 environmental regulators noted dangerous levels of fecal coliform bacteria, an indicator of untreated sewage, in ocean waters where people were swimming. According to figures cited in *The Green Host Effect*, sprawl is further advanced in Cancún, on Mexico’s Yucatán Peninsula, which grew from a tiny fishing village in the early 1970s into a tourist mecca with more than 20,000 hotel rooms and 2.6 million visitors annually. Each day, the local landfill receives 450 tons of garbage. Many of the poor among Cancún’s 300,000 residents live in shantytowns, and 75% of their sewage flows untreated into the lagoon behind the beach. Heading south toward Belize, shoreline destinations along modern highways are replacing pristine rainforest, and tourism in Playa del Carmen, Mexico, has been growing at 30% annually.

Coastal development can damage other marine resources. Anchoring and disturbance by scuba divers and their boats has damaged reefs in the Yucatán, the Caribbean, and elsewhere. Road building and development can cause siltation and destruction of harbors and sea life.

Tourist development can also cause problems inland. In Asia, for example, golf courses near tourist destinations are causing concern. Thailand bills itself as a “golfer’s paradise,” but densely populated tropical nations may be ill-suited to golf courses, which appropriate large tracts of land from agriculture. Golf courses also reportedly use between 800,000 and 1.3 million gallons of water per day during the dry season. Oliver Hillel, director of the ecotourism program at Conservation International, says, “In the Malay Peninsula of Thailand, a local government has opted to supply tourist facilities—golf courses—with water and energy before [serving] the local people.” The average golf course also receives

1,500 kilograms of fertilizer, herbicide, and pesticide each year, according to *The Green Host Effect*, which also notes that the chemicals “have been associated with pollution of water resources, the death of wildlife, and increased diseases, including cancer, among humans.”

Tourism development and the visitation it occasions also contribute to habitat decline. In a 1997 survey of 44 U.S. national park superintendents titled *Environmental Impacts of Tourism on U.S. National Parks*, 37 parks reported vegetation problems related to tourism. Camping along streams in crowded parks causes trampling of stream banks and erosion into surface waters. Laura Loomis, director of the visitor use and experience program at the private National Parks Conservation Association, says the National Park Service has recently done a reasonably good job of moving campsites away from streams. The service has been less effective at dealing with damage due to new forms of recreation, she says. For example, “sand boarding” is a dry version of surfing done on the sands of the Great Sand Dunes National Monument in Colorado. Critics charge that the activity leads to erosion of the dunes and that regulations to protect the dunes are not being enforced. “They say it’s only 10 people per year and that it’s too expensive to send rangers out,” says Loomis, “but that’s the same head-in-the-sand attitude they took when snowmobiles were introduced into Yellowstone.”

The effects of tourism development are perhaps most vividly evident in the Galápagos Islands, the volcanic islands in the Pacific Ocean where Charles Darwin gathered data before propounding his theory of evolution. The Galápagos archipelago has long been a destination for tourists with an ecological or scientific bent, but the habitat is rapidly changing. The islands and its wildlife are threatened by an onslaught of tourists and a surge in population among the people who serve them. The islands’ population has reached 20,000, causing problems with sewage, trash, and habitat destruction due to such introduced species as goats and pigs.

Animal Behavior and Biodiversity

It’s not just geography that can be threatened by tourists. Animals may be affected by the presence of tourists as well. Much of the international concerns in this area originated in Kenya, where lions, cheetahs, elephants, and other wildlife at game parks are frequently surrounded by scores of tourist vans. A 1990 survey by J. S. Akama published in *Progress in Tourism and Hospitality Research* found that 80% of tourists in Kenya were disturbed by animal harassment, off-road driving, and vehicle congestion.

Visitors may also affect animals in the fragile rainforests, according to research in the Ecuadorian Amazon basin by biologist Stella de la Torre, formerly at the University of Wisconsin at Madison. After tracking howler monkeys at two locations, de la Torre found that noise from tourist boats was changing the way the monkeys used their habitat. “In the area with motorboats from 17 tour agencies, the monkeys seem to be retreating from the lake edge, where they would normally be spending most of their time,” says University of Wisconsin researcher Charles Snowdon, who oversaw the research, which was published in the September 1999 issue of *Neotropical Primates*. In a companion study of the pygmy marmoset scheduled for publication in *Biological Conservation*, de la Torre found that the five-ounce primate stayed higher in the trees and interacted less in areas with more tourists. The pygmy marmosets at the heavily traveled site produced only 31% of their potential offspring, compared to 86% in areas with low tourist numbers.

Ecotourism to the Rescue?

If today’s trends continue, tourism and particularly travel to exotic natural destinations is expected to increase. Perhaps in response, the industry is looking at its environmental effects, says Jafari. “There’s a huge debate and [environmental] concerns. There are programs alerting the industry to the fact that it will have to police itself, or somebody will police the industry.”

Many of the suggestions for reducing environmental damage from tourism include proposals for alleviating the more generic human impact on the planet. One popular proposal is to reduce energy use by substituting buses for cars. In California, however, plans to deliver tourists in buses to the crowded Yosemite Valley portion of Yosemite National Park have encountered opposition by local businesses, which fear that a reduction in tourism would ensue if people could not use their personal cars to get there.

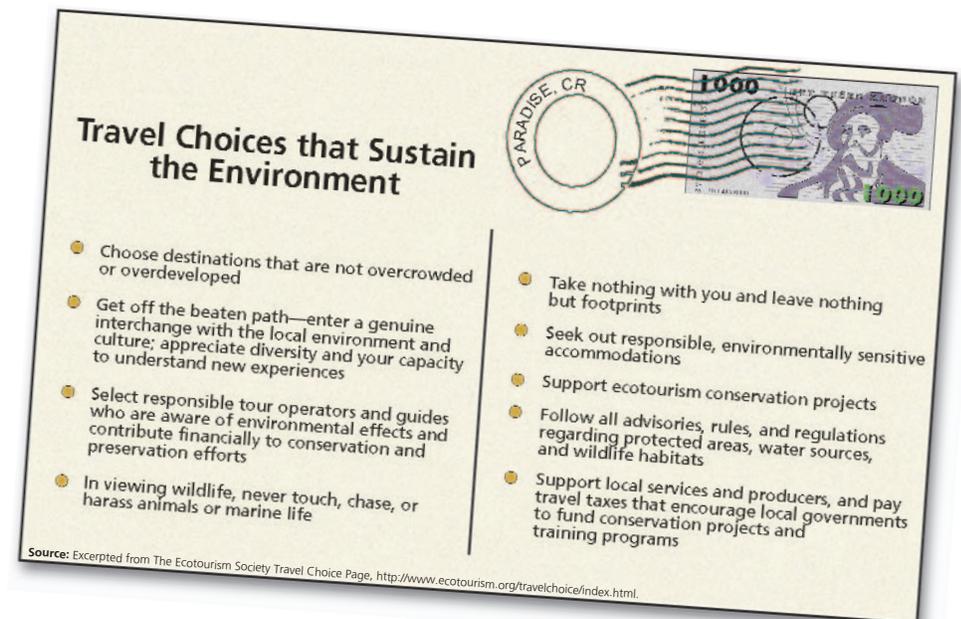
Many of the solutions for reducing the environmental impact of tourism are lumped together under the label “ecotourism.” Ecotourism, sometimes called sustainable tourism, tends to overlap with adventure, wildlife, and nature travel, but true ecotourism should simultaneously benefit tourists, the environment, and the local society and economy. According to a commonly used definition from The Ecotourism Society, ecotourism is “purposeful travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem, while producing economic opportunities that

make the conservation of natural resources beneficial to local people.” Ecotourism development proposals involve controlling construction in vulnerable locations and grouping resorts to leave some land undisturbed, as well as increasing the local benefits to make conserving habitat more profitable to local people, the idea being that the need to conserve land for tourism and the income it creates may become more valuable to the local economy than activities that deplete resources, such as logging.

In 1999, the Center for International Forestry Research in Bogor, Indonesia, published an extensive study of ecotourism projects in the Ecuadorian Amazon titled *Promoting Forest Conservation through Ecotourism Income?*, which found benefits to local communities and the environment. “In all five study cases of tourism in Cuyabeno [Wildlife Reserve], local community members receive economic benefits that are significant and competitive, compared with other sources of monetary income,” writes analyst Sven Wunder. The tourism income to each community was between \$15,000 and \$50,000, much higher than previous estimates. The impacts on the forests were lessened by regulation, peer pressure to preserve animals that tourists like, and the fact that employed people had less time for hunting. Wunder writes, “There are good reasons to believe that the rise of tourism and the stream of income . . . have substantially helped to conserve the integrity of the reserve.” In essence, tourism became a counterweight to profitable but destructive uses of the land such as plantation farming, logging, and drilling for oil.

Ecotourism is popular among conservation organizations, some of which promote ecotourism development projects and sponsor ecotravel. Such development projects can provide a more environmentally friendly alternative to conventional tourism. Lodges that use local materials and traditional architecture, for example, may need less material transported in during construction and use less air-conditioning during operation. Similarly, buying local produce reduces the environmental effects of freight transportation such as air pollution and energy usage, and supports the local economy. One well-known example of ecotourism development, Maho Bay in the U.S. Virgin Islands, was built largely with recycled materials. Rather than houses, it uses tents that rest on platforms to reduce soil damage. Communal toilets, cold-water showers, and solar panels all reduce energy use. But while the site does offer so-called green lodging, critics charge that it falls short on local social and economic benefits such as community empowerment.

Such benefits have been more evident at a



project near the Maya Biosphere Preserve in Guatemala, where more than half the local forest had been destroyed by logging and resin collection. There, Conservation International helped start a Spanish-language school. By 1998, the school was run by a local cooperative and was attracting 500 students, each paying \$50 per week for instruction, to an area that had seen little tourism. Local people also earn money at new tourist-associated businesses selling lodging, food, and guide and telephone services, which provide alternative income to logging.

Ecotourism projects may also be designed to attract internal tourism that is environmentally friendly. Andrew Smith, a professor of biology at Arizona State University, has consulted for such an effort outside Mexico City, the world's largest metropolis. Smith says the Ejido (communal lands) Park at San Nicolás attracts city residents to its fenced, protected land. He expects the park to help stem a transformation of this rural highland into a suburb. “Three years ago, 90% of the people were getting their basic income from Mexico City,” he says. “They’d given up the heritage of living on the land.” Now, on weekends, hundreds of Mexicans from the city pay parking and entrance fees to hike, bike, and camp in the area. A fish hatchery and tree nurseries are helping restore the biological vitality, Smith adds, and now that standing pine trees are becoming profitable, “all the biodiversity in the area is protected.”

In New Jersey, birdwatchers contribute \$31 million annually to the Cape May economy. In a familiar type of industrial-environmental conflict, the shorebirds that attract the birdwatchers eat horseshoe crab eggs, which are also harvested for bait and as a raw material for a medicine. As a result of discussions between the birdwatchers and industry, the fishery was restricted but not banned.

“Hopefully it’s a win-win situation,” says Michael Weinstein, director of the New Jersey Sea Grant program. “If the fishermen give up a little, the shorebirds gain and the ecotourism is sustained.”

Yet, many ecotourism projects fail to meet the lofty standards of the comprehensive definition. In her 1999 book *Ecotourism and Sustainable Development: Who Owns Paradise?*, Martha Honey, director of the peace and security program at the Institute for Policy Studies in Washington, DC, writes, “While . . . many projects around the world may be missing a few of the pillars of sound ecotourism, others amount to little more than green packaging.” For example, she writes, “In Costa Rica, a \$3 billion megaresort project that will include shopping centers, two golf courses, and a polo field is officially called an ‘ecodevelopment.’”

In the long run, the debate over the environmental effects of tourism will likely gain significance if, as the World Tourism Organization predicts, over one billion people travel internationally in 2010, producing revenue totaling \$1.55 trillion. Will tourism destroy the world? Probably not—there are plenty of other contenders for that dubious honor. Will ecotourism save the world? Equally unlikely. But for its potential to deliver environmental, economic, and social benefits to places that could use plenty of both, tourism—and particularly the ecotourism variation—can be a boon. Still, if tourism is to provide real benefits in a sustainable way without wreaking havoc on the environment, the multitudes of travelers who traverse the planet will need to learn to tread softly on the earth.

David J. Tenenbaum