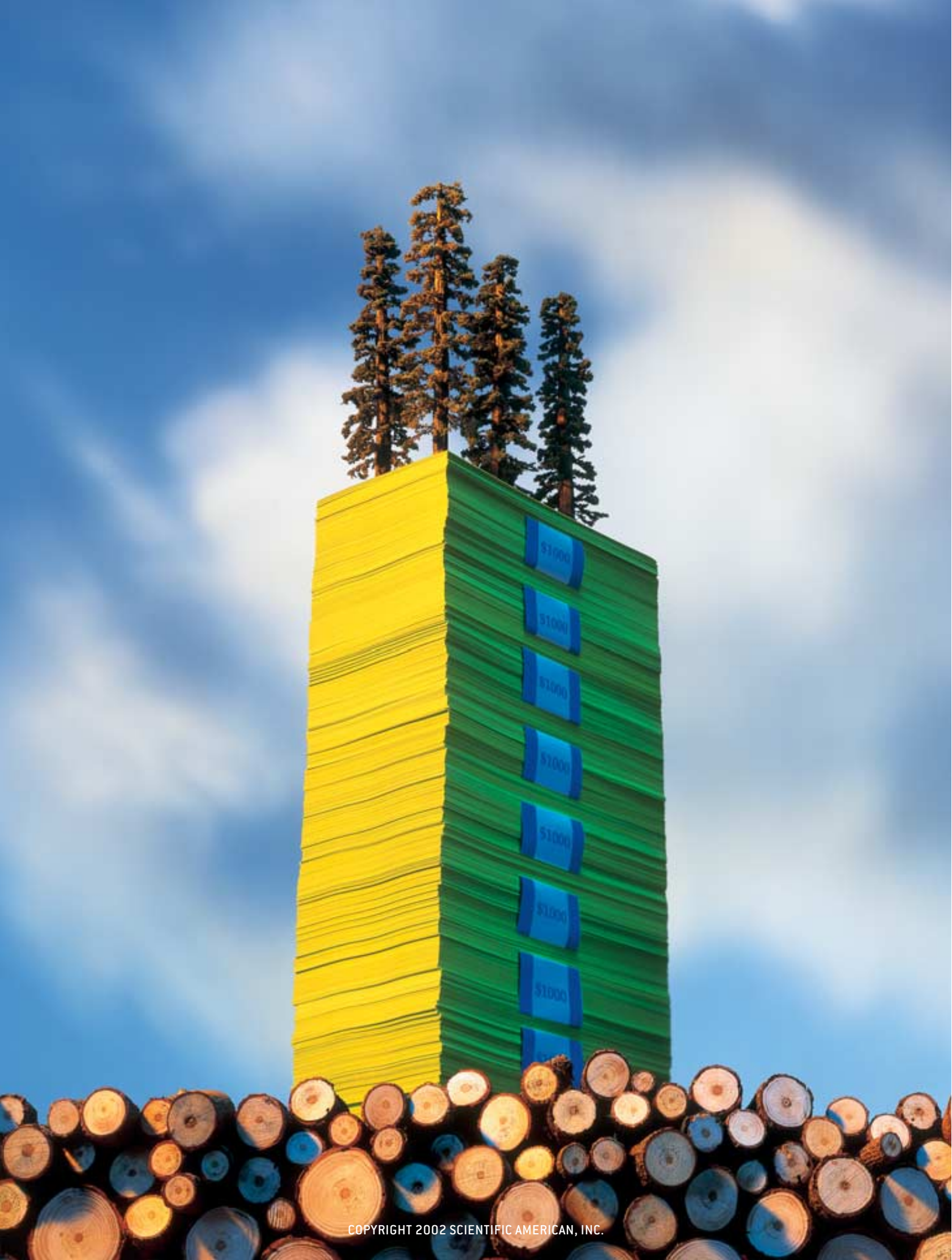


Buying green products won't be enough to save biodiversity in the tropics. A new plan for marketing conservation services may be the answer

Rethinking GREEN CONSUMERISM

By Jared Hardner and Richard Rice
Photographs by Pete McArthur

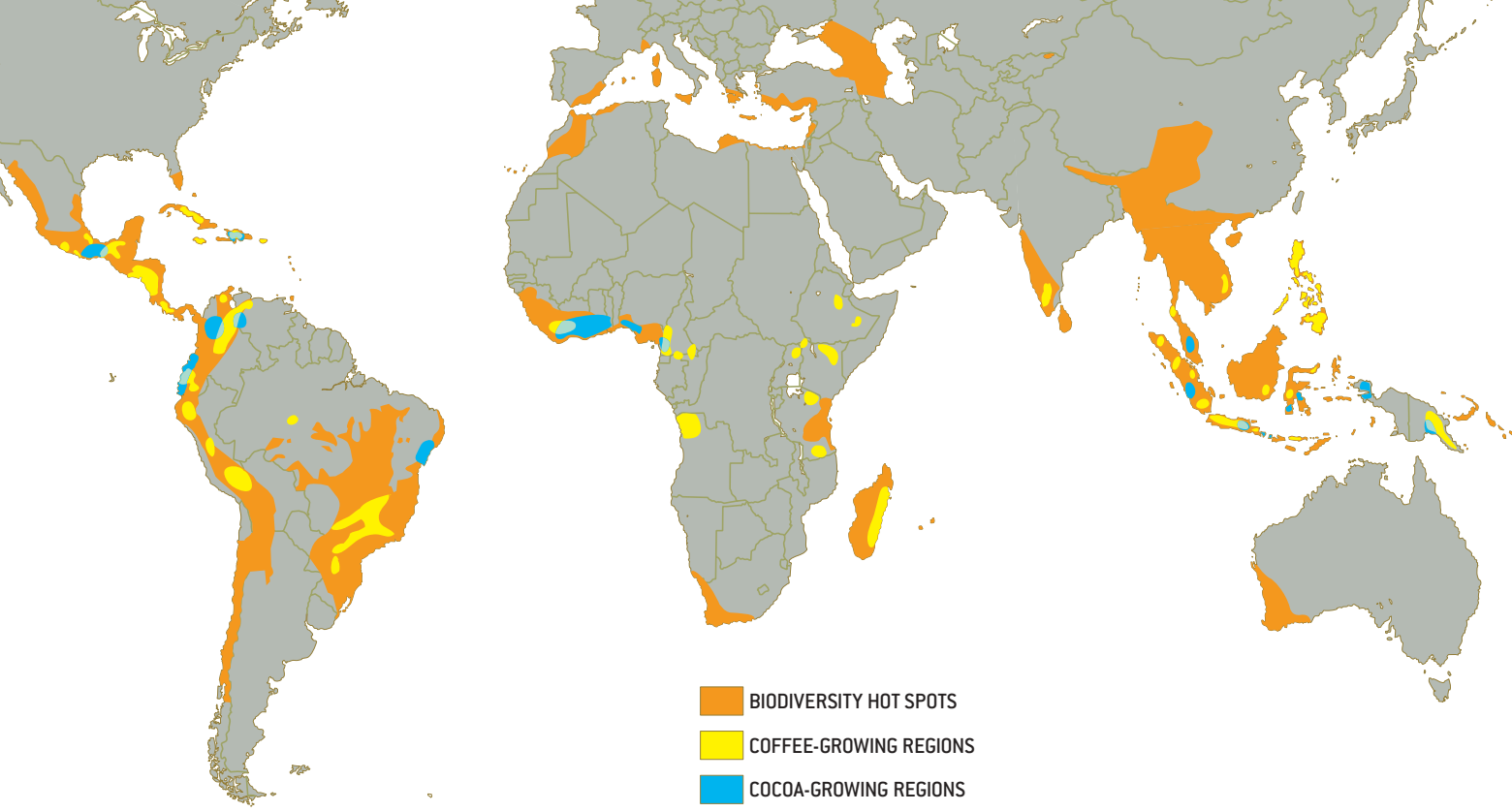
Over the past decade, one popular tropical conservation effort has been to encourage consumers to pay more for products that are cultivated or harvested in ecologically sensitive ways. Myriad international development projects have promoted these so-called sustainable practices in forests and farms around the world. Ordinary citizens in the U.S. and Europe participate by choosing to buy timber, coffee and other agricultural goods that are certified as having met such special standards during production. One of the best known of these certified, or "green," products is shade-grown coffee beans, which are cultivated in the shady forest understory rather than in sunny fields where all the trees have been cut down.

Efforts to develop green products deserve support and praise. But in the context of the global economy, sustainable agriculture and consumer actions alone will not be enough to conserve the plants and animals that are most threatened by deforestation. We believe that a bold new approach, which we call conservation concessions, provides a potentially powerful way to expand the green market from its present dependence on products to the broader notion of green services—the opportunity to purchase biodiversity preservation directly.

The feasibility of this strategy relies on economics. Huge tracts of public forest in the developing world are being leased for less than $1 per hectare a year. At those prices, conservation organizations, which have long demonstrated a willingness to pay for the preservation of biodiversity, can afford to outbid competitors for land leases and to compensate local people to manage the intact ecosystems. These agreements are legally and economically no different from logging contracts or any other business deal that grants control over natural resources to a particular group. Indeed, the income that developing countries can generate in this way is equivalent to, and often more stable than, what they could earn through the volatile international markets for timber and agricultural goods.

No Other Choices

ONE OF THE GREATEST ADVANTAGES of conservation concessions is that they dispel the notion that habitat destruction is inevitable if ecosystems are to generate



CONSERVATION AND AGRICULTURE often compete for the same valuable tracts of land. Major growing regions for coffee and cocoa coincide with some of the world's richest and most threatened areas in terms of biodiversity. Cultivation of these two crops alone has replaced or degraded nearly 20 million hectares of natural habitats in the tropics.

financial benefits. During a study of cocoa economics in Ghana in the spring of 2000, an official in that country's department of forestry explained to one of our research partners, Eduard Niesten, that Ghana's government cannot be expected to set aside more than the 20 percent of its prized high-canopy forest zone that is already protected by national law. The rest must be used for economic progress, the official said. This pessimistic sentiment is widespread among governments and residents of many developing countries, where economic planning often includes rapid growth of the production of agricultural commodities, especially after logging operations have cleared the land. These activities represent an attractive—and perhaps the only—development option in tropical countries, which tend to have an abundance of land and unskilled labor but insufficient capital to finance more costly endeavors, such as industry.

To examine this issue more closely, we formed a research team with six other investigators at Conservation International's Center for Applied Biodiversity Science in Washington, D.C. Our aim was to study agricultural commodities that are produced in areas designated by ecologists as the world's richest and most threatened in terms of biodiversity [*see map above*]. These 25 so-called biodiversity hot spots, which encompass only 1.4 percent of the earth's land surface, have lost at least 70 percent of their primary vegetation. They are also prime habitats for 44 percent of all vascular plant species and 35 percent of all land-dwelling vertebrate species. Based on this three-year study, our team determined that in addition to logging for timber, natural-habitat destruction is rapid and extensive to accommodate the production of five agricultural commodities: beef, soybeans, palm oil, coffee and cocoa.

In the 1980s the expansion of cattle ranches in South America was widely publicized. This activity accounted for 44 percent of deforestation on the continent during that decade. Today one of the greatest threats to South America's tropical biodiversity is the expanding production of soybeans, most of which goes to feed livestock. Since the 1970s soybean cultivation has grown by 13 million hectares in Brazil alone—the fastest expansion of any agricultural product in the tropics known to date. Government subsidies have allowed this activity to move into areas never before touched by agriculture. In neighboring Bolivia, the area devoted to this crop has grown by an average of nearly 35 percent a year since the mid-1960s and is fast approaching one million hectares.

Elsewhere natural forests are being converted at an alarming rate to cultivation of the other three crops in our study. Spread ubiquitously around the world's biodiversity hot spots are coffee and cocoa, occupying 11 and eight million hectares, respectively. Their cultivation has replaced as much as 80 percent of Ivory Coast's original forests. Malaysia leads the production of palm oil, cultivating three million hectares out of the total six million devoted to this commodity globally. Indonesia, which currently grows oil palm on 2.5 million hectares, has vowed to overtake its neighbor as the world's leading producer by planting the 15 million additional hectares that the government has already slated for oil palm plantations.

Certainly the intention of people who convert biologically diverse ecosystems to agriculture or logged forests is to improve their economic lot in life. The sad irony is that these prospects are often unreliable. When countries choose logging and agriculture for lack of better economic options, they often are not competitive in

JANA BRENNING; SOURCE: CONSERVATION INTERNATIONAL

THE LIMITS OF BUYING GREEN

A POPULAR STRATEGY for slowing the destruction of tropical forests has been to promote ecologically friendly practices within the agriculture and logging industries. But demand for coffee, timber and other "green" goods that are produced according to these certified practices originates almost entirely in Europe and the U.S., where consumers are willing to pay premium prices to support conservation. These niche markets play an important role in conservation efforts, but they have serious limits.

Unreliable profits restrict the markets for coffee and cocoa. Whether or not they produce green goods, all cultivators of these products must face the uncoordinated nature of global production, which often results in vast oversupply. Cocoa production swelled throughout the 1980s and 1990s, for instance, despite a punishing decline in price. For green consumerism to work in this context, conservationists must find ways not only to make cultivation and harvesting ecologically sound but also to ensure that the products will be profitable in a competitive global market.

A different problem confines the market for green timber. Organizations such as the Mexico-based nonprofit Forest Stewardship Council have certified more than five million hectares of logging activity in Asia, Africa and Latin America. The problem is that almost all the green timber produced in these forests is sold in Europe and the U.S., which together import less than 6.5 percent of the 228 million cubic meters of all timber—green or otherwise—that is produced in the tropics every year. The vast majority of uncertified logging serves the economies outside these regions.

The worse-case scenario occurs when uncertified logging occurs in biodiversity hot spots such as Madagascar, where most of the timber harvested will become charcoal that local people burn for fuel. This island country, which is less than 2 percent the size of neighboring Africa, harbors a staggering diversity of living things that are found nowhere else on the planet, including at least 8,000 species of flowering plant. Madagascar shelters 12 percent of all living primate species, 36 percent of all primate families, and 33 species of lemur that exist virtually nowhere else, making it possibly the world's single most important area for conservation of these animals. And yet because the trees are consumed domestically, wealthy foreign consumers looking to "buy green" have no opportunity to influence the logging of these priceless forest habitats.

—J.H. and R.R.

A NEW GREEN MARKET

LAND SET ASIDE FOR CONSERVATION is often deemed an economic asset gone to waste. A new market for green services promises to eliminate this trade-off. International willingness to pay for conservation reflects growing demand for protection of the world's biodiversity, which many developing countries can readily supply. The logic behind this new market is simple: landowners lease natural resources to conservationists, who pay the same as or more than logging companies or other destructive users. These so-called conservation concessions not only protect the land but also finance conservation services and provide employment for local people. A properly executed conservation concession:

ENABLES HOST COUNTRIES TO CAPITALIZE ON THEIR AMPLE SUPPLY OF BIODIVERSITY-RICH HABITATS. The concession approach alleviates economic reliance on volatile timber and agricultural commodity markets and allows tropical countries to benefit economically by protecting their natural resources. This benefit can be achieved without depreciating the value of the natural resource and without damaging wildlife habitats or other aspects of the environment.

STIMULATES ECONOMIC DEVELOPMENT BY MIMICKING THE PAYMENT STRUCTURE OF OTHER BUSINESS TRANSACTIONS. Payments cover government taxes and fees, lost employment, and capital investment and are made in hard currency. Part of these fees is directed to the local communities to create jobs and invest in social programs.

OFFERS IMMEDIATE, TRANSPARENT PROTECTION FOR THE LAND IN QUESTION. The tangible nature of conservation concessions offers a clear way to quantify the payoff of biodiversity investments. They should also appeal to corporations seeking methods to offset the environmental impacts of their operations with unambiguous benefits.

CATALYZES CONSERVATION IN SITUATIONS WHERE CREATING A NATIONAL PARK MAY BE INFEASIBLE. Conservation concessions provide governments with an economically sound motive for creating protected areas that extend beyond park systems. Concession payments also ensure long-term management of these areas, in contrast to many underfunded national parks.

REDUCES RISK OF FAILURE BY ESTABLISHING ONGOING ECONOMIC INCENTIVE FOR COOPERATION. Substantial financial risk accompanies business investments in many developing countries, but a well-constructed incentive system based on annual payments in return for resource monitoring and other conservation services should dramatically reduce the temptation to break a concession agreement.

—J.H. and R.R.

global markets. Indeed, the very nature of export commodity markets is that many producers are not profitable for years at a time because of chronic oversupply. The annual harvest of cocoa and accumulated stocks, for example, exceeded consumption by between 30 and 70 percent each year from 1971 to 1999. Cultivators in West Africa recently resorted to burning their crops in a desperate protest of the situation. Another striking example played out in Bolivia, where in 1996 the imposition of a new tax of $1 per hectare on the country's 22 million hectares of timber concessions resulted in nearly 17 million hectares being abandoned by loggers. In other words, the potential net returns for logging these forests were so low that an additional cost of $1 per hectare per year was enough to make most companies avoid these investments.

No matter the level of economic payoff, all these situations can portend widespread, irreversible loss of biodiversity. The concept of sustainable forestry and farming practices was born of this dilemma—the need to promote economic development while mitigating its probable course of ecological destruction. But our recent studies have convinced us that attempting to give green consumers broader access to agricultural markets is not necessarily a winning option for economic development or conservation in many settings. The share of the global agricultural market that is occupied by green goods is largely limited to those consumers in Europe and the U.S. who have the money for, and an interest in, purchasing such products. This reality effectively eliminates the potential for curtailing deforestation related to many agricultural products—for example, soybeans from Brazil that are eaten by livestock, oil palm in Indonesia that is cultivated for domestic consumption, and trees in Madagascar that are burned locally as fuel [*see box on page 91*].

Even when certified goods—such as coffee, timber and beef—do reach wealthy consumers, the effect is not as significant as some may think. Less than 1 percent of the coffee imported into the U.S. is certified for social or ecological reasons. What is more, most of the land newly devoted to growing coffee beans is for robusta, usually sold in developing countries as instant coffee, rather than arabica, the product sold most commonly in cafés of the industrial world. Green timber fares no better. Even if every board foot of wood imported into the U.S. and Europe from tropical countries were certified, it would make up only 6.5 percent of total production from the tropics. The rest is being sold in regions where consumers have little or no interest in certified timber. Similarly, organically produced beef is growing in popularity in industrial countries. But international trade in beef represents only between 1 and 3 percent of global production; in the developing world, beef production is growing at more than 3 percent a year, primarily to serve domestic markets.

Marketing Green Services

THE MORE WE STUDIED the conservation impacts of timber and agricultural commodity markets, the more convinced we became that attempting to support these markets through price premiums for green products is not the only way to encourage conservation. This situation seemed especially tragic when we considered the high demand for biodiversity protection among the international community. A common misperception is that conservation cannot compete directly with most other economic uses of natural resources; in reality, the conservation economy is quite large. The international community—including governments, multilateral development banks and conservation groups—spends at least half a billion dollars annually on biodiversity conservation in the tropics.

This figure is only a small fraction of the global budget that could be directed to biodiversity-rich countries if better investment mechanisms existed. In 1999 an example from Bolivia showed us just how far these financial resources can go. That year Conservation International paid a logging company $100,000 to retire its 45,000-hectare timber concession. As part of the deal, the Bolivian government agreed to integrate the area into adjacent Madidi National Park. Bottom line: an area three times the size of Washington, D.C., received permanent protection for less than the average price of a house in that city.

Working with timber concessions or other lease arrangements enables conservationists to avoid the problems associated with purchasing land outright. Some governments balk at the idea of foreign investors taking permanent control of parts of their territories, especially if they are trying to ensure a renewable stream of revenue from their natural resources. For the same reasons, incorporating land into national parks—as conservationists were able to convince the Bolivian government to do—is also a rare opportunity. That is why the Bolivia experience, and others like it, inspired us to take advantage of the low prices for which millions of hectares of forest could be leased in the tropics.

We developed the conservation concession approach to leasing land with several major goals in mind [*see box on opposite page*]. Most important, perhaps, was that a portion of the concession payments would be directed to local communities to support employment and social services. In the same way that a logging company would pay local residents wages

THE AUTHORS

JARED HARDNER and *RICHARD RICE* have collaborated on economic studies of biodiversity conservation in South America, Africa and Asia for the past 10 years. Hardner earned a master's degree in natural resource economics from Yale University in 1996, and four years later he co-founded Hardner & Gullison Associates, an environmental consulting firm based in Palo Alto, Calif. Rice received both a master's degree in economics and a doctorate in natural resources from the University of Michigan in 1983. In 1992 he joined Conservation International (CI), and in 1999 he accepted his current position as chief economist of the organization's Center for Applied Biodiversity Science in Washington, D.C., where Hardner also serves as a research fellow. The authors would like to express their thanks to collaborators Anita Akella, Gregory Dicum, Philip Fearnside, Sharon Flynn, Ted Gullison, Chris LaFranchi, Michelle Manion, Shelley Ratay, the staff of CI's offices in Guyana and Peru, and the staff of ProPetén in Guatemala.

PARTNERING WITH PARKS

NATIONAL PARKS are an important component of any nation's conservation plan. In countries such as Guatemala and Indonesia, conservation concessions can extend the protection that parks offer, especially in areas that allow economic activities such as logging.

GUATEMALA

CONSERVATION CONTEXT: In 1990 the government of Guatemala created the two-million-hectare Maya Biosphere Reserve (MBR). The reserve includes a multiple-use area where commercial exploitation of forest resources is allowed, but its core zones are protected against all activities other than those judged to be environmentally benign, such as scientific research and ecotourism.

WHAT'S AT STAKE: The MBR is the largest remaining tropical forest in Guatemala, and it constitutes a major part of a Mesoamerican biological corridor that shelters the jaguar and other species with extensive ranges.

THE THREAT: Commercial logging (especially for mahogany) and agricultural invasion threaten forests in the multiple-use zone.

PROPOSED CONCESSION: Later this year Conservation International and its Guatemalan partner, ProPetén, hope to finalize conservation-concession contracts with the communities that manage some 75,000 hectares of forest within the multiple-use zone. These additional conservation areas will begin to provide habitat links between the reserve's core zones of Tikal and El Mirador national parks.

INDONESIA

CONSERVATION CONTEXT: Siberut National Park protects just under half of the 400,000-hectare island of Siberut, off the western coast of Sumatra. Only about 60 percent of the 205,000 hectares outside the park remain naturally forested.

WHAT'S AT STAKE: Three distinct types of forest habitat, including lowland tropical rain forest and freshwater swamp, support a diversity of life. Four of the island's primate species—Kloss gibbon, pig-tailed langur, Mentawai langur and Mentawai macaque—live nowhere else in the world. About 35,000 Mentawaian people, who maintain a Neolithic social structure, also rely heavily on the island's forest resources for their subsistence.

THE THREAT: Pending concessions for commercial logging and oil palm plantations threaten 80 percent of the island—including areas within the park.

PROPOSED CONCESSION: The local government of Siberut and Conservation International are negotiating a conservation concession that could extend the area protected by the park and curtail encroachment by logging and agriculture. *—J.R. and R.R.*

and benefits to work in the mills, the financier of the conservation concession would hire them to preserve the forest.

Once we had developed a clear set of criteria for this newfangled green services market, we set off to create a series of pilot conservation concessions. Among the first countries we visited, early in 2000, was Peru. There we planned to compete for part of the 800,000 hectares of Amazon forest that the government was putting up for lease in an international auction. What transpired during our negotiations confirmed our theory that the economic value of forest resources in Peru—and many other regions of the world—is poor at best. Indeed, the auction began with a proposed minimum bid of between $1 and $4 per hectare a year and involved forestry companies from Europe and North and South America in addition to us. In a matter of months, however, the auction was called off because the other potential bidders lost interest in these concessions, presumably because the base price was too high. The fate of that particular forest remains to be determined, but we had planted a seed that took root in the fertile ground prepared by the Peruvian conservation community.

Peru had been undergoing the final revisions of its forest and wildlife law, a process in which several conservation groups were seeking alternatives to logging leases for Peru's forests. In April 2001 the government chose to include conservation concessions as a legal use of its 67 million hectares of public forest. We had entered the original bidding arena without knowing for certain that we would be allowed to compete, so this was good news. At around that time, a Peruvian conservation group, the Amazon Conservation Association, approached us. The group's members wanted to use a conservation concession to secure critical natural habitat where they were setting up an ecological research station. Under the new Peruvian law, concessions could be acquired by applying for specific areas of interest to the bidder. We leaped at the chance to help launch Peru's first conservation concession.

Thanks to the scientific and community work of the Amazon Conservation Association, legal advice from the Peruvian Environmental Law Society (SPDA), assistance from independent environmental consultant Enrique Toledo, and the enthusiastic support of Peru's Minister of Agriculture, Carlos Amat y Leon, Peru established the Los Amigos conservation concession in July 2001. The agreement centered on a renewable 40-year lease for the conservation management and study of 130,000 hectares of tropical forest. This land forms part of an ecological corridor that links Manu and Bahuaja-Sonene national parks in Peru and protects many of that country's 25,000 species of flora and 1,700 species of birds.

Catching On

OVER THE COURSE of our Los Amigos negotiations, we also conducted discussions for pilot projects in Guyana and Guatemala. In September 2000 the government of Guyana issued to Conservation International an exploratory permit for a conservation concession of approximately 80,000 hectares in the southern part of the country. During the subsequent months, we have worked with forest commission officials to negotiate the terms of a renewable 25-year contract. We hope to conclude the deal for this uninhabited area of forest later this year.

In Guatemala the national government had already issued timber concessions within the country's two-million-hectare Maya Biosphere Reserve to local communities. These people, who live within the reserve's multiple-use zone, where logging and other economic activities are permitted, are currently producing certified green timber from their forests. Two communities, however, have proposed to forgo logging and instead lease standing trees—and the obligation to protect the ecosystem in which they reside—to conservationists. The communities, together representing about 110 households, could use their new revenue stream from the proposed concession deal to pay salaries for conservation managers, to invest in projects such as guiding tourists to nearby archaeological sites, and to provide community social services such as education and health care. The proposed concessions, which would preserve both pristine forest and a wealth of Mayan ruins, span approximately 75,000 hectares bordering a national park [*see box on opposite page*]. The Guatemala and Guyana deals, both developed and financed by Conservation International's Center for Applied Biodiversity Science and the Global Conservation Fund, represent two very different settings for concessions.

At many turns in our negotiations over the past two years, we have faced scrutiny and skepticism about conservation concessions, from governments and conservationists alike. But the bold actions that some governments, together with significant financial supporters, have taken to adopt this approach indicate that it is viable both as an economic alternative and as a conservation tool.

And the idea is catching on. Last year we received a phone call from a man in Ecuador who had traveled six hours to the nearest international phone line so he could ask about establishing a conservation concession in his coastal forest community. Halfway around the world we struck up a partnership with a small nongovernmental organization in Indonesia that is keen to experiment with this concept as a way to protect that nation's fragile marine ecosystems.

Now, along with other colleagues, we are looking at the feasibility of conservation concessions across Africa, Asia and Latin America, and we predict that this approach will transfer readily to many areas. If we are right, conservation concessions may indeed be able to bring to life a global market for green services. SA

MORE TO EXPLORE

Can Sustainable Management Save Tropical Forests? Richard E. Rice, Raymond E. Gullison and John W. Reid in *Scientific American,* Vol. 276, No. 4, pages 44–49; April 1997.

Biodiversity Hotspots for Conservation Priorities. Norman Myers, Russell A. Mittermeier, Cristina G. Mittermeier, Gustavo A. B. da Fonseca and Jennifer Kent in *Nature,* Vol. 403, pages 853–858; February 24, 2000.

Effectiveness of Parks in Protecting Tropical Biodiversity. Aaron G. Bruner, Raymond E. Gullison, Richard E. Rice and Gustavo A. B. da Fonseca in *Science,* Vol. 291, pages 125–128; January 5, 2001.