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Why Your Daily Fix Can Fix More Than Your Head

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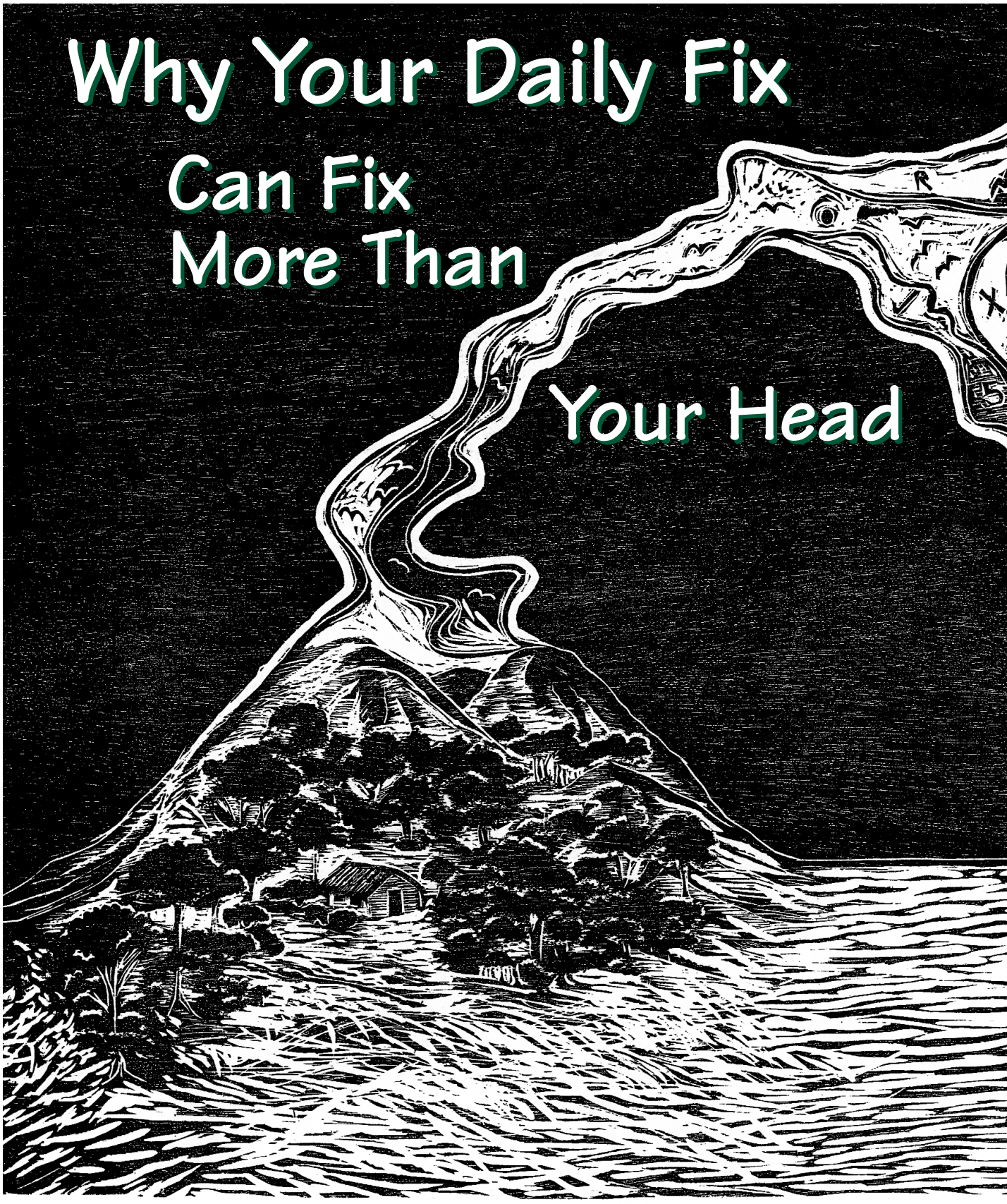
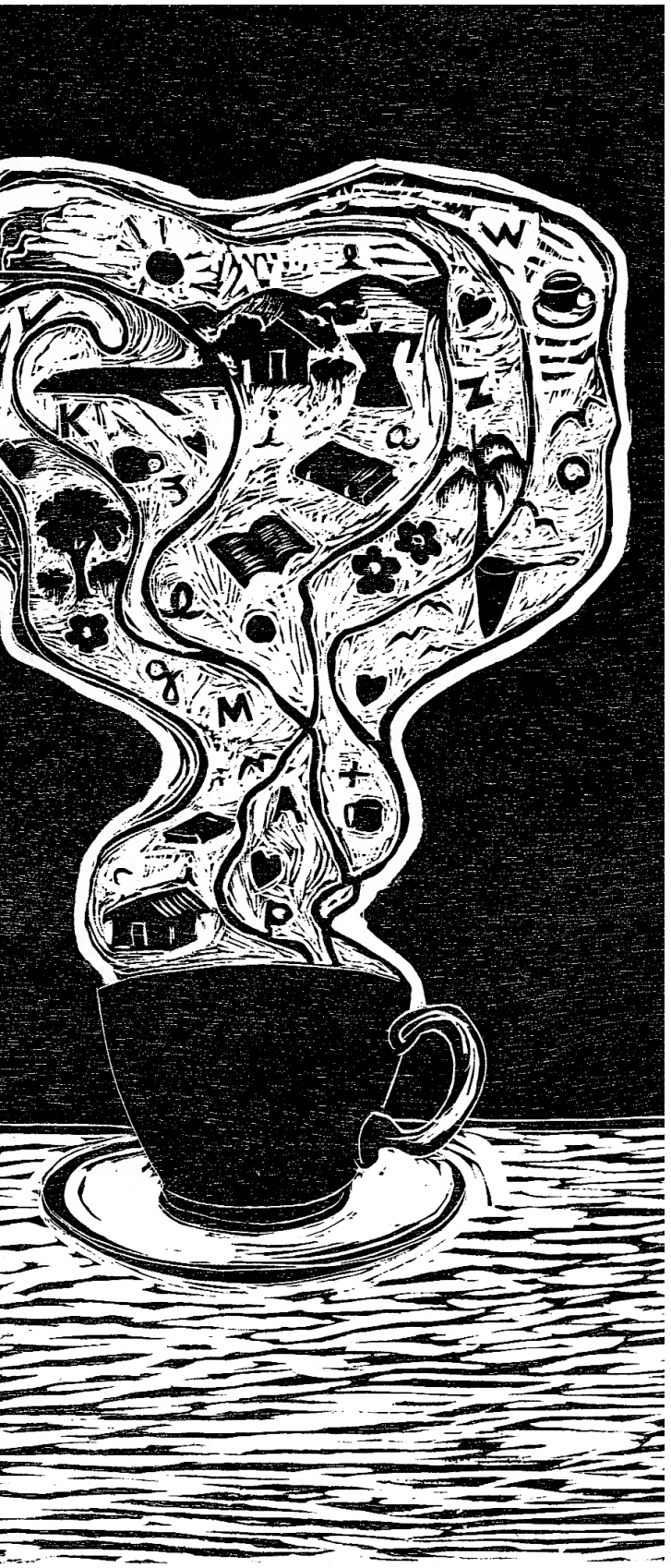




Coffee, if grown right, can be one of the rare human industries that actually restore the Earth's health.

by Brian Halweil

Take a deep breath.

If you are in a coffeeshop—or you've just brewed your own java—you are inhaling microscopic particles of coffee, which carry some of the 800 naturally occurring chemicals that give coffee its seductive aroma. These are the same chemicals, by the way, that can jumpstart your central nervous system—caffeine being the most famous one.

When these molecules enter the nostrils and stimulate the olfactory nerve, it may be hard to think about much more than getting that first swallow. Drinking coffee quickens the heartbeat and makes a person more energetic and alert. Regular coffee drinkers can even experience withdrawal symptoms, if they don't get their fix at the expected time. So if you're starting your day and just want that first cup, it may be hard to muster much interest in where the coffee actually comes from.

But where it comes from has surprising importance for the future of life on a destabilized planet. Coffee is one of those tropical exports that are produced exclusively in the Third World and consumed almost entirely in the First World. (Cocoa, vanilla, and bananas are some other examples.) The beans that are brewed for people in Geneva, Los Angeles, and Tokyo all grow in that waistband of tropical rainforests that girdles the planet between the Tropic of Cancer and the Tropic of Capricorn. At this point, there are basically two ways to grow coffee—in a manner that helps to preserve and restore rainforest, or in a manner that destroys rainforest. And as biologists have stressed, rainforest happens to have disproportionately high value to the Earth's ecological health.

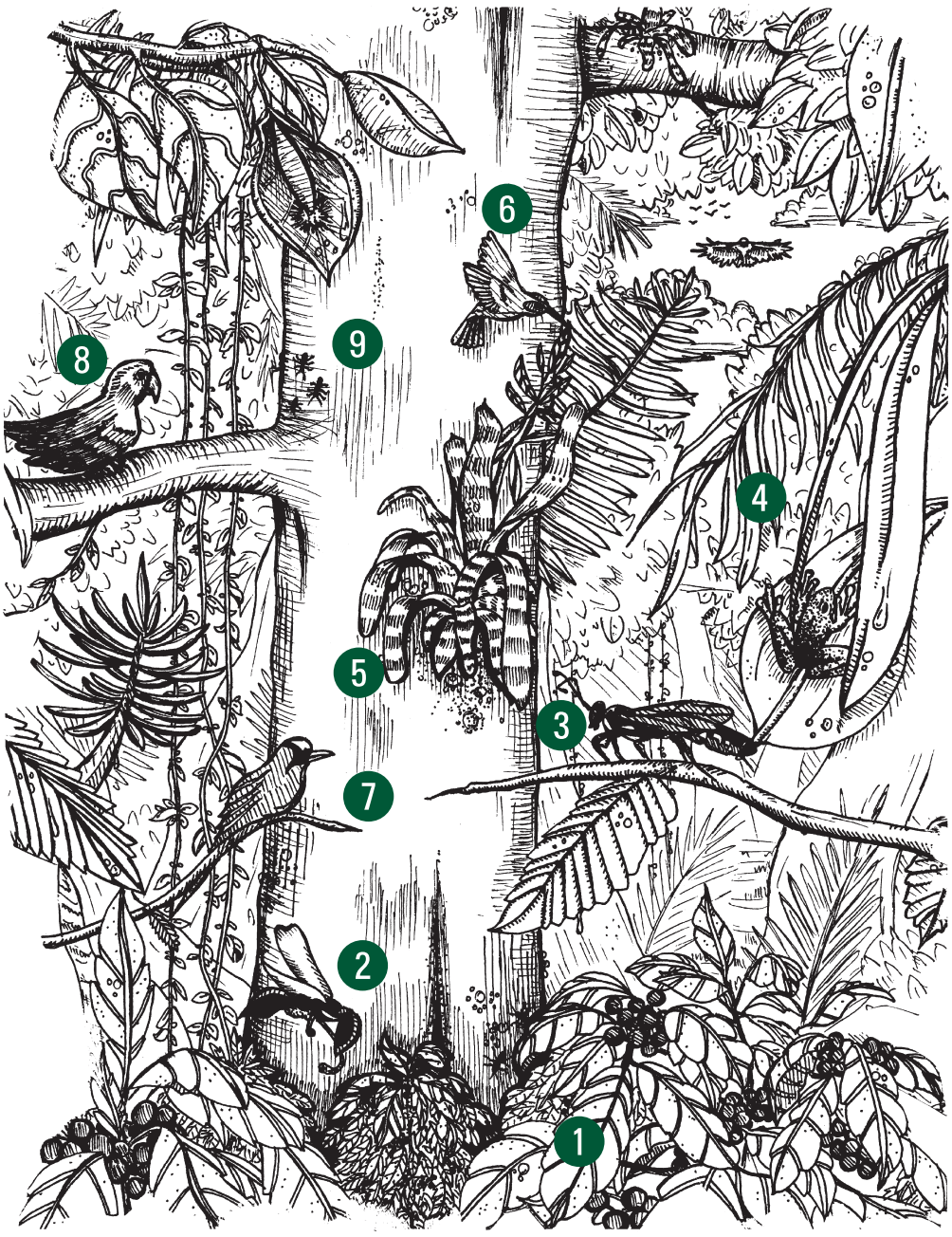
Until a few decades ago, most of the world's coffee was grown in the understory of rainforests, with farmers looking after the rainforest trees as a natural part of managing their coffee. But now, more and more coffee is produced in what *was* rainforest—clear-cut tracts of land without shade, that give off the dry, burning scent of ammonia fertilizer. Over 40 percent of the coffee area in Colombia, Mexico, Central America, and the Caribbean has been converted to "sun" coffee, with an additional one-quarter of the

area in conversion. It's a pattern that is emerging everywhere coffee is grown.

In the short term, this conversion may boost yield because larger numbers of coffee plants can be crowded together in the space where great wild fig trees once stood. But the long-term effect is another story. From an ecological point of view, this conversion is simply another form of tropical deforestation, along with the slash-and-burn clearing by settlers, or the bulldozing by cattle farmers looking to expand grazing range. When a shade coffee farm is converted to full-sun cultivation, the diversity and number of organisms in the area crashes. The various orchids, mosses, frogs, salamanders, and birds that inhabit a rainforest nearly all need a shady and moist area to build their homes, get food, and survive.

Ornithologists have found that in full-sun plantations, the number of bird species is cut by half, and the number of individual birds is cut by as much as two-thirds. Most rainforest birds reside in the canopy of trees, rather than on the ground near the coffee plants. The Mot mot, a brilliantly colored bird with a feathered knob at the end of its wire-like tail, which the bird swings from side to side like the pendulum of a clock, lives on berries and insects found in the upper canopies of wild fig, avocado, and coral trees. The insects, in turn, depend on the nectar produced by plants living on the surfaces of these trees—

The Secrets of the Shade



The coffee plant 1 is normally threatened by the coffee berry borer 2. But in a rainforest, the borer can be intercepted and destroyed by a parasitic wasp 3. The wasp needs shade, provided here by a great fig tree 4, on the trunk of which a bromeliad grows 5. The flowers of the bromeliad provide nectar to a hummingbird 6, which in turn pollinates the bromeliad flowers. The bromeliad collects a small pool of water, from which the Mot mot bird 7 and parrot 8 drink. These birds, along with ants 9 and spiders that live in the shade all eat the larvae of the coffee borer. The birds' droppings, along with nitrogen-fixing trees, enrich the soil in which the coffee plants grow. In a plantation, without this shade, the bromeliad cannot grow; no pool of water can last; most of the birds and other species cannot live; the ecological pest control and fertilization thus fail; and the coffee plants become dependent on chemical pesticides and fertilizers.

ILLUSTRATION BY JONATHAN GUZMAN

orchids, bromeliads, and cactus. Insect larvae develop in the pools of rainwater captured and stored by these plants, which also happen to be the water source for salamanders, frogs, snakes, and other rainforest animals. But if the highly complex rainforest system is reduced to just a field of coffee shrubs, all these interdependent organisms disappear.

According to Jeffrey A. McNeely, Chief Scientist at the World Conservation Union (IUCN), "The widespread conversion to sun coffee is particularly troubling considering that 13 of the world's 25 biodiversity hot spots—those areas that are unusually rich in species and highly threatened—are in coffee country." But what's at stake is not just the inherent worth of the rainforests and the species for which those forests are home. There are also some major benefits for people, both in the places where the coffee is grown *and* in places like the one where you live:

• These rainforests sequester a large share of the world's carbon, and as our atmosphere gets more and more saturated by carbon, that capacity to keep the carbon locked up in plants, and out of our atmosphere, becomes more and more indispensable. When a forest is burned or cut, the carbon is released into the air and becomes a contributor to global warming. Shade coffee helps keep the carbon where it should be.

• The forests—and the shade coffee farms that help preserve them—are essential to the protection of freshwater resources in tropical areas. The vegetative cover and roots of the shade system help to store more water, reducing the incidence of flooding and landslides, and helping to recharge aquifers. Coffee growers in the hillsides surrounding San Salvador, the capital city of El Salvador, are now being encouraged to bring trees back to their farms in order to help the city alleviate its water shortage.

• Shade coffee requires less pesticide (sometimes none), because undisturbed rainforest is home to birds and insects that devour coffee-plant pests.

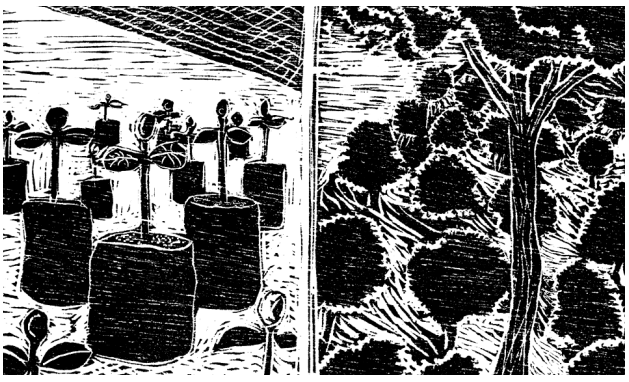
• Shade coffee also requires less (or no) chemical fertilizer, because many of the plants that comprise the complex ecosystem of a natural forest add nutrients to the soil. Similarly, the natural system requires less (or no) application of irrigation water, because the greater soil cover and shade reduces water loss through evaporation.

• The biodiversity found in shade coffee farms is a critical asset to people all over the world, because of its potential for developing new medicines, foods, and other resources. The benefits begin with the coffee farmer, who benefits far more from a shade-grown than from a sun-grown crop. On shade coffee farms in Peru, farmers derive nearly 30 percent of their income from sales of firewood, timber, fruits, and medicinal plants found in the shade system—all products which are also consumed by their own households. And these farmers do not have to be constantly working around pesticides.

Coffee farmers have another incentive, too, to restore the forests on their farms, because when coffee is grown in the shade, it brings a premium price. Coffee companies and drinkers are willing to pay more for beans grown with some consideration for sustaining the forest, which generally means not only creating space for other species but also farming without reliance on toxic agrochemicals. And there are some coffee labels that guarantee growers a minimum price that is generally much higher than the world price. The aid group Oxfam is encouraging Americans and Europeans to seek out and buy this "fair trade" coffee, as "a small but significant way for you to contribute to fighting poverty."

To coffee farmers in Kenya, Colombia, or any other poor country, this premium now means more than ever. Worldwide, the average coffee farmer earns less than $3 a day. For the price we happily pay for a latte, the farmer has to pay for his house, food, clothes, and kids' education. As a result, with commercial coffee prices at their lowest in several decades, many small growers are abandoning their crops. In Mexico, 300,000 coffee farmers have left their farms. When fair trade is practiced, coffee drinkers become involved in improving the lives of distant coffee farmers.

One reason fair trade can pay more is that it offers better *long-term* economics. The coffee farm that resembles an intact forest costs less to maintain. The pesticides and fertilizers that are essential in a plantation setting are expensive substitutes for the free serv-



ices once provided by the birds, insects, fungus, and other organisms of the forest understory. The coffee plant evolved in the shade of forests in what is now sun-blasted Ethiopia and the Sudan. Remove the forest and you're left with "coffee plants on life support," according to Robert Rice of the Smithsonian Migratory Bird Center. "You've done a number on the soil and the supporting cast of biodiversity," so the plants sooner or later wear out and fall prey to disease.

Most of the world's "ethical" coffee—certified as organic, protecting the rainforest, and giving the grower a fair wage—currently comes from Central America and the Caribbean, but the concept can be easily extended to the whole world. The tree and bird species that are protected will vary, as will the languages and cultures of the small farmers that maintain the farms. But the bottom line is that the world's tropical heritage will be preserved.

Exactly how much forest can be preserved? Of the 11.8 million hectares sown to coffee worldwide in 2001, virtually all of it (except the 2.3 million hectares planted in Brazil) is in current or former rainforest. In other words, a global conversion to ethical coffee production would safeguard about nearly 10 million hectares of rainforest. Considering that fires and clear-cuts claim roughly 15 million hectares of rainforest each year, this could be a major move toward actually reversing rainforest destruction. It won't happen immediately, of course. In places where the natural forest has been completely cleared, it would take five to ten years to establish a durable stand of trees. The big question is whether there is enough demand for this "ethical" coffee to keep growers on the land and to encourage them to grow more than just coffee.

At a recent meeting of the International Coffee Organization, major coffee producers and buyers from around the world agreed to limit coffee production in order to boost the world price and help growers around the world stay in business—a move that some analysts think points to a paradigm shift in how coffee companies think about the crop. Ernesto Illy, president of illycaffe, a premium quality coffee company based in Italy, says that the industry understands that coffee drinkers care more and more about the quality of the coffee. "If you want to have beautiful, ripe, and mature, hand-picked cherries [coffee beans], then you have to assure the farmer a decent living," he says. Illycaffe often pays its growers double the world market price to assure such quality.

In some ways, this presents a "chicken-and-egg" dilemma. On one hand, major coffee companies often argue that even if they wanted to sell shade-grown or fair-trade coffee, there is not enough currently produced and certified to assure a reliable supply. On the other hand, most growers are unlikely to convert until someone shows them the money.

A few major European and American coffee houses, including Starbucks, have now joined the many smaller shops that are offering ethical coffee, certified to be organic, grown in the shade, and/or fairly traded. These shops represent just a small fraction of the market compared with the major buyers worldwide, Proctor and Gamble (Folgers), Philip Morris (Maxwell House), and Nestle (Nescafe). In terms of the ethical coffee discussion, the big players—known as "the cans" in industry lingo—haven't even come to the table.

Which points to another chicken-and-egg dilemma. Coffee companies are generally unwilling to begin selling shade-grown coffee without some assurance that customers will buy it, and perhaps pay a bit more for it But there's precedent for thinking that with the help of a reasonable boost from promotion and advertising, a serious shift in demand is possible. With other products, consumer awareness of ethical or environmental implications has brought major changes in the market. Around the world, growing numbers of people are asking questions like, "Am I buying diamonds that financed warlords in Sierra Leone?" "Did kids in a sweatshop stitch together my T-shirt?" "Have these fresh-cut flowers been doused with banned pesticides?"

Humanitarian considerations aside, there may be some other very good reasons to care how your coffee is grown. "Coffee grown in the shade matures more gradually," says Ernesto Illy, "which makes it more aromatic and gives it a more powerful flavor." Ted Lingle, executive director of the Specialty Coffee Association of America, notes that "organic, shade-grown coffees are beginning to win a disproportionate number of cupping [tasting] competitions around the world."

Brian Halweil is a research associate at the Worldwatch Institute. He is author of "Farming in the Public Interest," in *State of the World 2002* (Washington, DC: Worldwatch Institute, 2002).

A Cafecito Story

The woodcuts accompanying this article were made by Belkis Ramirez of the Dominican Republic, to illustrate the book *A Cafecito Story*, by Julia Alvarez (White River Junction, VT: Chelsea Green Publishing Company, 2001, www.chelseagreen.com). They are reprinted here with permission. "In Central and South America, coffee is an economic lifeline, after oil the most important export commodity," says the publisher. "The story unfolds through the eyes of Joe, a man with farming in his blood but an increasing sense of displacement from the natural world."