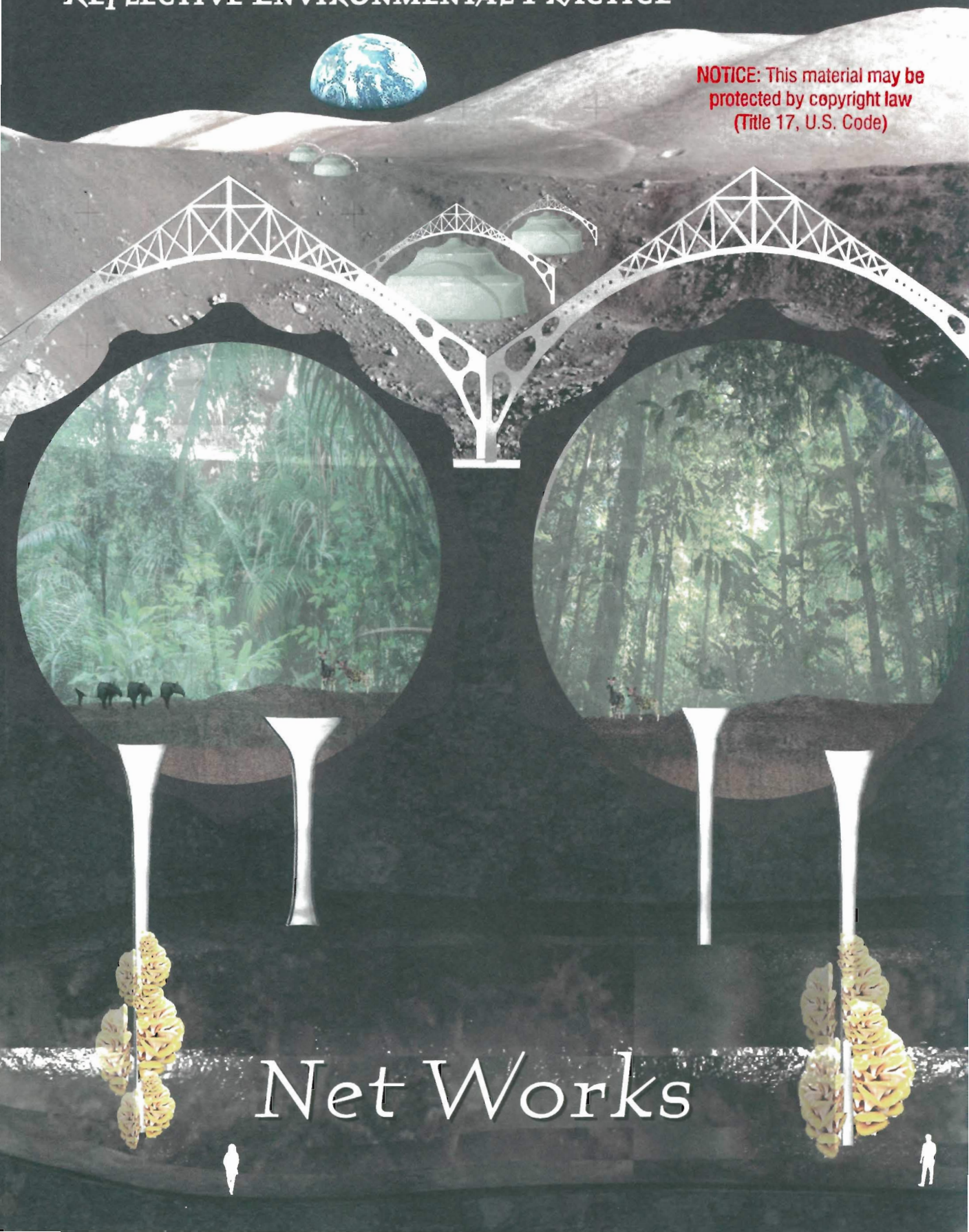
Whole Terrain

Reflective Environmental Practice



Net Works

A Note of Gratitude to Laurie Webster

This year *Whole Terrain* bid farewell to an esteemed member of our organization. Over her 10 years as *Whole Terrain* graphic designer, Laurie Webster has helped transform *Whole Terrain* from a journal of modest and simple design to a modern and visually sumptuous entity. We are thankful for her many years of dedication and creative vision.

Whole Terrain is dedicated to the experience of those who have chosen the environment as the basis of their professional work. It cultivates reflective thought and mindful awareness in an effort to create a balance between humanity and the earth. Each issue's specific theme examines the relationship between an evocative social topic and the environment. *Whole Terrain* is a publication of Antioch University New England.

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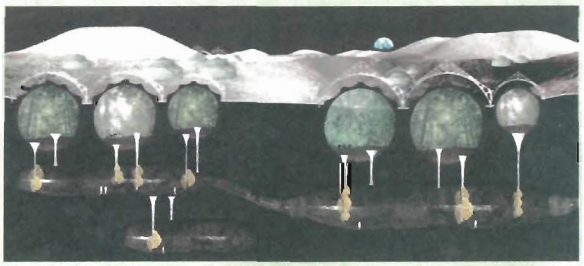
Sophy Tuttle is a freelance illustrator with a degree from Rhode Island School of Design. She loves to draw plants, birds, animals, and anything else that's alive. She has been included in the Society of Illustrators' Illustration West exhibition and selected as a 2010 "Chosen" artist by American Illustration. This is her third year illustrating for *Whole Terrain*. Her website is www.sophytuttle.com.

Cover Art



© 2010 Kathryn Foley and Colleen Tuite.
Harvest the Pharmacological Moon.

Kathryn Foley is a landscape architect. She designs with Landworks Studio, Inc. in Boston and returns to Providence daily. **Colleen Tuite** is a landscape architect. She works for architects at WORKac in New York City and for herself in Queens.

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A Tree Falls in the Forest

Laird Christensen

Less than a quarter mile past a secluded gate in the Willamette National Forest, we're forced from the jeep by a winter's worth of downed trees. Steve takes a bow saw to the first few until it becomes clear that we could spend all day at this. So we prepare to continue on foot into the old growth, hunting for a nest of Northern spotted owls.

Steve Ackers is a field biologist with the Oregon Cooperative Fish and Wildlife Research Unit, and surprisingly clean-cut for a guy with three days' stubble. He takes eight mice from a cage in the back of the jeep and places four each into plastic containers half-filled with wood shavings. Sliding these into his pack, he grabs an aluminum pole and shuts the hatch.

We start up the road, around and over fallen trees. To our right, Boone Creek is running white with snowmelt, unusually high for so late in May. Steve welcomes the chance, after a week of gray days, to clip shades onto his wire-rimmed glasses.

"Sometimes when I'm out here—especially when I'm alone, not flapping my gums—the owls will come right up to the road."

"No kidding!"

"They know I mean lunch."

The nest we're looking for is new this year. Both parents were spotted early in April, though there was no sign of either on a sopping day later that month. Then, two weeks ago, the male was seen and a fledgling heard from the nest.

At a strip of pink flagging, we step off the gravel road and clamber down a steep, ferny slope. I'm thrilled to be back among big trees after several years in New England. I grew up in Oregon, even worked in timber awhile, but I've never seen a spotted owl. Most folks around here know her only as a symbol: lost jobs or forest health, take your pick.

I'm hauling myself over a moss-covered log when Steve spots the mother watching from a limb about fifteen feet away. Her black eyes are set in shallow, downy bowls filling the space between her arched brow and small beak. Her face is flat, her wide body speckled from head to tail. I hadn't imagined talons so large.

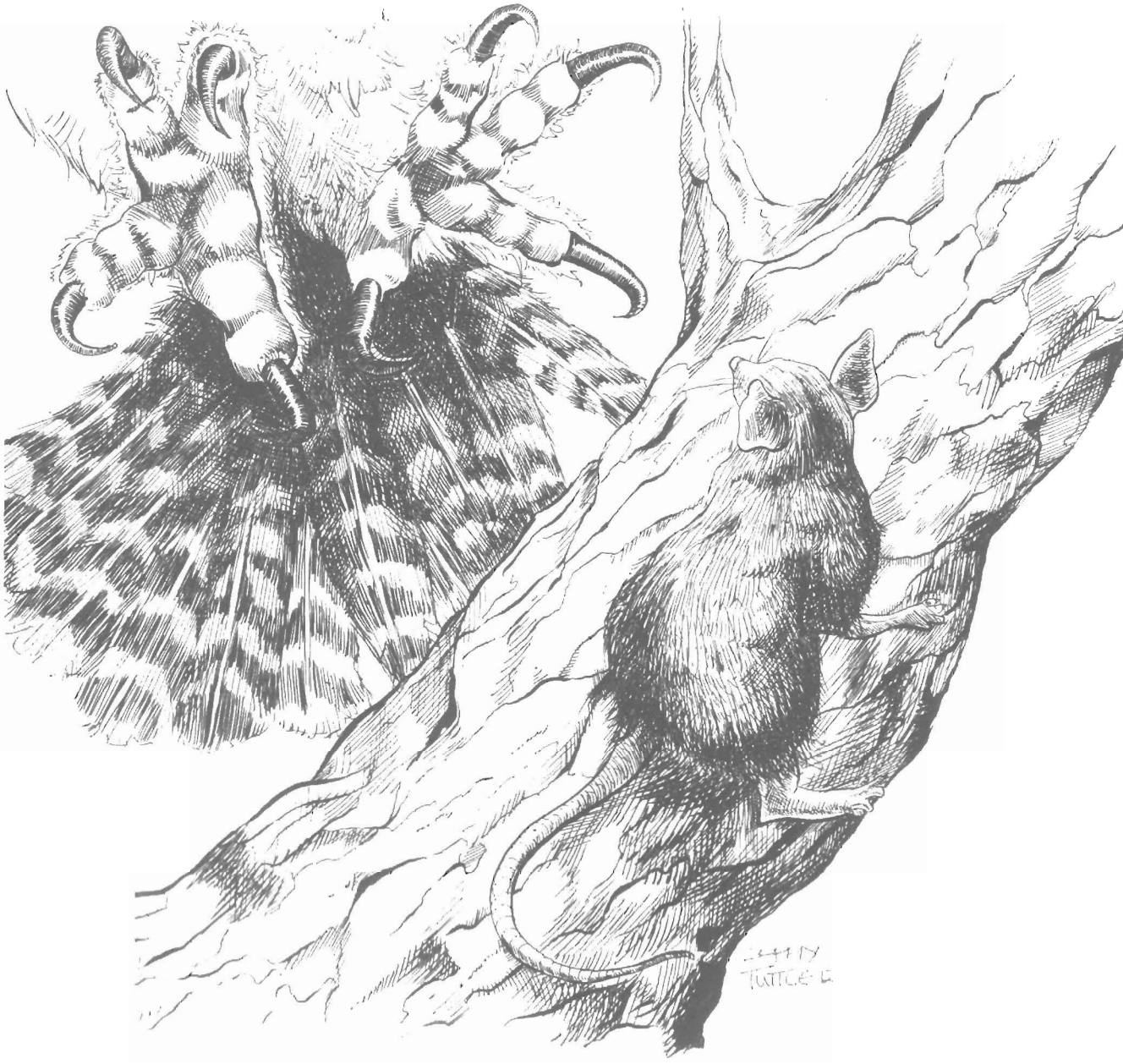
Steve slips off his pack and removes a mouse, which he places on the bark of a big Doug fir, then steps back. The mouse stays so still I think he's pinned it there, but it's just clinging to the bark. The owl swivels her head—her gaze sliding from mouse to Steve, to me, to Steve, back to the mouse—and suddenly her tail flares and she's descending on a broad fan of feathers. She takes the mouse in her claws and flutters to the limb above her, then ladders up a series of branches until she can fly directly across to her nest.

"Ah! Looks like it's right there." Steve points up at a Douglas fir older than Beethoven. "Top of the understory."

I ask if she'll eat the mouse and regurgitate it. He shakes his head.

"The fledglings are only a couple weeks away from leaving the nest," he says. "She'll probably tear it up and split it between them. Or she may give it to them whole and let them take care of it."

Then the owl is back, on a closer branch this time. Hoping to replace the band on her leg, Steve sets another mouse on the bark. The owl waits until just the moment when Steve reaches for his pole, then comes for the mouse.



"I could have caught her by hand," he chuckles, adjusting the loop at the end of the pole and extending it to ten feet.

The mother eats this mouse herself, waiting on a branch six feet above. I'm watching through my camera as the aluminum pole slides into the frame and lays the loop gently over her head. She seems undisturbed until the moment the loop draws tight. Her wings flail as Steve lowers her to the ground, where he takes her in his hands, calms her, and begins to look her over.

"The eyes should be wide open, clear, and free of any discharge, crustiness, or debris," he explains later. "Both feet should occasionally reach out as if to grab me—if one foot moves, the other should do essentially the same movement."

He suspends her by the legs from a lightweight scale to see if her weight has dropped below 650 grams: sometimes a mother will lose too much muscle while brooding. Not this one.

Steve removes her red-and-white band and

attaches another: pink with a black tab, easy to identify from the ground. The old band shows that she fledged four years ago at Lost Creek. That's twelve miles east as the crow flies—though much farther for a spotted owl weaving its way through old-growth forests.

The mother remains unruffled through most of the process, only once rising in a flurry of wings above Steve's grip on her legs. After promising her another mouse, he lets her go and watches her alight on a nearby branch. The indignity of being caught, weighed, and banded is apparently a small price to pay for home delivery. He places one last mouse on the bark, which she scoops up and takes to the nest.

"I can't believe how calm she was," I say, as Steve gathers his gear.

"I know. I'm surprised every time."

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The shaggy forest above Boone Creek looks little like the woods I saw two days earlier, a few miles downriver. The rain was drumming the roof of a mint-green Forest Service pickup as Teiva White drove me up Foley Ridge. A trim man from Tahiti, all mustache and smiles, Teiva handles timber sales for the McKenzie River Ranger District. He wanted to show me how far things had come since the bad old days, when clear-cuts left soil sloughing down hillsides like candle wax on a Chianti bottle.

As the rain let up, we stepped from the truck and over a bulldozed berm into the Nugget unit, where the space between trees felt something like a park. Teiva explained the steps taken here to preserve spotted-owl habitat.

"We required loggers to leave 40% of the canopy," he said, adding that each prescription is site-specific. He pointed out several big trees blazed with orange paint: no Western hemlock over two feet across was cut here.

In the fifteen years since the Northwest Forest Plan went into effect, Teiva explained, logging in the Willamette National Forest has come to mean thinning. Large reserves of older trees are set aside as prime habitat, while the logging that continues nearby tries to mimic natural disturbances. A portion of the canopy is preserved. Snags are created by girdling healthy trees, topping them, or even inoculating them with fungus. Sometimes units are burned after thinning to imitate wildfires. Logs and branches are left on the ground.

"We ask for at least 2,400 lineal feet of downed wood per acre here," Teiva said. "It drives some loggers crazy, but if you're going to work for us, you're going to follow our rules."

I tried to imagine how that would sit with the two old loggers I used to work for, enough fingers between them to fill three hands. *The idea of wasting perfectly good saw-logs!*

But are they going to waste? Just downriver at the H.J. Andrews Experimental Forest, uniform lengths of cedar, fir, and hemlock lie among the ferns in an ancient grove. Scientists here have spent decades studying the secret work of fallen trees: discovering how many hundreds of species they host, for example, and how they retain water, slowly dripping concentrated nitrogen and carbon onto the soil. Each new finding reveals another strand in the intricate network of life and death we call forest.

Such studies can eventually affect federal policies—in fact, research from this forest helped earn the spotted owl protection under the Endangered Species Act—but less directly than one might suppose. First it has to influence public opinion. Then come the lawsuits and political pressures. Finally, when policies change, the loggers find their work transformed: still sweaty and dusty and

achy, but orchestrated by people seated at computers beneath fluorescent lights deciding which trees to save, what kinds of snags to create, how many lineal feet of timber to leave behind.

The result is units like the Nugget: carefully planned, well meaning, and utterly contrived.

• • •

"Forty percent of the canopy and a scattering of snags—does that sound like a place a spotted owl would call home?"

Steve Ackers shakes his head. "Not right away. Maybe in a few decades." They might drop by to hunt the newly homeless voles and wood rats, but the understory needs time to recover, providing new habitat for prey.

Another skeptic is Tim Fox, who designed a method of assessing spotted-owl habitat for the Oregon Cooperative Fish and Wildlife Research Unit. Tim worries that the Forest Service overestimates the useful habitat left by thinning operations.

For nesting, Tim explains, spotted owls need the highest quality old growth, featuring a range of big trees. The ideal nest is a cavity left by the broken top of an old Douglas fir, sheltered by a stovepipe leader. Their requirements for roosting habitat are less selective, though they need multiple layers and a solid canopy to protect them from predators, as well as from poor weather.

"For non-migratory birds, they're not very efficient thermal regulators," Tim says, so they rely on the multiple stories of old growth for insulation.

Come night, while most predators sleep, spotted owls are less particular about where they forage. Their preferred meal is flying squirrel, high in calories.

Finally, the dispersal of fledglings requires a single canopy for cover and ample space between trees. Even then, young owls face long odds. They remain in the nesting grove till summer's end, when their parents stop feeding them. With winter coming fast, survival rates are low. In fragmented habitat, they're more vulnerable to predators that thrive along the edges, such as great horned owls and, increasingly, the barred owls that have arrived from the East.

"Forty-percent canopy may be good enough for foraging," Tim says, "but if there are no roosting areas nearby, what good is it?" It's simply not worth the energy to travel too far from home.

There's an even more fundamental difference between managed units and intact habitat. "In a natural disturbance," Tim points out, "the biomass stays on site." Not only do thinning operations remove most of the downed material, but units are logged every forty years.

I think back to Lookout Creek, in the Andrews Experimental Forest. Among the ancient trees and silver columns of old snags, dozens of fallen giants are scattered like jackstraws across the drainage. The steep slopes along the creek are a factor, but it's not unheard of to find fallen trees covering a quarter of the surface area in old growth.

This is where the real work happens. Each falling tree, crashing through its neighbors, creates openings for new growth and a variety of age groups. Each snag, each downed tree, creates habitat not only for mammals and birds, but for all the invertebrates turning woody debris into soil. Old man's beard and other lichens capture nitrogen in the canopy, then flutter to the forest floor. Here is the dripping, sprouting, swallowing, crumbling, incessant becoming of a healthy forest.

To wonder how much lumber can be removed without disrupting sensitive species misses the point. Biologists call the Northern spotted owl an indicator species because of

what she tells us about her home. Here, she says, is a place where life has achieved remarkable integrity—a specific local wholeness—through overlapping networks of matter and energy that we don't even know yet how to imagine.

What we do know is that our kind, like so many invasive species, tends to reduce the diversity of life in its way. This tendency has enabled nothing less than the rise of civilization, but also the largest wave of extinctions since the age of dinosaurs ended. Species disappear when we replace elaborate ecosystems with simplifications that are easy to manage: a forest giving way to a tree farm. And when people at last grow concerned about the species gone missing, the best compromise available seems to be just a subtler form of land management.

But given how little we understand the processes that compose ancient forests, how can we presume to manage them? Maybe instead we might learn to manage ourselves: to limit our impact by meeting our needs more carefully. To reduce our demand for timber, building homes from cob or stone or straw, shipping pallets from milk jugs. To get the timber we *do* need from someplace other than wild lands.

There's so much we still don't know about our original forests—but maybe we know enough by now to leave the rest alone.

Laird Christensen *is Professor of English and Environmental Studies at Green Mountain College. This essay draws on research he conducted while serving as Writer-in-Residence at the H.J. Andrews Experimental Forest, as part of a Long-Term Environmental Reflection project that invites nature writers to produce work inspired by visits to selected observation sites over a 200-year period.*