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You might be interested in the essay enclosed below, which I wrote about Yasuni National Park. As you'll see from the opening paragraph, I owe you thanks for sending me down there in the first place.

Thanks,

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The sadness of loving trees
Nigel Pitman

Five years ago a magazine article like this one made me pick up the phone and call a person I didn't know in a continent I'd never seen. The article described a controversial road-building project in a national park in Amazonian Ecuador, and one note in particular caught my attention. The oil company building the road had hired a team of botanists to salvage plant specimens from the trees felled during the construction – young collectors quick enough to survive in the shifting logjam between the chainsaws and the bulldozers, snatching a flowering branch here, a fruiting vine there. I had just graduated from college with a specialty in tropical botany, and as a result I had no job and no prospects. This sounded like a prospect. I called the director of the National Herbarium in Quito and pressed my case. Couldn't he use another collector? Wouldn't an extra hand be of use to him? Couldn't I join his crew? He said no, and hung up. It was winter where I was, and for a while after the line went dead I sat staring out the window at the snowdrifts, thinking about the trees coming down three thousand miles away. A few weeks later I walked into the director's office in Quito, and eventually he gave in and sent me down to Yasuní National Park.

Five years later I'm still here, carrying on with the apparently endless inventory of tree species in the park. The road that once called down so much fire and brimstone from environmentalists and indigenous groups was completed in 1995, and now it's just a road. It's really quite a nice road. Strolling along it at dusk, when the macaws make their screeching way across the stretch of sky above, you can't help but feel a little consolation from the reflection that even disasters can sometimes be beautiful. The surprise is that the disaster taking place along the road today bears no resemblance to the disaster foreseen by the people who protested its construction. For the biologists who work in Yasuní, for those of us who have come to know and love its forests, what has come to pass is even worse.

From its start on the southern banks of the Napo river the road they built runs 120 kilometers south, twisting through the wilderness like a ribbon unspooled in a maze. Along its course it arcs through rolling forest, climbs into steeper, terraced landscapes, zigzags through miniature mountain ranges, and levitates over swamps. It crosses slow, muddy rivers with names like Tiputini and Tivacuno, where pink dolphins and giant otters swim, and down which you could drift for a week without seeing any sign of people. The forest rises up on both sides of the road,

so that as you drive along it feels as though you are winding along the bottom of a leafy canyon, and every so often you pass under the branches of a great old ceiba, twelve stories overhead.

In many ways, what the bulldozers pushed through five years ago is less of a road than one of the world's great nature trails. In the early days of its construction, driving up and down it had all the flavor of an East African safari: you were always stopping the Land Rover for things like tapirs, jaguars, boa constrictors, or (if a botanist was driving) trees like Chelyocarpus ulei. Then as now, you didn't see much of the oil operations. With everything else to look at it was easy enough to forget about the pipeline buried next to the road and the rigs hidden along its length. These days the only real reminder of the road's purpose, once you're past the checkpoints, is a massive production facility at kilometer 110. Ten kilometers farther on, after enough forest to put all that chrome and fire out of mind, you are brought back to earth again when the road dead-ends in the parking lot of a wellsite named Ginta.

Ginta means dog in the local indian language, and the name is a reminder that apart from animals and trees the road, these days, is full of people. Along its first thirty kilometers most of the trees you see to either side make a curtain ten or twenty meters deep – step behind it and you find the shacks of Quichua colonists in clearings already planted with manioc. Whenever I drive this stretch of the road it doesn't take long for my truck to start listing with the weight of all the colonists hitching rides – men hauling sacks of corn to market, hunters catching a ride to a good patch of forest, children commuting to the schoolhouse at kilometer zero. All of them have come in since the road was built, but because they are Indians no one has bothered to keep track of how many they are. Most of the land they have settled on was national park before they staked their claim to it, and on paper it still is. Now, though, if a biologist ventures into the area without the Indians' authorization, their Presidente dusts off the old typewriter in the schoolhouse and bangs out a formal letter of protest.

Thirty-two kilometers along the road, coming over the Tiputini river, you pass out of the portion of the park settled by the Quichua and into the portion of the park settled by the Huaorani. The Huaorani are relative newcomers to the modern world, having softened over the last two generations their former policy of killing anyone who couldn't speak their language, and they are the tribe whose existence activists worried would be threatened by the road. There is no real change of scenery as you cross over to the Huaorani side of the bridge; on the southern bank a signboard says "Yasuní National Park" and "Huaorani Territory," although official Huaorani territory doesn't begin for 26 more kilometers. Just past the signboard is a Huaorani community, which was an oil camp before it was a community, and was forest before it was an oil camp. As you pass through town, which is a few houses put together with boards, strips of plastic, and zinc sheeting, the men playing at volleyball give your truck no more than a glance; an old woman carting a basket of manioc along the road covers her mouth against the dust; the only ones to take any kind of interest are the kids, unless they're busy tossing around paper airplanes. A little farther down the road, if he's not out hunting, you can buy a Coca-Cola from Iteka.

There are two other Huaorani communities on the road, plus a few discontents scattered here and there along its length. No one knows for sure how many people live in the three communities, which, like the Quichua settlements, have come into existence since the road was built. Most of the Huaorani now on the road migrated to the area after the construction, but the influx has been modest, the communities are still tiny, and the oil company is proud at having prevented the large-scale colonization that destroys forests along other new roads in the tropics.

For their part, the Huaorani seem just as satisfied with the arrangement. When someone gets sick they turn up at the company clinics, and when they need to get from here to there they hitch rides

on company trucks or on their own company bus, called the "Happy Forest;" their children attend bilingual schools, but otherwise they carry on hunting and fishing and harvesting manioc and marrying and throwing parties as they have always done. Now and then when one of them gets upset, he stands in the middle of the road with a spear and makes extravagant threats, and then someone brings him whatever it is he wants – an outboard motor, a screwdriver, a sack of rice....

The company is the ruling authority in the large areas of national park covered by its concession, and its laissez-faire policy regarding the road's new tenants is rooted in a modern-day version of the noble savage philosophy favored by many conservationists: the idea that after generations of living in tropical forest, indigenous communities know how to do it sustainably. The argument goes that indigenous communities live in small family groups; they move from here to there, hunting a little, farming a little, fishing a little; and as a result, in the favorite metaphor of this school of thought, they "tread lightly on the earth." The policy translates into an entertaining kind of reverse-racism at the entrance to the road: if your skin is white you are forbidden entrance unless you can produce all the right permits, whereas if your skin is dark and your features "indigenous" you can come and go as you please. The result is that all up and down the Yasuní road, men with shotguns and children with rotten teeth and women with babies have set up house in places where five years ago there were no houses, and they have begun to tread lightly on the earth.

The earth you tread on when you visit Yasuní is home to about 1,500 different species of trees, give or take a few hundred. By trees I mean large trees – trees big enough to climb, or sling a hammock between, or put your arms around – and by 1,500 species I mean about one species of tree for every word you have read so far in this article. Think of all the different kinds of trees you have ever seen, or read about, or imagined – weeping willows, kapoks, oaks, yews, coconut palms, gingkos, cherries, sweetgums, baobabs, bristlecone pines, banyans, sugar maples, those craggy pink trees that grow on hillsides in Dr. Seuss books – and then add about one thousand four hundred and fifty more, and you have some idea of how many kinds of trees 1,500 kinds of trees is.

It has always been hard for biologists to talk about this kind of diversity – the kind of diversity you find in tropical forests – without resorting to purple prose. A hundred years ago the keywords were lofty, grandiose, impenetrable; nowadays, tropical forests are diverse, threatened, and priceless. With all the hyperbole it's easy to lose sight of the fact that some tropical forests, in the end, are more priceless than others – South American forests, for instance, beat out forests elsewhere in the diversity of almost any taxon you look at – and it's easy to forget that there are a few places on the map of the Amazon basin where you can put your finger on the single forest that is home to more kinds of trees, or birds, or frogs, than anywhere else on the planet.

For woody plants, that place now appears to be Yasuní. As of last spring there is nowhere on the planet where biologists have found as many tree species growing together in a hectare of forest – not Sarawak, not Congo, not darkest Peru. It seems there is no forest on the planet where you can find as many kinds of lianas (woody vines) growing together in a tenth-hectare, despite the peripatetic surveys at that scale by the legendary tropical botanist Alwyn Gentry. And there is nowhere on the planet where biologists have found as many species of woody plants -- everything from shrubs to giant canopy emergents – growing together in a ten-hectare patch of woods. Pick a compass direction, head that way, and the numbers start to drop off. For botanists drawn to diversity, the search for El Dorado seems to be winding down along the Yasuní road.

According to current buzzwords, what forests like Yasuní have is so extravagant that it isn't even diversity any longer – it's hyperdiversity, or megadiversity – and it has the unfortunate effect of

frightening off biologists, simply because the learning curve is so steep. Getting familiar with just the trees can take years, and even then it means making up your own names for the dozens of species that don't yet have names because they are new to science. You start off naming them after some special quirk of their leaves, or after the smell of the leaves when you rub them between your fingers, or because the fruits remind you of Mickey Mouse ears; when you get tired of strictly morphological names you name them after zoo animals, old girlfriends, baseball teams, or towns in Italy; and when you run out of those and all the novelty in your collection sack begins to get on your nerves, you name them after the four horsemen of the apocalypse. Most of the people studying plants in Yasuní these days are young biologists who cut their botanical teeth there and never had the sense to realize that botany is an easier undertaking just about anywhere else on the planet.

But if most botanists shy from doing field work in a place like Yasuní, they can't help but wonder why it keeps producing such high numbers. The reason is that no one knows why the pinnacle of the planet's forest diversity should be there and not somewhere else. Ecologists know that the diversity of most kinds of life peaks around the equator, which passes just north of the park, and they know that the immensity of the Amazon basin makes its forests more diverse than equatorial contenders in Africa and Asia, but that is just about all they know. Whatever it is that makes the thin crescent of forests running along the eastern base of the Andes the most diverse part of Amazonia remains a mystery, and whatever it is that makes Yasuní the jewel in the crown remains a mystery too.

Getting to the bottom of questions like these requires that someone roll up their sleeves and get to know a community of western Amazonian trees, or beetles, or whatever, one species at a time. In a forest like Yasuní it's staggering work; whenever you start imagining a light at the end of the tunnel it means you're about to run across ten trees you've never seen before in your life. But in the end, the staggering thing about working with 1,500 kinds of trees isn't that there are so many of them. The staggering thing is that you actually come to know them, one by one; that you fall in love with them the way other people fall in love with Bach or tiramisú; and that the more time you spend in their company the less inclined you are to pick up the phone when it rings, or open the newspaper in the mornings. Put simply, the beauty and variety of 1,500 different kinds of trees is beauty and variety enough to make you set aside most other distractions more or less indefinitely; or to make you start wondering, in a disinterested way, whether they were really all that necessary in the first place.

In the mornings, walking out to work in those forests, you make your way along the still-dark paths whistling back at the birds up in the canopy. All through the understory treelets are putting out fragile, outrageously colored new leaves or flowers. It's still too early for the sun to have gotten very far into the understory, and once you put down your pack the patient old trees stand around you in shadow, still dewy from the long night. You know some of them by the shape of their trunks, some by the feel of their bark, some by the way their wood smells like mangos, or kerosene, or maraschino cherries. In that patch of woods there are sure to be some trees you haven't seen for years (you lay a hand fondly on their bark); others you always suspected were there but have yet to come across in all your searching, until that day (you throw back your head and laugh); some trees you have never seen before in your life (and maybe no one else has either); and some trees that are so handsome standing there that you forget everything about them but the way their branches curve this way and that or the patchwork of lichens on their bark. In some groves, the probability that the next tree you look at will be the same species as the last tree you looked at is around 2%.

As the sun comes up the air grows warmer; maybe later on it rains a little. After lunch you stretch out on the forest floor and lie gazing up at the canopy. The trees rustle in a breeze, birds whistle and chirp, you lie thinking whatever comes into your head. For a long time nothing else happens. After a while you hear a hunter's gunshot over the next hillside, or a charge of dynamite going off in a stream somewhere, and then you get back on your feet and go back to work.

Usually when conservationists wring their hands over tropical forests, what they're worried about is deforestation. Witness the metaphors that get trotted out in article after article about the tropics – so many Manhattans cut each hour, so many Rhode Islands burned each year, a Belgium, a Kansas, a wherever – as if finding the perfect geographical comparison might finally bring some government to face the blitzkreig. Occasionally they do just that, with no apparent results; since the Rio Earth Summit in 1992, for instance, the rate at which people are cutting down forests in the Brazilian Amazon has doubled. The result is that most of the hopeful talk of the 1980's and 1990's about "saving the rainforest" now sounds starry-eyed and absurdly dated, like Lionel Richie. Nowadays, the best description of the predicament of tropical forests doesn't come from conservationists at all. It comes from Hollywood. It's the scene where, after the iceberg has done its work and the engines have been turned off, the great ship sits motionless and serene, casting its lights on the smooth water. By some estimates, tropical forests now have about the same life expectancy as the young biologists studying them. This means that when I am eighty, biologists like me will be clinging to the stern rail like so many geriatric Leonardo DiCaprios, ready for the final ride down.

But those of us worried about what is happening along the road in Yasuní aren't that worried about deforestation. It's happening, but not on a very threatening scale yet; there still aren't enough colonists to cut down more than a hectare or two each week, and until the oil runs out in the next few years the company's guards will keep the logging trucks out.

In the meantime, though, there is more than one way to skin a cat. Several years ago an ecologist working in Peru calculated the killing power of a single hunter with a shotgun in forests there. He estimated that a person on foot, hunting for food, could empty dozens of square kilometers of forest of its large animals in the course of a year. This is a best-case scenario. If hunters have ready transportation, if they have rifles as well as shotguns, and if they have access to a steady stream of ammunition, you can pretty much kiss your animal communities good-bye.

That is what zoologists who work in Yasuní are beginning to do. A primatologist who studied woolly monkeys in the park from 1994 to 1996 recently came back to visit his old study site. He had left the patch of forest with about 100 individual woollies, not to mention ten other kinds of monkeys. During his fieldwork in Yasuní the animals grew accustomed to his presence, which made them easy targets for hunters. He kept them from being shot out of the trees through regular payments to the nearest Huaorani community, fifteen kilometers away. The deal worked pretty well. Then he went back to California to write up his dissertation.

Over two weeks last September, walking around that patch of forest, he spotted woollies four times, for a total of perhaps fifteen animals. Now when they spot him the monkeys no longer continue about their business as they used to. One of them screams an alarm, then the others start screaming, and then they all turn tail and vanish through the canopy. He spends some days sitting on a log, listening for his monkeys and hearing birds, cicadas, and the far-off sound of passing trucks; he spends other days walking around the woods, checking the old places and picking up shell casings....

Over our last year of field work my assistant and I have seen three troops of monkeys, a tapir, and something my assistant described as a kind of furry dog. In an intact western Amazonian forest this is the sort of tally you might reasonably expect to see in a day – seeing it in a year is like strolling around Manhattan for a year and seeing three, maybe four, panhandlers. Over the last twelve months I've seen more dead monkeys than live monkeys, more turtles trussed up and taken to the market than turtles trundling free in the woods. During a two-week stay in an Indian community along the road in September I made a casual tally of the game brought in by the four families that live around the schoolhouse we were camped out in. The list reads like some morbid Twelve Days of Christmas: seven peccaries, six currasows, three woolly monkeys, two toucans, three parrots, one caiman, one agouti, and one turtle. Days passed in a kind of perpetual safari. In the mornings the men piled into company trucks with their rifles and shotguns, and in the evening the trucks pulled up full of meat. I went back for twelve days in October: five toucans, two howler monkeys, a blue-and-gold macaw, a tapir, a spider monkey, an ocelot....

All this hunting, of course, is perfectly legal – not because some park manager has reviewed the harvest levels and deemed them sustainable, but because hunting is part of what newspapers in Quito call the "millennial culture" of indigenous communities, and part of the right of indigenous people to maintain their traditional way of life. Now that everyone hunts with rifles and trucks, though, millennial culture is no longer what it used to be. And assuming that the other communities along the road are hunting at something like the same rate as the ones I've seen, one has to wonder if the idea that indigenous people can live sustainably in tropical forests is really on target.

It's easy enough to find out. You can do the math, model the population dynamics of various animal species, factor in the kill rates and the number of hunters in the area, and calculate how many more years there will be animals along the road. Or you can just talk to the hunters. When we spent a few months living with a Quichua family along the road, I asked the father how to say "animal" in his language. He replied that there was no single word for animal, since each kind of animal had its own name. But what if you heard something rustling around in the undergrowth but you couldn't see what it was? Then what would you call it? The father gave my question some thought, and after a while he said "meat."

An anthropologist I know once spent several months living with a Huaorani community near Yasuní, with the goal of understanding the rules that families use to regulate levels of hunting, fishing and gathering in the forests they share. How many monkeys can you kill before your neighbors start to complain? How many chambira palms can you cut down? Are some areas off-limits to hunters? Are certain kinds of game taboo? What she found, after hours of interviews and observation, is bad news for the people who believe that indigenous groups like the Huaorani are any less clever at destroying forests than the rest of us.

"They had no idea what I was talking about," she told me. "Rules? What are you talking about? It's this simple: there are no rules."

Tropical forests are complicated enough systems that no one really knows how they work, and so no one can say for sure what killing everything edible in a forest will do to its trees. But the animals being hunted out in Yasuní – species that have long since vanished from the forests around older communities in the area – are animals that disperse seeds, pollinate flowers, eat seedlings, or prey on animals that do these things, and so removing them and expecting the forest to carry on is a little like firing all the janitors, electricians, garbagemen, roofers, and plumbers who work at the Louvre and expecting the paintings to remain in good condition.

Compared to the quick work of bulldozers, this leisurely attrition might not seem such a disaster. In fact, Yasuní's vanishing wildlife may be the least of its worries. At a meeting last November on the park's future, government ministers peered over their bifocals at a map of the park as a young cartographer reeled off a litany of threats facing it, jabbing here and there to illustrate the incursions – new well sites, new pipelines, new roads, new settlements and land claims and immigration: spears from all sides.

Now and then someone glanced at his watch or poured himself a glass of mineral water. In that businesslike atmosphere it seemed perversely inappropriate to steer the conversation back to the forest we were talking about. No one in the room besides the cartographer and I had ever been there, but the ministers spoke so comfortably about the bigger issues at hand (indigenous rights, the price of oil, the bankruptcy of the forest service) that any mention of tapirs and woolly monkeys had a deeply eccentric ring to it. The photograph I had brought along, of a park guard and an indian grinning at a spider monkey the indian had killed in the park, never made it out of my folder. And a couple of months later, Ecuador's president declared two new reserves in Amazonia, including the southern half of Yasuní, "untouchable," which means that they are set aside for the protection of indigenous communities and wildlife.

It was heart-warming news for the conservationists who still believe that indigenous communities are "guardians of the rainforest," but when the scrap of newspaper arrived at our field station people shook their heads. What it means for us is that our friends in the communities down the road will keep shooting tapirs and woollies and macaws until there aren't any more. Tiwae will keep coming into camp with dead monkeys slung over his shoulder, throwing them down outside the kitchen, and heading inside for a glass of juice. If someone tries to lecture him about the hunting he'll smile at them in an obliging way – he's a friendly guy, he's heard it from us before – but what he's interested in at the moment is a ride home, because he lives ten kilometers away, it's been a long day, and it's time for dinner.

How much simpler things might have been if everything had turned out the way people worried it would, five years ago – if the oil company, wearing a black hat, had ridden roughshod over everything in its path and given us a villain to hiss at. Instead, it's the good guys who are destroying the park, under the very flags that protesters were waving five years ago – indigenous land rights, cultural preservation, self-determination.... As it turns out, trees and peccaries and ocelots were never really part of the equation. They're marginal to the big issues. In the last best forests on earth it's people, stupid.

This is the sadness of loving trees, that the closer you get to trees the farther you get from people. You start loving trees as a bright-eyed young botanist, you go out every morning and immerse yourself in their world of flowers and sap and stilt roots, only vaguely conscious of the distance this puts between you and the rest of your species. And then one morning you wake up to find that the divide that separates the trees you know and love from the people you used to know and love has gotten too wide to straddle any longer, and you have to choose one side or the other. And so you keep on with your work, conscious of things going wrong around you, and every so often you venture out of the woods like the Abominable Snowman and let out a heartbroken yawp, and then you go back to your trees and lie on your back looking up at the canopy and thinking whatever comes into your head.

It's a curious way to behave in an emergency, and there is nothing admirable about it. If there are solutions to the problems in Yasuní – and there surely are – they will probably not come from those of us who are up to our necks in its biodiversity. Expecting people like this to halt the

destruction of tropical forests is like expecting a cadre of lyrical poets to take over congress and push through healthcare reform.

Even now, writing this article, I keep getting up to go back to work and then sitting down again. The last hectare I worked in had about 250 species of trees in it, including 15 belonging to the mahogany family, and the specimens I brought back are waiting to be sorted in the herbarium. All things considered, it would probably be better to let them gather dust – probably my time would be better spent lobbying government ministers on behalf of the park, writing letters of protest to newspapers, or throwing bricks through the windows of the oil company's office in Quito. But in the mahogany family there are a couple of species with leaves as long as I am tall, curving out from the branches like Medusa's hair; there is a species whose soft, yellow-pubescent leaves and fruits and twigs give it the appearance of a vegetable golden retriever; there is a species with shaggy red bark that smells like garlic....

The trees those specimens came from are standing where I left them, minding their own quiet business. The end of their world is not far off. It won't finish in fire or water, or end with a whimper or end with a bang, or appear on the horizon disguised as a giant anteater or a magical boa. It will come walking along the road on its own two legs, or it will hitch a ride; and when it arrives, hopeful, or exhausted, or dazed from the heat of the midday sun, it will rest a while at the foot of some shady old tree, gaze around, and see how beautiful things in that place are, and will be, and might, under other circumstances, have been.

Quito, January 1999