

LIFE AFTER LOGGING

PATRICK MOORE

FOREST ECOLOGIST AND GREENPEACE FOUNDER PATRICK MOORE TACKLES THE PUBLIC MISCONCEPTIONS AND POLITICS THAT ENGULF THE FOREST INDUSTRY.

LOOKING AT THE FOREST INDUSTRY FROM THE perspective of an environmentalist, there is no more renewable or sustainable primary industry in this world than the forest industry. It is the most sustainable of all our major industrial enterprises in our society. Wood has always been the most renewable and sustainable material resource in civilization; it is today, and will be 10,000 years from now.

Imagine a single tree—the defining feature of a forest. It was 450 million years ago when plants evolved the ability to grow long, woody stems. When they did so it wasn't with 2 x 4s or pulp and paper in mind. They had one single purpose: to get their needles or leaves closer to the sun, up above the other plants where they could take advantage of the direct light for photosynthesis. When you want to understand why foresters do things in certain ways such as make clearings or clear-cuts in forests in order to establish a new forest successfully, it's important to remember that if trees had wanted to grow in the shade, they would have been shrubs instead.

QUEST FOR BIODIVERSITY

This is the most important environmental fact about forests: Forests are home to the majority of animals, plants, birds, insects, and other living species. This was not always the case. At one time, hundreds of millions of years ago, the sea contained the majority of living species. But today, without a doubt, at least 50–75% of all living species require forests as habitat. Why is that? It's because the living bodies of the trees themselves create an environment that does not exist in their absence. The canopy of the tree provides millions of opportunities for insects and birds. Beneath that canopy in the interior of the forest, their environment is now protected from frost in cold climates, from sun in hot climates, and from wind in all climates. Thus, millions of new niches or habitats are provided for new species to evolve into and become



My grandfather clear-cut logged this area in 1936, long before words like ecology and biodiversity were known to the public. The forest has healed entirely through natural regeneration from what looked like devastation at the time. Today there are deer, bear, cougar, wolves, raven, eagles and owls living in these woods — the spirit of the forest has returned.

dependent upon the forest. This is analogous to coral reefs and kelp beds in the sea.

It's commonly believed that forestry, by its very nature, results in diminished biodiversity, a reduction in the number of species. A pine plantation, in place of a natural forest, does indeed reduce biodiversity; but if foresters take into consideration the needs of all the species in the natural environment and plan forestry in a sustainable fashion using native tree species, it is quite possible to increase biodiversity on a landscape basis. This is achieved by planning for a finer mosaic of forest-age classes and ecosystem types across the landscape than would normally occur under conditions without human intervention. Many plants and animals require open land. They will not live in the shade of trees. You can't go into a forest and find fire weed— that nice pink



When this site was clear-cut four years ago it looked ugly and dead. Now it is beautiful after being transformed by the rapid influx and growth of fireweed. You cannot determine the ecological health of a landscape just by viewing a snapshot in time. The visual aesthetics of the environment should not be used to make moral judgments about particular uses of the land.

plant won't grow in the forest. But inevitably as forests grow back after clear-cutting or any form of catastrophic disturbance, the plants that need light die out again, and the plants that require or prefer shade come back—the same ones that were in the forest in the first place. This is called “forest ecological succession,” as the composition of plants and other species changes through time.

It's also commonly portrayed with all manner of biblical metaphors that when you cut a forest down with chain saws, its very spirit has gone forever; it has been desecrated. Of course, this is absolute nonsense, but it works very well with a public which only reacts to visual images of stark landscapes as barren as the moon. It's not true that the spirit has gone. My grandfather clear-cut his land in the 1930s; the word “biodiversity” wouldn't be invented for more than 50 years into the future. “Ecology” was known only in academic circles and had not as yet been used in the public press. No consideration was made for soil conservation or anything else that had to do with the environment, for that matter. Natural regeneration reestablished the forest. Today, ravens, bear, cougars, wolves, and deer all live in this forest. Its spirit has returned without any help from human beings.

THE MONOCULTURE MYTH

It's very unfortunate that the word “monoculture” has been borrowed directly from agriculture and applied to forests the way it has. In agriculture, monoculture means that the entire original ecosystem has been eliminated and replaced with a single species, usually of an exotic variety. In forestry, monoculture means a forest that is dominated by a single tree species. It does not speak to

the hundreds of other species—plants, herbs, shrubs, insects, birds, and mammals—that will be living in that monoculture forest. In the case of a monoculture Douglas-fir forest planted after clear-cutting, it will grow back through natural regeneration—just as it would have if a fire had destroyed the original forest.

Nobody is trying to kill all the weeds or insect pests in this forest. It is a perfectly full-functioning ecosystem, yet environmental groups refer to this as a monoculture pulp plantation that has replaced the original biodiverse forest. As an example of this deception, I could put two captions under one slide to give you two completely different impressions of what you're looking at. I could say “multinational forest corporations have clear-cut an ancient, biodiverse rain forest and replaced it with a monoculture pulp plantation.” Or, I could say, “a highly biodiverse second-growth forest coming in entirely through natural regeneration on land that was logged in the 1950s.” The second statement is true and the first one false.

NATURAL REGENERATION

Now, I've looked into it very carefully and there is no getting around the fact that it takes 500 years for a tree to become 500 years old. This is a law of nature. But thankfully for many of the species that acquire “old growth characteristics” in forests, it doesn't take 500 years for those to redevelop in new forests growing back.

There is a 90-year-old second-growth forest on southern Vancouver Island. All of the species that are dependent on old-growth characteristics can live in this environment, but there is another side of the story. A cathedral-topped cedar snag was already dead when my granddad clear-cut the surrounding forest in the 1940s. Now the forest is growing back through natural regeneration. Nobody knows when the tree died but when it did, it was at least 1500 years old. It's about 14 ft in diameter. When it falls over, as it will inevitably do, it will take 1000 or more years to decay completely into an unrecognizable form because cedar is so resistant to rot. That's 2500 years or more from when a tiny seed germinated on this ground and grew into this incredibly complex structure which provides habitat for thousands of other living things until it disappears through decomposition—again providing habitat for thousands of other living things.

THE POLITICS OF THE SPOTTED OWL

To our knowledge no species has become extinct in

British Columbia because of forestry. This is also true of Canada, it's also true of all of North America, and for all I know it's true of the world in general. Yet the World Wildlife Fund announced early this year that 50,000 species are becoming extinct each year and commercial logging is the main cause. Not one Latin name do they provide, and yet this statement went around the world on wire services and was printed in newspapers in every country.

We know lots of species and their Latin names that have become extinct by excessive clearance for agriculture and human settlement, by eradication efforts, by over-hunting, by the introduction of exotic diseases and predators; but we don't know of one with a Latin name that has gone extinct because of forestry. I'll tell you why they want logging to cause extinction: because if it doesn't, what other reason is there to be against it?

The spotted owl caused a lot of trouble for the forest industry in the Pacific Northwest of the United States. In 1992 over 30,000 people were thrown out of work overnight by a federal court decision because it was said that logging posed a threat to the extinction of this bird. Since that decision was made, we now know there are over three times as many spotted owls as we thought there were then because people started counting them. But more importantly, it is now absolutely certain that spotted owls are quite capable of living and breeding in second-growth forests. There are hundreds of mated pairs breeding successfully in the area so there was no need to throw all 30,000 of those people out of work overnight, but it's going to be a long time before we can bring some rationality and sense of balance into this situation.

CULTURE AND THE ARTIFICIAL MEADOW

Environmentalists commonly use the term "environmental destruction" synonymously with logging. But what is this really? It's just broken bits of wood on beautiful fertile soil. It's not toxic or nuclear waste. Mice love this kind of environment and hawks and owls like to eat the mice for lunch. It's a perfectly healthy place and in fact will soon grow back to look just like a sea of green, all of which is second-growth forest.

Think for a minute of the clear-cut as a temporary meadow, temporary because it's not going to stay that way. It's going to grow back into a forest again, but meadowlike because the trees have been removed and now the sunshine can reach directly to the ground and cause plants to grow that need direct sunlight. Clear-cuts have large woody debris and stumps because trees will grow on clear-cuts. Trees will not grow on natural meadows because they're too dry for trees. Therefore, meadows don't really support high biodiversity.

In New Zealand, Scotland, Norway, Finland, and Germany you will find campaigns in the name of conserva-

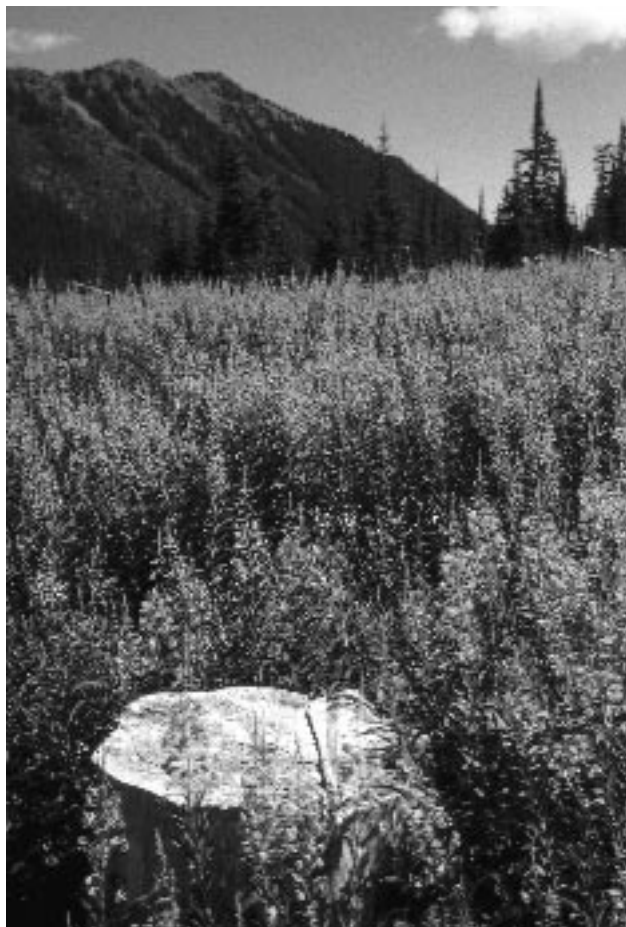


As the new trees grow taller they will shade out the land and kill all these beautiful wildflowers. Only during the early years of regrowth, when sunlight reaches directly to the ground, can the meadow flowers germinate and survive.

tion to prevent reforestation of lands that were cleared centuries ago for farms because people want to retain the natural character of the landscape—that "temporary" meadow. They want to retain a sheep pasture because it has wild flowers in it. They don't want the shade of a spruce forest coming back and shading out all that biodiversity. What people want the land to look like has as much or even more to do with culture and history as it has to do with anything about biodiversity.

AGENTS OF CHANGE

This, I believe, is an axiom of science: If forests were not capable of recovering from total destruction to their full and complete renewal, they wouldn't be there in the first place. Forests have had to recover from ice ages, volcanos, tornados, landslides, and the land sinking beneath the ocean for a few hundred million years and coming back up again. The forest grows back every time once the climatological conditions are correct again. It's a corollary that every single species living in the forest



must be capable of recolonizing areas of forest that have been disturbed or destroyed; otherwise, they wouldn't be there in the first place. Forest renewal is, of course, the combined total of all the individual species that come back and recolonize the site after a catastrophic disturbance due to whatever factor.

Fire is still the main agent of change or destruction in the forests of Canada. But fire is natural, you say, and doesn't destroy the forest ecosystem whereas logging is unnatural and does destroy the forest ecosystem. Well, count the species after a catastrophic wildfire. It's okay, you say; the seeds will spring forth quickly and a new forest will come back because the fire will open the seeds. Not if all the seeds are burnt in the fire, they won't. Quite often the fire is so severe that all the soil is burnt as well and all the seeds with it. The only things growing underneath these trees are from seeds that are blown in on the wind: cottonwood, fire weed, dandelions, for example. Only those plants with seeds that blow for hundreds of miles, just looking for a place like this to begin the process of healing the soil, will grow here. Don't expect to see pine trees here for a long time because their seeds don't fly very far in the wind.

In areas where the fire was less severe or because the



Most people would find the clearcut visually offensive even though it is beginning to recover into a forest again, complete with native trees, plants, animals and birds. The tidy, pastoral nature of farmland looks good to most people even though it has been cleared of forest and turned into plowed fields with planted monocultures. Deforestation often looks better than reforestation, even though the reforested area is far higher in biodiversity than a field of crops.

soil was moister, the seeds survive. Even though every living tree above was killed, here you will have a new forest coming back quickly. The impact of fire is just as relative as the impact of any other disturbance. It can be very severe or not so severe, and logging is no different. You can do logging in a way that causes a lot of soil erosion and damage. You can also do logging in a way that does not.

Insects in general, but beetles in particular, kill a tremendous number of forests as in the boreal forest in Northern Canada and the Pacific Northwest of the United States. Sometimes in three or four years they kill virtually all the trees in the forest. In British Columbia we have a policy called "chasing beetles" where we cut the forest while the trees are still useful for saw logs and pulp and paper. This sometimes results in huge clearcuts that would never be allowed under normal circumstances.

Some consider this action a combination of corporate greed and government complicity in allowing this to happen. Critics of the forest industry don't mention the beetle in their book, *Clear-Cut: The Tragedy of Industrial Forestry*. They do the same thing with lands that have been salvaged, logged after catastrophic wildfires. They make it look like clear-cutting was the end in itself; when, in fact, loggers have gone in the ravaged forest under horrendous conditions of soot and ash to retrieve any remaining wealth. Part of that wealth is used to reforest the land.

WEYERHAEUSER'S INTERVENTION

If you want to see real destruction, Mt. St. Helens is a

wonderful place to go. It's a great place to take a family to learn things about nature. A number of interpretation centers have been set up there. A brand-new paved highway has been pushed into the center of the destruction zone, which was a huge area because Mt. St. Helens didn't blow upwards like most volcanoes. It blew out through the side to the north and took out a vast area of old-growth forest with it.

One of the most interesting features here is to compare the two jurisdictions that were destroyed. One was national forest land under federal jurisdiction, the Gifford Pinchot National Forest, where much of the old-growth forest was destroyed by the volcano. The other was Weyerhaeuser Corp.'s private forestlands, also much of which was in old growth and destroyed. The federal government redesignated their part the Mt. St. Helens National Volcanic Monument, where nature would be permitted to recover without interference by human beings for the study of science. Today, 15 years later, nature still looks dead and devoid of life. That's because a thick layer of volcanic ash, which was very sterile, containing no nitrogen in particular, inhibited seed growth.

Weyerhaeuser had a different approach. They salvaged, logged all the down and standing dead trees, got 85,000 three-bedroom homes' worth of wood off their site in a two-year period. It was difficult working in the volcanic ash. They had to invent a carbide-tipped chain saw blade, deal with worker health due to breathing and dust problems, and deal with all kinds of corrosion and abrasion issues for their machinery. But they did it. After they salvaged logs, they realized that the disturbance they had caused by dragging all the logs around with all

the heavy machinery had broken through the ash everywhere and exposed the original organic soil, thus creating a classic case of site disturbance increasing productivity in the soil.

Weyerhaeuser planted two-year old seedlings of Douglas-fir and Noble fir, the species that belong in this environment. The stalks were strong enough to get their roots down into the original soil, even if they were planted directly into the ash, and today a forest of trees 15 ft high covers the land, making a beautiful habitat for wildlife. I'm not making a moral judgment about which is right—to leave it alone to recover on its own, which it eventually will, but it'll take a lot longer—or to give it a little help like Weyerhaeuser did. But it is a case in point where a couple of interventions by intelligent humans can make a dramatic difference to the way in which an ecosystem recovers after a natural catastrophe such as a volcano.

DEFORESTATION AND REFORESTATION: THE DIFFERENCE

In Brazil they plant eucalyptus from Australia; in Sweden they use lodgepole pine from British Columbia; in Scotland they use larch from China and Douglas-fir from



(L) Fifteen years after the eruption of Mount St. Helens the area that was left for nature to heal still looks devastated. (above) Nearby, where the dead trees were salvaged and new seedlings were planted, a new forest is thriving. Here is proof that human intervention can make a dramatic difference to the way an ecosystem recovers after destruction.



Patrick Moore stands by a second-growth Sitka spruce near his home at Winter Harbour on the northwest tip of Vancouver Island. This area was logged by the earliest European settlers in this area less than 100 years ago.

North America; in Germany they use pine and spruce from Scandinavia. However, in North America the new forests that are being established after logging are largely with native tree species, not with exotics. In British Columbia, all across Canada, and in much of the United States the species of trees that are grown on the site are native to that ecosystem. Therefore, the second-growth forests are native forests and provide habitat for all the native species. This is perhaps the most important point in getting public understanding of the difference between deforestation and reforestation.

Deforestation is a two-stage process. Cutting the trees down is only the first stage; it is the least important but the most visually dramatic. Three or four years after clear-cutting a rain forest on Vancouver Island, most people would not particularly like the looks of it. It's kind of rough-looking, basically fairly ugly, and it looks destroyed. Yet this is deforestation. This area of land is already growing back in western hemlock, red cedar, Sitka spruce, and balsam fir, back into a rain forest again. All of those pastures and fields were once completely forested with native trees. If you stopped plowing that land for five years, there would be a blanket of new tree seedlings from seeds from the surrounding forest established on that land and within 75 years you'd never know that there had been a farm there.

The important lesson is that deforestation is not a one-shot deal. It isn't something that just happens and then it's over. Deforestation is an ongoing process of continually intervening to prevent forest renewal, and agriculture is by far the most predominant way of achieving that. Deforestation is seldom caused by forestry; it's caused by farming, livestock grazing, industry, and urban development.

A monoculture cabbage plantation exists where there was an ancient rain forest on Vancouver Island. We have to clear forests to grow our food and house our population, but wouldn't it be good if the highest principle of sustainable development was to minimize the amount of land for human settlement and agriculture and to maximize land for native trees and forests, even though much of that was being used for wood production? That's the opposite of what we do. We sprawl our cities out over the land, taking up space that could otherwise be used for growing food so that we have to cut down more forests to grow the food. And we even are pretty wasteful in the way we use agricultural land in many parts of the world as well.

We should really get our priorities straight when it comes to land use and what we're doing to biodiversity. Wood is the most renewable and sustainable of all materials used in our culture. That's because it's 99% air and water, 50% carbon from CO₂ in the atmosphere, 49% hydrogen and oxygen from water, and a sprinkling of minerals that comes from the earth's crust, and the sun. Those four elements—earth, air, fire, and water—make up wood being produced all by itself in the forest without any factory, except by photosynthesis in the leaves.

Each day everyone on earth uses 1-1/2 kilos of wood. I carry a little wedge of wood around because it's nice to have an actual graphic illustration. It's actually about a little more than the amount of food that we eat every day. Just because we don't get hungry for it every three or four hours doesn't mean we need it any less for the survival for our civilization. Worldwide, wood is used in the following proportions:

- Fifty percent of all the wood that's consumed is for energy, cooking, and heating, mostly in developing countries where there's no alternative. The people can't afford to buy fossil fuels.
- Thirty-five percent of the wood that's used is for solid wood, where all the available alternatives use a vast amount more energy, whether you're talking about steel, cement, or plastic.
- Fifteen percent of the world's annual wood consumption is used for pulp and paper. Actually, very little native forest, or original forest, is being cut down specifically for pulp and paper. It's either from the waste from sawmills or from plantations that have been established on land that was cut years ago, much of which was actually used for farming for many decades before it was returned to forest.

So, one of the keys to sustainability is not to do as the

HIGHEST PRINCIPLES OF SUSTAINABLE DEVELOPMENT

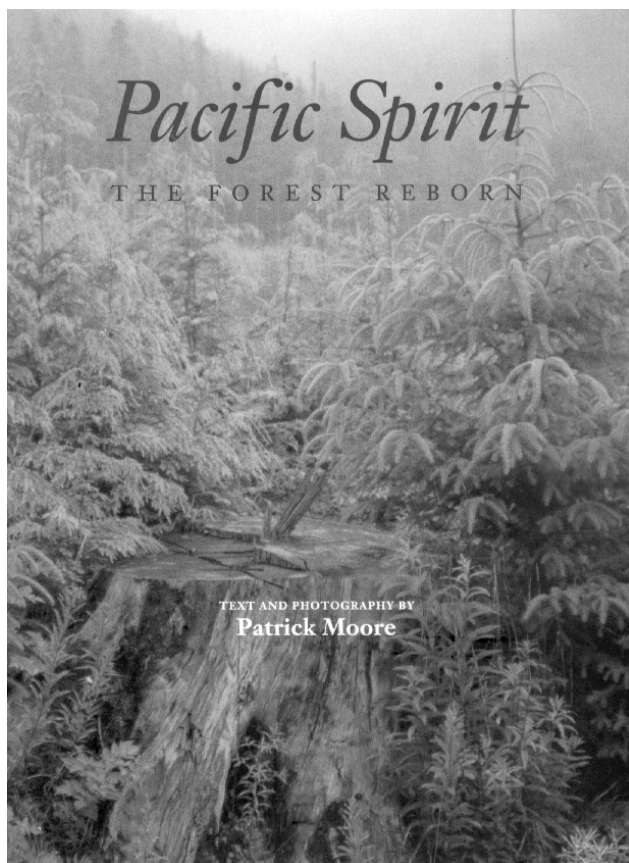
Rain Forest Action Network and all the rest of them say to reduce the consumption of wood by 75%. That's their goal; that's how they want to save the world, and make everything out of hemp. That's one of their favorite solutions, but they don't mention where you're growing the hemp. Of course, you'd have to grow the hemp where you could be growing trees, and birds and squirrels would prefer trees over hemp any day. How ironic that organizations that purport to have biodiversity protection and conservation as their main goal would advocate growing monoculture farm crops to produce paper instead of growing beautifully diverse ecosystems called forests; it doesn't make any sense to me.

The Forest Alliance and the consensus of British Columbians agree that we should be doubling our parks and wilderness from 6-12%, which we are presently doing. We'll definitely achieve that target and perhaps exceed it by the year 2000—although it's costing money and jobs. We're still in favor of it and mitigating it as best we can because we believe it's in the greater social interest to have large intact ecosystems of original forests not

being used for industrial purposes.

To conclude, I would like to leave you with one piece of advice. If you want to have a rich and rewarding life, study forests, study how they work, and study how we can work with them because there is no more complex or amazing environment to study. There is just an endless amount to learn. The forest is a miracle in its ability to renew itself. It is indeed the most complex system we know of in the universe because it contains the majority of living species. **TJ**

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Leadng enviromentalist Patrick Moore presents a positive and balanced perspective on forest renewal in his book, *Pacific Spirit: The Forest Reborn*. Celebrating the beauty of new forests through color photographs and text, this book explores the beauty, biodiversity, and health of the new forests of British Columbia and the Pacific Northwest growing back after logging. Moore shows that forests can return to their full grandeur even after clear cutting.

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