

Behind the Logo

Think twice when you next see a green label on forest products, because it may not be the guarantee you are looking for. A new report reveals that several new forest certification schemes fail to ensure that the products they endorse meet minimum requirements for sustainable forest management. Jessica Wenban-Smith from the European forest NGO, Fern, explains why the certificates don't make the grade.

'This greeting card has been made from wood pulp from managed Scandinavian forests. For every tree cut down, at least one more is replanted, thus replenishing the Earth's atmosphere.'

How many times have you seen claims like this one and suppressed a curse of frustration? Those of us involved in forest-related issues know that without a Forest Stewardship Council (FSC) logo, many environmental claims on wood and paper products are preying on the good intentions of shoppers and doing little or nothing for good forest management. Now, with the emergence of several forest certification schemes to rival the FSC, things may be about to get worse.

For five years, the stamp of the FSC has signalled an environmental guarantee to retailers and consumers alike. Shoppers concerned about the legacy of the timber and paper industries — global deforestation, the illegal timber trade, loss of biodiversity, disrespect for forest peoples' rights and community suppression — have had a reliable alternative that is widely supported by environmental and social non-governmental organisations (NGOs). But recently several competing forest

Behind the Logo is based on six case studies by WWF France, Taiga Consulting, Taiga Rescue Network, Robin Wood, Natural Resources Defense Council, Fern, Finnish Nature League and Greenpeace International. The report is available on the web at www.fern.org.

certification schemes have emerged — each with its own method of assessing forest management and its own environmental claims.

This year Fern undertook an in-depth comparison of four certification schemes to find out whether the claims they were making

could be supported by forest management practices on the ground. Using a set of criteria reflecting the demands of governments, industries and NGOs, the *Behind the Logo* report establishes the minimum requirements for a credible certification scheme — and finds that three of the four schemes fail to make the grade.

The four schemes are the biggest schemes in operation — the Forest Stewardship Council (FSC), the Pan European Forest Certification (PEFC) scheme, the Canadian Standard's Association (CSA) Forest

Management Standard and the US's Sustainable Forestry Initiative (SFI). The conclusion of *Behind the Logo* is clear: though in need of improvement, the FSC is currently the only independent and credible certification scheme in the market. Of the remaining three schemes, the PEFC raises the most concerns and both CSA and SFI score poorly against most of the criteria.

This article continues on page 11.

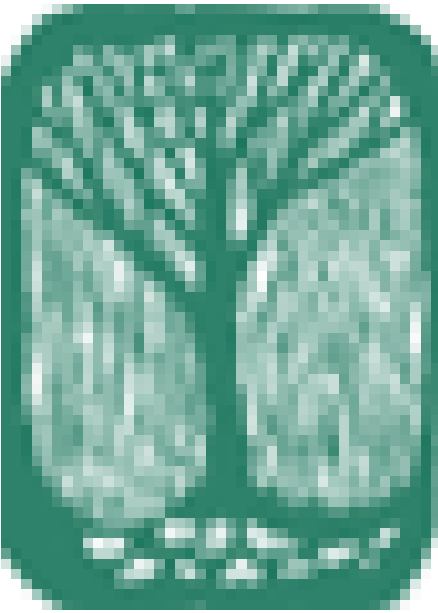
In a joint statement issued with *Behind the Logo*, more than 65 environmental and social NGOs, including WWF, Greenpeace and Friends of the Earth, endorse the FSC as 'the only credible forest certification system that we can recommend to consumers or promote among forest managers, policy makers and the public'. They urge:

- consumers, wholesalers and retailers of forest products to accept only FSC-labelled products;
- governments to support credible certification schemes (and credibility should be clarified);
- companies and governments to resist calls for mutual recognition of forest certification schemes until minimum levels for credible certification are agreed.



Contents

news	2-3
ecology	4-10
clearcuts=fire?	4
FSC standard	5
biodiversity	6-7
history	8
thresholds	9
montane scrub	10
certification	11
action alert!	12



Editorial

Greetings from the wiggly woods!

This late summer issue of *Taiga News* addresses the ecology of the boreal forests, and we hope that it will be a useful input to the run up to the Convention on Biodiversity 6th Conference of the Parties, to be held in April 2002. As usual the articles take a politically astute look at some of the issues, including whether clearcuts can mimic wildfires, the ecological aspects of FSC standards, critical thresholds for biodiversity, the importance of ecological progressions right up to montane forests, and the role of historical knowledge. Our centre spread gives a wee taste of the biodiversity of the boreal forests.

Unfortunately the Post Office has changed its rules for mailings so from now on we will have to send *Taiga News* out in an envelope to those of you who receive it by post. Please re-use the envelope. Why not use it to post your letter of protest against the logging of the Samarga (see back page)?

Mandy Haggith and Bill Ritchie

Global

Essential Reading

A new report on the world's forests has been produced by the United Nations Environment Programme (UNEP), the United States Geological Survey and NASA, the United States space agency. Based on satellite-generated data, it estimates the closed forest (that with >40% canopy cover) remaining in all countries of the globe, focussing in most detail on the 15 most forested countries. Russia and Canada have the most closed forest, Russia having 670 million hectares and Canada 369 million hectares. The report, *An Assessment of the Status of the World's Remaining Closed Forests*, is free online.

Contact:

www.na.unep.net/publications/closedforest.pdf

Climate Change

After intense negotiations, delegates from 180 nations participating in the Climate Summit in Bonn, Germany in July, reached the consensus needed to salvage the Kyoto Protocol (the treaty intended to limit the emission of greenhouse gases linked to global warming). The summit also created three new climate funds for developing countries and adopted rules for the international emissions trading regime. Although the treaty has been saved, many within the international environmental community believe it was at the expense of its environmental integrity because of the inclusion of forests as carbon sinks in the Clean Development Mechanism (CDM) of the treaty. This will enable industrialised nations to claim carbon credits and meet their emission targets through means other than domestic action. Afforestation and reforestation activities will be eligible for carbon credits while forest conservation and forest restoration projects will not. Critics are concerned that this will lead to emission increases and large-scale plantation projects by industrialised nations.

Contact:

www.climatevoice.org

BorNet

A group of scientists has initiated an international effort called BorNet to strengthen the scientific basis for maintaining boreal forest biodiversity. BorNet aims to: understand the human footprint on the boreal; inform the setting of nature conservation targets; find indicator species; analyse habitat loss; and enhance communication between scientists and foresters.

Contact:

www.bornet.org

Europe

Nenets in the Netherlands

A conference is being held in the Netherlands, from 4 to 7 October 2001, on the Nenets people of Siberia.

Contact:

Arctic Peoples Alert
arctica@planet.nl

Finns Nearly There

In early July the Finnish FSC Working Group published a draft FSC standard. It will be revised after a 60-day public consultation process and should be finally approved in the autumn.

Contact:

www.fsc-finland.org/fscengl.htm

NGOs Quit Living Forest

In mid-June all major environmental NGOs suspended their participation in negotiations to improve the Living Forest Standard, which is affiliated with PEFC. This decision was taken after the Norwegian Forest Owners' Federation (NFOF) had refused for months to accept that remaining natural and old-growth forests must be defined, surveyed and mapped.

Contact:

Einar Wilhelmsen, einaw@uio-pop.uio.no

Community Woods Conference

The third community woodlands conference will be held in Scotland, from 9 to 11 November 2001.

Contact:

Reforestation Scotland
reforscot@gn.apc.org

North America

Hydro Dams in Quebec

Power utility Hydro Quebec has proposed 36 new dams on 24 rivers to be constructed and run by small energy producers. The proposed projects would produce 425 megawatts, just 1% of the current production in the province. The proposal has generated a wave of criticism from environmental groups accusing Hydro Quebec of sacrificing some of the most valuable wilderness areas in the province to produce marginal amounts of electricity.

Source:

Environmental News Service

Paying the Damage

Meanwhile some Manitoba consumers are donating 10% of their annual Manitoba Hydro bill to help the Pimicikamak Cree Nation at Cross Lake pay for the environmental and human costs the band has suffered from hydro development.

Source:

Winnipeg Free Press

Paying the Tarrif

The United States have imposed a 19.3% tariff on Canadian timber imports, as part of the trade war resulting from the renegotiation of the Softwood Lumber Agreement (see TN34). Canada has complained to the World Trade Organization. Many environmental groups are delighted, hoping the tariff might slow logging in Canada's boreal forests.

Source:

Pacific Environment

Algonquins Lose Funding

The Trilateral Agreement (see TN35), a pioneering resource management agreement, which could have served as a model for sustainable development and reconciliation of forest conflicts on First Nation territory, is in danger of collapse on the eve of its implementation. The Algonquins of Barriere Lake are trying to complete the land management plans needed to ensure that logging being carried out is sustainable and not a threat to the Algonquin traditional way of life. But the federal government is refusing to cover their share of the costs to complete the process provided for in the Trilateral Agreement. As a result the \$40 million a year logging industry, part-owned by the Algonquins, in the Trilateral Agreement territory, will be suspended. The Algonquins are looking to unlikely allies, logging companies including Domtar, Louisiana Pacific, Bowater, Bois Omega and Commonwealth Plywood, for support.

Contact:

Tony Wawatie, Algonquins of Barriere Lake
Tel: +1 819 440 8355

Anti-Pipeline Action

British Colombian Halfway River First Nation have prevented ground access to a proposed Petro Canada pipeline since 13 August. They are attempting to protect their traditional lands from oil and gas explorations, which fragment their hunting grounds, traplines and sacred areas. The proposed Petro Canada pipeline would devastate four of seven hunting camps in the area.

Contact:

Union of British Columbia Indian Chiefs
Tel: +1 604 684 0231

Kananaskis Controversy

A G8 Summit Meeting is being planned for Kananaskis, Alberta, in June 2002. Local environmental groups fear that the Summit will be used as an opportunity to push for further commercial development in Kananaskis. Ministers have been busy in Kananaskis Country, creating three new provincial parks (great!) and signing a Forest Management Agreement with Spray

Lake Sawmills (not so great!), but have failed to develop a Regional Sustainable Development Strategy, promised in 1999 (not great at all!), to ensure that development is kept under control.

Elsewhere in Alberta and Northwest Territories, the forests are reported to be becoming a 'spiderweb of seismic lines' for oil and gas exploration. In winter 2000, 60,000 km of seismic lines were cut in the McKenzie River delta alone.

Contact:

www.kananaskisg8.net

Adopt a Tree!

The Forest Fringe Citizens' Coalition invite you to adopt a tree in Friendly Forest, the forest where SaskPower plans to push a powerline corridor.

Contact:

friendlyforest@inet2000.com



Russia

Debt Relief for Environment

The Russian government is asking the Paris Club of creditors to write off Russian debts as payment for global environmental services (freshwater, oxygen, carbon absorption) by Russia. There are already instances of such 'debt for nature' contracts to preserve forests, for example between the United States and Brazil.

Source:

Interfax News Agency

MNR Declares War

One year and a half after absorbing the Forest Service, the Ministry of Natural Resources (MNR) may be waking up to the rampant deforestation in the Far East, Altai and the entire area along the Chinese border due to millions of cubic metres of timber being illegally exported to China and Japan. It has declared 'war on illegal logging', and organised a conference with officials from the State Committee for Statistics, the Interior Ministry, the State

Committee for Forestry, and the Tax and Revenue Collection Ministry. According to official reports, illegal logging in the country accounts for a mere 0.04% of overall timber procurement, but WWF Russia claims that 40–50% of forest is cut illegally. An estimated 1.5 million cubic metres of timber a year is cut illegally in the Primorye Territory alone. The official figures come from reports from forestry services, some of whose officials are in the illegal business themselves while others are intimidated. Since the early 1990s, just one person has been convicted of illegal logging and sent to prison.

Source:

Russian Environmental Digest

New National Parks

A new plan has been adopted by the Russian government to establish nine new nature reserves and 12 national parks over the next 10 years. Although this is significantly less than in the previous plan, it includes some controversial reserves and parks, including the Kalevala National Park (unwanted by the Karelian government), Onezhskoye Pomorye (unwanted by the Arkhangelsk regional administration), the Kologriv Forest (already logged according to fresh satellite data), Sredneussuriysky (geological research area) and Buzuluksky Bor (occupied by oil companies). Many important territories previously up for protection before 2005 have disappeared from the new list. The full text of the directive is online in Russian.

Contact:

www.forest.ru/rus/legislation/laws/npa-list.html

Reinstate Tkhsanom

In Kamchatka, the governor of the Koryak Autonomous Region has issued an executive order that repeals the Traditional Nature Use Territory called Tkhsanom, established in December 1998. This area is home to over 1000 indigenous Koryak people. The Russian Association of Indigenous Peoples of Siberia and the Russian North, RAIPON, is appealing to the international community to write to President Putin asking for reinstatement of the Tkhsanom territory as a traditional use area.

Contact:

RAIPON, udege@online.ru

Cash for Tigers

A grant of 750,000 dollars will be given by the International Ecological Foundation to the Russian Far Eastern regional public organisation, Wildlife Fund, for work on protection of Amur tiger habitat.

Source:

Russian Environmental Digest



Can Clearcuts Mimic Fires?

Logging can mimic some fire patterns but not all of the ecological processes caused by fire. We must reintroduce fire's beneficial effects into boreal forest management, argues Lorne Johnson, of WWF Canada.

Fire plays a significant role in boreal forest diversity and succession. The combination of active fire suppression coupled with large-scale industrial logging is having

significant ecological impacts. Within Ontario for example, fire suppression is estimated to have increased the fire rotation cycle in the managed boreal forest from an estimated natural cycle of 60–90 years up to almost 600 years. In recent years, harvesting in Ontario's managed boreal has surpassed fire as the most important factor in terms of overall disturbance levels.

Much of the current thinking in forest management circles is based on the notion that we can mitigate the negative impacts of forestry by designing our logging systems to mimic the disturbance patterns that would naturally occur within a given forest region.

While this theory remains untested, it does have some intuitive appeal. The species in any forest ecosystem have adapted to natural disturbances so that, at least at a population level, they are not threatened by them. To the extent that forest management mimics natural disturbances, biodiversity can hope to be maintained and perhaps even restored. However, widespread disturbances that are novel to a forest, such as herbicides and other chemicals, construction and use of roads, large clearcuts with sharp edges and little residual woody debris, are likely to negatively affect native species. The theory suggests that it is these disturbances that must be minimised if we are to conserve biodiversity with our forest management.

Clearcutting is the universally applied silvicultural system in Canada's boreal forests today. Historically, government and industry have argued that clearcutting is the most economical and safe way to harvest trees. In recent years, however, it has been argued that clearcutting is also the ecologically appropriate forest management tool in the boreal forest because it mimics fire. On the surface, this argument seems reasonable in that both clearcutting and fire open up the forest canopy by removing mature vegetation cover. But in reality how similar are they?

Characteristics of Disturbances

To understand whether clearcutting can truly mimic fire, it helps to consider the characteristics of disturbances, which can be grouped under the broad categories of patterns or processes. Patterns are physical or geometric in nature. Landscape-level patterns include such things as the size, configuration, connectivity and juxtaposition of disturbed and non-disturbed patches. Stand-level patterns include the amount, location and species composition of residual trees left standing, the amount and location of woody debris, and the shape and pattern of the edge of the disturbance patch.

Processes are more complex involving interactions and changes over time. There are many chemical processes associated with a fire disturbance, such as changes in the pH and nutrient levels of soils; the burning of pathogens, insects and diseases; the opening of serotinous conifer cones; and the successional pathways of herbaceous and woody plants following disturbance.

What Can We Mimic?

Mimicking the physical patterns of fire disturbance is, in theory, relatively easy. We can leave more downed woody debris on the sites, leave more dead and alive trees standing in natural clumps and islands, and create patches that have 'fuzzy' and irregular perimeters. At the landscape level, we can plan for the layout of cut blocks and undisturbed patches so that they approximate a natural landscape in terms of connectivity, size and location. We have tools to model these landscape patterns both spatially and temporally so that we have some notion of what the impacts of harvesting will be on the future landscape. These are all good things that we can and must start doing now to improve our logging practices in the boreal.

What Can't We Mimic?

However, we have a long way to go to understand the processes of fire let alone mimic them. Clearcutting removes the standing timber from the site, and usually leaves behind slash and debris in piles on the site. Fire on the other hand consumes much of the timber, slash, and other organic matter on site, and makes better seed beds by leaving nutrient rich ash behind. Fire releases nutrient elements that are otherwise locked up in organic matter. Absence of fire in coniferous stands in the boreal forest increases soil acidity, soil toxicity and the incidence of certain disease organisms. Given the unique processes associated with fire disturbance in the boreal, it is safe to say that we cannot replicate them with clearcutting.

Solutions

We need to move beyond debating whether clearcutting mimics fire and start talking about ways to reintroduce fire's beneficial effects into the managed forest. The following are a few steps that can be taken.

- Promote the increased use of prescribed natural burns in our parks and natural reserves. Prescribed natural burns are natural wildfires that are left to burn if they occur at the right time and right location, as determined in a fire management plan.
- Promote the increased use of prescribed burning as a tool for restoring post-harvest sites to a more natural condition.
- Reduce fire-suppression activity where it does not threaten people and property. Accept that fire will reduce the amount of timber available for harvest.
- Make the necessary changes to clearcutting practices so that they more closely resemble the physical patterns of fire.
- Establish protected areas large enough for natural disturbances to continue unchecked. With 100,000 hectare wildfires not uncommon in the boreal, this suggests that we need protected areas in the scale of millions of hectares.

Fire is understandably a sensitive issue and governments typically avoid such politically 'hot' issues. If we want governments to adopt some of these steps, we need to promote public awareness of the critical ecological role that fire plays in sustaining our forests.

When thinking about the role of fire in the boreal we would be wise to remember Aldo Leopold's words to the effect that 'The intelligent tinkerer keeps all of the parts'. I would argue that when trying to 'manage' the forest, we are little more than tinkerers and that fire in the boreal is one part we would be best to keep.

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Raising the Standard

Are the guidelines for sustaining biodiversity in the Swedish Forest Stewardship Council (FSC) standard based on scientific data or just guesses? In this summary of her masters thesis, Lena Dahl of the Swedish Society for Nature Conservation examines some of the biodiversity indicators and finds some weaknesses. She also makes recommendations for how the standard should be revised to take account of different vegetation zones.

Today, approximately 45% of Swedish forest lands are certified in accordance with the FSC standard, and all Swedish forest companies have certified their forest holdings. Accordingly, the content of the Swedish standard for FSC certification is of great importance for the environmental progress of forestry in Sweden, and must be the subject of constant evaluation.

The environmental content of the Swedish standard for FSC certification is very comprehensive, and includes 40 different indicators. For six of the 40 indicators a minimum level is stated, as follows.

Indicator	Swedish FSC Standard Level
Share of forests exempted for nature conservation	5% of productive forest land
Share of burned forest land	5% of annual clearfelled area
Number of trees left after clearfelling	10 trees per hectare
Amount of dead wood	3m ³ per hectare
Share of broadleaved trees in coniferous forests	5-20%
Share of broadleaved forests	5% of the forests on moist ground

The study examined these six indicators using the following questions.

- Are the levels of the standard items supported by research within the field of conservation biology?
- Are the levels of the standard items reasonable in relation to existing research?
- Which of the standard items are most important to change during the next revision of the Swedish standard?

Since no applied research was found, the results of the study were based on historic research on the natural forests of Sweden and Scandinavia.

For several of the indicators, differences appeared between the natural forests of the boreal vegetation zone compared to the natural forests of the boreonemoral (hemiboreal) and nemoral (temperate) vegetation zones. They differed both regarding the dominating disturbance regime (boreal zone: fire; boreonemoral and nemoral zone: wind and internal dynamics) and regarding the dominant tree species of the forests (boreal zone: conifers; boreonemoral and nemoral zone: broadleaves). Despite these differences, the Swedish standard for FSC certification states the same demands for all of Sweden. One of the most important conclusions of the study is that the demands of the Swedish FSC standard should be different for the different vegetation zones of Sweden after the next revision of the standard.

A comparison was made of the expected levels of these indicators as given in the Swedish FSC standard and the actual levels in natural forest. The demand on the share of broadleaved trees in coniferous forests in the Swedish FSC standard was already close to, or on a level with, the share of broadleaved trees of the boreal zone's natural forests. For all other indicators examined, including the share of broadleaved trees in the boreonemoral and nemoral zones, the level in the standard was lower than the level in the natural forest. The share of forests exempted for nature

conservation and the share of burned forest land in the boreonemoral and nemoral zones of the virgin forest could not be judged due to insufficient scientific material.

A list of the studied indicators from the Swedish FSC standard is displayed below, ordered by difference between the standard and the natural forest. The items with largest difference come first.

Boreal zone

1. The amount of dead wood
2. The share of burned forest land
3. The number of trees left after clearfelling

Boreonemoral and nemoral zones

1. The amount of dead wood
2. The share of broadleaved forests
3. The share of broadleaved trees in coniferous forests
4. The number of trees left after clearfelling

The difference between the Swedish FSC standard and natural forest was greatest for the amount of dead wood. This is most unfortunate since many of the red listed species in Sweden are dependent on dead wood. The demands on the amount of dead wood in the Swedish FSC standard should therefore be increased.

In the boreal zone the difference between the Swedish FSC standard and natural forest was second greatest for the share of burned forest land. This is not surprising since fire was the most important disturbance in this part of Sweden. The demands on the amount of forest land burned should also be increased in the Swedish FSC standard.

In the boreonemoral and nemoral zones the difference between the Swedish FSC standard and natural forest was second greatest for the share of broadleaved forests. Since historical research on the old-growth forest shows that broadleaves dominate 50% of the forests in the boreonemoral zone and 100% of the forests in the nemoral zone, this is hardly surprising. It is important to strengthen the demands of the Swedish FSC standard for this item. The need for an increased amount of broadleaved forests is partially taken care of by the indicator that states that broadleaved forests in the long run should dominate at least 50% of the forest land of the nemoral zone.

Conclusions

The levels of the studied indicators were not consistent with facts from research within the field of conservation biology. This was mostly due to lack of scientific material.

The Swedish FSC standard should in the future include different demands on forest land in different vegetation zones.

Although the Swedish FSC standard is a product of negotiations and based on more or less qualified guesses, it is still a step towards environmentally well-adapted forestry in Sweden. Hopefully, each revision of the standard will mean another step in the right direction.

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An Overview of Boreal Ecology

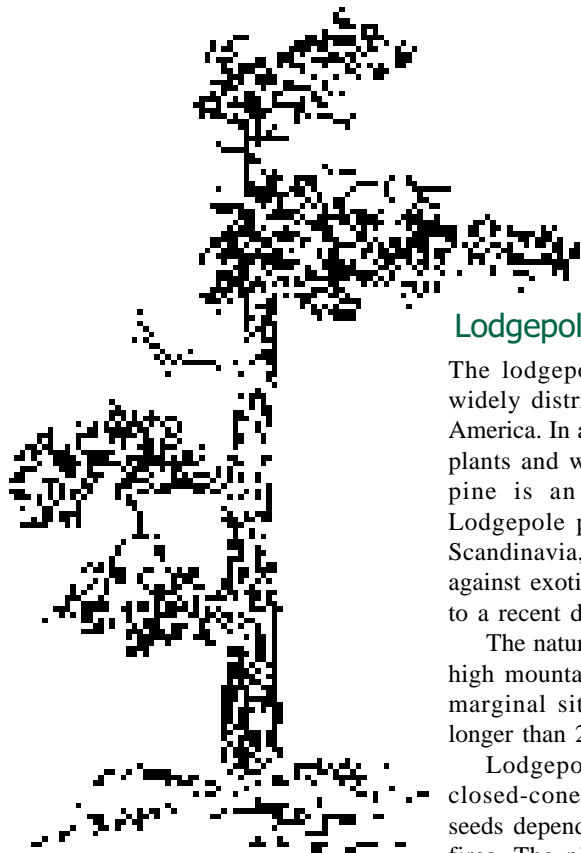
The boreal forests are the largest terrestrial biome, covering more than one third (16 million km²) of the world's forest area. The boreal forests form a belt of conifer-dominated forests encircling the Northern hemisphere through Russia, Canada, Alaska, Scandinavia and Scotland. In all these areas the forests share many ecological features and processes.

Boreal ecosystems are relatively poor in species compared to tropical and subtropical ecosystems because they are young and located in regions with extreme climatic conditions. Most of the boreal region's trees and other inhabitants have colonised only since the end of the last ice age around 10,000 years ago.

The boreal forests are the forests of fire and ice. All over the region forest fires play an important role in shaping the forest landscape. Together with other disturbances such as floods, storms and insect outbreaks, fires create a dynamic landscape that is extremely varied and rich in different structures. The distribution of the boreal forest is closely related to the climatic zone characterised by long, extremely cold, dry winters and short, cool, moist summers.

Trees are certainly the most visible structural elements of the boreal forest. The region is dominated by a small number of needle-leaved coniferous tree species, the spruce, fir, larch and pine, which are well-adapted to freezing winter conditions. However, deciduous tree species such as birch, poplar and willows also constitute an important part of the boreal ecosystem.

Here we highlight three of the main coniferous trees and a few of the endangered plants and animals found around the boreal.



Lodgepole Pine (*Pinus contorta*)

The lodgepole pine is one of the most widely distributed pine species in North America. In addition to its natural value for plants and wildlife habitat, the lodgepole pine is an important timber source. Lodgepole pine has been introduced to Scandinavia, but environmental criticism against exotic tree species has contributed to a recent decrease in planting.

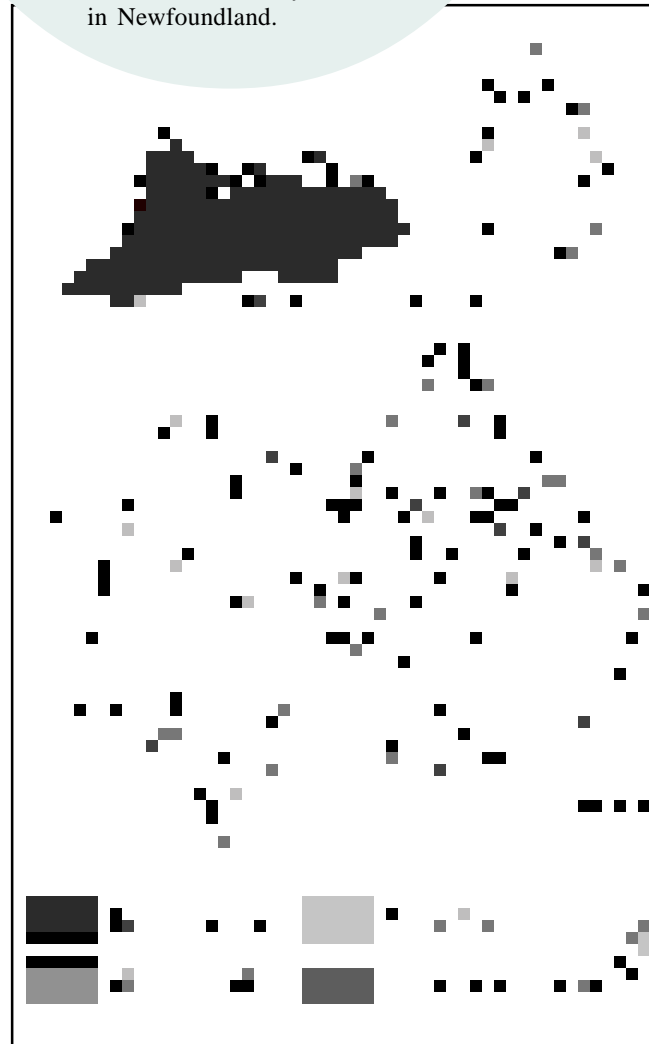
The natural habitat of lodgepole pine is high mountain areas, mostly disturbed or marginal sites. It usually does not live longer than 200 years.

Lodgepole pine is a member of the closed-cone trees. The dispersal of the seeds depends on the occurrence of forest fires. The pine cones have scales sealed with resin that trap the seeds inside. When a fire burns through the forest, the resin melts and the seeds fall out. These seeds germinate in the ashes and the newly exposed soil. Lodgepole pine also depends on forest fires to reduce competition from other species.

Newfoundland Pine Marten (*Martes martes*)

The Newfoundland pine marten is a unique subspecies native to the island. Listed as threatened in 1986, it is estimated that only 300 remain. These martens prefer to live in undisturbed mature boreal forest. For denning and nesting sites, martens use hollow trees, stumps and logs.

Research is being conducted in Newfoundland on the effects of logging on pine martens and their prey. Increasing the amount of dead wood on the forest floor may attract martens by providing additional cover and den sites. Reintroduction initiatives have been unsuccessful. Habitat loss due to clearcutting within their prime range is probably the main obstacle to recovery of martens in Newfoundland.



Scots Pine (*Pinus sylvestica*)

The Scots pine is the most widely distributed conifer in the world, ranging from beyond the Arctic Circle in Scandinavia to southern Spain and from western Scotland to the Okhotsk Sea in eastern Siberia.

The Scots pine is a keystone species in the boreal ecosystem on which many species of plants, insects, birds and animals depend.

Taiga's Treasures

Methuselah's Beard (*Usnea longissima*)

Usnea longissima is an arboreal lichen with a pan-boreal distribution that can be found in Scandinavia, Russia, Asia and North America. The lichen can get up to 10 m long and grows, in Scandinavia, mainly in spruce forests that have not been affected by forest fires for a long time. These forests, mostly north slopes and small spruce stands connected to bogs, constitute a naturally small part of the boreal forest landscape and therefore the species is 'rare by default'. The extensive Scandinavian forestry model has affected close to all of the forest landscape and pushed *Usnea longissima* to the verge of regional extinction and the species has been added to the red list in Norway, Sweden and Finland.



Amur Tiger (*Panthera tigris altaica*)

The Siberian or Amur tiger lives primarily in the temperate forests of Far East Russia. The Amur tiger population in Russia has fluctuated dramatically, from a relatively high number at the beginning of the century through a critical low in the early 1940s, when an estimated 20–30 animals remained. The main reason for the near extinction was hunting. Since the ban on tiger hunting in 1947, the population has increased to around 300–400 individuals, but there is serious concern for the future. Loss of habitat and depletion of the food-base are the main threats. Most forest land within the tiger's range is subject to logging and tiger prey is heavily hunted. Poaching for the Chinese medicine market is an additional threat to the survival of the Amur tiger.

Map: Ola Larsson

Siberian Larch (*Larix sibirica*)

The Siberian larch is a deciduous conifer native to eastern Russia, Siberia and northern China. It is widely distributed in the west Siberian plain, mid-Siberian hills, south Siberian mountains and in the watersheds of the Ob and the Yenisey rivers and most of their inlets. In the Krasnoyarsk region of Russia Siberian larch makes up 50% of the forest.

Siberian larch mostly grows in mixed stands of Siberian spruce, fir and pine, called dark-coniferous taiga forests. Siberian larch prefers light and is tolerant of both heat and frost, allowing it to grow on permafrost sites, where it is often found.

Siberian larch has been planted for timber production in Finland and Sweden. Its timber products are strong and dense with high resistance to rot. The tree can live up to 400 years and can reach a height of 45 m.

Lady's slipper (*Cypripedium calceolus*)

The Lady's slipper orchid is a pan-boreal species. It is an erect orchid with a spectacular yellow slipper-shaped flower that grows in moist herb-rich forests on calcareous soils. The species is rare throughout its area of distribution and forestry activities have played a role in reducing the species abundance. Ditchings and final fellings are direct threats to the species. The Lady's slipper is classified as endangered in Manitoba, Canada and as near threatened in the Swedish red list.

Some of these, like lichens and mosses, grow on the trees themselves. Red squirrels, mice and voles live on pine seeds and deer feed on pine seedlings and saplings. The trees also attract various insects that are eaten by birds. Scots pine plays an important ecological role even when it is dead: a decaying Scots Pine provides habitat for 15 times more beetle species than a living tree.

History Matters

Lars Östlund, Swedish University of Agricultural Sciences, Sweden

The long-term human impact on the forest of northern Sweden has altered forest ecosystems and fundamentally transformed the forest landscape. This simple fact must be taken into account when future forest reserves are set aside. A superficial or inadequate forest historical interpretation can lead to erroneous conclusions about the need for forest reserves.

Impacts Down the Centuries

Human impact has taken different forms throughout history. In the 16th century, royal sawmills were erected in northern Sweden to furnish the royal court with sawn wood and masts for sailing ships. In the 17th and 18th centuries, iron works were relocated from the mining district of central Sweden to the north Swedish coast. In the 19th century tar was produced from old-growth pine stumps and snags and was exported abroad. Potash derived from broadleaved trees also became an important export item at this time. In the 19th century large old-growth Scots pines became a prime target for a rapidly developing sawmill industry. After logging, much effort was put into silviculture, with the aim of restoring the standing volume and increasing the yield from the forest.

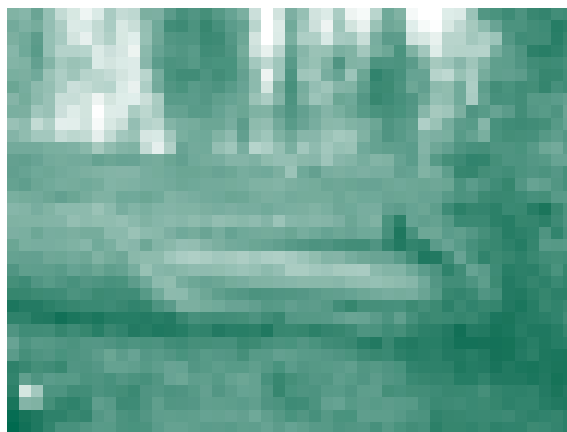
20th century forest management, which has increased overall growth-rate and standing volume of the north Swedish forest, has had an important ecological price. The process of forest transformation has led to an accumulation of clearcut areas, a decrease in old-growth forests, the promotion of single-species and even-aged forest stands and the introduction of exotic tree species. Biologically important structures have been consistently removed from the forest and biodiversity has been reduced.

As a result of human impacts, old-growth forests have been reduced in extent and quality. Typical old-growth characteristics include the presence of large trees, old trees, dying trees and dead trees within a forest. Their absence affects biodiversity in the forest, since many species of plants and animals depend on old-growth structures. The reduction of standing dead trees in Swedish forests has been dramatic during the last century. Removal of dead and old trees was mandatory to reduce the risk of insect outbreaks and there has also been a clear policy to 'clean-up' and 'rejuvenate' the forest.

Other more indirect measures, particularly fire exclusion, have also affected forest ecosystems. One of the major concerns of foresters in the early 20th century was to suppress wildfire. The introduction of fire towers, roads, fire crews, etc., was extremely successful and fire almost ceased as an ecological factor in the boreal forest landscape, with far-reaching and complex implications, especially the near absence of dead trees.

The Importance of Culture and Knowledge

Parallel to the pre-industrial and industrial forest exploitation, agricultural and Sami utilisation of the forest also increased. During the last millennium, more and more of northern Sweden has been populated. Agriculture has increased at the expense of hunting and fishing and other forms of traditional and extensive land use. Strong waves of new settlement came in the 16th century, and later in the 19th century. An interesting legacy of the agricultural



A pine with bark peeled in 1721, in northern Sweden. Trees like this demonstrate the cultural value of the forest to the Sami people. Photo: Lars Östlund.

and Sami people's use of forests is the culturally modified trees which today can be found in remaining old-growth forest and in forest reserves. Such trees include Scots pines bark-peeled by Sami people, blazed trees indicating old paths and borders in the forest, Sami holy 'seite-trees' and Finnish magic 'mieskuva-trees'. Each type of culturally modified tree gives a clue to past land use and the relation between humans and the forest.

We need to recognise the importance of historical knowledge of forests as a prerequisite for nature conservation and forest management aimed at maintaining biological diversity in forest ecosystems. At

present such knowledge is not used widely even though the current trends in Swedish forestry and forest legislation are strongly emphasising multiple use and biological diversity. The first step in understanding the effects of modern forestry on biological diversity must be to identify crucial forest structures and analyse the changes in the occurrence of such structures over time.

Into the future

So, how do we protect forests in the future in boreal Sweden based on an understanding of forest history? We have three important factors to deal with.

First, it is important to understand that protection of large areas is absolutely necessary. Over large regions in boreal Sweden there is a definite lack of protected forest. The northernmost forest is least affected by human activities and has qualities that are absent elsewhere, including unique biological qualities like very old trees, and traces of ancient pre-industrial use by Sami people.

Second, we need to acknowledge that the forest of boreal Sweden is a forest landscape shaped by long term human use. Therefore areas set aside for future protection may also contain traces of past land use, for example culturally modified trees or pre-industrial forest landscape patterns. The presence of both biological and cultural legacies adds value to both existing and future forest reserves.

Third and finally, we need to have a less complicated approach to which areas should be protected in the future. Nature protection NGOs cannot be responsible for proving beyond every doubt that a certain area has infinite biological qualities before it is protected. The responsibility lies, in fact, on logging companies (private and state owned) to help set aside unique forest. Past logging and forest management activities have severely reduced the ecological qualities of the boreal forest. There is a price to pay today in the form of protection of the remaining old forest.

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Thresholds and Time Machines

Per Angelstam, WWF/Örebro University, Sweden

Introduction

A question of imperative importance for biodiversity maintenance is the amount of habitat that can be lost without causing populations of different species to go extinct. Below a certain amount of forest components, such as dead wood, old large trees, old-growth stands and intact forest landscapes, the risk of local extinction of species accelerates. There are critical thresholds for habitat loss that forest and land managers must pay attention to. Typical questions are:

- How much forest do we need to set aside in forest reserves?
- How many trees and stands do we need to leave in the matrix surrounding the forest reserves?
- What can we do in management to restore or recreate important features that are required to maintain biodiversity?

Recent developments in conservation biology and landscape ecology can help us become better at providing answers to such questions.

Critical Thresholds for Habitat Loss

Both field data and ecological models show that there are critical thresholds in the amount and distribution of the preferred habitat required for the long-term survival of a given species (e.g. Jansson and Angelstam 1999; Fahrig 2001).

Usually the negative effects of reduced patch size and isolation tend not to occur until less than 20–30% of the suitable habitat remains. When 5–10% of the original habitat remains species usually have gone locally extinct. Based on these results, a preliminary answer to the question of how much habitat loss is acceptable without losing the most area-demanding specialist species falls in the range of 70–90%. The actual mechanism for extinction thresholds is that the habitat patch network deteriorates through destruction of some of the habitat patches. As a result the network may not be capable of supporting a viable population of the focal species anymore.

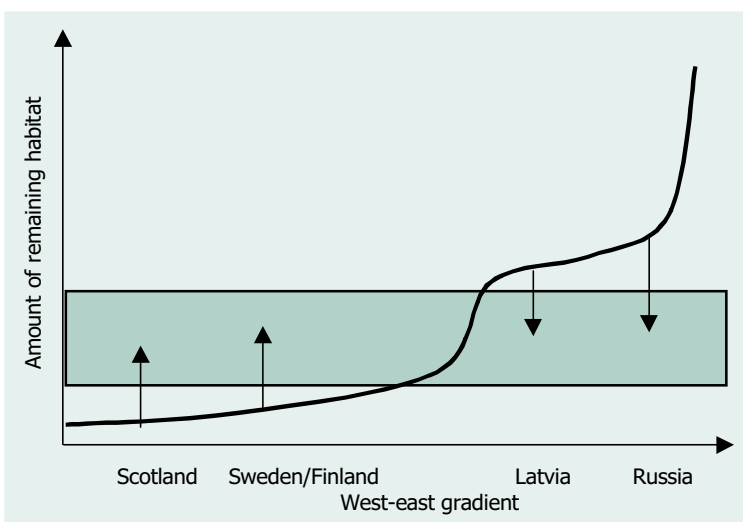


Illustration of the problem of trying to strike the balance between forest use and nature conservation in European boreal forests. The black line illustrates the range of remaining amounts of authentic habitat in the west–east gradient in northern Europe. The boxed interval represents the tentative range of threshold values to be exceeded for the maintenance of viable populations of forest specialists with large area requirements. Finally, the arrows represent the need for restoration in the west, and the need for pro-active planning in the east.

Extinction debts

The extinction of a local population does not occur immediately after habitat destruction, but only after a time delay. Theoretical models show that the time delay is greatest for species for which the deteriorated environment is near the threshold for persistence (Hanski 2000). On the contrary, a species for which the quality of the current environment is far too poor is predicted to go extinct relatively quickly. The time delay also depends on species-specific factors.

Compared with what we can actually observe, this time delay underestimates the risk of extinction. After deterioration of a habitat patch network there may be a number of species, that will inevitably go extinct although they have not yet done so. The number of species that are expected to go extinct due to past adverse environmental changes is called ‘extinction debt’. Before the extinction debt is paid by actual extinction, the relative proportion of rare species of the total number of species will increase. It should also be noted that the time delay associated with attempts to restore connectivity is even larger.

The Forest Time Machine

The European boreal forest, extending from Scotland to the Ural Mountains, provides a unique resource for the development of sustainable forest ecosystem management. The reason is the steep gradient in land-use history whereby the gradual exploitation and intensive management of boreal forest resources has spread like a tidal wave from areas of high demand to more and more remote regions. This ‘time machine’ allows us to understand the effects of the human footprint on the boreal environment.

At first glance, this area may seem huge and without threats to its biodiversity as a whole. However, recent studies (e.g. Yaroshenko *et al.* 2001) show that even in European Russia a surprisingly small area (13%) of what could be called intact natural forest landscapes remains today. Further west such intact and productive areas do not exist at all. In fact, even considering all the productive boreal forest in Sweden, only about 5% can be termed forests with high conservation value. In Scotland only about 1% is left. The maintenance of boreal forest biodiversity is a matter that concerns the European boreal forest as a whole. It is therefore important that both the west and the east share the relevant biological knowledge of importance for the long-term maintenance of boreal forest biodiversity (see figure).

- In the west, maintenance of biological diversity requires restoration of habitats to reach the threshold in the future.
- In the east, the development of forest management should not proceed so far that it reduces the amount of important forest components below this threshold.

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Above the Tree Line

Tim Clifford, Highland Birchwoods, Scotland

Ecological restoration work in Scotland is looking at the whole highland landscape, from river valleys to the mountain tops. This includes the woods beyond the tree line, up in the montane scrub zone.

When I came to the Highlands of Scotland in 1983 I was aware that much about Scotland's native forests was 'incomplete'. The patches of forest were too small; they were isolated from each other so that woodland species could not easily move from one patch to another; there was little new regeneration; most woods no longer had a shrub understorey; many had only one scattered generation of old and senescent trees; there wasn't much deadwood habitat; most of the ground vegetation was grazed flat; and large mammals such as beaver, lynx, wolf and bear had long since become extinct.

It was not until I visited western Norway to study native pinewoods in 1987 that I really appreciated that a whole woodland habitat was virtually absent from Scottish forests! This was brought home to me sharply at the beautiful ancient pine forest of Espellandsdalen at the head of the massive Hardanger Fjord. We walked

from the valley floor at about 200 m above sea level, up to just over 800 m, where forest finally gave way to open ground.

The real eye-opener came as we reached the upper part of the forest. Gradually the forest canopy thinned, open boggy areas with scattered small trees became more frequent, the stature of the main trees reduced and pines and juniper became multi-branched and contorted. Climbing still higher the canopy disappeared completely and the vegetation became a mosaic of gnarled and twisted 2-m high birch, various shrub willows, dwarf birch in the damper areas and small peaty pools. We had passed through a real, natural tree line and were crossing a wide montane scrub zone that gradually merged with open vegetation dominated by low growing dwarf shrubs.

I'd never seen anything like this on Scottish hills. There were tiny fragments of stunted woodland of birch, rowan and eared willow clinging to inaccessible cliffs above the pinewood at Beinn Eighe, and dwarf shrub heath higher up the hill, but no natural transition zone between the woodland and the high-altitude heaths.

Did Scotland ever have a full natural progression of vegetation zones? An eminent ecologist, Derek Ratcliffe, seemed to think so

when he wrote: 'Originally a fringe of scrub 3-4 feet high girdled the upper edge of the forest... This scrub zone, which has been destroyed almost totally by fire and grazing, gave way still higher up to much lower growths of dwarf juniper, heather and other dwarf shrubs forming alpine heaths'. Proving this montane scrub habitat once existed more extensively in Scotland is, however, difficult.

There are three sources of information that can be used in a historical reconstruction: documentary records, plant remains that have been preserved in peat, and pollen grains. Unfortunately no documentary evidence or plant remains have been found to support the former existence of extensive montane scrub communities since the last deglaciation about 11,000 years ago. Pollen analysis has taken place in the Highlands but it is hard to distinguish the pollen of the montane willows and dwarf birch from the willows and birches that grow at lower altitudes. Nevertheless, evidence from sites in northern Scotland, where grazing exclosures have been established, suggests that herbivores can significantly reduce both the extent and vigour of these communities. In terms of soils and climate, there are still extensive areas of the Scottish uplands suitable for this habitat.

A major seminar on the ecology and restoration of montane scrub habitats was organised in 1996. A Montane Shrub Action Group has been established and is busy raising the profile of the habitat and the issues associated with its management and expansion, and recording the extent, distribution and current condition of our existing montane scrub communities through scrub surveys and experimental grazing exclosures to encourage regeneration.

So what do we still need to do? We firstly need to recognise that this habitat is an integral part of the overall forest ecosystem and as such must be fully incorporated into any ecological restoration project targeting native forests in the uplands, and preferably also into any forestry proposals incorporating suitable hill ground. In this way we can ensure that montane scrub will play an important part in the development of forest habitat networks that encompass not only remote wilderness areas and nature reserves but also the wider working upland landscape with its farming, forestry and tourism interests. We must also accept that the restoration and re-creation of this lost habitat will only happen at any reasonable scale if financial incentives are provided.

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Trees for Life Mountain Woodland Project

In our plan for the restoration of the Scottish Caledonian forest we are committed to reinstating the diversity of woodland that would have been present at one time, including the succession to montane scrub above the tree line. Distribution maps and reports have been prepared and have helped us understand site requirements of montane scrub species and the extent of their occurrence in our focus areas. We have stock fenced 30 exclosures in key areas to facilitate regeneration. Recovery is slow but is making definite progress, with small clumps of dwarf birch growing laterally and beginning to form quite extensive mats.

The Montane Scrub Conference held in April 2001 highlighted the importance of not only protecting montane scrub plant communities but reinstating the progression from lower level woodland, through a band of stunted trees, up to the true montane layer. We are now working with Forest Enterprise towards enhancing significant remnants of pine/birch/juniper and encouraging natural regeneration over the higher ground where both dwarf birch and juniper have been found. In time, we expect to see the desired progression of woodland and other vegetation types at this site which extends to approximately 50 km², half of which is currently open hill dominated by common heather, *Calluna vulgaris*.

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Behind the Logo

Continued from page 1

Crucially, all three of the FSC's rival schemes are industry led (or industry initiated) and make little or no attempt to meaningfully engage with environmental and social concerns. Even where NGOs are invited to participate, as in the case of the PEFC and CSA, they are given unequal representation or no voting rights. This in-built dominance of economic interests in the decision-making process reveals a poor commitment to multi-stakeholder participation, with serious consequences.

Disputes

Disputes about land rights are a common occurrence in commercial forest management. In the worst cases they are the prelude to abuses of civil and political rights and, often, human rights. Despite international agreements that customary and land rights of indigenous peoples should be respected, these rights are not recognised by the PEFC, SFI and CSA, and logging operations certified by these schemes occur on disputed lands. In Sweden, for example, PEFC-certified forest owners have refused the reindeer-herding Sami people access to their traditional grazing lands. The lack of a proper complaints procedure means that the Sami people have no formal opportunity to engage with PEFC over this dispute, which has little to distinguish itself from the hundreds of disputes about land rights in non-certified forests.

By contrast, the FSC, while not immune to land rights disputes, has a robust complaints procedure that is open to all, including indigenous peoples. Dissatisfied petitioners can also seek the support of environmental and social NGOs who are full members of the FSC Board and, with their equal voting rights, are in a position to investigate and amend mistakes openly.

Field Assessment

Perhaps the minimal expectation shoppers have of any forest certification scheme is that products come from well-managed forests that are monitored and inspected regularly. It is hard to believe then, that in Germany national PEFC rules allow certification even when no field visits have occurred. Our research showed that six entire German states have been certified without any field assessment prior to the certificate being issued. The PEFC structure is such that in each country different rules, standards and procedures apply. This is a weak approach to certification since it offers the consumer

no guarantee that one certified forest meets the same management standards as another. It undermines one of the central tenets of certification – that all forests accepted into a scheme meet an equivalent minimum standard of management.

Low Standards

The standards that forest managers have to meet in order to achieve successful certification are central to the credibility of forest certification. Standards for the PEFC, CSA and SFI schemes are mainly system-based, rather than based on ground level performance. Certification criteria for CSA and SFI are set (and sometimes even assessed) largely by the operation applying for certification. In this circumstance, any forest operation can achieve certification simply by sticking to self-set, non-stretching targets that allow little more than a 'business as usual' approach, but bring valuable market benefits and an enhanced public image. In the case of CSA it is even possible for a company applying for certification to set itself targets that avoid any direct logging practice indicators. The single largest SFI certification, representing 25% of SFI's total certified forest area, was given to International Forest Products (Interfor) – a company involved in ecologically destructive clear-cutting operations in old-growth, coastal temperate rainforest in British Columbia, Canada.

Conclusions

Assessing the histories of these certification schemes, it is hard not to conclude that the three schemes that were initiated by forest owners and the forestry industry — the PEFC, CSA and SFI — have compromised their environmental ambitions to protect their members from the inevitable move towards environmentally and socially sound forest management. The evidence presented in *Behind the Logo* shows that when industry-dominated groups set forest certification standards, they fail to challenge the common practices that are at the heart of the forest crisis, and do little to encourage forest managers to take any significant step towards sustainability.

The FSC, by contrast, gives equal voting rights to its three chambers — economic, social and environmental interests. Thus, in its

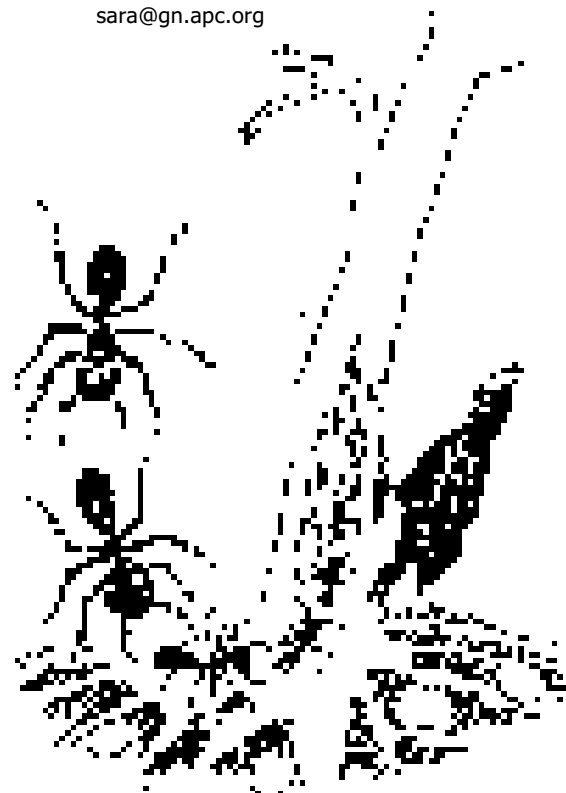
standard setting procedure, as in all other decisions, economic interests are not able to dominate. Relatively high, performance-based standards are the result, and with a thorough monitoring process in place, it is clear that the FSC has the greatest potential to improve forest management. This is not to say the FSC is beyond improvement – it still needs to overcome a number of weaknesses to ensure its principles and criteria are rigorously implemented, but it remains the only credible scheme currently available.

Finally, back at the shopping mall, what has happened to our luckless consumer? So far, the FSC is the only scheme to bring labelled products to the marketplace. For the time being, then, certified wood and paper products are a positive and beneficial choice for consumers. How long this will last is uncertain. The PEFC has launched its logo and is pushing retailers to accept it, while the CSA and SFI are backing PEFC and moving towards recognising each others' schemes as equivalent.

Overall, it is a disappointing situation and we hope that those forest owners and managers who are sincerely committed to improving forest management practices will make their views known loudly and clearly and soon.

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Action Alert!

Help Save the Samarga Watershed in the Russian Far East

The Samarga watershed is located in the northeastern corner of Primorsky Region in the Russian Far East. The forests of the Samarga are the traditional hunting and fishing grounds for the Udege people, about 200 of whom live in the remote village of Agzu. This pristine, roadless million-hectare watershed contains some of the last large areas of unprotected wilderness in Russia's biodiverse Sikhotealin mountains. It provides habitat to the Amur (Siberian) tiger and Asiatic black bear and a refuge for wild Pacific salmon populations.

The Primorsky Regional government has recently auctioned off logging rights to 500,000 hectares of the Samarga watershed to the Russian timber company Terneiles without informing or receiving

the consent of the local community. The auction was also completed without any environmental review, even though this is a violation of Russian law.

For years, the Udege people have fought to protect their forests as an officially recognised Territory of Traditional Natural Resource Use, but the regional government, interested in the Samarga's timber resources, has blocked their efforts. Logging will ruin the Udege's sustainable economic development plans based on fishing, hunting, ecotourism and use of non-timber forest products.

The native community of Agzu, the Bureau for Public Regional Campaigns (Vladivostok), Pacific Environment and Friends of the Earth-Japan are asking for your urgent help.

Please act now! Write to the Primorsky Governor and the Chair of the Duma asking them to annul the auction and to guarantee indigenous rights to the watershed as a Territory for Traditional Nature Use. Please also send a copy of your letter to Pacific Environment.

Write to:

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Write to:

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Chair, Primorsky Region Duma
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Contact:

info@pacificenvironment.org.
Fax: +1 510 251 8838

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