

issue 53

winter 2005

# taiga news

newsletter on boreal forests



## Can FLEG Work?

The Europe and North Asia Forest Law and Governance (ENA-FLEG) ministerial meeting kicked off in St Petersburg on 22 November 2005. Taiga Rescue Network (TRN) hosted a well-attended side event at the meeting, optimistically entitled 'FLEG Can Work', explaining practical initiatives to combat illegal logging and trade.

Chaired by Jouni Nissinen, TRN international coordinator, the panel included Lars Lastadius (World Resource Institute) on Satellite Monitoring, Stuart Wilson (Forests Monitor) on Independent Forest Monitoring, Ke Dong (WWF China) on cross-border controls between China and Russia, and Kenichi Nakazawa (Friends of the Earth Japan) on public procurement in Japan. TRN is keen to see that all boreal forest users, including communities, industry, traders, flora and fauna, are represented in actions to establish and maintain good sustainable and equitable forest governance throughout this vast region.

TRN saw the ENA-FLEG meeting as an opportunity to highlight the problems of forest governance and trade in the boreal region. TRN has produced two briefing papers, a webpage and press materials to raise awareness of the issues of unsustainable legal and illegal forest practices and associated international trade.

TRN participants were keen that the ministerial declaration would not support continued enforcement of the very laws that undermine forest-dependent communities whose forest practices are less destructive than some national and international companies issued with legal concessions rights. The previous two FLEG processes have increasingly been criticised by many stakeholders for failing to realise initial expectations, including positive legal reform to establish good forest governance for sustainable and equitable forest management and trade. Will the ENA-FLEG be any different?

Prior to the meeting a non-governmental organisation (NGO) position paper outlined priorities for the final ENA-FLEG declaration. These included: legal reform to establish sustainable and equitable forest management; good governance to end corruption in forestry; time-bound national action

plans with measurable targets to be adopted by all participant countries; public procurement polices to be adopted by governments; and a clear follow-up process with NGO involvement included.

Despite a positive preamble, the final declaration is much less determined than NGOs had wanted. It fails to include many NGO and industry priorities, such as commitments to time-bound actions with measurable targets of success. The language of the declaration remains evasive, using terms such as 'assess' and 'formulate' rather than 'implement'. National action plans like procurement policy are only referred to in the indicative list of actions (ILA).

However, the success of the ENA-FLEG will not be contained in the declaration and ILA but will lie in the actions that governments enable to take place, including key stakeholders: NGOs, indigenous peoples and forest communities, and industries both in the ENA region and internationally.

There will be a follow-up ministerial in 5 years time, and two expert level meetings involving civil society prior to then, to assess the success and problems in implementation. When Russia hosts the G8 in 2006, NGOs want the ENA-FLEG to be reaffirmed as of key political importance.

Arguably the ENA-FLEG declaration is another non-legally binding text that will be acted upon by few, and under funded as a whole. To avert this NGOs have noted the need for an effective follow-up process. TRN is keen to mobilise the resources and skills of the network to assist in this challenge to make the intentions of ENA-FLEG contribute to the end goals of good governance and sustainable, equitable forest management in the boreal.

**Contact:**  
info@brenweb.org  
www.taigarescue.org/index.php?sub=1&cat=37

**inside:** forest fires in the boreal region



## editorial

This is my final issue as editor of *Taiga News* and I am very pleased that as the theme this time is fire, I get a chance to go out in flames!

It has been a really rewarding 6 years, and my only complaint is that in all this time I have never had the opportunity to visit the arctic wonders of Jokkmokk. The chance for a real Swedish sauna was one of the things that persuaded me to take on the job, so it says much about the wonders of telematics and the excellent phone-conferencing skills of the TRN staff that I have never needed to go to Sweden to meet them in person. Shame!

I need to thank a lot of people who have helped me over these years. Special thanks to the various TRN staff who have provided invaluable support, information and of course paid the bills: Elisa Peter and Ola Larsson for helping me through the steepest part of the learning curve; Swaantje Fock, Danielle Peloquin and Solveig Lubeley for the middle years; and Damien Lee and Jouni Nissinen who will take TN into its next incarnation. I also want to thank Jean-Paul Jeanrenaud, for getting me into it; Dennis Khoroshavtsev, our dream of a Russian translator; Gun Hofgaard, the wonderful illustrator; Eva Fairnell, my friend and ever watchful proof-reader; David Ritchie, printer and adviser; and Bill Ritchie, cuddly revolutionary and well handy with a red pen. Finally, I want to thank all the many activists who have taken the time and trouble to write about their campaigns and your passions, and given me such fascinating and inspiring texts to edit.

For the taiga!

Mandy Haggith

## contents

news	2–3
fire	4–11
karelia	4
canadian first nation	5
in the hot seat	6–7
female fire-fighter	8
outer space	9
sámi knowledge	10
cleansing fire	11

## Global

### Tissue Giants

WWF has evaluated Procter and Gamble, SCA Tissue, Kimberly-Clark, Metsa Tissue, and Georgia Pacific on environmental performance across a range of criteria, including sourcing practices, recycling, clean production, transparency and public reporting. They have found irresponsible wood sourcing policies and alarmingly low levels of use of recycled fibres. The best, SCA Tissue, scored less than half the available points, and Kimberly-Clark scored worst.

**Contact:**

[www.panda.org/forests/tissue](http://www.panda.org/forests/tissue)  
[hb@wwfdcp.org](mailto:hb@wwfdcp.org)

### GE Trees

Genetically engineered (GE) trees are being developed by researchers backed by the pulp and paper industry. Nippon Paper Industries has begun outdoor cultivation of GE salt-tolerant eucalyptus trees at the Japanese University of Tsukuba's Gene Research Centre.

**Contact:**

[www.gen-etisches-netzwerk.de](http://www.gen-etisches-netzwerk.de)  
[www.stopgetrees.org](http://www.stopgetrees.org)

### UNFF6

The sixth session of the United Nations Forum on Forests (UNFF6) will take place in New York, 13–24 February 2006.

**Contact:**

[www.un.org/esa/forests](http://www.un.org/esa/forests)

### COP11

The 11th Conference of the Parties (COP) of the Framework Convention on Climate Change meeting took place in Montreal, Canada, 28 November – 9 December 2005, with the forestry industry making a strong play for the role that sustainable forestry can play in controlling greenhouse gas emissions.

**Contact:**

[www.wbcsd.org](http://www.wbcsd.org)

### FSC GA

The Forest Stewardship Council (FSC) held its General Assembly (GA) in Manaus, Brazil, 7–9 December 2005, where discussions included a new future strategy. One controversial area is certification of plantations, and a moratorium has been proposed on such certification until after the FSC's current review process is complete.

**Contact:**

[h.liedeker@fsc.org](mailto:h.liedeker@fsc.org)  
[anafili@wrm.org.uy](mailto:anafili@wrm.org.uy)

### No Plantations Day

People around the world celebrated an International Day against Monoculture Tree Plantations on 21 September 2005 by planting a diversity of native trees.

**Contact:**

[recoma@internet.com.uy](mailto:recoma@internet.com.uy)

### Deforestation Understated

The UN Food and Agriculture Organisation (FAO) has published new figures on the 'state of the world's forests', met by howls of protest from NGOs that claim they are misleading, inaccurate and understate the real extent of deforestation and damage to forests globally.

**Contact:**

[simonc@rainforestuk.com](mailto:simonc@rainforestuk.com)  
[www.fao.org/forestry](http://www.fao.org/forestry)

## Russia

### NTFP Fair

An international Non-Timber Forest Products (NTFP) Fair and Forum was held at the All-Russia Exhibition Center, in Moscow, 24–28 September 2005, organised by the World Conservation Union (IUCN), aiming to provide small Russian businesses (crafters, indigenous peoples and community-based businesses) with opportunities to reach new markets with their NTFP products.

**Contact:**

[info@iucn.ru](mailto:info@iucn.ru)

### Land Rights Fury over Code

Land rights campaigners stepped up the pressure as the Russian State Duma prepared to hold its second reading of the new Forest Code (lesnoi kodeks) in mid-September, gaining a reprieve until November. The code will allow large-scale privatisation of Russia's forest lands, and is being viewed as the most severe threat yet to indigenous land rights in Russia. Campaigners complain that consultation with indigenous peoples over the code has been inadequate.

**Source:**

CHUM-L listserve

### Conservation Conference

A conference on high conservation value forests (HCVFs) will be held in Arkhangelsk, 13–14 December 2005, with the objective of elaborating strategic plans at national and regional levels for managing HCVFs.

**Contact:**

[AShegolev@wwf.ru](mailto:AShegolev@wwf.ru)



## Europe

### Sámi Rights Upheld at UN

On 14 November 2005, the UN Human Rights Committee ordered Finland to stop logging activities in the Nellim area in Inari, which is one of the Sámi reindeer herding areas (see TN52 Action Alert). The reason given is that the current and escalating activity is violating the rights of the Sámi people. Sámi people are celebrating the decision and hope that Stora Enso, Metsähallitus and other actors in Sámi areas now take time to evaluate their positions and policies.

**Contact:**  
saamicouncil@saamicouncil.net

### Old-Growth Logging

On 7 November 2005, Greenpeace activists blocked a Finnlines freight ship to prevent it loading pulp and paper in the Finnish port of Kemi, linking it to the destruction of one of Europe's last ancient forests, being exported to make magazines. The world's largest paper company, Stora Enso, buys logs from areas of ancient forest in northern Lapland, which the Finnish government agency Metsähallitus has started logging themselves in defiance of the country's own conservation laws.

**Contact:**  
senge@greenpeace.org  
harkki@sll.fi

### No to MTCC

In late November 2005, 64 NGOs from 21 countries presented a statement urging the European Union (EU), European governments and the European timber industry to reject the Malaysian Timber Certification Scheme (MTCC), which cannot guarantee sustainable or legal timber forest management because it does not respect indigenous peoples' rights. MTCC has received widespread criticism for its disregard of indigenous peoples' rights. The certification scheme is widely considered a marketing device for Malaysia's disreputable timber industry rather than a credible effort to achieve sustainability.

**Contact:**  
info@bmf.ch www.bmf.ch

### Impacts of Biofuels

The drive for 'green energy' in Europe is having the perverse effect of encouraging destruction of tropical rainforests to grow palm oil and soybeans. The rush to make energy from vegetable oils is being driven in part by EU laws requiring conventional fuels to be blended with biofuels, and by subsidies equivalent to €0.3 per litre. The UK government has announced a target for biofuels to make up 5% of transport fuels by 2010, aiming to help meet Kyoto protocol targets for reducing greenhouse-gas emissions.

**Source:**  
www.newscientist.com

## North America

### Biggest FSC Yet

In September 2005, Alberta-Pacific Forest Industries Inc. (Al-Pac) achieved FSC certification of 5.5 million ha, becoming the largest FSC certification in the world. Smartwood certified the forest in north-eastern Alberta. Al-Pac's forest is on publicly owned land. Certification will enable Al-Pac to deliver FSC-certified Kraft pulp to customers. With this certification, Canada is now the leading country in the world for FSC-certified forests, with 14.3 million ha, or 22.8% of the global total. Al-Pac is owned by Mitsubishi Corporation (70%) and Oji Paper Co. Ltd (30%).

**Contact:**  
mbecker@fscscanada.org

### Arctic Oil Drilling Halted

The USA House of Representatives has dropped a plan to allow oil drilling in Alaska's Arctic National Wildlife Refuge, after intense lobbying efforts persuaded 22 Republican politicians to threaten a rebellion on the budget bill. Environmentalists consider this a substantial setback for President Bush and the oil lobby.

**Contact:**  
www.savebiogems.org

### Cree Win Buffalo Victory

The Supreme Court of Canada ruled on 24 November 2005 that the federal government failed to meet its treaty obligations to consult the Mikisew Cree First Nation when it authorised a road to be constructed in the Wood Buffalo National Park, which straddles the border between Alberta and the Northwest Territories. The Cree argued the road could damage their traditional hunting, trapping and fishing rights, as granted in an 1899 treaty.

**Source:**  
www.cbc.ca/news

### Stop Kimberly-Clark

On Boreal Action Day, 3 November 2005, activists in more than 160 North American cities demonstrated against Kimberly-Clark, the world's biggest tissue product manufacturer, and citizens around the world flooded them with letters and phone calls. The campaign against Kimberly-Clark is escalating, with Greenpeace, the Natural Resources Defense Council (NRDC) and others criticising the USA-based paper giant for its role in destroying Canada's boreal forest.

Environmentalists are urging Kimberly-Clark to increase the use of post-consumer recycled fibre and to ensure any virgin fibre used comes from ecologically sound logging operations.

**Contact:**  
www.kleercut.net

# Loggers Fighting Fires

In Karelia, lack of government financing of fire fighting means that logging companies are forced to devote significant resources to putting out fires, even, in some cases, to the extent of preventing them from extracting any timber at all. Meanwhile, local communities are threatened with being banned from the forest, which they depend on for non-timber forest products, in an effort to prevent them from lighting fires.

Alexander V. Markovsky  
SPOK, Karelia,  
Russia

## The Forests are on Fire

Fire is a frequent event in boreal forests. Forest fires have always happened, but with different intervals depending on the type of forest habitat. For example, in natural communities with windfall stand dynamics (mostly dark coniferous rainforests in damp habitats) fires occur only once every several centuries. In natural communities with pyrogenic dynamics (mostly light coniferous forests growing in well-drained soils) fires take place up to several times a century. However the frequency of forest fires rocketed when people began harnessing the boreal forests. Even in as scarcely a populated region as the Republic of Karelia (where the density of population is only four people per km<sup>2</sup>) up to 90% of forest fires are human-induced. This is one of the most pressing problems in taiga ecosystem transformation. The forest does not have enough time to recover and it is set on fire over and over again.

At the same time forest fires represent a direct danger to the people. In Karelia, 158 communities (nearly 40,000 people or 6% of the republic's population) live in places exposed to forest and peat-bog fires.

In recent years the situation with forest fires in Karelia has been diverse. The number of forest fires has fluctuated from 137 to 1712 a year, and the fire area from several hundred hectares to several thousand ha (in 2002, more than 4000 ha). Financial losses caused by forest fires, including the cost of extinguishing them, exceed 10 million roubles (Euro 350,000) per year.

## Forest Legislation: A Helping Hand?

As a part of the Russian forest management system reform, on 1 April 2005 the responsibility for extinguishing forest fires was transferred from the leskhozoes to the Agency for Supervising Nature Management. However, so far fire supervision in each region is carried out on average by as few as five people, including those responsible for fire fighting. This situation calls into question the new agency's capability for fighting forest fires in Karelia and throughout the country. Another factor aggravating the situation is the lack of finance allocated for fire fighting from the federal budget. Karelia was supposed to receive 9 million roubles (about Euro 300,000) but the money was not transferred during the forest fire season.

## Who Fights Forest Fires?

As a result, leskhozoes staff have had to try to continue fighting forest fires even though they do not have sufficient funds. They are joined by large local logging operators, who have often had to stop their logging activities and switch to extinguishing fires. The press service of Segezhpulp-and-paper plant reported that during the summer of 2005, a few enterprises of the

holding had to cease logging operations completely. For example, Segezhpulp JSC stopped its logging activities, and Pandany JSC only logged 30% the planned amount. As a result logging enterprises incurred direct losses because of failed timber supply and the costs of fire fighting. For example, the Segezhpulp-and-paper plant alone spent 4.5 million roubles (Euro 150,000) on maintaining a fire fighting unit.

The duty of the fire fighting squads formed of logging company staff is only supposed to be 'to provide assistance in fighting forest fires', not to replace professional firemen. These forest tenants have criticised the approaches of the republican government and Karelian forest management agency to fighting forest fires. In emergency situations, the authorities tend to use temporary control schemes that rely heavily on administrative resources. In the case of forest fires such a scheme was based on forcing the tenants to incur extra expense whilst simultaneously criticising them as the main, if not the only, bodies responsible for keeping order in the forest.

## Consequences

The present high fire hazard was forecast long ago, but the authorities have once again failed to get ready. The reform of the environmental authorities has completely destroyed the system for extinguishing forest fires, but the authorities blame their difficulties on the transitional period and the lack of finance.

Now the government of Karelia intends to prohibit local residents from entering the forests because of the increased number of forest fires. In this way the authorities are once again going to make the local communities hostages of the situation and make them pay for the bureaucrats' mistakes. However, banning the local communities from entering the forests violates their civil rights. According to our research, in the Republic's Pudoshzky Rayon alone, where the last large areas of old-growth forests remain unprotected, each summer more than 1500 people earn their yearly livelihood by collecting non-timber forest resources. The people must be allowed to visit these forests freely, but making fire in public forests must be restricted only to specially allotted sites.

## Summary

The restructuring of the forest management bodies continues in Karelia and in Russia in general. Forest legislation is also being changed, with adoption of the new Forest Code under way. Various regions address the problem of forest fires differently: in some it is still dealt with by the leskhozoes, in other regions by the tenants. However, it remains unclear when the Russian Agency for Supervising Nature Management will be properly financed and able to begin to work efficiently.



Contact:  
nwb@karelia.ru



Maggie Parker  
Rainy River First  
Nations  
Watershed  
Program,  
Ontario, Canada

# Eco-Cultural Cinders

The Rainy River First Nations' heritage includes a prescribed burning technique that preserves a unique form of prairie-oak savannah ecosystem, at Kay-Nah-Chi-Wah-Nung (Long Sault), a National Historic Site.



Photos: Maggie Parker

The Kay-Nah-Chi-Wah-Nung prairie is all that remains of a large prairie-oak savannah that once stretched along the Rainy River before European habitation of the area. Until the 1800s, mesic prairie vegetation grew everywhere here, but it was cleared for agriculture, drastically reducing the available habitat for the area's native vegetation and

wildlife. During this time, Ojibway people lived at Kay-Nah-Chi-Wah-Nung, thus ensuring the preservation of this unique habitat through conducting yearly burns.

The prairie-oak savannah is nestled between the Long Sault Rapids and the mixed woodlands. It is a globally significant plant community and hosts many of Ontario's rare plants, including oval leaved milkweed, hoary puccoon, and wild licorice. The site is home to hundreds of plant species, 15 that are very rare in Ontario.

Today, preservation of this site is ensured through the stewardship efforts of the Rainy Rivers First Nations. Each spring the prairie is burned to mimic the traditional yearly burns, which facilitates the growth of prairie plants and inhibits the encroachment of invasive species.

## History

Kay-Nah-Chi-Wah-Nung is one of the most significant centres of early habitation and ceremonial burials in Canada; Long Sault has deep cultural and spiritual meaning to indigenous peoples throughout North America. Each year, thousands of visitors to the Historical Centre are accompanied to the prairie-oak savannah communities and burial mounds by tour guides trained in ethnobotany and Ojibway culture and history.

This site was home to a once vibrant continental trading network. Long ago, indigenous people travelled to this site during the spring when trading with the Euro-Canadians flourished. Europeans brought blankets, weapons and their non-native seeds, which are responsible for many of the non-native vegetative species found today at this site.

Each spring, when indigenous people arrived at this culturally significant site, they would burn all the grasses to clear the area in order to build their teepees. Over many years, these yearly spring burns along with the new seed species created a unique habitat, the prairie-oak savannah ecotype.

The historical yearly spring burns have long

ceased. Consequently, invader species, such as aspen trees, have been creeping back onto the site. Additionally, many of the ground vegetation species induced into their reproductive cycles by fire have been dormant.

## Site Conservation Plan

Until the 1800s, mesic prairie vegetation grew extensively along the shores of the Rainy River. The stewardship efforts of native people living at Long Sault preserved the prairie-oak savannah, though farmers have cleared most of this prairie during the past 200 years for agricultural purposes. In order to continue to conserve and restore Long Sault's globally rare prairie as part of their natural and cultural heritage, Rainy River First Nations developed a conservation plan to implement conservation, monitoring and education actions at the site.

Each spring, as soon as the snow melts, Rainy River First Nations conducts a prescribed burn to renew growth of rare prairie plants and keep invasive species away. As fire burns through the prairie, it exposes the mineral soil, allowing new growth of plants. Prairie plants are well adapted to fire, as their growth tissue is located below the topsoil, safe from the effects of a fast-burning fire. Woody plants are set back or destroyed because their growth tissue, located at the upper tip of each plant, is damaged. Weeds, such as reed canary grass, sprout early in the spring and are burned off by spring fires, while native prairie grasses start to grow after the burn.

However, in 2002 it was determined that spring burns alone will not prevent poplar encroachment onto the prairie. The Watershed Program thus developed an expanded site conservation plan that will be implemented from 2003 to 2005. The initial stages of the plan are currently being enacted.

In order to maintain the site as a part of its heritage, at the yearly spring burns Rainy River First Nations uses the traditional knowledge of an elder. Solitary ceremonies are held with the spirits by offering tobacco and replacing a handful of dirt of a burial mound that has been desecrated by private businesses.



**Contact:**  
parkerma@cnc.bc.ca  
www.kaynahchiwahnung.com  
www.rainyriver.firstnation.ca

# Forest Fireman

Professor Johann Goldammer is a specialist in the ecology and management of fire at Freiburg University, Germany. He co-ordinates the Global Wildland Fire Network and the United Nations International Strategy for Disaster Reduction (UNISDR) Wildland Fire Advisory Group, a high-level advisory body to the UN system in questions related to wildland fires. In 1998 he established the Global Fire Monitoring Center (GFMC)<sup>1</sup>.

Johann G. Goldammer  
World Fire Monitoring Centre,  
Freiburg, Germany



Photo: Johann Goldammer

## What is the GFMC?

The GFMC is an interface institution between wildland fire science, the fire management community and policy makers, working to enhance international co-operation in wildland fire science, management, training and sharing of knowledge and resources.

We have partners in all boreal countries. Our Canadian partners are very experienced leaders in the development of wildland fire early warning systems. For boreal Eurasia the Canadian Forest Service has developed the Eurasian Experimental Fire Weather Information System that is displayed in 2-day intervals on our early warning website<sup>2</sup>.

We also work with people from Nordic countries, notably Finland, particularly on re-introducing prescribed fire in nature conservation, forestry and landscape management. This work is conducted under the European Fire in Nature Conservation Network (EFNCN), which aims to restore historic cultural burning practices that have positive effects on biodiversity, ecosystem productivity and stability.

Back in the early 1990s we recognised that wildland fire science and management in Russia and the states of the Former Soviet Union (FSU) was lagging behind approaches in western boreal countries. During the Soviet era fire had been considered as an enemy and was fought with all possible resources, despite natural fire having shaped the ecosystems and their functioning for millennia. Also, the use of remote sensing was not accepted as a tool for monitoring forest fires. Recently, this situation has changed.

## Is fire a natural part of the boreal forest ecosystem or is it destructive?

The boreal forest zone is a circum-global lightning-fire belt. Both natural and human-made fires are important for the whole functioning and life cycle of a boreal forest.

In Alaska and Canada very intense fires in pine, spruce and fir stands 'recycle' the forests: so-called stand-replacement fires occurring at the end of the life cycle of a mature or overmature North American boreal forest allow the regeneration of the stand and the start of succession towards a new forest.

The situation in Eurasia, notably in Siberia, is quite different. Pine and larch forests are regularly affected by low-intensity lightning fires that occur under moderate weather conditions every 10–20 years, consuming dead organic debris on the forest floor. Pines and larches are quite resistant against such moderate surface fires: their thick bark protects them against lethal heat. By reducing the fuel loads these fires often result in relatively open stands that are less susceptible to high-intensity fires simply because an uncontrolled wildfire will find less material to burn. The open and sometimes park-like coniferous forests of the 'light taiga' provide valuable habitats for wildlife and plants, and they are economically of high value.

It is clear that high-intensity fires that scar trees or sometimes even consume tree stems reduce the value of timber. So, in areas of intensively managed and utilised forests fire may cause economic damage. And here we have a conflict.

## Is the rate, scale or nature of fire (fire regime) changing in the boreal region?

There are dramatic changes of fire regimes in the whole boreal zone and the adjoining hemiboreal lands. The changes are driven by human activities, but in some regions also by the consequences of climate change. In southern-central Russia or in northern Mongolia, for example, increasing fire pressure is associated with economic weakness: the consequences of inappropriate forest management, reduced budgets for forest protection activities and economically motivated arson have brought an increase of destructive fires to these regions. This coincides with a trend of increasing regional aridity. For instance, we collected rainfall data in the Trans-Baikal region for the season preceding the extreme fire year 2003. Between August 2002 and May 2003, the total rainfall recorded in two stations in Buryatia Republic and Chita Oblast was 36.0 mm and 45.7 mm, respectively. The evaluation of vegetation health by satellite sensors confirmed this drought and the trend of increasing aridity in the Eurasian temperate-boreal belt between Europe and east Asia.

Extreme fires burned between May and September of 2003, leaving behind a total burned area of more than 20 million ha in the region around Lake Baikal. Many of these were fires in the so-called 'grass forests', which under normal conditions do not harm



Photo: Johann Goldammer



**Contact:**

johann.goldammer@fire.uni-freiburg.de

**Notes:**

1 [www.fire.uni-freiburg.de/](http://www.fire.uni-freiburg.de/) or [www.gfmc.org](http://www.gfmc.org)

2 [www.fire.uni-freiburg.de/fwf/eurasia.htm](http://www.fire.uni-freiburg.de/fwf/eurasia.htm)

3 [www.fire.uni-freiburg.de/GlobalNetworks/globalNet.html](http://www.fire.uni-freiburg.de/GlobalNetworks/globalNet.html)

[www.unisdr.org/eng/task%20force/tf-working-groups4-eng.htm](http://www.unisdr.org/eng/task%20force/tf-working-groups4-eng.htm)

the trees at all. But in 2003 the fire severity was extreme: the fires burned the humus layers and affected the roots. We have confirmed this in two expeditions in 2003 and 2005.

Another aggravating factor of the wildland fire theatre in the region around Lake Baikal, especially in Buryatia and Chita, is the increase of arson fires. The underlying causes for arson fires are deeply rooted in the economic development of south-east Russia, Mongolia and neighbouring China. The depletion of China's forest resources and the increasing demand for timber products on the market in China have created an enormous pressure on the forest resources of Mongolia and the Russian Federation. Local people in the region informed the GFMC that Chinese timber dealers have encouraged or bribed locals in the Russian Federation and in Mongolia to set fires to forests in order to increase the permissible salvage logging areas and thus increase the timber export to China.

### What questions remain unresolved about fire in the boreal region?

Collectively we are facing global change as a consequence of climate fluctuations, both natural and human-induced, and fire is playing a determinant role in that process, for instance accelerating the transition from forest to non-forest cover. We need to make a decision whether we wish to accept an accelerated 'steppisation' in Eurasia (i.e. the replacement of forests by steppes) or, alternatively, whether we could halt this development by appropriate fire management and maintain a forest cover that would offer a high carrying capacity for humans, biodiversity and carbon.

The new Canadian forest fire management strategy, which is currently in preparation, is carefully looking at the impacts of climate change and the fire management policy needed to respond to these changes. The Canadians do not intend to suppress those fires that will be an expression of changing climate, vegetation composition and fire regimes. Trying to halt stand replacement fires in boreal North America does not make sense: the process of change is so powerful and irreversible it cannot be stopped or redirected.

### What are the biggest fire-related problems just now in Eurasia?

The biggest challenge is the development of human and technical capacities in fire management in Eurasia. The period of transition from centrally planned to market-based economies of the FSU countries in the 1990s and early 2000s has substantially weakened the formerly strong centralised system of forest management and conservation, including their fire management system, and their ability to respond to these requests. How do we apply advanced fire management knowledge in countries suffering extreme problems related to these socio-economic and political changes?

The situation in central Asia, including the hemiboreal forests of northern China, northern Mongolia and southern Russia, is suffering all the extremes of global change. This is one part of the Eurasian problem.

The other problem zones are quite outside public awareness: the wetlands and peatlands of Eurasia. In these ecosystems we have a rich biodiversity and the largest terrestrial carbon stores of the world. Whereas the peatlands in the tropical regions are primarily threatened by drainage and systematic conversion with the help of fire, the situation in the uninhabited regions

of the boreal zone is quite different. Here we will see the interactions between desiccating wetlands and wildfires which may lead, long term, to the triggering of the 'terrestrial carbon bomb'.

The melting of permafrost sites as a consequence of regional warming will also result in change to forest cover and fire regimes in central Asia. For example, the continental larch forests of Yakutia are extremely threatened. Carbon will be released by fire and will not be sequestered by this ecosystem because of irreversible changes from forest to steppe. In addition the 'palaeogases' trapped in the permafrost ice will be released and add a new pulse of greenhouse gases to the global atmosphere.

Finally, problems remain of radioactively contaminated forests and other vegetation in Eurasia. Remnants of nuclear weapons tests and nuclear accidents wait in the form of radionuclides in the organic layers of contaminated regions. Wildfires lead to a lifting of these radionuclides. Their redistribution is by chance: the wind direction and convective activity on the day of the fire. These are all high and unacceptable risks that we need to be aware of.

### Do government policies need to change?

The Russian Federation is now undergoing a dramatic reform, at least on paper, and prescribed fire as an integrated forest and wildland fire management tool has been recognised. However, in the near future there are almost no human, technical and financial capabilities to change practice substantially. The Russian government is refusing to provide sufficient funding for forest fire suppression and the amount of large fires is on the rise. One may say this is a result of a new 'let burn policy' based on ecological considerations, but the reality is that this is simply the effect of insufficient financial support for fire management.

### Can NGOs or local communities help?

The need for action in boreal Eurasia to reduce the risk of destructive fires is present at all levels. The majority of fires in Eurasia are caused by people, and so the most important need is fire prevention. Everybody must be included, from the youngest to the oldest, from civil society to those who have a responsibility in the government. NGOs will be crucially important. We have seen this in south-east Asia, for instance in Indonesia, where in the process of democratisation civil society is standing up and taking responsibility. This will also be the case in the FSU countries, I am quite confident.

International organisations and financial institutions will be involved too. Support of the World Bank and the Global Environment Facility in a fire management project in the Amur-Sikhote-Alin Ecoregion in the Russian Far East is a first encouraging example.

On our side we are working through the Global Wildland Fire Network (GWFN), which is coordinated by the GFMC as a UNISDR programme<sup>3</sup>. We are establishing three regional Wildland Fire Networks (Baltic, central Asia and northeast Asia) in which boreal countries participate, aiming to enhance international co-operation in wildland fire management between neighbouring countries, sharing human resources, knowledge and fire management technologies, and assisting each other in large fire disaster and emergency situations.

So, we can do a lot!



# Fire-Fighting Female!

A Toronto-born woman tells how she got a taste for life on the frontline of boreal forest fires.

Patricia Burley  
Canada

City girl fighting forest fires in the back woods, no way? Yes! Anyone can do it who likes the outdoors, wants a good challenge and is in good physical condition. How can you go wrong with a job that pays you to go camping? You work outside cutting trees on beautiful days (most days) with lakes all around you (sometimes swamps) and many of the people you work with become friends who are as close as family. You get to travel across Canada and sometimes the USA, where you see how amazing Mother Nature can be when it is dry outside and something sparks the earth to start a blaze. This job is seasonal, so you work hard in the summer and get the winters off to do whatever your heart desires, perhaps down-hill skiing. If you love all of the above, then forest fire fighting might be the career for you!

Growing up in Toronto, Ontario, Canada, I always felt there was something lacking in my lifestyle: trees! I love trees, forests and everything else about nature's beauty. I knew at a young age I wanted to get out of city life. So when I turned 18 I moved away from home to the small town of Lindsay to enroll in a college forestry programme. Did my life change! I found my love: not a man, but the environment and the outdoors. I planted trees for a summer, which was an excruciating job, but that one summer was enough for me! It challenged my mental and physical capabilities more than I thought possible. Back in school some of my friends were taking a forest fire-fighting course that sounded very interesting, so I enrolled and soon found that I absolutely loved it. I was hired that next summer in North Western Ontario, a 21-hour drive from Toronto. What was I getting myself into?

Five years later, I am still working at the same fire base. I am now a crew leader in charge of three men. I work as an Initial Attack Fire Ranger, where we use helicopters, trucks and boats as our transportation to a water source. Once at the water source we set up our fire pumps and lay out hose to the fire and then nozzle the fire out. We could be working on a fire for anywhere from one day or up to 19 days straight. We live in all weather conditions in the bush until that fire is dead.

Fires can be started by lightning or by careless people (camp fires, cigarettes, etc.). This is why it is so important to remember, as Smoky Bear says, 'Only you can prevent forest fires'!

Working in this field is sometimes difficult being a woman. I will never be as strong as most men, so I have to pull my weight a little extra at times. It does not really matter how big or small you are, it is about how smart you are and how you use your head when you are working in the bush. Safety always comes first with this job, and with this principle I can honestly say that my life has never been endangered from this line of work. Usually when people do get hurt, it is because of their own mistakes.

Everyone working in this position has to take a test to make sure they are physically capable of the job. Yet while physical fitness is one of the most

important parts of the job, of equal importance is a person's emotional stability, social skills and ability to work in a team. We always need to remember that it is only trees that are burning and that this a natural process. Personal safety and the safety of the crew always comes first.

In northwestern Ontario there is a vast difference in landscapes and terrain, ranging from the Canadian Shield to boreal forests and from mixed wood to tundra. Where I work, forests mostly contain conifer mixes, which burn better than deciduous trees. Ontario is rich with fresh water lakes. In some areas it is only a 5-minute drive from one lake to the next as many are connected, which is very handy for the forest fire fighters because water is the easiest way to put fires out.

As each season comes and goes I anticipate what new adventure might come out and grab me. Being a transient individual really gets tiring after a while, but I still get excited for the winter powder snow, which I ski every winter, and appreciate every moment of it, knowing how lucky I am to live this free lifestyle.

Being a forest fire fighter has grown on me. I have made some of the best friends, people that I will never lose touch with. Special bonds seem to grow between people who are in this job. No one else seems to understand why we do this tedious work.

Fire has taught me many life lessons. I never take family for granted. I appreciate little things like hot showers and warm meals. Many of my senses have become more acute during my years in fire fighting. I readily smell smoky hot spots. My hearing is sensitive because of all the helicopter and radio activity. My taste buds now crave meat even though I was a vegetarian for six years. Yes, fire fighting has definitely changed me: no more city life for this girl!



Contact:  
trisherssrehsirt@yahoo.com



# Watching Fires from Space

Tom Stone  
Woods Hole  
Research  
Center, USA

The use of satellites enables monitoring of the location, timing and duration of fires in the boreal forests, with a consistency of approach across many countries. This is crucial for researchers trying to determine the climate change impacts of climate stores lost to forest fires.

Fires are common in boreal forests and it is axiomatic that the patterns of boreal forests are controlled by fire. In contrast, temperate forests are controlled more by tree falls, insects and storm damage. Fire, its location and severity, is perhaps the largest determinant of vegetation development in the boreal forest. Fires and the resultant patterns they impose on boreal forests are, in general, easily seen by satellites.

The first imaging satellite, Landsat, was launched in 1972 and there have been newer versions of the satellite in orbit continuously ever since then, providing coverage of the entire globe. Landsat images or 'sees' primarily in the visible and near infrared parts of the light spectrum. As the satellite resolution is around 30m, canopies rather than individual trees are imaged.

Newer satellites, such as the North American Space Agency (NASA) MODIS satellite, acquire imagery in the thermal part of the spectrum as well (but at lower spatial resolution) and are therefore ideal for mapping active forest fires and other thermal hot spots. The MODIS satellite is specifically designed to monitor fire on a daily basis. MODIS sensors have a field of view of 2330 km and orbit the Earth several times a day. The combination of having two MODIS sensors in orbit allows the detection of fire activity across the globe four times each day.

Weather satellites, sensitive to heat so that they can measure cloud temperatures, have been excellent monitors of fire locations and change. Their frequent coverage allows rapid updating of the fire location and size. Coverage, however, is limited in areas of heavy clouds but as the satellite can acquire a new image every day, the location, size and progress of larger fires can be followed through time. Global databases of fire are being constructed based on the different types of satellite imagery that are available and can be used to supplement national level surveys and provide a time series of changes in a region or over a continent.

Although fire location, size and change can be defined, it is much more difficult to define fire intensity. Fire intensity is important as severe fires are stand-replacing, and the severity of the fire determines whether the majority of the carbon from trees is lost as carbon dioxide or as carbon monoxide. Also, the type of ground cover being burned cannot be determined

very well so in some cases a grassland or tundra fire and a forest fire might be confused. Consequently, it is difficult to define how damaging a fire is and this may be better defined by fieldwork.

Historically, monitoring of fires in the boreal zone by different countries was limited by resources and there was little consistency in approaches. For instance, in some countries there were incentives to under-report the area and number of fires. Using satellites, although not perfect, provides consistent estimates from country to country and over time.

Monitoring boreal forest fires is very important to help us understand the global carbon cycle and the effects of climate change, especially when we consider that about 25% of all global terrestrial carbon is in the Russian boreal forests.

Global warming will probably be most pronounced in the high latitudes and if it both warms and gets drier, we can expect to see the cycle of boreal forest fires intensify. Fires that may have re-occurred in the past on a 100–150 year cycle may occur much more frequently in the future, preventing forests growing to maturity. If this happens, there will be a positive feedback to the increase in greenhouse gases that will only make matters worse. Recent research shows that boreal forest fires are, indeed, increasing in frequency.

Similarly, if the climate of the boreal forests warms, it might encourage insect infestations that will decimate forests and make them more prone to fires. Satellite data can also see the effects of these major insect infestations.

In summary, the use of satellites for monitoring forest fires has removed much of the guesswork and the reliance on national government agencies for data, and enabled useful and up to date information to be obtained on the location and frequency of all types of wildfires globally. However, fieldwork or other data are still required to define the type of ecosystem burned and the intensity of the fire. As we enter an era when the climate is changing rapidly, satellite data from many different countries and agencies will allow us to monitor not only the location, timing and duration of fires but also to follow the recovery of the vegetation on the site after the fire.

## Resources:

Web Fire Mapper from the University of Maryland:  
[maps.geog.umd.edu/maps.asp](http://maps.geog.umd.edu/maps.asp)

NASA's Earth Observatory:  
[earthobservatory.nasa.gov](http://earthobservatory.nasa.gov)

NOAA Fire Events:  
[www.osei.noaa.gov/Events/Fires](http://www.osei.noaa.gov/Events/Fires)

American Boreal Forests:  
[www.whrc.org/borealamerica/role\\_of\\_fire.htm](http://www.whrc.org/borealamerica/role_of_fire.htm)

Contact:  
[tstone@whrc.org](mailto:tstone@whrc.org)



# Traditional Knowledge

The Sámi people have a rich traditional knowledge of fire and fire-making, which includes detailed understanding of the ecology of the plants that they have used as fuel for generations.

Yngve Ryd  
Sweden

The Sámi people in the north of Scandinavia have a thorough knowledge of fire-making. They were nomads and moved with their reindeer herds. They seldom had permanent housing, living instead in tents. Being always on the move, they had no stores of chopped and dry firewood. They had to make a fire with whatever was available where they camped. That usually meant cutting down standing living trees, and using the raw wood immediately.

In Scandinavia it is birch (*betula* species) that grows at the highest level up to the tree-line in the mountains, not conifer trees as in most of the arctic area. When birch dies it does not dry out, instead it decays under its waterproof bark. This kind of rotten wood is possible as firewood, but not used very much. Instead, freshly cut birch is a superior fuel for everyday use in the tent. Despite being fresh and damp, it burns well, if only you know how to light it.

Above the birch forests you find willow bushes (*Salix* species), called *siergga* in the Sámi language. When willow shrubs die they dry out. The dry twigs are excellent for lighting a fire, but there is never very much of it in one place. Instead there is plenty of live willow, and it resembles raw birch: even damp it burns well, and the embers stay alive and glowing for many hours, while coals from dry wood die out faster.

Raw willow bushes are such good fuel that in nomadic times some families stayed in the high mountains the whole winter, living in tents and warming themselves and cooking with nothing else.

Reindeer herders sometimes slept out in the open even in winter. They made a big fire of willow, and when the fire had gone out they spread a thick layer of twigs over the embers, and then slept on this heated twig bed. There are many rules regarding what kind of twigs you should use, how to cut them and how to distribute them on the coal. Mistakes will set fire to the twigs and the sleeping men will get burned. As an old reindeer herder says: 'Inexperienced people must not try to sleep on coal, they will surely burn'.

Higher up in the mountains where the willow is rare there is dwarf birch (*Betula nana*) or *skierre*. It is used as summer fuel in the tents, and for little coffee-making fires outdoors. The slender twigs are burned fresh with their green leaves, and they burn quickly. A fire of thin *skierre* twigs gets hot enough for baking bread, but does not last long.

In the mountains Juniper bushes (*Juniperus* species; *gaskas*), grow crooked and curved, and their needles whirl around in the air when lit, therefore juniper wood is seldom used. Still it has one very important property, so important that reindeer herders sometimes call juniper 'life saver of the mountains'. When a juniper has died and dried out, the wood is harder than any other. Even in very heavy rain it does not absorb water. No matter how terrible the weather is, it is always possible to get a fire going if you can find old juniper.

Freshly picked crowberry, (*Empetrum nigrum*; *dangás* in Sámi), *Phyllodoce caerulea* (*vuorkkodangás*), and even *Lycopodium* (*ruvdarássi*) are also used for fire, usually in fine summer weather. When the sun is hot, reindeer move up on to snowfields high above the tree-line and for the herders following them these small shrubs are the only firewood available.

A reindeer herder always carries birch bark in his backpack to light his fire with. The precious strips of bark must not be squandered; in the mountains the next birch might be a very long way off. In the summer you might find dry wood to light up with. But in winter it is much harder, as almost every twig is hidden under snow. Surprisingly though, it is actually possible to light a fire out of live, raw willow, even with no dry material at all to help out. Matches and a razor sharp knife are necessary, however. You take a fresh willow branch and slice a number of paper-thin strips, piling them into a little, lofty heap. Put two or three matches to it carefully, and it ignites.

In pine and spruce forests it is easy to make fire, as there is plenty of dry wood about. When pine (*Pinus sylvestris*) dies it gets dry, and the trunk remains standing for decades, until it finally falls to the ground. The standing dry pine, *soarvve*, is used in different ways. When sleeping outdoors in temperatures of  $-20^{\circ}\text{C}$  or  $-30^{\circ}\text{C}$ , the reindeer herders made a special fire of two *soarvve* logs. One was laid on the ground, and the other parallel upon it. Different kinds of supports were used to prop up the upper log and prevent it from rolling off. The small flames, not more than on a candle, still generate a lot of heat. Such a double log fire, a *nuorssjo*, burned all night.

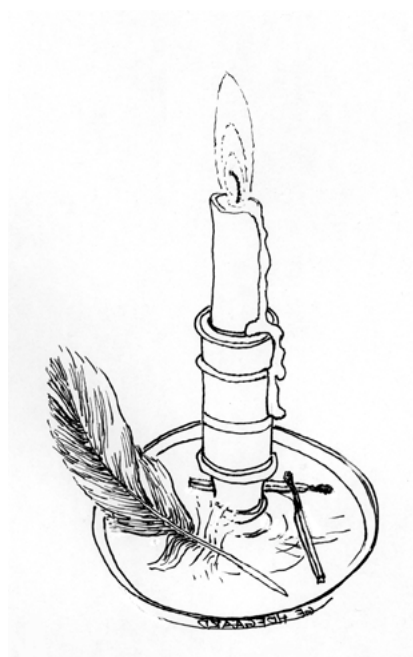
Dry spruce wood (*Picea abies*; Sámi *luorkoj*), is unsuitable for open fires, because it generates a lot of sparks that fly around. When the spruce has decayed, however, and is rotten through, you have useful firewood that will glow and burn softly without making sparks. Therefore it was used for night-fires in the tent.

Smoke from fires has many uses, for instance as protection against mosquitoes. Bigger animals can also be scared off by smoke. In the old days reindeer herders picked leaves of Angelica (*Angelica archangelica*) and smoked them in a pipe to protect the reindeer from hungry wolves. Angelica has two different forms; one is tall with a stem of one metre or more, Sámi *bosku*. This form is edible and well known as a Sami household vegetable. The low-growing form without the long stem is called *vádnu*. It has an acrid taste, and its leaves are smoked in the foul-smelling wolf-scaring pipe.

In a recent book by Yngve Ryd the Sami expertise of fire-making is revealed in fascinating detail, with excellent colour photos making it possible even for those who do not read Swedish to follow the processes and to understand something of these ancient skills.

The author and publisher are looking for a partner to publish the book in English.

*Eld Flammor och glöd – samisk eldkonst.*  
Yngve Ryd, Natur och Kultur, Stockholm, Sweden. 430 pages. ISBN 91-27-10750-7.



Contact:  
[www.nok.se](http://www.nok.se)



# The Cleansing Fire

Mandy Haggith  
worldforests,  
Scotland

The ultimate spiritual taiga forest experience is a traditional Russian banya ceremony led by a master in the art, followed by toasts to friendship and the forest.



...Unencumbered by clothes or tools, two small animals under the shelter of stars, they are reborn into the taiga...

Picture a hunter's camp deep in the Ussuri taiga. After the brief heat of the summer, frosts are already crisping the leaves, and the sky is clear and bright above the clearing where a handful of huts cluster: a cooking shed, three sleeping cabins, the compost toilet and, most important of all, the banya.

It is late September, the broadleaf trees are in full autumn colours, vine leaves shout red up aspen trunks crowned with fluttering gold coinage. The sticky green cones of the Korean pines are stuffed with succulent nuts and the forest understorey is jewelled with rosehips, redcurrants and wild kiwi fruits. Here in the Russian Far East, the most southerly reach of the vast boreal forest, home to Siberian tiger and Amur leopard and both European brown and Asiatic black bears, the vegetation is a diverse mixture of northern conifers, temperate broadleaves and fruits that evoke the subtropics. This is a forest to die for.

Up the wooden steps into the banya, there is an inviting warm room, hung with clothes, towels, and accoutrements for washing. Here you can pause, chat, sip some beer.

A door leads into the inner sanctum, where a ceremony is taking place. The fire in the iron stove is blistering hot. Water has been thrown onto it so steam fills the room. A faint light seeps through cracks between the thick plank walls.

In the semi-dark, two people lie naked on the highest level of a wooden staging, one man and one woman. The Banya Master has chosen this couple for special treatment. With his long black beard and hair, wet and sleek, and his dark eyes shining, he is transformed. Activist by day, at home in the forest and lobbying in the corridors of UN intergovernmental meetings, this night he returns to his ancestral Siberian tradition. He is a shaman.

With both hands he brushes bundles of wilting oak stems over the bodies of the couple. They are moist, soft, gently abrasive, scented like the heart of the forest. Under their rhythmic, pattering massage, it is impossible for any muscles of the back or legs to remain tense. The leaves waft the couple into total relaxation, and with his rich Russian intonation, the shaman talks to them about reconnection, nature, soul. The ritual will heighten their love, he says, strengthen their bonds to one another and to earth. The heat sears their minds clean.

Slowly, gently, he leads them outside, instructs them to step off the wooden pathway onto the forest floor, to stand barefoot on the soil. In the clear sky above them the moon is full, a silver disc, shinier than they have ever seen. Taking a bucket of shriekingly cold water, he empties it over the their heads, one by one, explaining that the chakra on the top of the head will open their spirit to connect to them to Mother Earth. They gasp and smile. They have never felt so open, so close to each other. Unencumbered by clothes or tools, two small animals under the shelter of stars, they are reborn into the taiga.

Three times the shaman takes them into the steamy womb room, and three times he brings them out to dowse them, like a spiritual midwife bringing forth children. And like children, all those who experience his ceremony this night emerge innocent, wide-eyed, full of wonder at the beauty of the forest and the sky.

They drink and eat and laugh together long into the night. The vodka is strong, fortified by a root related to ginseng. One of the hunters relates stories of being helped in his hunting by a Siberian tigress. Anton, a motherless brown bear cub who has been adopted by the hunters, eats water melon and tales are told about previous bears befriended who return to the camp to see their comrades (and maybe raid the kasha barrel) from time to time. There are toasts to friends, the taiga, the banya, and to peace. This night's forest fire is one we will always remember.

Thank you Andrei, Anatoly, Fyodor, Arkady, Pavel, Luba and all our other Russian friends too numerous to name. Thank you for the healing wisdom of your forests that you have shared with us. We will be forever grateful and continue to do whatever we can to try to help you to save the precious far eastern taiga.

**Contact:**  
hag@worldforests.org

# ACT NOW!

## Support Grassy Narrows' fight to save their forest

Three years on the longest-lasting logging blockade in Canada will be marked on 5 December 2005 by the people of Grassy Narrows First Nation, near Kenora, Ontario. Now the logging must stop.

A new report by Canadian Parks and Wildlife Society's (CPAWS) Wildlands League documents the harm being caused by unsustainable logging in the Whiskey Jack Forest under licence to Abitibi Consolidated. The report investigates the results of the company's government-approved logging practices and finds that the amount of wood that Abitibi is cutting is causing extensive damage to the forest ecosystem.

'We've found evidence that these logging levels are too high and we know they cannot be sustained', said Chris Henschel, lead author of the report. The people of Grassy Narrows know this all too well, and hence they have been blockading logging roads into the Whiskey Jack Forest for the past 3 years.

The report highlights the long-standing concerns of the First Nation, that industrial forest management in their traditional territory is adversely affecting their livelihoods, impinging on their constitutionally protected aboriginal and treaty rights, and affecting the health of fish and wildlife populations on which the community depends.

### ACT NOW in support of Grassy Narrows First Nation

Send an email to the First Nation (email [fobister@voyageur.ca](mailto:fobister@voyageur.ca)) telling them that you support their blockade

Send an email to the Ontario Premiere, Dalton McGuinty (email [Dalton.McGuinty@premiere.gov.on.ca](mailto:Dalton.McGuinty@premiere.gov.on.ca)), asking him to listen to the people of Grassy Narrows First Nation, heed the conclusions of the CPAWS report and stop the clearcutting of the Whiskey Jack Forest.



#### Contact:

[fobister@voyageur.ca](mailto:fobister@voyageur.ca)  
[www.wildlandsleague.org](http://www.wildlandsleague.org)

## Subscribe to *Taiga News*

*Taiga News* is the only newsletter available focusing solely on the boreal forest and its people and issues related to them. We hope that you are able to support it by subscribing. You will be sent 4 issues per year. Please pay the subscription fee and fill out the form below.

Return this form to: Taiga Rescue Network, Box 116, 96223 Jokkmokk, Sweden

Name \_\_\_\_\_ Organisation \_\_\_\_\_  
Address \_\_\_\_\_  
City and Postal Code \_\_\_\_\_ Country \_\_\_\_\_  
Telephone \_\_\_\_\_ Email \_\_\_\_\_  
WWW \_\_\_\_\_ Date \_\_\_\_\_

#### Subscription Rate (please circle)

	1 year	2 years*
NGO/Individual	US\$25 / •22 _____	US\$40 / •35 _____
Industry/Government	US\$55 / •48 _____	US\$100 / •88 _____
Additional donation	US\$/• _____	
<b>Total to TRN</b>	<b>US\$/• _____</b>	

#### How to pay:

1. SEND CASH!!  
(to avoid the US\$10 bank/postal fees)

2. Pay bank transfer to Sparbanken Nord  
Box 9, 962 21  
Jokkmokk, Sweden  
Bank ID:8264-4,  
Account no:103.017.399-9  
swift ID: SWEDSESS

*Note: If you pay by post or bank transfer, please add US\$10 / •9 to cover bank fees. Be aware that your bank will probably also take a fee.*

#### Publisher

Taiga Rescue Network (TRN),  
Box 116, Ajtte,  
S-962 23, Jokkmokk, Sweden  
Tel: +46 971 17039  
Fax: +46 971 12057  
Email: [info@taigarescue.org](mailto:info@taigarescue.org)  
Website: [www.taigarescue.org](http://www.taigarescue.org)

#### Editor

Mandy Haggith  
95 Achmelvich, Lochinver  
IV27 4JB,  
Scotland  
Tel: +44 1571 844020  
Email:  
[taiganews@taigarescue.org](mailto:taiganews@taigarescue.org)

#### Illustrator

Gun Hofgaard,  
[gun.hofgaard@snf.se](mailto:gun.hofgaard@snf.se)  
Tel: +46 971 38063  
*Printer*  
A4 Design and Print,  
Inverness, Scotland  
Tel: +44 1463 220287

#### Paper

Repeat paper,  
Inveresk Graphic  
Papers, made from  
100% post-  
consumer waste,  
accredited by NAPM,  
Eugropa and ISO.

Publication financed by the European Commission and the Finnish Ministry of the Environment. Authors are responsible for their own articles. Permission is granted to reproduce text providing credit is given.