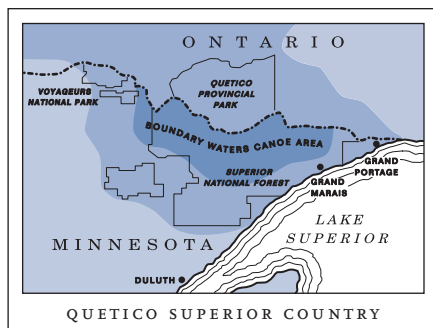


# Wilderness News

FROM THE QUETICO SUPERIOR FOUNDATION SUMMER 2008



The Quetico Superior Foundation, established in 1946, encourages and supports the protection of the ecological, cultural and historical resources of the Quetico Superior region.

*"In traveling great rivers and lakes, there are times when islands fade, hills and headlands recede, the water merging with the sky in a distant mirage of shimmering blue. These are the open horizons of the far north....Life itself is a series of open horizons, with one no sooner completed than another looms ahead. Some are traversed swiftly while others extend so far into the future one cannot predict their end. Penetrations into the unknown, they will give meaning to what has gone before and courage for what is to come. More than physical features, they are horizons of mind and spirit and when one looks backward, we find they have blended into the grand panorama of our lives."*

Excerpt from *Open Horizons*  
by Sigurd F. Olson



## Wilderness News

Published by the Quetico Superior Foundation  
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Jack pines and moonrise over Gneiss Lake, Boundary Waters Canoe Area Wilderness.

© Layne Kennedy 2008

## Transformation of a Landscape

### What Global Warming Could Mean for the Boundary Waters

By Alissa Johnson, Wilderness News Contributor

**Mention canoe country to any canoeist familiar with the Quetico Superior region, and an array of sights, sounds and smells spring to mind: the bow of a canoe cutting across a calm northern lake; the jagged relief of pine trees silhouetted against an evening sky; the curled bark of a birch tree; the aroma of pine duff warming in the summer sun. Even the most subtle nuances of the boreal landscape conjure emotional stirrings so deep it would be nearly impossible for many canoeists to imagine their canoe against the backdrop of a deciduous maple forest. Yet according to Dr. Lee Frelich, Research Associate and Director of the University of Minnesota Center for Hardwood Ecology, unchecked global warming could transform the boreal forest of Minnesota into just that. Or possibly, even, an oak savanna.**

It's hard to make a statement like that without gaining the sudden attention of every canoeing enthusiast in the region. The 1999 blowdown and the more recent Cavity and Ham Lake Fires have already created high profile change in the Boundary Waters Canoe Area Wilderness and surrounding

areas. Adding a more ominous threat in the form of global warming certainly heightens the discussion. Frelich would likely argue that it is not a separate conversation. All of it – the storm, the fires, an already changing forest – is deeply intertwined with global warming.

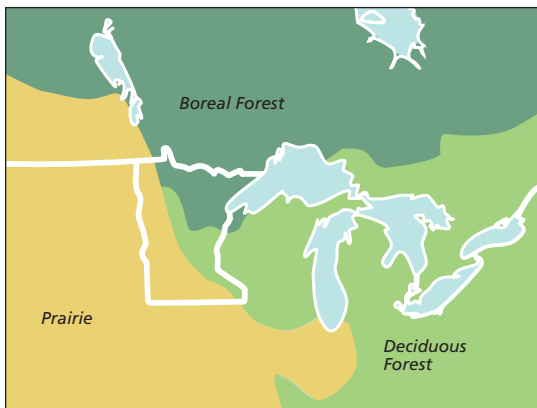
According to Lee it's a common misperception to simplify the effects of global warming by blaming them solely on rising temperatures. In reality, increased temperatures are not going to directly cause the coniferous forest to die out and a deciduous forest to spring up in its place. Take, for example, the jack pine so common across the BWCAW. The species has populated the forest for thousands of years, and in so doing has tolerated the coldest winter temperatures and the hottest summer days. As Frelich puts it, even the tiniest twig on a tree isn't all that affected by temperature.

It's more appropriate to think about global warming in terms of the changes it creates in overall weather patterns, impacting conditions like temperature, precipitation, or storm activity. Changes in weather patterns can have big effects. Insects, bacteria or fungi might thrive where they were once absent, a factor capable of wiping out entire coniferous forests as the Mountain Pine Beetle has done in the west. Decreased moisture levels can lead to increased droughts that interfere with a tree's ability to deal with stress. Trees under duress shut down secondary functions that aren't critical to survival, like the production of compounds that make them unpalatable to insects.

*continued on page 2*

**Other changes in weather patterns can result in more days with high dew points, which in turn can result in more frequent severe storms. It only takes the severity of the blowdown to demonstrate the significance that could have for the landscape.**

Each of these factors alone can have major consequences for any forest. But in the context of global warming, few changes happen in isolation; taken together, the potential for change only multiplies. Add to that the context of the Quetico Superior region, and they start to take on even greater significance. Canoe country is located on the southern edge of the boreal forest. The edge of any forest is prone to fluctuation as natural changes in climate conditions favor the species of one landscape and allow them to gradually take over those of the neighboring forest.



In Minnesota, the southern edge of the boreal forest yields to a deciduous forest that grows diagonally across that state in a narrow band from the northwest to the southeast corner. Below this deciduous forest lies the prairie. This naturally occurring distinction between coniferous forest, deciduous forest and prairie has been fluctuating for thousands of years. The significance? As climate conditions change more rapidly as a result of global warming, the region is inherently susceptible to change.

Frelich, having studied the BWCAW extensively through his work with the University, believes transformation is already underway. While deciduous trees are not unheard of in the BWCAW, a typical hundred-year old maple is stunted, only 15 – 20 feet in height, and bears frost cracks in its bark. In recent years, Frelich has found smooth-barked maples that are already 15 – 20 feet tall at the age of six, suggesting that milder winters are already impacting forest composition.

At the same time, where maples are found Frelich also sees worms. Worms are not native to North America or cold climates, and their invasive presence is an inauspicious harbinger of climate change. They alter the composition of the soil by eating the leaf litter, make it more susceptible to drought and facilitate the spread of invasive species. It remains unclear if maples and worms facilitate each other's spread, yet their presence suggests to Frelich that warming would mean a gradual shift in forest makeup.

However, just as global warming can't be seen only through the lens of temperature increases, these are not the only changes in play in the BWCAW. According to Frelich, the last several summers have seen more days with high dew points, creating conditions that can cause more

frequent and larger storms. The predominant tree species in a boreal forest are not storm resistant. The characteristic tufts at the top of many conifers that make the Boundary Waters tree line so distinctive also make them top heavy. This point becomes especially poignant in light of the 1999 blowdown. A study completed by Frelich's graduate students after the July 4th storm demonstrated that aspen and jack pine are the most likely to blow down, whereas maple, ash and birch are the least likely.

For a forest dominated by jack pine this has significant implications. Jack pine are fire dependent, requiring the heat of a fire to release their seeds every 20 to 150 years. The right fire will leave the jack pine standing but burn the forest understory, creating space and fertile soil for the released seeds to germinate. When fire occurs too frequently cones don't have time to mature. When they don't occur often enough seeds will be too old to germinate. In a landscape where jack pine have been felled by storms, their seeds are consumed by fire and the trees won't regenerate. The Cavity Lake Fire of 2006, which burned a portion of the blowdown, has demonstrated just that. The jack pine are being replaced by birch, aspen and cherry.

This thought may send a collective sigh of relief through the hearts of canoeists, for what other tree could be more symbolic of the north than the paper birch? But all three species are susceptible to drought. With current global warming predictions that the middle of the country will become drier, this does not bode well for the future of northern Minnesota's boreal forest.

**If climate conditions continue to change unabated, Frelich believes they're likely to be replaced by deciduous trees: a hardwood maple forest, or under drier conditions, perhaps even an oak savanna on shallow or sandy soils.**

For Frelich, it all adds up to the veritable "fruit basket" upset. So many factors are in flux that without intervention it's unlikely current forests will remain intact. Still, Frelich remains an optimist. If measures are taken to drastically reduce emissions of greenhouse gases and mitigate the effects of global warming, he believes it's possible for the forests to remain intact. But if no action is taken, changes could happen in the next two to five decades, much faster than a typical forest evolves. Conditions will be ripe for invasive species like buckthorn to beat out the competition. The question will shift from whether the forest will change to whether it can keep up with the climate change and transition gracefully. For Frelich, a "graceful transition," where a deciduous hardwood forest or an oak savanna wins out over invasive species, is the next best thing to keeping the BWCAW intact.

Whatever the outcome, the fate of the Quetico Superior region remains to be seen. Now, as ever, human impact will play a large role in determining that outcome. But talking with Frelich, it's clear the rules have changed. What was once a matter of preservation without human interference now becomes inextricably intertwined with human intervention. □



## Gunflint Green Up Commemorates the Ham Lake Fire

**The day of the Gunflint Green Up dawned bright and cold, with three inches of fresh snow blanketing the ground. Spring snow certainly isn't unheard of in canoe country, but it could have put a damper on the May 3rd tree planting. According to event organizer Nancy Seaton of Hungry Jack Outfitters, the snow seemed to energize participants. Over 450 volunteers descended upon the Gunflint Trail to commemorate the one-year anniversary of the 2007 Ham Lake Fire that burned 75,000 acres of Superior National Forest and Ontario. They came from as far away as the Twin Cities and even Missouri to plant red and white pine seedlings and "green up" the Gunflint Trail.**

The idea to actively regenerate the burned areas originally grew out of conversations among displaced residents and business owners while the Ham Lake Fire still burned. Initial efforts spearheaded by Seaton and others saw more than 200 volunteers plant over 6,000 seedlings that May. It didn't take long for this success to sprout the idea of a second, larger event to mark the fire's one-year anniversary. And according to Seaton, the Gunflint Green Up "had a life of its own" right from the start.

Remarkable cooperation between residents, volunteers, the Gunflint Trail Scenic Byway Committee, the Cook County Events and Visitors Bureau and the USDA Forest Service resulted in what can only be described as a true community partnership. Seedlings were donated by Iron Range Resources and the Quetico Superior Foundation, as well as purchased with sponsorship money. Well-received publicity drew year-round and seasonal residents, local business owners and recreational enthusiasts from out of town. As the day warmed the snow melted, and volunteers planted over 50,000 red and white pine trees on Forest Service land under the guidance of the local Forest Service crew, which provided tools and instruction.

With so many individuals and organizations investing in the future well-being of the forest, the future of the Gunflint Green Up as an annual event is promising. Even as heartfelt thank yous are still being extended to Green Up participants, plans will soon be underway for the 2009 annual Gunflint Green Up. Interested volunteers can expect event information to be posted on the web site, <http://www.gunflint-trail.com/ggu/>, this fall.

# A Perspective on the 100th Anniversary of the Quetico Superior Region

By Rob Kesselring, Wilderness News Contributor

**If the entire human history of North America was compressed into one year, a century would be the equivalent of a single day. Geologic time is even more absurd; a century would be just a blink of an eye. Even so, if the rocks of the Quetico Superior Region could talk they would remark that the last hundred years have been a memorable blink.**

Next year will mark the 100th anniversary of the initial formation of what was to become Quetico Provincial Park and the Boundary Waters Canoe Area Wilderness. In 1909, a jagged process of preservation and restoration began that resulted in a huge, roadless and protected forest in the middle of the North American continent. It has become a treasured spot chosen annually by hundreds of thousands of canoeists, fishermen, skiers, hikers and campers as a site to explore, relax and find adventure. It has become a place where many children get their first taste of life away from video images, concrete and wall-to-wall carpeting. Maybe most importantly, it persists as a sanctuary of biodiversity. The year 2009 will be a year for celebration.

It would be reassuring to believe that this area, so loved, exists as it always has and will continue in its present form to a time without end. A naive canoeist of today might believe that 100 years ago a visionary explorer gasped at the beauty of the region and proclaimed, without objection, that this place be set aside from development and preserved for future generations. That same canoeist might even grumble on a crowded August portage wishing he could step in a time machine and go back 100 years.

If he did go back in time he might be unpleasantly surprised. His portage would be choked with second growth timber and his skyline scarred by burned over slash. Almost all of what is now the BWCAW had been clear-cut by the turn of the century. The woods and swamps would be devoid of moose, which were being relentlessly pursued 12 months a year by hunters hired by the timber camps. Beavers were all but exterminated a century earlier, and the time traveler would discover even in the most remote corners of the park evidence of careless prospecting with picks and shovels. He might have wet feet because waterways were dammed to facilitate the floating of logs. If he was north of the international border he might have been standing in the shade of old-growth timber but not because the Canadians were any more gentle on the earth. Rather, moving logs north out of the Quetico region was more bother than it was worth. The flora and fauna of the region, even the unique mosaic of lakes and interconnected waterways was imperiled. Concepts such as “pristine,” “timeless” and “untouched,” although applied to the Quetico Superior region even to this day, have for well over a hundred years been based more on fantasy than reality.

By a stroke of geologic luck, the iron ore deposits had formed just south of the region and the easily accessible lumber was already stripped from the land, so there was little opposition when 77-year old Minnesota Forestry Commissioner Christopher Andrews convinced the United States government to protect and manage the American side. Ontario citizens appalled by the demise of the moose joined the effort in 1909, creating a unique international partnership, forest-focused on one side, wildlife-focused on the other. It was a rickety start to 100 years of gradually increasing protection, contentious debates and an improving environment. Although he experienced Quetico Superior at its worst, Andrews was the first of many to sense the magic of this land and to find the passion to defend and protect it.

But the permit system, the ban on bottles, even the concepts of conservation and wilderness were not formulated in 1909. The first fifty years in this region saw a rapidly growing tourist industry antithetical to our current definition of wilderness. By 1944, the guest capacity of the sixteen resorts on Basswood Lake exceeded a thousand. There was daily mail service, several

private cabins, double-decker houseboats and widespread use of outboard motors. Boats clogged portages, green trees were chopped down for tent poles and pine boughs were cut for bedding. Empty cans and bottles were strewn about and into the lakes. Wilderness activist and Basswood Lake cabin owner Frank Hubachek counted 38 flights of pontoon-equipped aircraft flying over his cabin on a single day in 1946. In 1951 people were observed water-skiing on Knife Lake. Indiscriminate fish stocking was the norm. Non-endemic fish were introduced and even heralded by staunch wilderness supporter Sigurd Olson. Twenty million fish were stocked in the Superior National Forest in 1936 alone. But gradually, through acquired knowledge and the persistence of dedicated conservationists like Ernest Oberholtzer and conservation organizations on both sides of the border, laws were passed, in-holdings were bought out, and airplanes and outboard motors were restricted. Despite an ever-increasing number of annual visitors, by many measures the quality of the wilderness environment in the Quetico Superior region continued to improve. Yet even these evolving ethics and actions did not come smoothly. As the years went by, attitudes about wilderness and development polarized, often pitting local residents against outside interests.

The passages of the Wilderness Act in 1964 followed by the contentious BWCA Act in 1978 were major steps but not the culmination of wilderness preservation in the Quetico Superior region. This legislation created a philosophical framework around which regulation and policy has grown to create the special level of protection this area receives today.

In Canada, the Quetico Park management plan has been modified to permit First Nations people motorized and airplane access to certain lakes as part of an economic development scheme and to compensate for past injustices. In an effort to reduce the likelihood of the introduction of exotic species to Quetico lakes, in 2008 a regulation goes into effect that would have been unimaginable fifty years ago, banning the use of live bait for fishing.

One hundred years is an important span of time. Maybe because it is as long as a human can optimistically hope to live. Maybe it's because 100 of anything, even sit-ups, seems significant. Whatever the reason, a hundredth anniversary is an opportunity to look back and to plan ahead. Protection, natural regeneration, no trace camping and the evolution of environmental regulations combined with gear advancements have resulted in better-than-ever wilderness experiences in the Quetico Superior region. It has become a premier canoeing destination for paddlers from around the world. While it is impossible to predict what will happen in the next 100 years, it is possible to influence the future. New challenges include: the shifting cultural norms on what wilderness preservation means, invasive species, climate change, homeland security, aboriginal land rights, pollution and increasing human demands for energy, water, raw materials and recreational land use. Will the Echo Trail be replaced with a tram and a bikeway? Will loons disappear? Will caribou come back? Will a casino be built on Lac la Croix? Will portions of the wilderness be set aside for “fair-means” travel prohibiting cell phones, gps, and petrochemicals including nylon and Kevlar? Will axes and campfires be banned? Will picnic tables and Wi-Fi be provided?

The biggest threat to the work accomplished to restore and preserve the Quetico Superior wilderness is complacency. As we celebrate we must also activate, because for certain, the next century holds great promise, great challenge and many changes.

Rob Kesselring is the author of two canoeing books: *Daughter Father Canoe: Coming of Age in the Sub-Arctic*, and the recently released collection: *River Stories*. Rob's web site is <http://www.robkesselring.com>.

## The Heart of the Continent Partnership Hires Bret Hesla as Coordinator

By Rob Kesselring, Wilderness News Contributor

Bret Hesla was hired in April as a part-time coordinator for the Heart of the Continent Partnership. Working out of the Voyageurs National Park Association headquarters in Minneapolis, Hesla will provide structure, support and coordination for the group's overall mission and specific initiatives.

The Heart of the Continent Partnership evolved from a group of 15 citizens and stakeholders that first met in 2004. This group has expanded to represent 23 government agencies and non-profit organizations. All of these groups are concerned with the geographical patchwork of interconnected public and private lands located near the center of the North American continent. The core of this area is bisected by the international border and includes provincial parks, states parks, national parks, national forests, First Nation reserves, crown lands, designated wilderness areas, land trusts, and private holdings. Because the Heart of the Continent ecosystem is an interconnected whole—a mosaic of lakes, forests, and human communities—a region-wide vision is necessary to ensure its sustainability. The landscape is criss-crossed by human-imposed lines: provincial, state, federal, aboriginal and private, and it straddles an international border. These boundaries have historically posed barriers to collaboration among agency land managers. The Heart of the Continent Partnership's goal is to create opportunities for groups to reach across these lines and work together to benefit the lakes, forests, wildlife and people of this ecosystem. Already, cooperative leadership is leading to an increase in knowledge, trust, projects, funding, and effectiveness, which in turn will lead to an increase in the stature and sustainability of the region.

Hiring a coordinator has enhanced and accelerated this process. Bret Hesla has an eclectic background. His formal education includes a Bachelor's degree in Biology and Master's degree from the University of Utah in Plant Ecology. He has worked as a field researcher and a science teacher, and he organized a residential land cooperative in southeast Minnesota where he built his own home out of recycled barn timbers and straw bales. Most recently, he has been working with two disability-related nonprofits on workshop development, publications, long-range planning and grant writing. Yet another of his passions is using participatory singing for social change organizing. All of these experiences seem like the perfect preparation for his role as coordinator. Even his ability to lead a group in song could help. If tempers ever flare at a Heart of the Continent meeting perhaps he can bust out with Woody Guthrie's, "This Land is Your Land." Bret is married and his two children attend Minneapolis public schools. In his free time he is a frequent visitor to the Quetico Superior wilderness.

## Artist in Residence at Quetico Provincial Park

By Rob Kesselring, Wilderness News Contributor

In August of 2007 watercolor artist Geri Schrab spent two weeks living her passion in Quetico Provincial Park as part of the new Artist in Residence program. Schrab was the second artist to participate in the park program, which received assistance from individual members of the Quetico Foundation who made personal contributions. The purpose of the Artist in Residence program is to enhance connections between the park and the public through the medium of art. Artists are provided with a prospector's tent, propane grill, a canoe and the use of a quaint studio that is actually a remodeled old pumphouse overlooking French Lake. They are also granted free and unlimited access to the wilderness for two weeks.

Schrab's home is located in DeForest near Madison, Wisconsin. She has been an avid canoeist in the Quetico Superior wilderness for almost a decade but this program enabled her to focus on her art without being too concerned about the logistics and expenses of living in the wilds. The inspiration for Schrab's art radiates from petroglyphs and pictographs created by aboriginal people worldwide. She considers her art as spiritual work and a respect for the individuals and cultures that created the original art on stone is always paramount for her. Schrab's quest to experience rock carvings and paintings has taken her to sites in seventeen states, Australia and Canada. Her personal mission is to bring the energy and beauty she finds in these sacred places to canvas so that others can experience it for themselves.

The caveat, that artists are required to contribute one piece of art they create during their stay to the park, is one of the reasons superintendent Robin Reilly supports this initiative. Displaying the various forms of art created by the Artist in Residence Program will enable those who do not venture deep into the park wilderness, to better understand and appreciate its splendor and history. Schrab's gift to the park (pictured above) was inspired by many different pictographs and the feeling of personal discovery canoeists experience as they paddle from lake to lake, far from the trappings of the twenty-first century, and encounter these timeless images.

One of the most powerful memories of Schrab's two weeks in Quetico occurred on a particularly calm day on Lac la Croix. Accompanied by her husband, they glided in silence beneath towering cliffs scrutinizing the delicate ochre images on the rock walls. Something urged Schrab to look downward and as she gazed into the still dark water below, she saw pictographs reflected back clear and crisp, with an ethereal clarity that stirred her soul.

It was moments like these, which were the result of two focused and supported weeks, which kindled Schrab's passions and resulted in deeper and more meaningful work than she could have anticipated. Her final words about the program, "It was a dream come true, it really was."

For more information on this program contact Quetico Provincial Park Superintendent Robin Reilly at [robin.reilly@ontario.ca](mailto:robin.reilly@ontario.ca). For pictures of Geri Schrab's adventure and information on her artwork go to her website at <http://www.artglyphs.com/>.



"Quetico Dreams" 2007, Original watercolor. Photo courtesy Geri Schrab.



Geri Schrab

# Evidence of Meteorite Impact Found off the Gunflint Trail

By Charlie Mahler, Wilderness News Contributor

In the Gunflint Trail region, which has seen its share of calamity in recent years in the form of blow-downs and forest fires, geologist Mark Jirsa thinks he has found evidence of a catastrophe so massive that the natural disasters we know today appear miniscule in comparison.

Off the north shore of Gunflint Lake, Jirsa, a geologist for the Minnesota Geological Survey, has found evidence of a massive meteorite impact that devastated a vast area of what is now North America and which may have radically changed the course of the planet 1.8 billion years ago. Although the mountain-sized meteorite slammed into the earth 480 miles away from the Gunflint, near what is now Sudbury, Ontario, Jirsa and others are finding evidence of the event in the rock of northern Minnesota, as well as near Thunder Bay, Ontario and in Upper Michigan.

What Jirsa and others believe happened millions of years ago is mind-boggling. Huge, hurtling meteorites seem more the stuff of science fiction and Hollywood than the usually placid Quetico Superior. But evidence shows that, like the Chicxulub Impact that caused the extinction of the dinosaurs, the Sudbury Impact likely changed the course of life on earth.

**The Collision:** At ground zero, the collision of the meteorite and the earth's surface caused an explosion so immense that the meteorite itself is thought to have vaporized on impact, leaving a crater more than 150 miles in diameter. Still discernable today, it is the second largest crater known on earth. The seismic shock at the point of impact would have created a 10.6 magnitude earthquake, something unprecedented in modern times.

Jirsa and other scientists believe that the impact felt along what is now the Gunflint – a shallow ocean at the time – shook the earth's surface



fiercely enough to break rock into a chaotic jumble. The area weathered a fireball and a blast of air that gusted to over 1,400 miles per hour, suffered a rain of semi-solid mineral hail falling from the sky, and endured tsunamis rolling across the land.

Across the whole planet, the meteorite's collision with the earth is thought to have had life-altering consequences. Debris thrown into the atmosphere is thought to have obscured the sunlight across the entire planet, choking the fledgling life evolving at the time of its photosynthetic energy. The blue-green algae, called cyanobacteria, that was creating the earth's first oxygenated atmosphere and depositing iron on the sea floor through its metabolism, suffered an extinction, ending the formation of iron on the planet save for a single blip in the geologic record millions of years later.

**The Discovery:** Jirsa found his rocky evidence of the calamity during the modest modern-day catastrophe know as last spring's Ham Lake Fire. In search of field trip sites outside the burn zone for a geological conference taking place in Duluth, he stumbled upon a rock outcrop off Gunflint Lake that looked familiar.

Jirsa noticed solid rock that appeared to be composed of small, pea-sized spheres and larger chunks of broken rock, called breccia, fused together in a single rock layer. Jirsa knew of similar rock, found by two high school teachers near Thunder Bay, which had been linked to the Sudbury Impact.

"I knew what this material might be," Jirsa said. "It was at the right stratigraphic horizon and it had at least two of the attributes – it had the spheres and it had the broken rock fragments." The spheres, called lapilli, are considered evidence of the rocky hail that fell from the sky following the impact; the broken rock is thought to be the result of the seismic shock waves that rippled through the crust of the earth.

Further investigation of the rock showed diagnostic signs of deformation from a violent impact. Microscopic study showed quartz grains with fractures in a variety of orientations. "In order to cause this kind of deformation in a quartz grain," Jirsa explained, "it takes pressures we can't get on earth without invoking an extra-terrestrial impact."

**The Consequences:** The rock record shows that after the Sudbury Impact, the formation of iron on the planet soon ceased. The rock strata formed prior to the impact, the Gunflint Iron Formation, contains bands of iron formed in shallow ocean sediments. The layer of rock that Jirsa is continuing to discover on the Gunflint, which lies on top of the iron formation and is therefore younger, features the breccia, lapilli, and shocked quartz of the impact event. The rock layer above Jirsa's "impactite," which is even younger, shows sediments again accumulating in a shallow ocean, but without the iron bands.

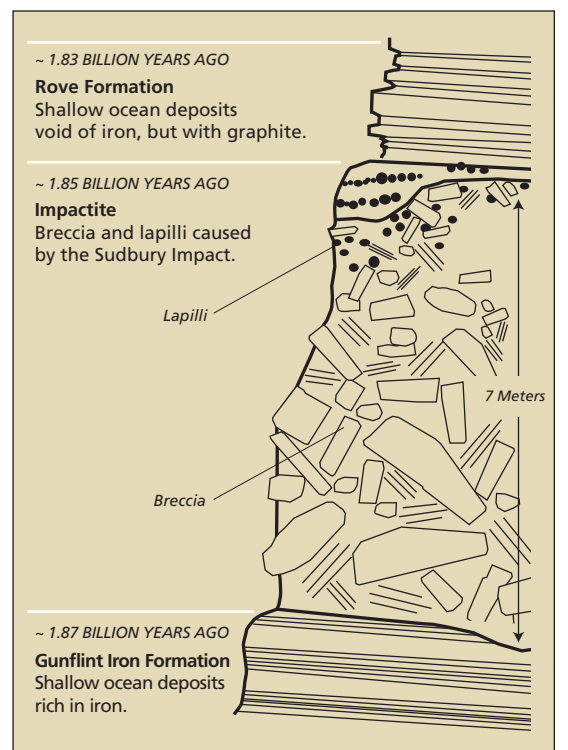
"So, you had nice, quiet-water deposition of iron formation," Jirsa describes, "and then, all hell breaks loose. Then it goes back to nice



Discovery Outcrop: The rock north of Gunflint Lake where Jirsa saw round spheres called lapilli – indications of the Sudbury Impact. Photo courtesy Mark Jirsa.



Broken Rock: An outcrop of impactite showing the breccia, broken rock, that the seismic shock of an impact 480 miles away, caused in Minnesota. Photo courtesy Mark Jirsa.



quiet-water deposition, but this time with no iron. There is a lot of graphite, though, graphitic mudstones. The graphite might be a product of an extinction event if those cyanobacteria that were forming the oxygen in the atmosphere that was causing the iron to precipitate out of seawater, they probably were killed. They were carbon-bearing."

As with most discoveries in science, the new answers discovered along the Gunflint Trail prompt additional questions about the nature of the earth before, during, and after the Sudbury event. Jirsa would like to know just how far the material ejected by the impact traveled and exactly what the meteorite hit when it cannonballed into the earth – did it impact hard rock or an ocean. It seems clear, however, that in the long geologic history of the Quetico Superior, a catastrophic event helped form the sometimes placid, sometimes chaotic, always wild region. □

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

### BOOK REVIEW

## *A Paddler's Guide to Quetico and Beyond*

By Kevin Callan

Published by the Boston Mills Press  
(2007, 192 pages, \$24.95 Softcover)

Reviewed by George Boody

Kevin Callan's most recent book weaves entertaining yarns about famous routes in Quetico Provincial Park and other Ontario parks to the north and northwest. Callan is obviously an experienced tripper who easily engages people he meets to gather facts and stories.

Callan's book describes 11 routes in Quetico and 5 additional routes in Woodland Caribou, White Otter Lake and Upper Albany River. Each chapter highlights a different route, featuring a map with portage distances and a chart recapping the route, the number of days, number of portages, longest portage, trip difficulty, access points, and maps. A "Before you Go" section includes information about permits, maps, outfitters and fish species in many Quetico lakes. The information is useful for someone planning a trip, and Callan's descriptions of the trips, environments, people and places he experiences are entertaining reading even for those not planning a trip.

The story of Callan's trip on the Wawig River route ends on Saganaga Lake, where a scout troop set up camp near a site he had already occupied. Humph. They were noisy of course, with adults bellowing commands and a camp full of kids busy with requisite Northwoods chores. Fuming, he became angry and depressed at this intrusion of people after days of solitude. But then the youth enthusiastically broke into song, and he realized they weren't the young vandals who loosened his wheel bolts on the way out of civilization; they were kids learning positive values. He ended up calling out, "Do you know Camp Fires Burning?"

The scout troop silenced, then took up his request, and he again felt able "to appreciate the good in humankind."

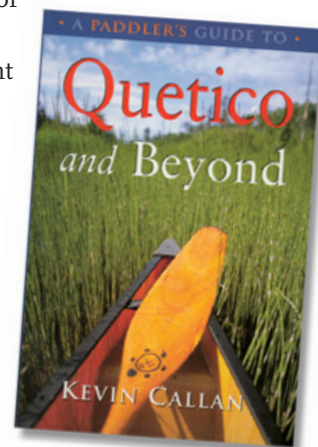
In addition to such entertaining stories, Callan provides helpful route descriptions, including alternate route choices, scenery, potential pitfalls, and tips on great campsites and fishing. He gives helpful clues about which portages to take, and if a portage was terrible, he says so. The book also includes the names and stories of many portages. The Yum Yum portage, for example, was named after a character in Gilbert and Sullivan's opera, *The Mikado*. Callan's system for pegging the difficulty level of a trip, however, is too nuanced for me. I would keep it simple.

Throughout the book Callan describes the contributions of native people, loggers, missionaries, early environmentalists, and park leaders that helped make Quetico the historic and fascinating place it is today. He also shares a bibliography of literature about the conservation, the parks, and the impassioned debate leading to the creation of Quetico.

Three chapters are written by friends, some of whom are more spiritually-oriented than Callan. They are all worth reading for insights into special places and routes in parks outside of Quetico, though they may not be quite as colorful as Callan's descriptions.

The book is full of beautiful pictures of scenery, humorous and self-deprecating poses, and chance meetings with other trippers. They capture the essence of the Quetico experience, and beyond. Callan writes, "Some paddlers endorse the idea that canoe-tripping in a wilderness area is an absorbing, emotional, life altering experience... And I agree. But our films and my writing always highlight the unpleasant experiences more than the pleasant ones. The more disasters you experience and survive, the more connected to the land you feel, and perhaps the better you

understand its importance to us." His book of tales, told with humor and laced with information, might help you more easily take the unpleasant parts of your next trip in stride. And sometimes, his way of taking busy entry routes in stride might include a shuttle ride, even though he is sure Sigurd Olson would not approve.



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