

THE ART OF CANADIAN NATURE PHOTOGRAPHY



PHOTOGRAPHING SCENIC VISTAS AND WILDLIFE IN CANADA

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The Canadian North

In 2010 I was invited to Yellowknife, and also further north to Peterson Point Lake Lodge, to take pictures for a new website www.petersonspointlake.com. At the time, I had no idea this would develop into a long-term friendship and annual photography workshop on the tundra. I now drive from Calgary to Yellowknife every year, covering a distance of 1,800 kilometres over two days. Stopping along the way to photograph wildlife, waterfalls, and sometimes the aurora, in High Level, Alberta. On my first visit to Yellowknife, I watched a spectacular display of the aurora from my hotel room, and I have become obsessed with its beauty ever since. The scenery at the Peterson's Point Lake Lodge – located about 350 kilometres north of Yellowknife on the shores of Point Lake – is sublime. Watching the tundra changes its colour is a breathtaking experience. The tundra has changed very little in thousands of years, and visiting this area makes me feel like I am travelling back in time.

When caribou migrate south in the autumn, they often go right by the cabins – allowing me frequent opportunities to photograph these magnificent animals up close. Although the tundra sometimes referred to as “the barrens”, it is anything but barren. In addition to caribou, the tundra is also home to wolves, Grizzly bears, sik-sik (arctic ground squirrels), wolverines, moose, birds, mushrooms, and hundreds of species of lichen. Point Lake is surrounded by high cliffs and rolling hills with large boulders, and the area around the lodge is one of the most rugged and beautiful places on the planet. The area is also rich in Canadian history, with the Franklin Expedition passed through in 1822 while searching for the Northwest Passage. The lodge is only open for brief period of time between July and September, before the winter begins and takes over.

The Tundra

For me, one of tundra's greatest attractions is the absence of any fences, roads, lights or people. There are only a few trees, and daylight can last 20 to 24 hours in summer. Flying over the tundra in a float plane allows one to see small lakes extending out to the horizon in all directions. Our float plane pilot sometime jokes, “Don't worry, if there are engine problems there are plenty of runways”. During the summer, mosquitoes and blackflies can be a real nuisance, so a head net and bug spray are highly recommended when hiking. You can avoid some of the insect pests if you stay near a large body of water with a strong offshore wind or hike high on the ridges where there is a strong breeze, which is what the caribou do in the summer.

Early explorers passing through the tundra were primarily looking for a route to the Arctic Ocean, hoping that mapping this area would help them secure the Northwest Passage. Sadly, many of them were ill-prepared and experienced severe hardships, with some starving or freezing to death. Several men from the Franklin expedition that travelled north in 1822 managed to survive by scavenging wolf kills and eating soup made out of a black rock lichen, called tripe. Having read the journals of some of the officers of the Franklin expedition, I am awed by these men's courage and toughness – having had to navigate thousands of miles through the wilderness by canoe and on foot, and guided only by sextant and chronometer. Although they often faced food shortages, the most serious complaints in their journal were directed primarily at the constant harassment by insects.

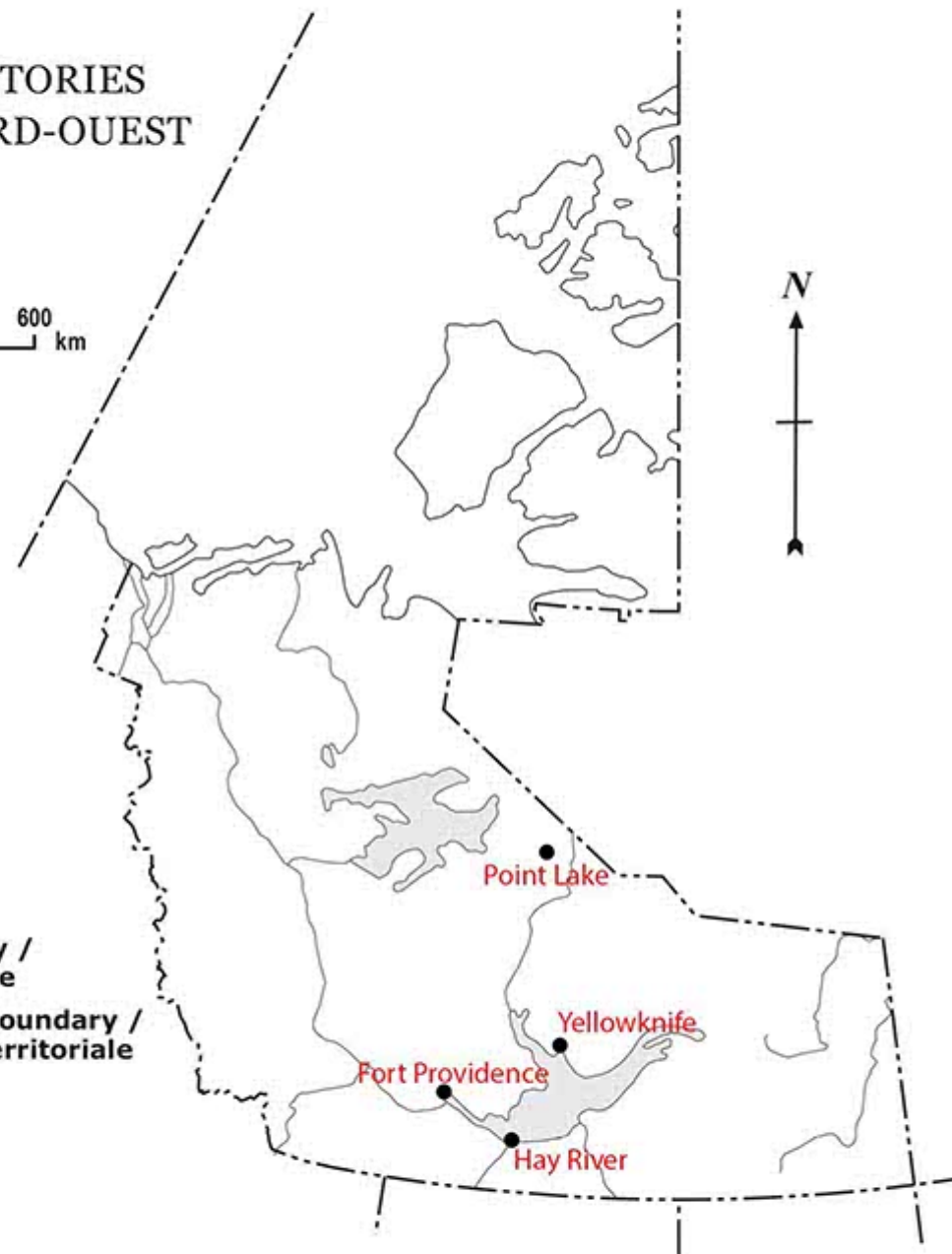
NORTHWEST TERRITORIES TERRITOIRES DU NORD-OUEST

Scale / Échelle
200 0 200 400 600 km



LEGEND / LÉGENDE

- International boundary /
Frontière internationale
- Provincial, territorial boundary /
Limite provinciale et territoriale







Barren-ground caribou (*Rangifer tarandus groenlandicus*) photographed at Point Lake, Northwest Territories. The caribou migrate south in late summer and often come in close proximity to Peterson's Point Lake Lodge. The tundra turns fiery red with red dwarf birch and golden yellow willows.

The tundra is beautiful but unforgiving, so one must always be prepared for emergencies. When travelling by boat we put on full-length survival coats to protect us. As our boating guide with a stoic sense of humour likes to advise us, "The coats are so your next of kin can identify you if you fall in". It's not just a joke either: the lake is so cold that no one could last in the water more than a few minutes. On the bright side, the lake water is so clean that I can just dip my cup in and take a drink whenever I'm thirsty. The lake supports giant lake trout that fisherman come from all over the world to catch and release. Around the end of August and early September, dwarf birch and willow turn a fiery red-and-yellow, followed by dark clear nights bringing out the Aurora Borealis light show in the sky. Naturally, this is my favourite time to visit.



Dwarf birch and willow growing on cliff side along Point Lake, Northwest Territories in late summer. The ground is covered in numerous species of lichen, mushrooms and other plants (shown on the right). The lichen, willows, birch and mushrooms provide an important food source for the caribou.



(*Cladonia pleurota*) lichen, Point Lake, NT.



Sunburst lichen (*Xanthoparmelia somloensis*), Yellowknife, NT.



Arctic finger lichen (*Dactylina arctica*), Yellowknife, NT.



Red bearberry (*Arctostaphylos rubra*), Point Lake, NT.



Whiteworm lichen (*Thamnolia vermicularis*), Point Lake, NT.



Labrador tea (*Rhododendron groenlandicus*), Point Lake, NT.



Above - Barren-ground caribou (*Rangifer tarandus groenlandicus*) behind Point Lake Lodge in the Northwest Territories. The caribou migrate south in late summer and visitors to Point Lake Lodge can view and photograph them.

Right - hiking along an esker in Esker Bay Point Lake, Northwest Territories. An esker is a long ridge of gravel and other sediment, typically having a winding course, deposited by meltwater from a retreating glacier or ice sheet. They can be anywhere from 10 to 50 meters high, wandering the landscape in an arbitrary fashion. In late summer we have spotted Caribou, Grizzly bears, wolves and wolverine from atop this esker. From the air eskers appear like giant worm casts.

Barren-Ground Caribou

There are nine migratory herds of Caribou (*Rangifer tarandus groenlandicus*) making their home in the Northwest Territories. Defined by their fidelity to distinct calving grounds, two of the herds – the Bluenose East and Bathurst Herds – overlap in their distribution and range right where the Peterson's Point Lake lodge is located. According to most recent population surveys conducted in 2015, both of these herds are declining in numbers, despite ongoing efforts to reverse the trend. There are many factors behind the fluctuations in caribou population, including weather and climate change, insect harassment, quality of forage, depth of snow in the winter, levels of predation, mineral exploration, mining, and human harvesting. Human harvesting has changed significantly in the past 20 years with increased winter road access, the use of snowmobiles, and use of aircraft and all-terrain vehicles to hunt the caribou.

With the herds believed to naturally fluctuate in cycles of about 30 to 40 years, the government of Northwest Territories has implemented a management plan to survey and promote the recovery of the herd numbers. The caribou are by far the Northwest Territories' most important wildlife resource – providing food, clothing, and cultural identity for the aboriginal people living there.

One curious trait that both the aurora and caribou share is that most of the time there is no trace of them to be found – until they suddenly appear right in front of you, only to quietly disappear again. Caribou are found in every province in Canada, and I have had the pleasure of photographing Mountain Caribou in both Jasper National Park and Newfoundland. Living in the in eve of ever shrinking boreal forests, woodland caribou were designated as a threatened species in 2004, with their decline primarily linked to the disappearance of their natural habitat. In Yellowknife, I recall reading the local paper in which a local student commented that caribou would have a better chance at survival “if only the snowmobiles were slower and the guns smaller”. Personally, I don't believe that killing off predators like wolves and grizzlies is a viable solution to boosting the caribou population. Wolf culls have been taking place in British Columbia since the 1960s with little effect on stopping the decline in caribou – suggesting this is a short-term and unsustainable technique. I think that monitoring caribou numbers, continuing education, and genuine cooperation between the government, aboriginals and local people is critical for the future survival of barren-ground caribou. I also think it is profoundly sad that a large majority of the Canadian population may never see a caribou except on the back of our quarter coins.

I feel fortunate to live in Canada, with its spectacular natural beauty and rich diversity of wildlife, and I hope we have all learned our lesson from the devastating collapse of the cod stocks off Newfoundland back in 1992. Despite the scientists' grave warnings about the dangers of overfishing and destruction of the marine ecosystem, the collapse of the cod fisheries was allowed to unfold just as feared – with over 40,000 people losing their jobs after local fishermen refused to reduce their quotas. I believe there is a lesson here that also pertains to the caribou, West Coast salmon and old-growth forests: we could easily lose them all, unless we learn to manage them better.



Top pictures - Caribou (*Rangifer tarandus groenlandicus*), Point Lake, NT. Bottom - Caribou Bay, Point Lake, NT in early September.

The Aurora Borealis also known as the Northern Lights

The Aurora Borealis can be seen on most clear nights between the latitudes of 57 to 65 degrees north except in the summer, due to extended daylight. This remote region of the globe, referred to as the Aurora Oval, also has its twin counterpart around the world deep in the Southern Hemisphere. In both places, the aurora is caused by the solar wind (charged particles) that emanate from the sun and interact with oxygen and nitrogen atoms in our upper atmosphere – 50 to 200 kilometres above – causing the sky to glow green, purple and, sometimes, red. The aurora can move in waves, vacillate, and resemble a snake moving across the sky. Some folks also claim to hear sounds. While I never heard them myself, a group of scientists in Finland managed to record such sound in 2012, albeit without explaining how aurora might create these sound effects.

The aurora is most prevalent around the spring and fall equinoxes, when the earth and sun's magnetic fields are perfectly aligned. The aurora's intensity is also determined by the number of sun spots, which follow an approximately 11-year cycle. In my experience, the aurora often starts about 10 to 11 p.m. and reaches its highest intensity levels around midnight, although it can occur any time it becomes dark and last until the wee hours of the morning. The Aurora Borealis is visible within Canada's northern cities and towns, but it's best to get away from urban light pollution to fully appreciate its beauty. I particularly like to photograph the aurora on moonless nights near a lake, where its vibrant reflections can be seen in the water. The area around Yellowknife is considered one of the best places in the world to view the aurora, as evidenced by some 20,000 foreign visitors flocking to Yellowknife every year to see it. Located about 30 kilometres outside of Yellowknife, Prelude Territorial Park is an ideal location, with a large open sky to the north and a mirror-like reflection of the aurora off the smooth lake surface. Photographing the aurora with a modern camera is easy, but you will need a tripod to hold your camera still during long exposures, which can last from a few seconds up to a minute. The best camera to use for shooting the aurora is an SLR (single-lens reflex) camera with a wide-angle lens, set at a focal length between 14- and 35-mm and a wide aperture, like F-1.4 or F-2.8, to allow as much light in as possible. Generally, you will need to set the ISO (International Standards Organization) speed on your camera between 400 and 1,600. The higher the ISO speed, the less exposure time is required to capture the aurora, but the pictures taken at higher ISO speed settings also appears grainier, due to digital noise. An electronic cable release and a small flashlight, preferably with both red and white lights, are very helpful for being able to see your camera controls in the dark, with the red light making sure not to degrade your night vision. Focussing on the stars is critical. With some lenses you can set them to their infinity focus point; on other lenses I use Live View and my LCD (liquid crystal display) screen. I try to find a bright star and adjust the focus while viewing the star on my LCD screen so the star appears as small as possible, like a pin-prick. In Yellowknife, though, the aurora can be so bright that I have seen folks take good photos with a handheld cellphone camera.



Aurora Borealis (Northern Lights) over Pontoon Lake. Amanda Peterson points to the aurora reflecting off this small lake adjacent to the Ingraham Trail outside Yellowknife, Northwest Territories. Autumn is the best time to photograph Northern Lights because it is cold enough in the evenings to kill blackflies and mosquitoes; the lakes are still unfrozen and act like a mirror. The aurora is usually most intense around the Spring and Fall equinoxes because of how the earth and sun's magnetic fields align at this time. On clear nights in Yellowknife there is a 95% chance of seeing the aurora and Yellowknife is considered one of the best places in the world for aurora viewing.

Next page – insets Aurora Borealis and meteor at Aurora village outside Yellowknife. Aurora village and star trails DM, Aurora at Prelude Lake with fog on the lens resulting in glowing stars. The larger picture is of the Aurora Borealis shortly after sunset at Prelude Territorial Park, 30 km outside Yellowknife, NT.



Aurora Borealis over Pontoon lake next to the Ingraham trail outside of Yellowknife, Northwest Territories. When the aurora is intense one can see reds blues and violet colours in the light display. Right - 3 photos stitched to create a panorama of the aurora in High Level, AB.

The main challenges with aurora photography are working in the dark and focussing on the stars, so that they will appear as tiny dots of light. Some lenses can be set to their infinity focus point, but this won't work with many of the newer autofocus lenses. The best way to ensure perfect focus is to aim it at a bright star using your liquid crystal display (LCD) in Live View, zoom in on your LCD screen 10X, and adjust the focus so the star is as small as possible to achieve true infinity focus. The camera and/or lens should also be set to manual focus, with the autofocus function turned off. Trying to focus on stars through your camera's viewfinder is impossible, and you should never use any filters in front of the lens, as they will produce the so-called "Newton rings" in the finished photos. I usually check my camera focus about once an hour. If using a digital camera, you should experiment with different exposures until you get it right. Remember that the exposure will vary with the darkness of the sky, the intensity of the aurora, and the lens you are using. A good exposure to start with is about 10 to 15 seconds at ISO setting of 1600 and adjust from there.

My favourite lens for aurora photography is Nikon's 14-24-mm f/2.8 G ED lens, which covers a wide section of the sky and allows me to make exposures as short as one second at ISO 400 – producing tack-sharp stars even at the picture's edges. I also like to make time-lapse movies by shooting a succession of frames one every 10 seconds, and then combining them into a video. For effective Aurora compositions, try to find locations during daytime: it's much safer when you can see the ground below you. Also look for locations that present an open sky facing north – a lake or a field are often great spots. Remember to bring along a compass or mobile app that will allow you to determine which way is north during daytime. At nighttime, of course, you can just look for the North Star. Including objects in the foreground of your pictures – be it a fence, a small house with lights on, or a silhouette of a person or tree – can often make the final image more interesting. Keep in mind that using your lens wide open at F-2.8 will give you a shallow depth-of-field, so don't move your camera too close to objects in the foreground. You should also check the aurora forecast before you head out – in Yellowknife your best choice online is www.astronomynorth.com – and think positive even if it's cloudy during the day. Often times the clouds will disappear later into the night to let aurora put on a dazzling show.



THE SKY IS ON FIRE TONIGHT

Aurora
Goddess of the Dawn
Usher in the sun every morning
Sister
Of the sun and moon,
Mother of the winds you are immortal
But you have a mortal lover
Is that you looking for your lover?
I wonder if you're dancing for your lover?

The sky is on Fire tonight
The dance of the spirits ignite
And paint the sky like a masterpiece
I wonder just what it could mean
A palette of scarlet and green
Moving to music we cannot hear
A rhapsody not meant for our ears
The sky is on fire tonight

Young boy,
Native of this land
Missing his father's guiding hand
He lives on
In the sky above
Like everyone you loved who left before you
His mother tells him as she dries his eyes
In the sky you can see him dancing
Look on high and you can see the spirits dancing

Each generation after another
We never cease to wonder
Just what it could mean
Always gazed upon with awe
By those who sought her out and saw
The beautiful Aurora
High in the sky like a queen

A father a long time ago
Grieves for his son who died in battle
looks up to see the shield of the Valkyries
And he knew his son would be in paradise
after all did he not pay the price?
For a moment he could see his son dancing
He could see his son was smiling and dancing

HANGIN WITH THE CARIBOU

I'm a reindeer
But I don't fly or pull a magic sleigh
Get to know me
and you'll find I'm special in a different way
I travel north for miles and miles
and there I plan to stay awhile
I have to roam
Want to get back home

I don't fly but that's OK
I like running better anyway
Run for miles that's what I do
I'm just hangin with the caribou
Getting closer
The tundra's where I really want to be
It's getting harder
To get there than it ever use to be
My habitat is going fast
You cut the trees and I won't last
I have to roam
Want to get back home

I guess that you and me
Together we'd agree
There has to be more to this life
than money and strife

I'm getting lonely
Seems there's fewer of us every year
I hope it changes
That things will stay the same's my biggest fear
They blame the wolves but that's not true
The cause of all my trouble's you
I have to roam
Want to get back home

Lyrics and music © by Donna Berdan

(You can hear the music on www.canadiannaturephotographer.com
or www.youtube.com)



Aurora Borealis and silhouette (composite image) of Donna Berdan at Prelude Territorial Park, 30 km outside of Yellowknife, Northwest Territories. This is one of my favourite locations to photograph the aurora because the lake provides a wide-open sky to the north and sandy beach to photograph from. The campground is beautiful and offers many hiking trails that can be explored in the daytime.



Aurora Borealis photographed from Aurora village outside of Yellowknife, Northwest Territories. Aurora village offers food, tents, and aurora viewing benches. About 20,000 visitors from Asia visit Aurora village every year to watch and photograph the aurora.

Right - photograph of the aurora covering most of the sky. I took this photo using a 10.5 mm fisheye lens to capture as much of the sky as possible. Most of my aurora exposures are less than 10 seconds at ISO 1600. Most of the time the aurora is white or green in colour, but when it becomes more intense it is possible to see blue, purple and red colours. Keep in mind that your digital camera is much more sensitive to the low light and will often reveal colours in the photograph you may not be able to see. The aurora often appears brighter after the moon sets or during a new moon.



Aurora Shapes & Forms



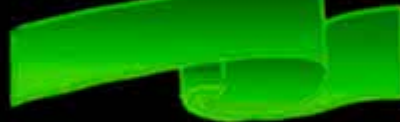
Homogeneous Band



Rayed Band



Folded Band



Folded Ribbons

The aurora often starts off as a homogeneous band then as it becomes more active forms rays that move and fold eventually forming folded ribbons and loops.



Homogeneous Band



Rayed Band



Folded Band



Folded Ribbons



Rayed Bands from below

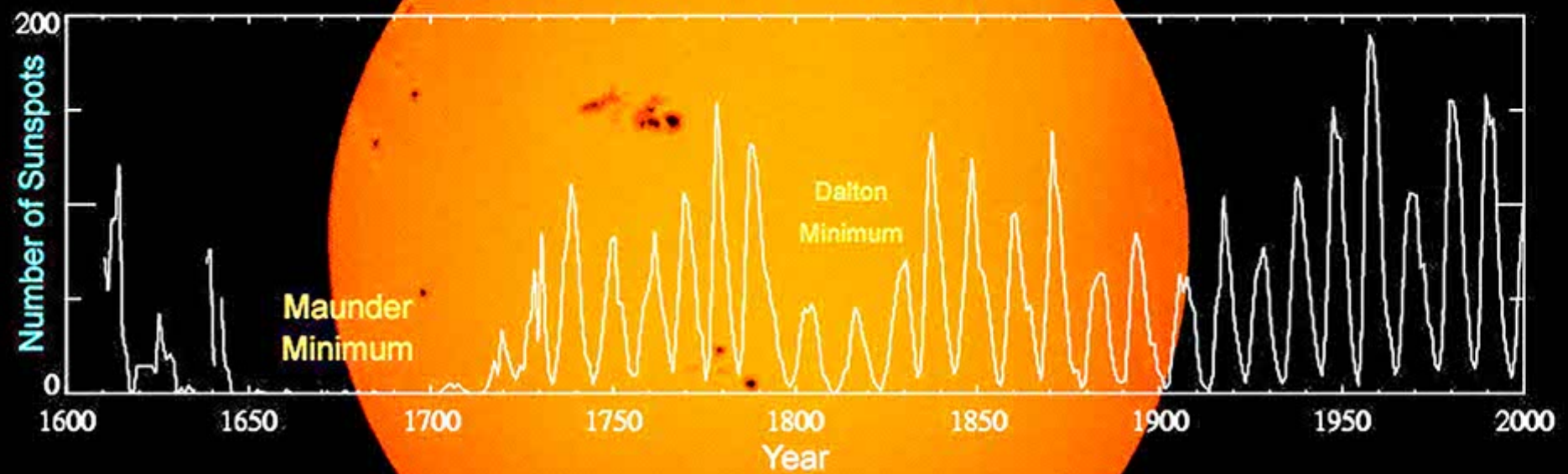


Single Band from below



Above - diagrams and photos showing the different shapes and phases the aurora can take during an evening. Right - pictures of the sun showing sunspots. Sunspots vary in number over a 11 year period and the aurora tends to be most intense when there are lots of spots. Right - bottom-left aurora over cabin at Point Lake, NT and bottom-right silhouette of sax player in front of Aurora over Yellowknife Bay.

Sunspots Photographed from Calgary



Nikon D700
1500 mm Celestron 6 inch
Telescope & Solar Filter
Nov 6, 2011 1\500 sec ISO 1600





Aurora Borealis and full moon over Yellowknife Bay, Northwest Territories. The aurora can even outshine the full moon.

Top-right: Aurora Borealis from Prelude Territorial park showing a lower red band that appears when the aurora is very active.

Bottom left & right: Aurora Borealis photographed with a fisheye (8 mm lens) at Pontoon Lake, NT.

