

# Jack Pines in Manitoba Canoe Country

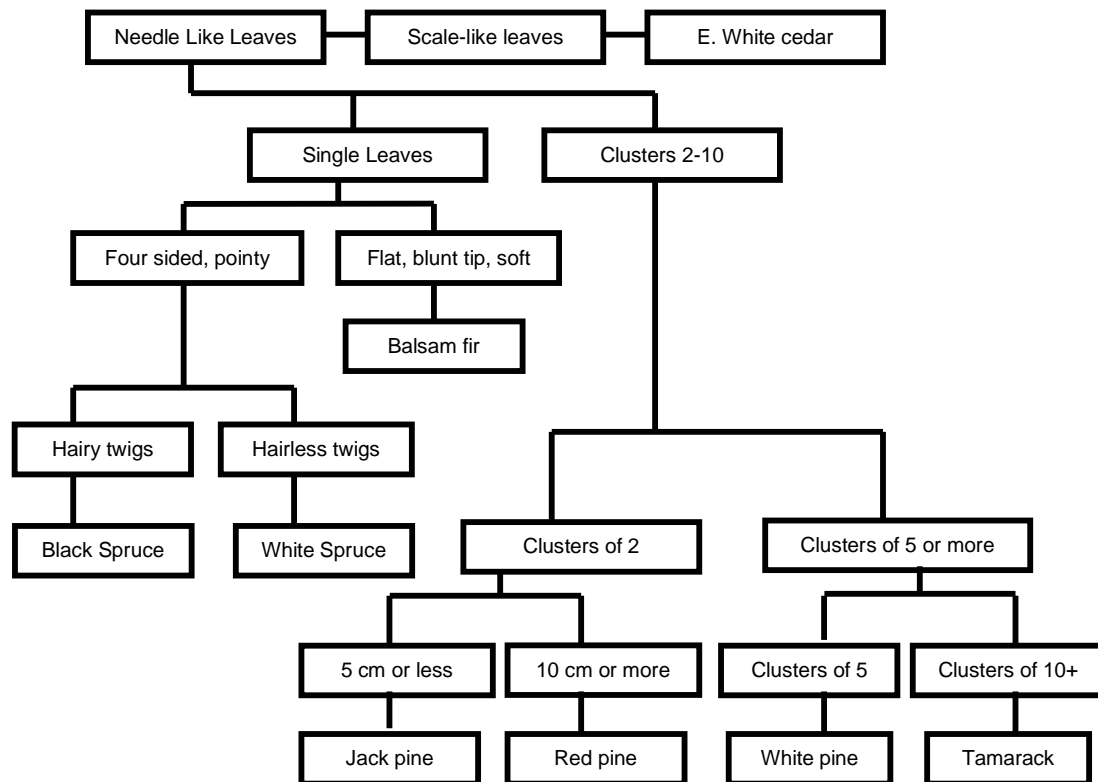
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When I was a teenager, I remember portaging through a forest on the east side of Lake Winnipeg that had been burnt about 60 years earlier. The path meandered across a gravelly sand ridge through a moderately dense forest with little in the way of mid-layer shrubs but had a wonderful bed of mosses. I knew the trees were Jack Pines and there was something special about the relationship between these trees and fire but that was about it. I also remember being amazed at the uniformity of the size and distribution of these trees, almost as if they were intentionally planted every few meters. It was not until much later when working as a research assistant in botany looking at the growth, recovery, and distribution of Jack Pines that I gave much thought to this interesting tree and the important place it holds in the uplands of the boreal forest.



In the late fall, I look out from my canoe for one last time and think about the winter to come. The aspen and birch have mostly lost their leaves and stand like skeletons on the shore, white and bare; waiting as ghosts until sending forth green shoots next spring. Among these deciduous trees stand green sentinels a promise of rebirth to hold onto through the long winter months. The Jack Pine dominates the rocky surfaces while the Black Spruce fills the lower wetter bays. Many of us are caught calling these species and the other generic cousins “evergreens” without a second thought. However, this group of trees is comprised of not only of spruce and pine but cedars, and firs as well. An additional coniferous tree, the tamarack, turns a brilliant gold in the fall and losses its leaves. The following figure shows how to tell them apart.

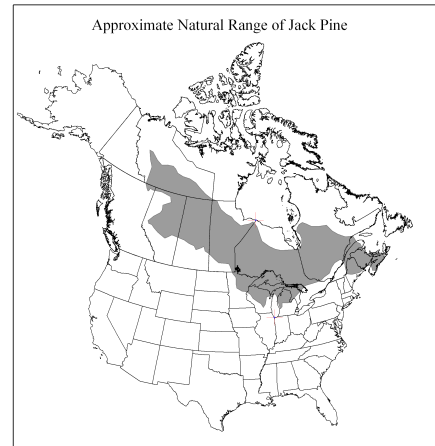


Eastern White Cedar is the easiest to identify because it is the only species that has scale-like leaves. The rest all have needles with pine growing in clusters of two or five, firs have flattened blunt needles growing singly, and spruce have four sided needles with pointy tips.

So the next time we're paddling together, expect a friendly question or two about the species of coniferous tree we're passing. Think of it as mid-term quiz!

In Manitoba there are three kinds of native pine trees. Red pine, is found only rarely in south eastern Manitoba and on Black Island in Lake Winnipeg. It is a large tree with smooth reddish brown bark made of broad scales. The needles are long (8-10cm) and grow in pairs. The second species, White Pine, is also rare in south-eastern Manitoba but a good place to see them is on the Hunt Lake trail east of Westhawk Lake. It is a medium-to-large tree with an open crown. The needles are 5 to 8cm long and grow in clusters of five. The number of needles in each cluster gives the tree a 'puffy' look from a distance. The most common and ubiquitous pine in the boreal forest of Manitoba is the Jack Pine. It is a medium sized tree with a more scraggly look and often grows in dense pure stands. The needles are 2-5cm long and grow in pairs. The Jack Pine's scientific name is *Pinus banksiana* after the British naturalist Sir Joseph Banks who encountered it while exploring the east coast of North America. The common name 'Jack' still remains a bit of a mystery.

The Jack Pine is the most widely distributed pine species in North America stretching from the east coast of Canada to the Yukon. It is typically found on sandy well drained soil or on rock outcrops; places that are dry and usually nutrient poor. The species is short lived reaching full maturity in about 80 years. Although Jack Pines have been found older than 200 years they typically reach the end of their lifespan at around 150 years. However, it rarely reaches old age because of fire, common throughout the boreal forest. Because fire is so common, the Jack Pine has evolved to co-exist with what would appear to be its natural adversary. In fact it needs fires to reproduce. The cones, normally sealed tightly shut, only open with heat of fire, releasing the seeds. The technical term for this adaptation is 'serotinous'. The sealing resin begins to melt at temperatures over 50°C but the cones can withstand heat as high as 482°C degrees for 30 seconds and instantaneous blasts of 700°C. Without the heat of fire, the seeds are rarely released. When the cones open the light, winged, seeds are carried upward by the fire's drafts and are widely distributed. In this evolutionary paradox, the success of Jack Pine is dependent on the destruction of each generation. The next time you have a fire on a canoe trip drop a couple of the curved light brown cones next to the fire to see what happens!



After a forest fire Jack Pine seeds find an excellent environment to germinate and grow. The species are highly intolerant of shade – the lower branches can't even tolerate the shade from its own (and neighbours) crown. The dark ground, exposed after a fire, is warmed by sun light and the newly released seeds sprout quickly. By the end of the second season after a fire, seed germination is virtually complete. Initially, competition for sunlight is low and the young trees grow quickly. This wide distribution of seed, quick germination, and rapid colonization explains why Jack Pines are often found in large mostly pure stands of uniformly aged trees.

Because of their intolerance of shade, Jack Pine stands are self thinning creating a forest with trees of similar size and almost equally spaced. Smaller or younger trees are shaded and quickly die. The dense population of uniformly spaced Jack Pine also prevents the growth of other species. This explains why shrubby undergrowth is not normally seen in Jack Pine stands. Aspen is often found mixed into Jack Pine stands on deeper soils as it is another species that recovers well after fire.

Pollen production from coniferous trees, including Jack Pine, is substantial in the late spring and early summer covering the lakes of the boreal forest with a fine yellow film. A remnant of this film can often be seen as a yellow line above the summer water level weeks, even months, later. As with most coniferous trees Jack Pines are wind pollinated with the seeds ripening in the next year after pollination. Each cone has 15 to 75 seeds. The straighter cones generally have more seeds than strongly curved cones.

Once considered a nuisance or 'weed' tree, Jack Pine is now heavily harvested for pulp wood and some lumber production. This practice may seem to be self defeating because it interrupts the natural fire/re-seeding cycle. However, some foresters believe that with the current fire control and suppression practices mature Jack Pine stands on sandy level soils should be clear cut. They believe with appropriate ground preparation and replanting a healthy successful forest can be maintained.

Interestingly, the inner cambium layer (bark) of jack Pine can be eaten. But be warned, it tastes like Pinosol or turpentine and is barely a subsistence food. Best in the spring, the flavour gets stronger through the summer. Young male cones can also be nibbled in the spring and have a better taste than the inner bark. Boiling has been suggested as a way of removing the resin from these cones but I have never tried it.

Jack Pine has been used for traditional medicines. The gum when chewed has been suggested as a cold medicine. I have tried it - the taste only made me forget I had a cold. The inner bark, soaked and softened, has been used as a poultice to help heal wounds. Powdered needles have been used as a poultice to treat frostbite. Pine oil and pine tar have been used to make disinfectants, antiseptics, and insecticides.

So, the next time you have a chance to walk a portage over an esker or an old sandy delta in the boreal forest take the time to stop and observe the forest around you. Likely it is almost completely Jack Pine or a mix of pine and Aspen all of a uniform size and age. Think about the importance of this tree to the boreal forest and how it has evolved to succeed with fire.

References for more information on the growth and uses of Jack Pine:

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