
AZAADI
TEACHINGS

Sponsors

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LAND ACKNOWLEDGEMENT

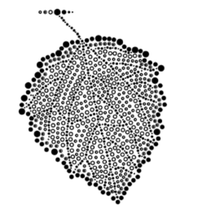
We acknowledge that the land we stand upon is known to the Indigenous peoples as Turtle Island, North America, and Central America. This land is the ancestral homeland of many Indigenous Nations who have lived and thrived here since time immemorial. We are grateful to be taught by the Indigenous peoples—thousands of generations strong on this land—their knowledge, and spiritual connection to their ancestral home.

Azaadi (Trembling Aspen) Teachings was created in what is now called Winnipeg, Manitoba. Manitoba is the traditional land of the Anishinaabe (Ojibway), Ininew (Cree), Oji-Cree, Dene, and Dakota, the birthplace of the Métis Nation and the heart of the Métis Nation Homeland.

We hope that people across Turtle Island will use *Azaadi Teachings*, and we invite everyone to reflect on all the traditional territories on which we live. Azaadi reminds us of our responsibility to reciprocate the gifts the land brings us by revitalizing our relationship with Mother Earth. We hope that this guide becomes a stepping stone for moving beyond the acknowledgment of the land to an understanding of the importance of Azaadi and Mother Earth as a whole.

As educators, it is our responsibility to teach our students the true history of Turtle Island and the impacts of settler colonialism on this land. We must help students become empathetic and culturally aware so that they can recognize their roles and responsibilities as settlers—people on Indigenous lands. Education rooted in equality, diversity, and inclusion will prepare our future leaders to build a better future for seven generations to come.

The Azaadi Teachings emblem was crafted with intention, it bears the essence of seven generations through stylized bead designs, weaving a tapestry that echoes the wisdom of our ancestors. At its heart lies the aspen leaf, a symbol of growth, resilience, and interconnectedness. Just as circles abound in nature's patterns, from indigenous art to biological rhythms, our logo beckons you to delve into the stories and lessons that bind us together. Join us as we honour the past, embrace the present, and shape the future through Azaadi Teachings.



7 generations symbolized

INTRODUCTION

Aspens are one of the most important trees found in North America. They support a treasure trove of wildlife and are the favourite food for Canadian royalty like beavers and moose. Aspens also help cool down landscapes, keep water flowing, and are superheroes against wildfires and pollution.

In Western Canada, an essential transitional zone exists between its grasslands and boreal forest. This region, known as the *Aspen Parkland*, is a large '"ecoregion"' that cuts across Manitoba, Saskatchewan, and Alberta. As its name suggests, the dominant tree in this region is Trembling Aspen, which forms a gateway, welcoming travelers from the southern grasslands to the northern boreal forest.

Throughout this guide, traditional Indigenous knowledge and the science of the Aspen tree will appear side by side. But first, we begin with an explanation of the Anishinaabe worldview.

Anishinaabe Worldview

"Indigenous people have an innate relationship with everything that exists on Earth and in the Universe: the lands, waters, rocks, trees, plants, insects, moon, sun, and stars. We see ourselves as the Universe.

Knowing that Sacred Beautiful. We are the people who know there is a Spirit in every living thing from a flower, leaf, ladybug, butterfly, buffalo, bear, eagle, mountain, water, our Mother the Earth, the Sun our Grandfather, the Moon our Grandmother, and our Ancestors the Stars. We are relatives. We are all related and we acknowledge that connection in our teachings, stories, and songs of that sacred and beautiful web of life in the vast Universe.

We have been misunderstood and we have been feared. We were judged, convicted, and mistreated. But now at this significant time, we are in a Spiritual Evolution where they now come to the people who were thought of as less, with no god. But we are the people who have always seen holiness, godliness, and sacredness in everything from the smallest insect to the planets and stars in the Universe.

We are the people who have known this heaven on Mother Earth; we felt and lived that nurturing, blissfulness, gratefulness, and love just as living in heaven. We are the people who have no judgment, no shame, no blame, and no jealousy. We are the people who lived as one with everything as our equal and as our relatives. We are the people who honoured the sacred creator, the life-giving woman. We always knew who we were.

The world of people who lost that Spiritual desire to know that beauty that is deeply rooted in our Indigenous essence. We are seeing that beauty and knowing that sacredness inside of us. We are returning to that beauty within and acknowledging that sacred beauty is everywhere.

It is important to mention that as an Anishinaabe, the word "planet" does not resonate in my thinking—this word seems false. For Indigenous people, we don't think that way; rather, we have this great reverence for the 'Earth.' This is why we say that we are all related, and we feel it deeply that way."

Written by Diane Maytwayashing, Indigenous Knowledge Keeper

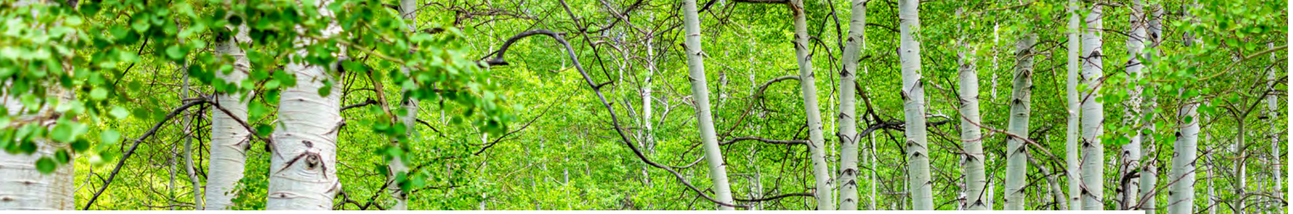
Photograph of Grandmother & Knowledge Keeper Diane Maytwayashing, taken at Whiteshell Provincial Park. Photo supplied by permission from Indigenous Tourism of Manitoba.

Glossary of Indigenous Words

Some Indigenous words and phrases related to Aspen are given here. Recordings of many Anishinaabemowin words are available from **The Ojibwe People's Dictionary**.

English	Ojibwe
an aspen (Trembling Aspen; Populus tremuloides)	azaadi, azaadiwag
aspen wood	azaadiisag ni
aspen bark	azaadiinagek na
punky aspen wood used for smoking hides	azaadiiwi-bigijiisag
spring	spring ziigwan vii it is spring
There are many trees	mitigokaa vai there are (many) trees
by the water	jiigibiig adv loc along the shore; by or along the edge of the water or an open area
It has roots	ojiibikaawan vii It has roots Paired with: ojiibikaawi vai
medicinal tea	mashkikiwaaboo ni a medicinal tea, liquid medicine See also: mashkikiwaabo ni (BL)
yeast bread	gibozigan na bread baked in the oven, yeast bread

English	Ojibwe
leaves bud	zaagibagaa vii It buds; the
Leaves rustle in the wind	gaaskibagaasin vii
noisy	ombiigizi vai s/he is loud, is
It is in or on the water, soaks in the water	agwinde vii
It catches fire; it is on fire; there is a forest fire	zakide vii Paired with: zakizo vai vii
S/He forms, shapes, kneads, molds something (a soft substance) (by hand)	onadinige vai
It is bitter to taste	wiisagizi vai it (animate) is bitter (to the taste)
a beehive, a wasp nest	aamoo-wadiswan ni a beehive, a wasp nest
beaver	amik na a beaver (Castor canadensis)
moose tongue	moozodenaniw ni a moose tongue
prairie/grassland	mashkode ni a prairie, a plain, a natural clearing



WHAT IS AZAADI?

AWEGODOGWEN AZAADIIWI ?

Azaadi is the Trembling Aspen tree, which scientists call Populous tremuloides. Aspens are a mid-size deciduous tree that has an incredible range and can be found growing across Canada from Newfoundland to the Northwest Territories, and further south in the United States and into Mexico. The Aspen is called “pioneer species” in forestry because they are often the first trees to grow after an area has been disturbed or damaged by landslides, fires, floods or clear cutting.

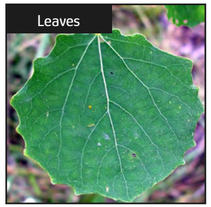
Forest Regions of Canada: Click here to view the interactive map (Million Tree Project)

How to Spot a Trembling Aspen Tree

Out for a nature walk? Use these features to identify a wild Azaadi!

- **Bark:** Smooth with a waxy appearance. Pale green to almost white when young, becoming darker when older. Often confused with paper birch. Unlike paper birch, however, aspen bark does not peel away from the trunk.
- **Trunk:** Straight and slender; up to 25 m (80-100 ft.) tall. As aspens age, their bark becomes furrowed and dark gray or even black, especially toward the base.

- **Leaves:** Smooth, flat, round at the base, somewhat heart-shaped, with many sharply pointed teeth along their margins. The leaves are bright green to yellowish-green, and white underneath, turning brilliant yellow, gold, orange, or slightly red in the fall. The leaves’ small stem (petiole) is flattened along the entire length, perpendicular to the leaf blade. The flattened stem allows the leaves to flutter or tremble in the slightest breeze—hence, the name.
- **Buds:** Cone-shaped, pointed, with the tips curving inward, 6–7 scales, shiny, slightly resinous, not fragrant.
- **Fruit & Seeds:** Aspen trees are either female or male. In spring the trees produce fuzzy catkins (flowers). The catkins on male trees shed pollen, and those on female trees produce seeds that split and become fluffy and white.

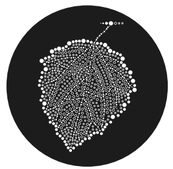


ACTIVITY

Do you live where aspens grow? On your next walk, use the features list to spot a Trembling Aspen in your neighbourhood.

AZAADI TEACHINGS

Indigenous cultures named the Trembling Aspen “the noisy tree” because of the sound of fluttering leaves. Click here for a Teaching that explains why Azaadi leaves tremble.



Why do the leaves flutter?

Scientists have suggested that the trembling of the leaves may also be a form of protection. The leaves of this species flutter, shake, and tremble in the presence of even the slightest breeze due to the physical structure of the leaf stem (petiole). The stem, from one and one-half to three inches long, is flat and turned at right angles with the blade of the leaf. This unique leaf stem allows the leaves of the aspen to quake. When scientists stabilized the leaves, they found that leaves that didn’t move had on average about a 27% higher chance of being damaged by insects or other pests. Studies suggest that trembling leaves may also improve the capture of sunlight, thus improving rates of photosynthesis.

ACTIVITY

1. Find a sunny spot, lie or sit down on the ground, and listen to the trees whisper to one another as they make their fluttering sound. What does the sound remind you of?
2. Examine the Trembling Aspen leaves—how do they feel? Are they wet or dry, soft or hard? What does the outer edge of the leaf look like? Flip the leaf—what colour is its underside?

AIR

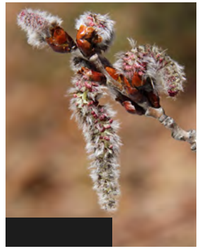
NESEWIN

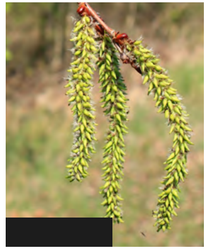
Spring is here!

Aspen trees are the first to bloom and signal the beginning of spring with their flowers and leaves. The tree's catkins are 1-2 inches long and appear before the leaves. The aspen tree's catkins rely on the wind to pollinate other trees; these trees are either male or female. After pollination, small fruit is produced that splits open to release an abundance of tiny cotton seeds. A single aspen tree can generate up to 54 million seeds that can travel up to 20 miles by hitching a ride on the wind. However, the seeds' lifespan is limited, and they require damp, bare soil to grow. Since seed survival is challenging, new aspen trees typically sprout from shoots growing from established roots.

ACTIVITY

Can you tell the difference between male and female flowers (catkins)? Look at the photographs on these pages carefully to learn how to identify male and female catkins. Then, in the spring, go outside and see if you can identify some Trembling Aspen trees in bloom. An aspen tree has only female or male flowers on each tree. The male flowers are brown catkins up to 12 cm long. They turn yellow with pollen. The female catkins are green and shorter than the male flowers.





Grab a magnifying glass or microscope and discover the beautiful structures inside the opening catkins!

Did you know?

The prairie crocus often starts blooming at the same time aspen does.

Amazing Aspens

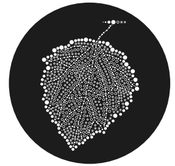
Bees are nature's little pharmacists! With their tiny backpacks, they collect resin from aspen buds, transforming it into an all-natural medicine called propolis. This miraculous substance is a hive-healing superhero, keeping bacterial and fungal "baddies" at bay and sealing up hive cracks. Beekeepers carefully collect propolis and dissolve it into alcohol, creating a potent extract to fight off bacteria, viruses, mold and mildew or reduce inflammation with mega anti-inflammatory and antimicrobial powers. One of Mother Nature's natural medicines.

Propolis or "bee glue" on wooden hive box.

Click to view: What is Propolis *(Video: 4:19)*

AZAADI TEACHINGS

Indigenous cultures used the aspen for medicine. The sticky buds contain a chemical called salicin. It behaves like aspirin and can be used as an anti-inflammatory or antiseptic. When the leaves are chewed and applied on insect stings and bites, they aid healing.



Photosynthesis

While animals get their energy from food, trees—such as Azaadi—generate it on their own. Through a process called photosynthesis, plants convert light energy from the sun into the sugar. The trees capture carbon dioxide (CO_2) and water (H_2O) into food used to grow and thrive.

A byproduct of photosynthesis is oxygen (O_2) which humans and other living animals need for breathing.

Compared to other trees, aspens boast higher rates of photosynthesis per unit of foliage, making them an efficient energy generator.

The roots, twigs and other parts of the Aspen are food for many kinds of animals who get their nourishment from the sugar they contain. Called biomass, these body parts are food for all kinds of animals. Biomass is also a living storage system for carbon: one Trembling Aspen can purify the air and remove up to 65.3 kgs of CO_2 from the atmosphere in one year.

What Aspens do in the Winter that other trees do not.

While other deciduous trees take a break, aspens continue to produce sugar for energy, even after they shed their leaves because of the special cells that grow in their bark. This remarkable feat helps them stay nourished throughout the winter. Bark photosynthesis has been measured down to -3C, says forest ecologist Dr. Jacques Tardif.

Did you know?

The bark of the Trembling Aspen produces a white powder that can be used as sunscreen.

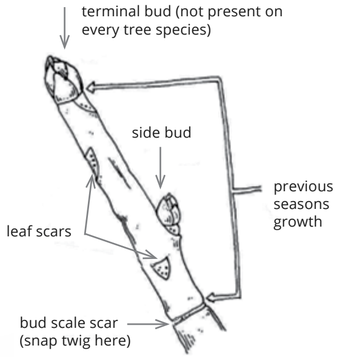
ACTIVITY

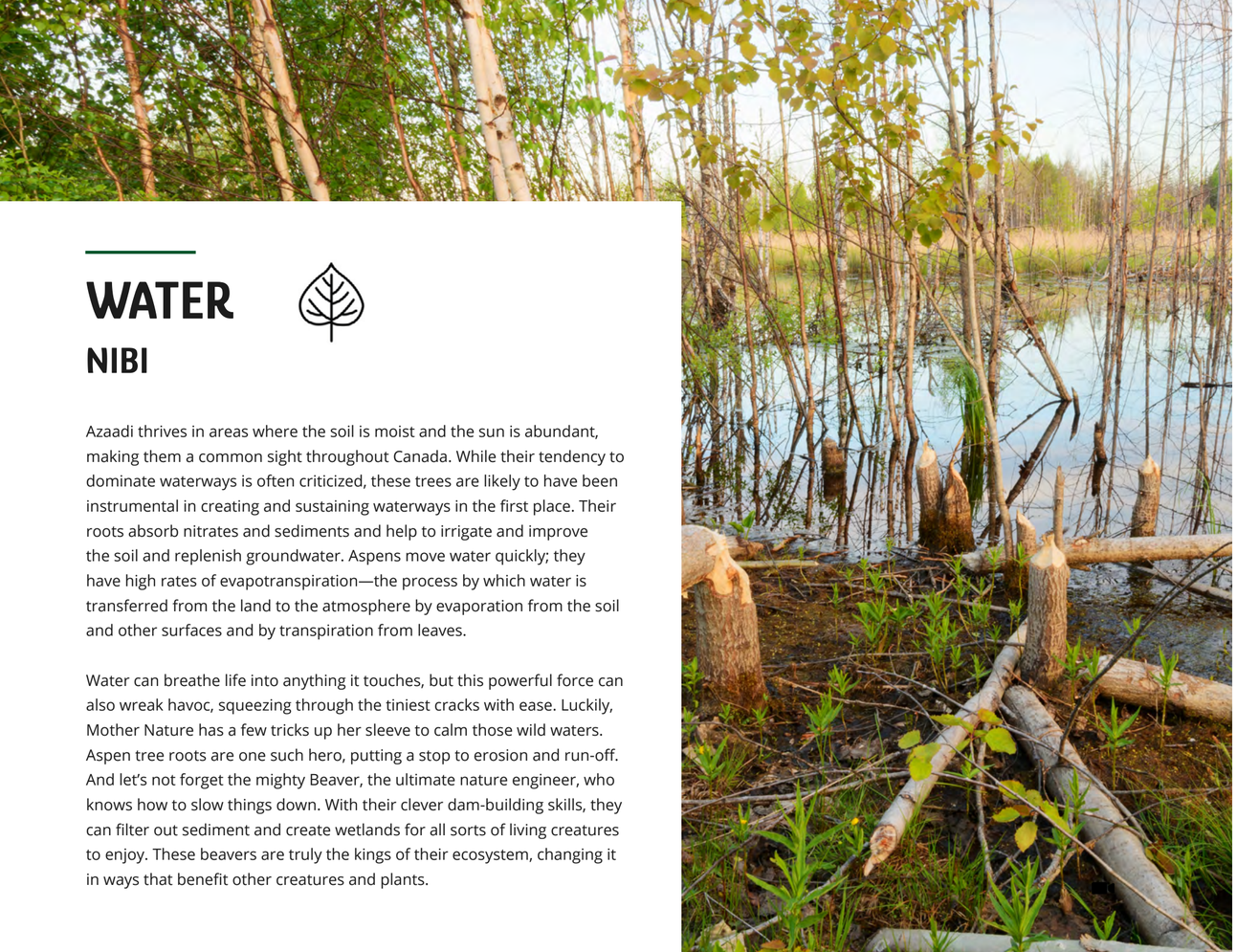
Parts of a Twig

Walk outside, find an aspen grove, and look for fallen twigs. Can you identify all the twigs' parts?

1. **Buds**—form leaves, which help the tree draw energy from the sun to make food.
2. **Bud scale scars**—mark where a twig stops growing for the season (fall), and begins growing again in the next season (spring).
3. **Pith**—transports nutrients throughout the plant Terminal bud (if present)—"Terminal" means end. A terminal bud is simply a bud that appears at the end of the twig.

Twig Diagram





WATER

NIBI

Azaadi thrives in areas where the soil is moist and the sun is abundant, making them a common sight throughout Canada. While their tendency to dominate waterways is often criticized, these trees are likely to have been instrumental in creating and sustaining waterways in the first place. Their roots absorb nitrates and sediments and help to irrigate and improve the soil and replenish groundwater. Aspens move water quickly; they have high rates of evapotranspiration—the process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from leaves.

Water can breathe life into anything it touches, but this powerful force can also wreak havoc, squeezing through the tiniest cracks with ease. Luckily, Mother Nature has a few tricks up her sleeve to calm those wild waters. Aspen tree roots are one such hero, putting a stop to erosion and run-off. And let's not forget the mighty Beaver, the ultimate nature engineer, who knows how to slow things down. With their clever dam-building skills, they can filter out sediment and create wetlands for all sorts of living creatures to enjoy. These beavers are truly the kings of their ecosystem, changing it in ways that benefit other creatures and plants.

ACTIVITY Build a beaver dam at home! Source: https://www.nps.gov/articles/buildabeaverdam.htm

Now that you've learned how beavers build their dams, try your hand at building a dam of your own!

Supplies

- A baking dish, plastic container, or any other waterproof container that is deep enough to hold water and your dam.
- Dam building materials: mud, dirt, sand, rocks, sticks, whatever you can find in your backyard!
- Tools you might need to build the dam, like shovels or trowels. Or just use your hands!
- Water.

1. Gather your dam building materials! Pretend your backyard is a forest and you are a beaver. What do you think is the best material for building your dam? What would a beaver use?

   Talk to a grown-up to make sure you have permission to take what you gather. You might find sticks, rocks, sand, or plants. Use dirt and water to make mud to hold it all together.
2. Using your materials, build your dam inside your container. Build it up using layers of mud, sand, twigs, or whatever natural materials you choose.
3. Slowly pour a small amount of water on one side of the dam.

Did the water break or go through your dam? Empty your container and try again! Remember: some water will trickle past your dam; a beaver dam on a stream or river doesn't completely hold the water back.

Did your dam hold most of the water back? Congratulations! You made a dam just like a beaver!

AZAADI TEACHINGS

The Anishinaabe are a people of the water; in their sacred teachings, Nibi (water) is the blood of Aki (Earth), the giver of life—a sacred energy that is part of us, flowing within and between us.

Did you know?

Beavers are the ultimate environmental superheroes? These furry animals work hard to transform their surroundings, and are the only beings, besides we humans, that can engineer habitats! Their go-to wood for building dams is the mighty Trembling Aspen tree, which also happens to be their top choice for a yummy snack.

Click to view: **Why Beavers are the Smartest Thing in Fur Pants** *(Video: 2:32)*

Canada's Aspen Industry

Canada is the second-largest exporter of wood products in the world with softwood lumber being its dominant product. In Canada Trembling Aspen is largely harvested to produce particle board, such as oriented strand board used in construction, and it is also used for pulp. Aspen is traditionally cheaper for manufacturing than other wood. The wood doesn't split easily, making it perfect for making furniture, chopsticks, cheese boxes, bowls, matches, and even medical tools!

Traditionally, Anishinaabe used Azaadi for drying fish in a smokehouse because it would burn longer than other types of wood. Dried aspen wood was used for smoking fish and meat because of its low sap content—trees with sap make a black fire. Aspen was also good for smoking moose hide as part of the tanning process. The wood was also used to build lodges, make canoe paddles and tipi poles, toys, and even musical flutes.

Click here to listen to traditional flute music.

Amazing Aspens

Do you snowboard? There's a good chance your snowboard is made of aspen plywood.*[1]

Salmon fish hanging in outdoor smokehouse.

Nibi / The Water Song

Click to hear The Water Song

Ne-be Gee Zah- gay- e- goo
Gee Me-gwetch Wayn ne me -- goo
Gee Zah Wayn ne- me- goo

ACTIVITY

Let's get wild in the kitchen!

Wild Sourdough Starter using Aspen Yeast!

Prepare to level up your culinary game with a wild challenge: make bread using the yeast of the aspen tree! Yes, you heard it right! Just dust off the white powder found on the outside of the bark and voila, you've got nature's own yeast!

Instructions:

The white powder found on the outside of the tree contains a good quantity of naturally occurring yeast. A sourdough bread mix kicked off with this powder will add some leavening and a great flavor to bread, pancakes, and other baked goods. Try scraping off a few teaspoonfuls, and add it to a soupy mix of flour and water. Throw in a tablespoon of sugar for good measure and wait a few days, stirring each day. The mix should begin to foam and smell "yeasty." Once this has occurred, add a portion of the mix to a bread dough recipe, replacing what you remove to perpetuate the starter.

Source: **lessonslearnedinthebush**

AZAADI TEACHINGS

In times of starvation bark and cambium could be eaten—the inner bark is rich in vitamin C and sugar.

Did you know?

Early Renaissance Italian art was painted on aspen wood panels, including the famous Mona Lisa!

French Artist Claude Monet created a series of aspen paintings. The Aspens series was painted in the summer and fall of 1891.

LAND

EARTH | AKI

The Aspen: Olympic Athlete of the Plant World

Did you know that trees could break athletic records too? The aspen certainly does! These super-trees can grow up to two meters in a single year and live for up to a century. This means that if their roots are damaged, it can spell game over for the entire organism. One aspen tree is actually only a small part of a larger organism. A stand or group of aspen trees is considered a singular organism with the main life force underground in the extensive root system. Before a single aspen trunk appears above the surface, the root system may lie dormant for many years until the conditions are just right, including sufficient sunlight. In a single stand, each tree is a genetic replicate of the other, hence the name a "clone" of aspens used to describe a stand.

The Trembling Aspen: Keystone Species that Supports a Thriving Habitat

Trembling Aspen plays a critical role in supporting flourishing ecosystems that provide food and shelter for a wide range of wildlife. These trees contribute significantly to soil nutrients and light filtration, which create a lush understory for many animals. During the winter, they drop their leaves, creating a thick layer of mulch and snow to accumulate, which in turn adds moisture to the soil in the spring. It's no wonder that Aspen forests are a favourite spot for birds and bugs alike!

Amazing Aspens

One of the oldest and heaviest living things in the world is a Trembling Aspen grove called Pando! This aspen grove is located in Salt Lake City, Utah. It has been around for an estimated 80,000 years, and boasts nearly 50,000 trunks!

Trembling Aspen is an important food source for white-tail deer and porcupines, says Dr. Jacques Tardif. Old Trembling Aspen trees affected by rot also provide valuable nesting sites for species such as the pileated woodpecker, which excavates cavities.

Canada's iconic moose particularly enjoys dining on aspen leaves. The moose is a traditional food staple for many Indigenous communities. Unfortunately, moose populations are dwindling across Canada due to various factors, including climate change, disease, deforestation, forest management, and sport hunting. Therefore, we must protect and conserve this species for future generations who rely on the moose as a traditional source of Indigenous food sovereignty.

Did you know?

A moose is an herbivore or vegetarian that will eat up to 27 kilograms of food a day! That's a lot of aspen leaves!

OJIBWE LEGEND OF THE MOOSE

Story by Isaac Murdoch of the Great Lakes

Many years ago, the people in the village were on the brink of death, starving, because the snow was too high for the men to hunt. It was horrible! The snow was so high it went way up past the wigwam door, and they had to make tunnels under the snow to use the washroom. One day, a young girl pleaded to the snow, “Please bring us life!”

In the distance, a moose heard her plea and went back to his people to tell them what the little girl said. That evening the moose people had a Great Council, and they all agreed that one of them would go into the village to save the people. In the morning, a lone moose walked into the village and gave his life.

The Ojibway honoured that moose with song, and praised the Great Spirit for listening to the children. This fall, when we go hunting, let’s all take the time to bring our children to our hunting camps, lodges, and wigwams, so their sacred voice can be cast out to where it needs to go. Perhaps the Great Medicine we all seek will come walking into our village when we most need it.

Nahow, Chi Miigwetch

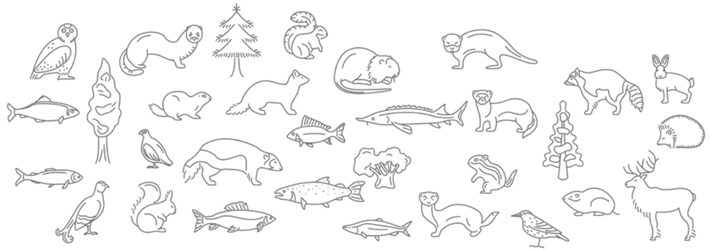
Click to view: **Video of Moose eating aspen** *(Video: 1:17)*

THE CANADIAN PRESS/AP/Becky Bohrer

Spotted in the Aspen Grove

Here are just a few of the plants and animals that often live near aspens:

TREES	PLANTS	INSECTS	MAMMALS	BIRDS
Alders	Blueberries	Bees	Rabbits	Blue Jays and Mountain Jays
Willows	Moss and Lichens	Butterflies	Moose and Deer	Hummingbirds
Birch	Chokecherries	Moths	Beavers	Chickadees
Balsam firs	Mint	Woodboring	Raccoons	Woodpeckers
Black spruce	Fireweed	Aphids	Squirrels	Grouse
White spruce	Cattails	Caterpillars	Bald Eagle	Owls
Jack Pine				Great Grey Owl Hawks
Tamarack (northern wild)	Mushrooms and Fungi including (Oyster)		Black Bears	Finch



ACTIVITY

Take a nature walk in an aspen grove. Are there conifers (cone-bearing trees) as well as deciduous trees? Wildflowers blooming? Remember to look up for birds and listen for hidden wildlife! Draw a picture of what you see.

Choose a tree near your home. For the next year, keep a scientist’s field notebook. Here are just a few of the things you could observe and document:

1. Growth
2. Changes in colours
3. Sounds and smells
4. Nearby plants, mosses, lichen, and fungi
5. Animals of all shapes and sizes

MOTHER EARTH

MAMA AKI

Indigenous people hold Azaadi close to their hearts, as a symbol of resilience and hope. Sadly, the mighty Trembling Aspen, like all wild species, is at risk due to climate change. As proud Canadians, we all have a part to play in shielding Azaadi and Mama Aki, our precious land, from the harsh effects of climate change.

AZAADI TEACHINGS

Azaadi teaches us:

- To be resilient and grateful
- To only take what you need and share what you can
- To preserve medicines and the land for seven generations to come, especially given that an aspen grove can live for tens of thousands of years.

Following these teachings will help us fight climate change—protecting Azaadi, Mother Earth, and all our relations.

How Climate Affects Aspen Trees

Things are heating up in Canada's western prairies. Over the years, temperatures have shot up by at least 1.5 degrees Celsius, and if you head north, it's closer to a two degree Celsius increase. Experts predict the mercury could soar up a whopping 11 degrees Celsius by the end of the century. This temperature rise could have a serious impact on all of Canada's living things, especially the Trembling Aspen which are extremely vulnerable to drought.

- Back in 2001-2002, a brutal drought hit the Aspen Parkland area, causing massive tree death across several patches of Trembling Aspen. According to scientist Dr. Jay Mailet, University of Winnipeg, the aftermath of this natural disaster was an alarming amount of dead biomass, equivalent to 7% of Canada's carbon emissions!
- In 2023, extreme heat and drought caused raging wildfires to burn across Canada; by the end of July 2023, over 120,000 km² of forest had been burned down, emitting around 290 million tonnes of carbon!

The Supertree that might just save the planet!

According to environmental activist James Steidle, the Trembling Aspen might be the supertree we need to address climate change. Trembling Aspens have roots that store vast amounts of carbon. Carbon dioxide is the most commonly produced greenhouse gas. The Trembling Aspen removes enormous amounts of carbon dioxide from the air and stores it. The only ecosystem that stores carbon more efficiently than a trebling aspen grove is peat bogs.

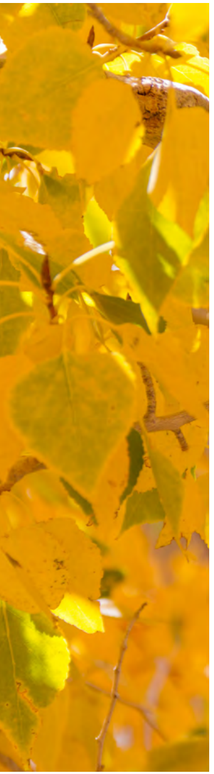
Trembling Aspen are also the cool kids of the forest, thanks to their white bark that reflects sunlight and keeps the air chilled. Trembling Aspens reflect 80% more sunlight in the summer and 60% more in winter than coniferous trees. Their ability to reflect heat and solar radiation also reduces their likelihood of catching fire. Moreover, aspens have a high water content and typically lack the volatile chemical compounds that can make trees like pine highly flammable.

Removal of aspen trees from mixed forests can contribute to rising temperatures or heat sinks, which in turn can lead to increased wildfires. Aspen forests are found to have higher levels of moisture in the soil; they are often said to be less flammable and have more flowing stream beds, making these forests more resistant to fiery disasters.

Aspen can help restore the environment too! Scientists have discovered that aspen roots are capable of purging a range of chemicals from both water and soil, in a process known as phytoremediation. Additionally, aspen is a source of biofuel, it could result in a cheaper and more eco-friendly alternative to fossil fuels. Aspen trees grow rapidly and contain high amounts of cellulose, a wood component that can be converted to the biofuel ethanol. **The aspen is the tree that's got it all!**

ACTIVITY

Participate in the Million Tree Project by collecting and planting maple keys!



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CREDITS

PROJECT LEAD

Dr. Lynda E. C. Colgan
Professor Emerita
Queen's University

STEM COMMUNITY OUTREACH COORDINATOR

Kathleen Miller
Science Rendezvous

PROJECT MANAGER/AUTHOR

Jennifer MacRae
Science Rendezvous

INDIGENOUS KNOWLEDGE KEEPERS

Grandmother Diane Maytwayashing
Whiteshell Petroforms, Manitoba

Late Brad Maggrath
Metis Nation of Ontario
Moose Story contribution

Isaac Murdoch Bombgiizhik
Anishinaabe of the Great Lakes, ON
Moose Story contribution

Patricia Beardy
Anishinaabe Language Keeper
Lake St. Martin First Nation

SCIENTIFIC CONTRIBUTORS/COLLABORATORS

Dr. Jay Maillet
University of Winnipeg

Dr. Jacques Tardif
University of Winnipeg

James Steidle
Environmentalist, Woodworker

FLUTE MUSIC

Miguel Medina
Singing Tree Flutes

GRAPHIC DESIGN

Cheryl Hallam
Hallam Design