# Sitka Spruce and Red Spruce

Pinaceae Picea sitchensis and Pinaceae Picea rubens

By Kale Jones

# Silvics of Pinaceae Picea sitchensis

- One of the tallest spruce species.
- Can exceed 300 feet in height.
- Also moderately shade tolerant tree.
- A long-lived conifer (average about 500 years)
- Requires increased light for rapid growth


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# Ecology of Pinaceae Picea sitchensis

- The bark is thin and scaly.
- The crown is broad conic in young trees, becoming cylindric in older trees.
- The shoots are very pale buff-brown, almost white.
- The leaves are stiff, sharp, and needle-like. (usually 2-3 inches long)
- Are dark, blue and greenish usually.
- The cones are pendulous, slender, and cylindrical, about 6–10 cm when closed.



# Range of Pinaceae Picea sitchensis

- Found mostly in the Northwest most portion of the United States.
- Commonly found in states like Northern California, Oregon, Washington, and Alaska.
- Thrives in maritime climates with high humidity and frequent fog.

# Uses of Pinaceae Picea sitchensis

- Provides habitats for birds and small mammals.
- Fallen logs create nurse logs for new plant growth.
- High-value timber species
- Can be used for aircrafts, musical instruments, and furniture.

# Challenges Pinaceae Picea sitchensis face

- Wind damage from being so close to the coast.
- Insects like aphids and beetles can have a small impact on the tree.
- Climate change eventually lead to stress on the tree.
- Human logging provides the biggest challenge for the Sitka Spruce.


# Silvics of Pinaceae Picea rubens

- Long lived conifer native to eastern North America.
- Prefers acidic, moist, well-drained soils and can establish on organic layers.
- Moderate growth rate often 300 years.
- Grows best at high elevations.
- Species reproduces mainly through wind-dispersed seeds.

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# Ecology of Pinaceae Picea rubens

- Evergreen needles, 1/2 to 5/8 inch long, sharply pointed and four-sided
- Grayish brown on surface, more reddish brown beneath
- Upright and straight, with a narrow crown
- Has a chestnut brown ovoid cone (1 to 1 1/2 inches long)
- Of White ce, B ay sp

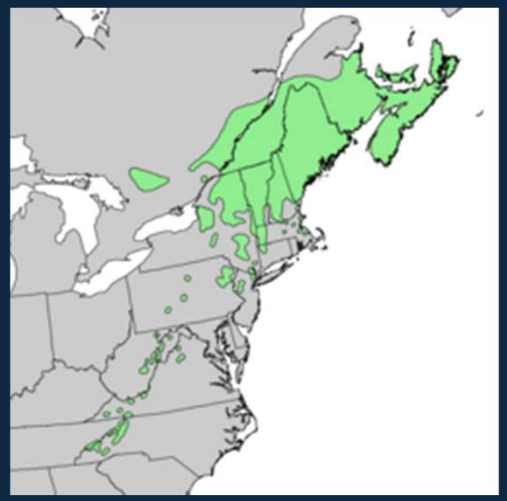
# Range of of Pinaceae Picea rubens

Throughout New England and the Northeastern United States.

South along the Appalachian Mountains to North Carolina and Tennessee.

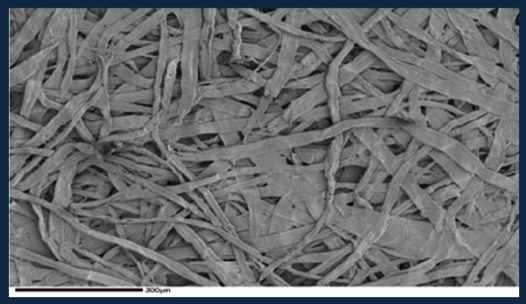
And can be found in Eastern Canada. (Nova Scotia, New Brunswick, Quebec)

Its distribution depends strongly on cool temperatures.



# Uses of Pinaceae Picea rubens

- Wood is light, straight-grained, and relatively strong.
- Used for construction, framing, and general wood products.
- Highly valued for guitar and violin soundboards.
- Widely used in the paper industry due to its fiber quality.
- Good habitat for birds, mammals, and insects. As well as important for watershed protection in mountain ecosystems.



# Challenges Pinaceae Picea rubens face

- Major historical problems include acid rain and air pollution.
- Warmer temperatures and drought stress out the species.
- Spruce budworm can defoliate trees and reduce growth.
- Past logging has reduced large areas of red spruce forests.
- They also have a slower recovery time than most trees.

# Interactive Activity

# The End

# Whitebark & Knobcone Pine

***Pinus albicaulis & Pinus attenuata***

**Tabby Kodiak**

**22 April 2026**

# Whitebark Pine - *Pinus albicaulis*

## Basics + ID

- High-elevation pine (7,000-12,000ft)
- Needles in bundles of 5
- Twisted, stunted growth

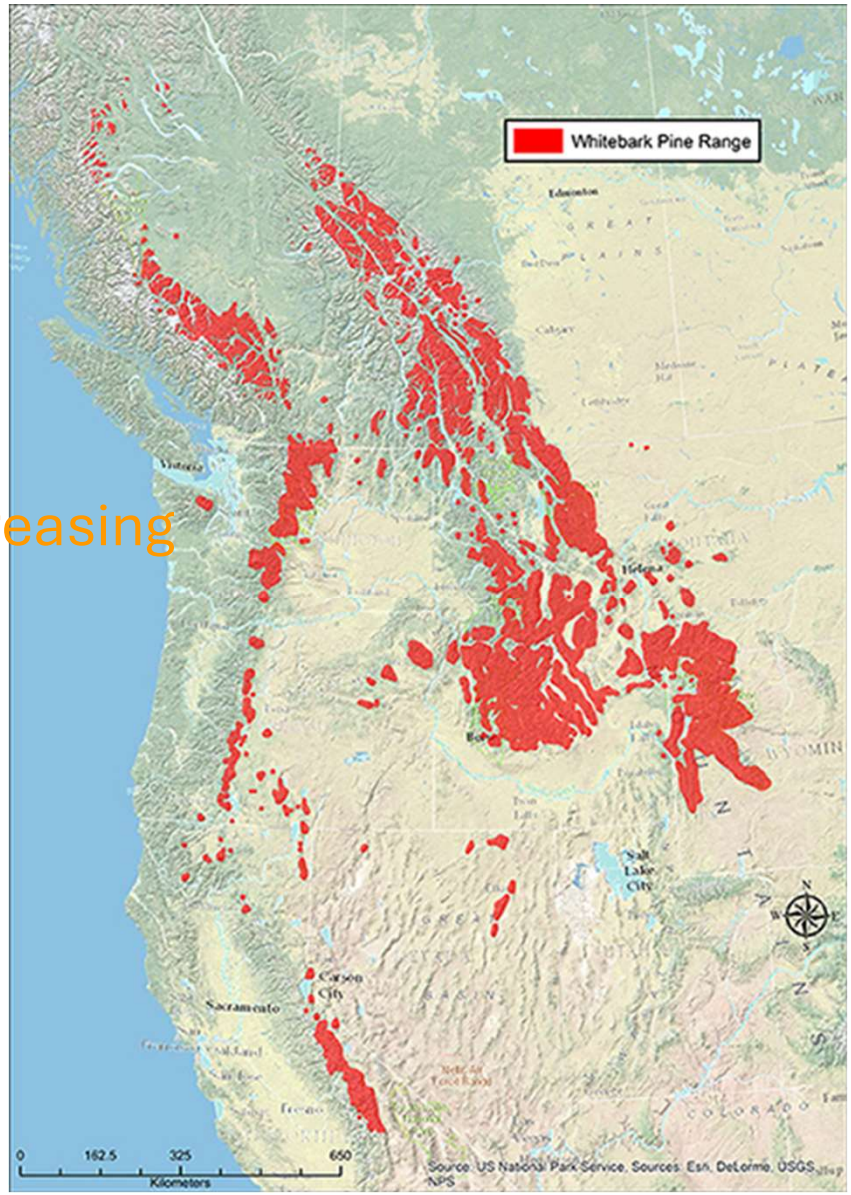
*Whitebark pine survives in extre ents where most trees can't*

# Whitebark Pine - *Pinus albicaulis*

- Western North America

Federal Legal status is listed as Threatened.

Conservation status : Vulnerable, pop. decreasing



# Whitebark Pine - *Pinus albicaulis*

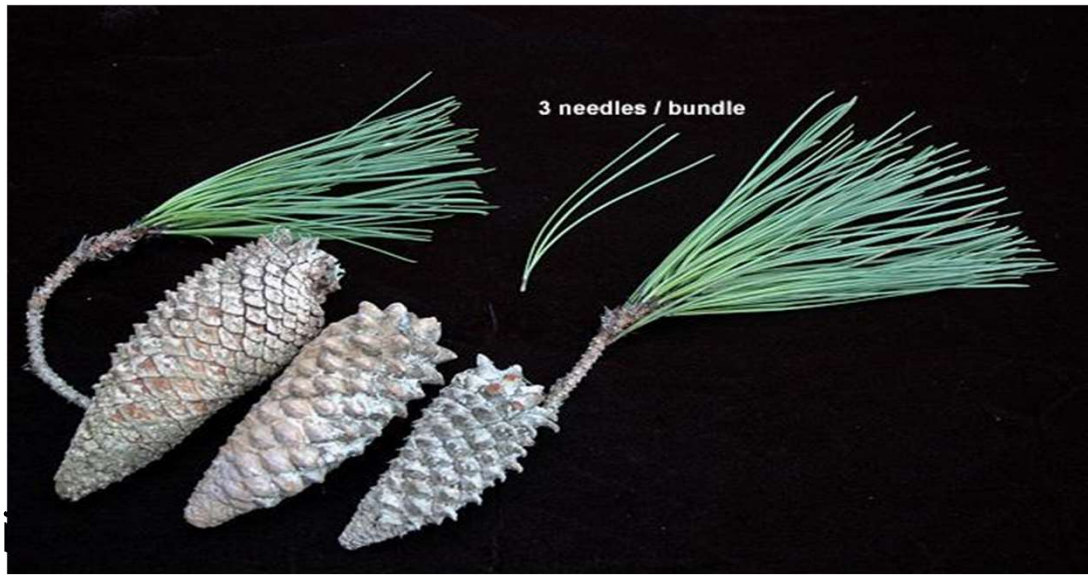
## Ecology and Importance

- Keystone species
- Seeds spread by Clark's nutcrack
  - Cache seeds
- Food for wildlife
- Declining due to disease + climat

"Where did I put my food again?"

*This tree depends on a bird to reproduce, and entire ecosystems depend on it.*

# Knobcone Pine- *Pinus attenuata*
# Basics + ID



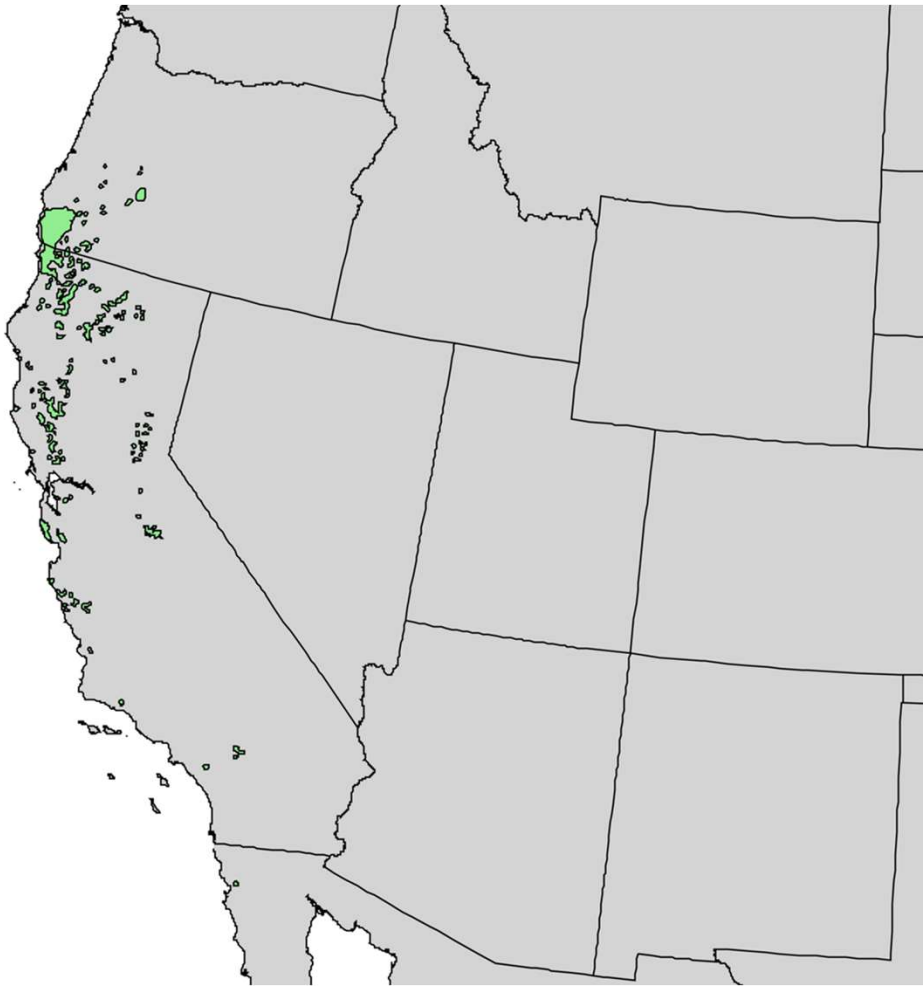

- Needles in bundles of 3
- Cones grow on trunk

*This species lives in fire-prone envi

Known as the gumtree that swallows its cones.

# Knobcone Pine- *Pinus attenuata*

- Found in California/Oregon
- Lower elevation, dry areas
- Conservation status: Least Concern



Knobcone Pine- *Pinus attenuata*

## Fire Adaptation

- Cones sealed shut
- Open ONLY during fire
- First to regrow after wildfires

*This tree literally needs fire to reproduce- no fire, no new trees.*

# *Do you know your pine cones?*

# Key Takeaways

- Whitebark = cold survival + bird relationship
- Knobcone = fire survival
- Two completely different strategies

*One depends on animals, the other depends on destruction-and both survive because of it.*

# Rocky Mountain and Great Basin Bristlecone Pine

Chakota D. Clinton

April 22nd,2026

# Rocky Mountain Bristlecone Pine
# Pinaceae *Pinus aristata*

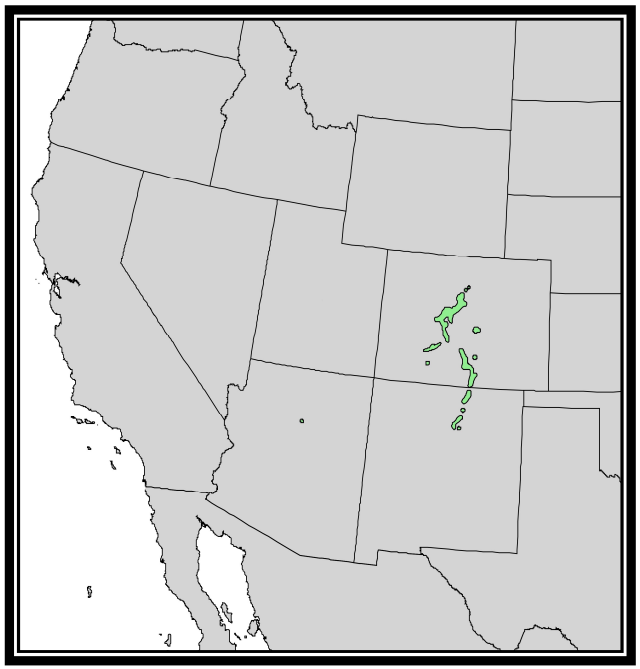
- VERY small 1-1.5in needles
- 5 needles per fascicle
- White resin flakes resembling fungus on needles
- Cones 3in long
- Scales tipped with a long bristle

# *Pinus aristata* Silvics

- Lifespan of 1,600-2,500 years
- INCREDIBLY slow growing
- 10-15in in height per decade
- Average height around 20-40ft
- Dry, rocky, drained soils

# *Pinus aristata* Range

- Primary distribution in the Rocky Mountains of Colorado
- Extends into northern New Mexico
- Outlier community- San Fransico peaks of Arizona



# Great Basin Bristlecone Pine
# Pinaceae *Pinus longaeva*

- 1-2in Needles, 5 per fascicle
- Needles usually lack resin flakes
- Visually very similar to *Pinus aristata*
- Needles less sharp and wider
- One giant difference. AGE

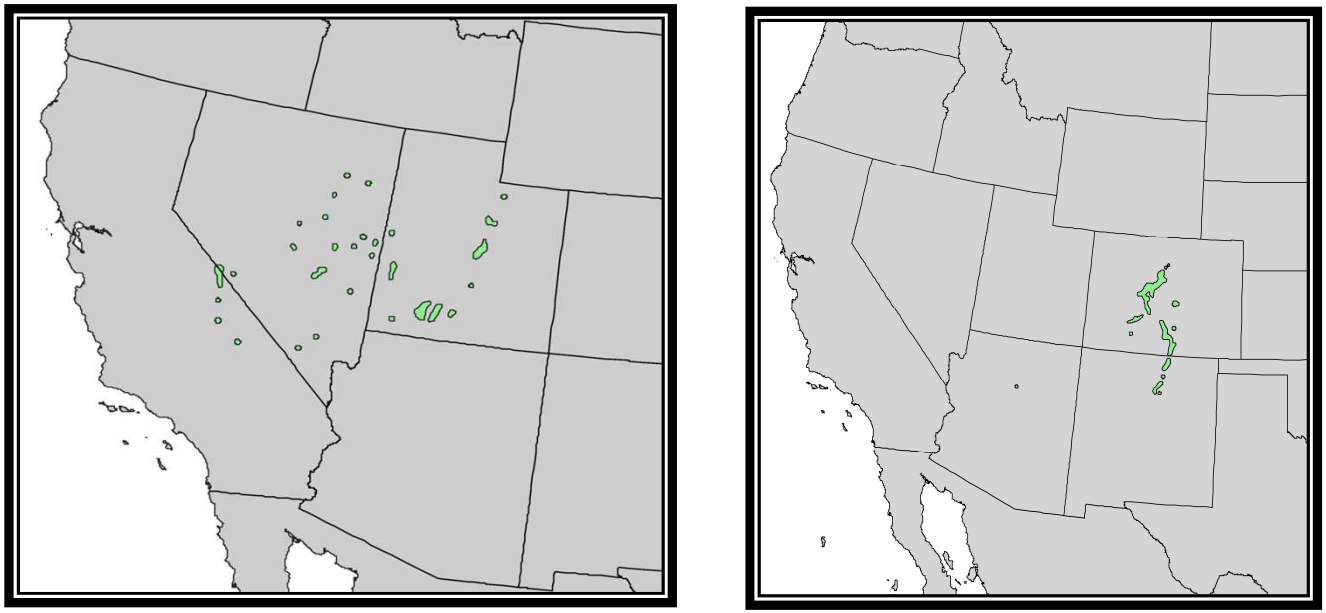
# *Pinus longaeva* Silvics

- Lifespan of 4,000-5,000 years
- 1in in DBH every 100 YEARS
- 20-60 ft in height, heavily stunted by elevation
- Dry, well-drained mountain slopes

# *Pinus longaeva* range

- HIGH elevation 6-11 thousand ft above sea level
- More western compared to *Pinus aristata*
- California's White & Inyo mountains
- Nevada's Great Basin Range
- Extends into southern and central Utah

*Pinus longaeva* range vs. *Pinus aristata* range

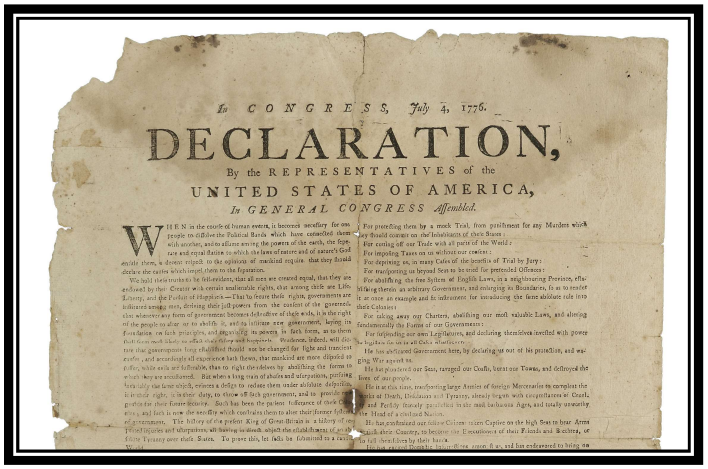


# Methuselah- Oldest tree on Earth?

- Oldest discovered non-clonal organism on Earth
- Roughly 4,850 years old
- Inyo National Forest in California's White Mountains
- Data used to calibrate Carbon-14 dating
- Multiple core samples needed to determine age

# How many events has Methuselah seen?

1. Human's first writing systems in Mesopotamia
2. The Pyramids of Giza's construction
3. The first Olympic Games
4. The fall of the Roman Empire
5. The Black Death
6. Colombus arrives in the Americas
7. The Declaration of Independence is signed



In CONGRESS, July 4, 1776.

DECLARATION,

By the REPRESENTATIVES of the

UNITED STATES OF AMERICA,

In GENERAL CONGRESS Assembled.

# The Answer?... All of them

1. Human's first writing systems in Mesopotamia- **Methuselah sprouts**
2. The Pyramids of Giza's construction- **270 years old**
3. The first Olympic Games 776 BCE- **2,056 years old**
4. The fall of the Roman Empire 476 CE- **3,300 years old**
5. The Black Death 1347 CE- **4,178 years old**
6. Colombus arrives in the Americas 1492 CE- **4,323 years old**
7. The Declaration of Independence is signed 1776 CE- **4,607 years old**

# An Unfortunate Mishap

- Wheeler Peak, Nevada 1964
- Specimen cut by grad student with USFS permission
- Specimen nicknamed “Prometheus”
- Found to be even OLDER than Methuselah at 4,844 years old
- Methuselah was 4,788 at the time
- About 2,900 countable rings


(Above) A cookie from Prometheus at the Great Basin National Park visitor center

# Questions?

# Jack Pine (Pinus banksiana) and Red Pine (Pinus resinosa)

By Sam Stanley

## Jack Pine

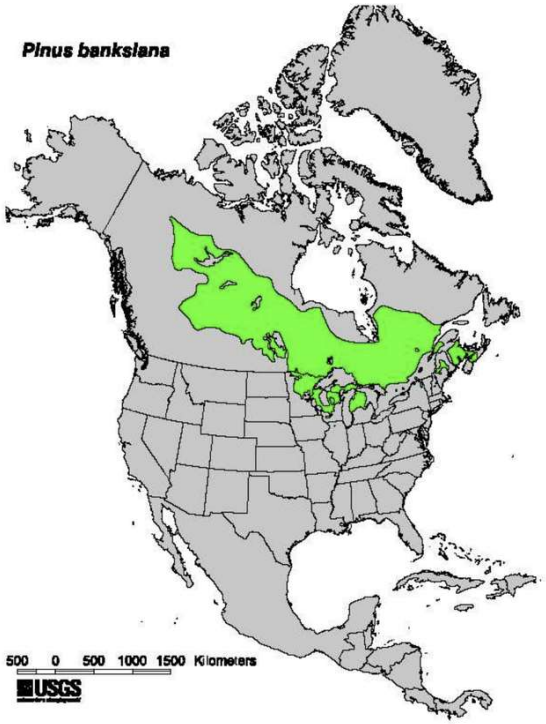
## Pinaceae Pinus banksiana

Other common names include:

- Scrub Pine
- Banksian Pine
- Hudson Bay Pine

Has thin, scaly, medium to dark gray colored bark, with reddish brown colored bark when younger.

Jack Pine ranges from northern US to most of Canada.




What is Jack Pine used for:

- Pulpwood
- Timber after 60 to 70 years of growth
- Lumber
- Helping to saving an endangered species called Kirtland's Warbler

## Jack Pine

## Pinaceae Pinus banksiana

They usually live 50 to 100 years.

- Oldest Jack Pine recorded was 246 years old.

They typically grow 25 to 60 feet tall.

- Tallest Jack Pine recorded was 73 feet tall.

They have fascicles of 2 and its needles can grow between ¾ to 2 inches long

Good at repopulating recently burned forests and does well in drier soils and colder climates.

The cones are 1 to 3 inches in length, oftenly curved, and are usually in pairs.

## Red Pine
## Pinaceae Pinus resinosa

Also can be called Norway Pine

Typically live from 300-400 years.

- Oldest Red Pine is about 500 years old

Usually grow between 50 to 100 feet tall.

- Tallest known one is 124.7 feet tall

The Red Pine's range extends from northeastern part of the US to the southeastern part of Canada.

What Red Pine is used for:

- Lumber
- Utility Poles
- Cabin Logs
- Pulpwood

## Red Pine
## Pinaceae Pinus resinosa

Red Pine has thick, flaky, platy, and reddish brown bark.

The needles of Red Pine grow between 4 to 6 inches long and are in fascicles of 2.

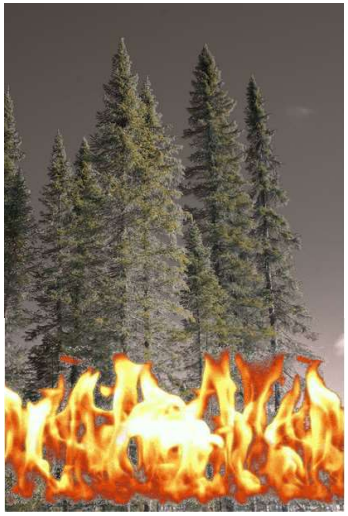
The pinecones are between 1.5 to 2.5 inches in length, egg shaped, shiny chestnut brown or reddish brown color.

# Fire Ecology of Both Trees

## Jack Pine

Easily catch on fire, but they have serotinous cones that open up due to heat

Takes about 122 degrees fahrenheit for the cones to open up



## Red Pine

Highly Fire Resistant thanks to thick bark

Unlike Jack Pine, their cones are not serotinous

# Colorado Pinyon (*Pinus edulis*) & Mexican Pinyon (*Pinus cembroides*)

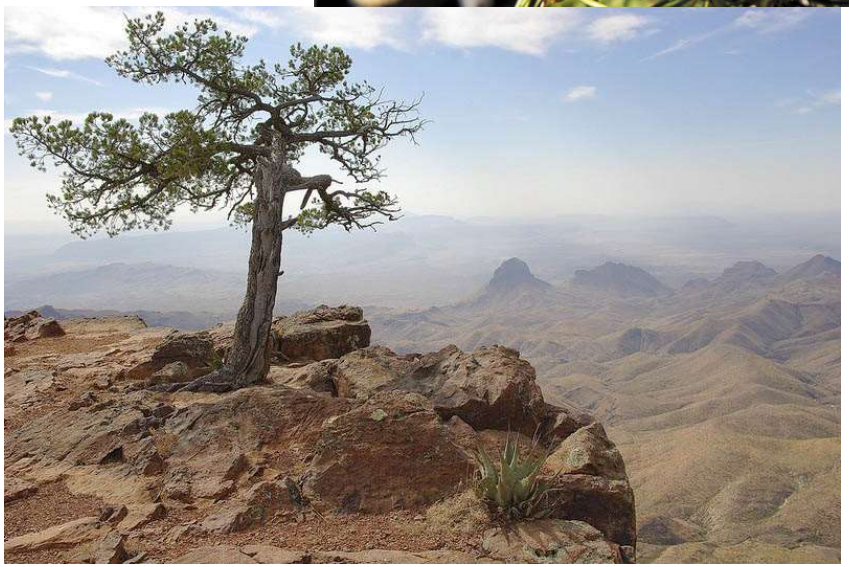
Ryder Anderson

# Mexican pinyon (*Pinus cembroides*)

- Monoecious
- Shrubby growth form
- General lifespan of 200-500yrs
- Starts having seeds around 25yrs

# Habitat and Morphology

- 3 Needles per fascicle
- 1-2.5” length needles
- Height avg. 16-20’
- Cones yield pine “nuts”



- Hot, dry climate
- Elevation 5000-7000’

Mexican- Pinus cembroides

# Range

- Southwestern U.S.
- North & Central Mexico
- Mountainous regions

Mexican- Pinus cembroides

# Overall Value

- Low commercial timber value
- Pine nuts for human consumption
- Landscape use in xeriscape gardens
- Wildlife
  - Seeds eaten by
  - Deer
  - Turkey
  - Squirrels
  - Parrots

Mexican- Pinus cembroides

# Champion Trees

- Biggest
  - Located in Big Bend
  - 65.6’ Height
  - 35.4” Diameter
  - 42.6’ Crown spread
- Oldest
  - Coahuila, MX
  - 351yrs

Mexican- Pinus cembroides

# Colorado pinyon (*Pinus edulis*)

- Monoecious
- 300-500yr lifespan
- Slow growing

# Habitat and Morphology

- 2 needles per fascicle
- 1-2” needles
- Avg. height 10-35’
- Deep tap-roots sometimes 40’+

- Also dry, hot climates
- And 5000-8000’ elevation
- Rocky soils

Colorado- Pinus edulis

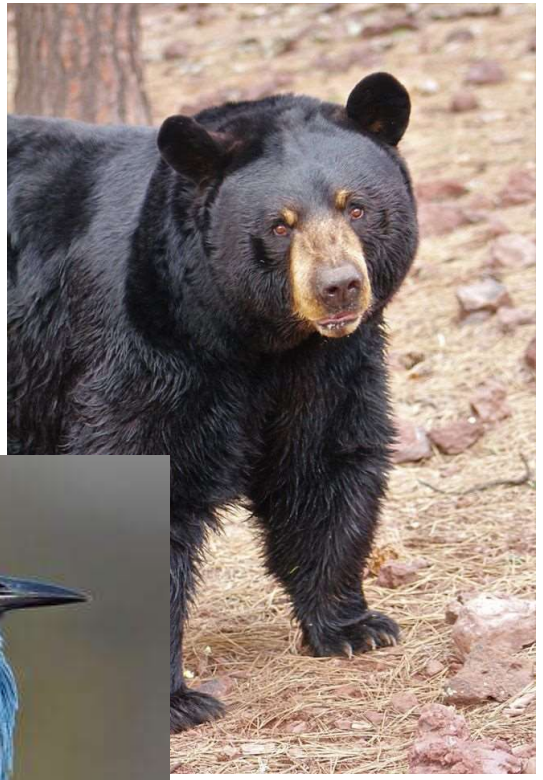
# Range

- Foothills, mesas, and canyons
- Southwestern U.S.
- Dry woodlands often with Junipers

Colorado- Pinus edulis

# Overall Value

- Poor timber value
- Aromatic Firewood
- Again, pine nuts
- Also landscaping
- Wildlife
  - Pinyon Jay
  - Bears
  - Deer
  - Rodents



Colorado- Pinus edulis

# Champion Trees

- Largest
  - Located in Cuba, NM
  - 67.7” DBH
  - 68.9’ Height
  - 52.5’ Crown Spread
- Oldest
  - 1115yrs old
  - East-Central Utah

Colorado- Pinus edulis

# Pinyon-Juniper (PJ) Woodlands

- Found between 4900’ and 8000’ elevation
- Largely found across the Rocky Mountains and Sierra Nevada
- Colorado Pinyon
- Utah Juniper
- Crucial Wildlife habitat/food source
- Considered “old-growth” when mature

# Interesting Fact: The multiple spellings

- Pinyon (American English)
- Piñon (Original Spanish spelling meaning “pine nut”)
- Pinon (Simplified American spelling of the Spanish word)
- Pignon (Rare use in reference to European Pine Nuts)