Lodgepole Pine Pinus contorta



- 1¹/₄-2 ³/₄" egg-shaped cones with sharp-tipped prickles.
- Needles come in bundles of two.
- When mature, lodgepole pines are tall, slender trees.



· Abundant at lower elevations in the mountains.

Key Differences from Limber Pine:

- Limber pines have five needles per bundle.
- Limber pines have shorter needles and larger cones without prickles.



Key Differences from Whitebark Pine:

• Whitebark pines have five needles per bundle. Their needles are usually shorter than lodgepole pine needles.

• Whitebark pine cones are darker and do not have sharp tips.

• In June and July, you may see small male pollen cones on trees. Lodgepole pine pollen buds are yellow-orange as opposed to the raspberry red pollen buds of whitebark pine.

Limber Pine Pinus flexilis



• 3-6" elongate cones, tan to yellowbrown, green when immature.

- Needles come in bundles of five.
- As the scientific name implies, limber pines have very flexible stems.



Key Differences from Lodgepole Pine:

- Lodgepole pines have two needles per bundle.
- Lodgepole cones are sharply spiked and much smaller.

Key Differences from Whitebark Pine:

- Limber pine cones are lighter brown/green, longer, and stay more intact over time than whitebark pine cones.
- Whitebark pine's outermost twigs tend to be the width of a pencil; limber pine's outermost twigs may be thinner.



• Limber pines become rare above 9,000 ft.

• In June and July, you may see small male pollen cones on trees. Limber pine pollen buds are yellow-orange as opposed to the raspberry red pollen buds of whitebark pine.

Whitebark Pine Pinus albicaulis

• 1¹/₂-2 ³/₄" oval-shaped cones, purple to dark brown.



• Needles come in bundles of five.

Mature trees often have a full, round crown, though they can also be small and stunted.

Key Differences from Lodgepole Pine:

- Lodgepole pine needles are longer and come off the branch in bunches of two.
- Lodgepole cones are sharply spiked. Key Differences from Limber Pine:
- Limber pines have longer cones that are light brown.
- Whitebark pine's outermost twigs tend to be the width of a pencil; limber pine's outermost twigs are thinner.



• Limber pines become rare above 9,000 ft.

• In June and July, you can usually see small male pollen cones on trees. Whitebark pollen cones are raspberry red while lodgepole and limber pines both bear yellow-orange pollen buds.

Red, Dying Trees

- Trees with red needles are dying or have died within the last few years.
- You can usually identify these trees by their needles, cones, and bark just as if they were alive.
- Sometimes trees may only be partially dead or dying. If a red tree has some green branches present-it's still alive.





Lodgepole Pine Pinus contorta



Whitebark Pine Pinus albicaulis



Limber Pine Pinus flexilis



Dead, Grey Trees

- It can be very difficult to identify long dead trees and there is no need to do so during this survey.
- Bark *can* help with identification of some dead trees.
- Cones often remain on the gray branches of dead lodgepole pine unlike the dead whitebark below.



Douglas-fir Pseudotsuga menziesii

• 2-3¹/₂" cones, narrowly eggshaped, with protruding bracts. No other tree has cones like the Doug-fir!

• Single flat needles with rounded tips.

• Mature Doug-firs are large trees with slightly drooping branches.



Key Differences from Subalpine fir: • Douglas-fir is not actually a fir. Firs have cones that grow upright on their branches while Doug-firs' distinctive cones dangle below their branches.

• In late summer, you can locate the buds of the coming year on the branch tips. Doug-fir has sharp pointy buds while subalpine fir has tiny, rounded buds.

Key Differences from Engelmann Spruce:

- Mature Doug-fir bark is deeply furrowed with broad ridges.
- Engelmann spruce needles are four-sided in cross-section and have sharp-pointed tips.



Engelmann Spruce Picea engelmannii



• 1¹/₂-2¹/₂" light brown, cylindrical cones, hanging beneath branches. Cone scales flexible, thin, toothed, or wavy along outer edges.

• Mature spruce bark is light brown to reddish-brown and may form potato-chip-like flakes.



• Needles are sharply pointed at tips. Shaking hands with the 'spiky'Engelmann spruce is less comfortable than greeting a 'friendly' fir.

Key Differences from Doug-fir:

• Engelmann spruce has papery cone scales but no bracts protruding from cones.

• Engelmann spruce needles are four-sided in cross-section and have sharp-pointed tips; fir needles are flat with rounded tips. W W

Key Differences from Subalpine Fir:

- Spruces sag, firs flag: Engelmann spruce cones are below the branch while subalpine fir cones perch atop branches.
- Engelmann spruce needles are four-sided with sharp tips.

Subalpine Fir Abies lasiocarpa

• 2¹/₂-4" cylindrical dark cones, borne on upper branches. Cones mostly drop their seeds and scales

until only the core is left behind.

- Mature trees have a narrow, pointy silhouette.
 - Subalpine fir bark often has many small pockets of resin.

• Single flat needles curve towards the topside of the twig.

Key Differences from Douglas-fir:

• Subalpine fir has tiny rounded buds at the end of its branches in late summer. Doug-fir buds are sharp and pointy.



• Mature subalpine fir bark is marked with many horizontal lines rather than vertical ridges.

Key Differences from Engelmann Spruce:

• Firs flag and spruces sag: Engelmann spruce cones hang underneath branches, while fir cones, if present, are held erect.

• Friendly firs vs. spiky spruces: spruce needles have sharp-pointed tips.



Quaking Aspen Populus tremuloides

Aspen is the sole widespread broadleaf tree of Wyoming's mountain forests.

- Deciduous tree with leaves instead of needles.
- Very thin, light-colored bark.
- Mature aspens are tall, slender trees.
- May grow in a large, pure stands. These groves are often made up of clones—trees with the same genetic make-up that have sprouted vegetatively rather than from seeds.







Douglas-fir Pseudotsuga menziesii



Engelmann Spruce Picea engelmannii



Subalpine Fir Abies lasiocarpa



Quaking Aspen Populus tremuloides



Blue Spruce Picea pungens

- The needles of blue spruce have four sides and roll easily between your fingers.
- Blue spruces needles have very sharp points!

• Needles may have a waxy coating

- that gives them a blue-green color. Key Difference from Engelmann Spruce:



- Blue spruce cones (2¹/₄-4") are generally longer than Engelmann spruce cones.
- Blue spruce tends to stay along rivers and lowlands. Higher in the subalpine forest, Engelmann spruce is much more common.
- Key Differences from Subalpine and Doug-firs
- Fir and Doug-fir needles are flat and not easily rolled between your fingers.
- Spruce twigs that lack needles are very bumpy (see picture of twig with needles above). Fir twigs without needles are much smoother.



Narrow-leaved Cottonwood Populus angustifolia

Cottonwood is very common along lower elevation rivers and streams, but is usually absent at higher elevations.

- Deciduous tree with leaves instead of needles.
- Leaves are long, slim and come to a narrow point.
- Mature bark is light tan-gray with deep furrows.





Signs of Mountain Pine Beetle

• Small, yellow or reddish, popcorn-like blobs occur when the tree tries to push out invaders with pitch.

• Under a dead tree's bark, you may see the J-shaped or curving tracks of mountain pine beetle activity.







Blue Spruce Picea pungens



Narrow-leaved Cottonwood Populus angustifolia



Signs of White Pine Blister Rust

- A rusty, orange fungus may be present on blistered bark.
- Affected areas attract porcupines that further damage the tree by gnawing through the bark.
- Damage can be lethal if it goes all the way around the trunk—girdling the tree.



