

## How to differentiate whitebark and limber pine in the field

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Feature	Whitebark Pine	Limber Pine
<b>Young bark</b>	Bark pale gray, from a distance appearing whitish to light gray and smooth	Bark light grey, nearly smooth
<b>Older bark<sup>1</sup></b>	With age becoming light brown and thinly plated without conspicuous fissures	With age (generally >30 cm DBH) becoming dark reddish-brown and cross-checked longitudinally into scaly plates and conspicuous fissures
<b>Branches<sup>2</sup></b>	Roughening of branches at a larger size, >10 cm diameter	Roughening of branches at a smaller size, <10 cm diameter
<b>Pollen cone<sup>3</sup></b>	Scarlet in colour, cylindro-ovoid, ca. 10-15 mm	Yellow in colour, broadly ellipsoid-cylindric, ca. 15 mm; as they age may turn reddish-brown
<b>Seed cone<sup>3</sup></b>	Spreading, symmetric, broadly ovoid to depressed-ovoid or nearly globose, 4-8 cm, dull gray- to black-purple, sessile to short-stalked; scales thin-based and easily broken off.	Spreading, symmetric, lance-ovoid before opening, cylindro-ovoid when open, 7-15 cm long, green in 1 <sup>st</sup> year, yellow-brown in 2 <sup>nd</sup> year, resinous, sessile to short-stalked; scales thick-based, securely held on.
<b>Cone location</b>	Cones usually on apical portion of canopy	Cones may be throughout the canopy, even on lower branches
<b>Cones at maturity</b>	Remain closed on tree (unless dislodged by animals), not opening naturally but through animal agency	Open on tree, shedding seeds and falling soon thereafter
<b>Cones on ground</b>	No intact cones of prior cone crop at base of tree; any cones show predation and disintegration	Intact cones (usually seedless) of prior and older cone crops often found at base of tree with no sign of predation

**References:**

<sup>1</sup> Kral, R. 1993. *Pinus*. Flora of North America north of Mexico, Vol. 2. Flora of North America Editorial Committee (eds.). Oxford University Press. Available online [<http://www.efloras.org>].

<sup>2</sup> Gymnosperm Database. 2006. *Pinus albicaulis*. The Gymnosperm Database. Available online [<http://www.conifers.org/pi/pin/albicaulis.htm>]; [<http://www.conifers.org/pi/pin/flexilis.htm>].

<sup>3</sup> Steele, R. 1990. *Pinus flexilis* James limber pine. In : Burns, R. M. B. H. Honkala, technical coordinators. *Silvics of North America*. USDA Forest Service, Agriculture Handbook 654, Wash. D.C. Pgs. 348-354.



*Whitebark pine seed cones on the left, and limber pine seed cones on the right. Some of the WBP cones have been hammered by Clark's nutcrackers. Photo courtesy: Katherine C. Kendall.*



*Left: in this early spring photo of limber pine seed cones, last year's open brown cones and the current year's green growing cones (top) are shown. Right: mature whitebark pine cones showing one that has been hammered by Clark's nutcrackers, exposing the seeds. Photos: Cyndi M. Smith.*



*Limber pine cone scales (top) are thicker than whitebark pine cone scales (bottom). Photos: Cyndi M. Smith.*



*Limber pine pollen cones (left photo); whitebark pine pollen cones (right photo). Photos: Cyndi M. Smith.*