

## Seed collections for the genetic conservation of threatened whitebark pine

Whitebark pine (*Pinus albicaulis*) is the top priority for forest tree genetic conservation in BC and Alberta, as well as in many U.S. states. Over the past few decades, stands have suffered unprecedented mortality from an introduced fungal pathogen and from the recent mountain pine beetle epidemic. This mortality is exacerbated by fire suppression that is changing the species habitat and reducing its ability to naturally regenerate. Future ecosystem shifts due to climate change are also a cause for concern, as whitebark pine grows near the timberline in areas strongly impacted by climate change.



Whitebark pine seeds are one of the largest among North American pine species, and are an important food source for many animals, including the Clark's nutcracker and grizzly bears. Because of this, obtaining seed for conservation collections requires caging cones in the early summer to prevent busy foragers from getting them. From 2007 to 2010, funds directed by the FGC have supported cone collections from natural stands throughout BC. The objective of these collections is to capture a broad spectrum of the species genetic diversity. Seeds are archived at the MFR Provincial Tree Seed Centre as a long-term ex-situ germplasm reserve. These efforts have also been supported by work from volunteers from conservation groups who have helped with cone caging, cone collection, and planting research trials. The Provincial Tree Seed Centre now safely stores collections of whitebark pine from 24 locations and over 300 individual trees, with more seed to be added in coming years.



In addition to ex situ conservation measures, projects have been undertaken at the UBC Centre for Forest Conservation Genetics to better understand the genetic differences among populations.\* Other studies are investigating opportunities for assisting whitebark pine migration to areas north of its current range that are expected to become suitable habitat as climates change (S. McLane, PhD dissertation in progress).



\*Bower, A. B, and S. N Aitken. Ecological genetics and seed transfer guidelines for *Pinus albicaulis* (Pinaceae). *Am. J. of Botany* 95(1):66-76.

### Photos:

Whitebark pine killed by white pine blister rust (*J. Krakowski*)

Whitebark pine seeds (actual size) are an important food source for many animal species (*J. Wood*)

Whitebark pine cone (*J. Woods*)

Clark's nutcracker foraging for whitebark pine seeds (*J. Woods*)



**Author:** Jack Woods. This article originally appeared in the FGC Annual Report 2009/10.