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Nine species of five-needle pines (*Pinus* L. subgenus *Strobus* Lemm.) are native to the United States: *Pinus monticola*, *P. strobus*, *P. lambertiana*, *P. albicaulis*, *P. flexilis*, *P. strobiformis*, *P. aristata*, *P. longaeva*, and *P. balfouriana*. To varying degrees, these species are important in maintaining ecosystem health and in providing commercial products and scenic beauty. All nine species of pines are susceptible to a non-native, invasive pathogen, *Cronartium ribicola*, the cause of white pine blister rust. Blister rust is now known to occur on eight species in natural forests or reforested stands (rust has not yet been documented on *P. longaeva* in native forests). Very high levels of infection and mortality occur in some parts of the ranges of several of these species, and there is little likelihood that current levels of natural regeneration will maintain these species in the areas of highest rust hazard (Harvey *et al.* 2008, Samman *et al.* 2003, Schwandt 2006). In the western United States, where eight of the nine species occur (all except *P. strobus*), blister rust continues to expand its geographic range.

Harnessing the genetic resistance to blister rust will be a key to retaining or restoring these species in their ecosystems or utilizing them in reforestation (Samman *et al.* 2003, Schwandt 2006). Fortunately, some level of genetic resistance to the rust exists in all of our native species (Bingham 1972; Hoff *et al.* 1980; Kegley and Sniezko 2004; Sniezko *et al.* 2008a, 2008b). Operational programs to develop genetic resistance have been underway for decades for *P. monticola*, *P. lambertiana*, and *P. strobus* (e.g. McDonald *et al.* 2004, Sniezko 2006), but continued efforts will be needed to increase the level of resistance and retain genetic diversity as well as to utilize resistant seedlings in reforestation and restoration. Recently, additional concerns have been raised about the future viability of the high elevation five-needle pine species (Aubry *et al.* 2008, Samman *et al.* 2003, Schwandt 2006). Concerted efforts to evaluate the level of genetic resistance in *P. albicaulis* (whitebark pine) have now begun (Mahalovich *et al.* 2006, Sniezko *et al.* 2007), and smaller scale efforts to evaluate the baseline level of rust resistance in the other high elevation species are just beginning (Schoettle pers. comm.; Sniezko *et al.* 2008a, 2008b). In addition to resistance to the rust, the maintenance of genetic diversity and adaptability are also key elements to ensure successful restoration of these species. Additional studies of molecular and adaptive genetic diversity have been recently completed or are underway (for a summary of work with whitebark pine see Aubry *et al.* 2008).

A national Forest Service workshop 'Genetic Conservation of U.S. Forest Trees Threatened by Invasive Insects and Pathogens' was held in October 2007, and the five-needle pines were one of the four species groups of focus (species threatened by non-native insects or pathogens). The threat of blister rust is compounded by impacts of mountain pine beetle (*Dendroctonus ponderosae*) in the western states (Gibson *et al.* 2008), climate change, and fire (both fire exclusion, and catastrophic fires). Concerted action will be needed to ensure that the genetic resources of these species are available for the future. The Forest Service is well-placed to undertake the conservation of these species, but success will depend on key factors such as partnerships, funding, and innovative strategies to rehabilitate or restore damaged ecosystems. Short conservation and genetic overview documents are currently being prepared for all nine species to provide summaries of past research and possible genetic conservation needs.

National Parks and National Forests currently provide *in situ* conservation areas for many of the white pine species. However, with the current and looming impacts of blister rust and other factors, more effort is needed to retain these resources *in situ* (Schoettle and Sniezko 2007). In addition, *ex situ* genetic conservation, principally via seed collections, will be needed.

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Prior to 2008, relatively few seed collections were available for the high elevation white pine species. Funding was available in 2008 for some additional individual tree cone collections from Colorado (*P. aristata* and *P. flexilis*) and New Mexico (*P. strobiformis*). A good cone crop is forecasted for *P. albicaulis* for 2009, and groups in several regions are hoping to greatly increase their seed collections.

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