

Bear Management Issue Brief February 2012

Grizzly Bears and Whitebark Pine

Key Points

- Whitebark pines occur in over 2 million acres within the six national forests and two national parks that comprise the Greater Yellowstone Ecosystem (GYE).
- Seeds of whitebark pine are a high quality food consumed by bears during the fall.
- During years with abundant whitebark seed production, bears feed almost exclusively on them from late August through early November.
- White bark pine seeds have a positive influence on grizzly bear reproduction and survival.
- During years with poor whitebark seed production there tends to be more grizzly bear-human conflicts on the periphery of the GYE.
- White pine blister rust, mountain pine beetle, and wildfires all pose threats to the persistence of healthy whitebark pine populations in the GYE.

Background

- A single whitebark pine tree can produce over 300 cones annually. Each seed contains approximately 52% fat and a caloric value of 4.0 kcal/g, making them a high quality bear food.
- Whitebark pine trees are a masting species and do not produce abundant cone crops every year. In the last 24 years there have been 12 good and 12 poor seed production years.
- Grizzly bears are omnivore generalists capable of significant diet switching. During years with poor whitebark pine seed production, grizzly bears consume more ungulate meat, roots, and truffles during autumn.

Current Status

- Approximately 20% of 4,774 marked whitebark pine trees in the GYE are infected with white pine blister rust. Blister rust caused mortality of marked trees is approximately 16%.
- Approximately 32% of marked whitebark pine trees greater than 10 cm diameter at breast height have been killed by mountain pine beetles. Beetle mortality of smaller trees is only 7%.
- While transect trees are experiencing mortality from white pine blister rust and mountain pine beetle, they are also experiencing recruitment of new trees.
- As of 2010, 3,987 (84%) of the originally marked trees remained alive and 238 new trees were recruited into the surveyed stands through natural regeneration.
- Despite the current level of whitebark pine mortality, the GYE grizzly bear population continues to increase in numbers and expand in range.

Conservation Issues

- There is potential for a significant reduction of whitebark pine due to the introduction of an exotic organism (white pine blister rust), a native beetle (mountain pine beetle), and climate change (facilitating more competition from other tree species and potentially increasing wild fire intervals).
- Whitebark pine seeds are a preferred fall food for grizzly bears and have some influence on grizzly cub production, survival, and the number of grizzly bear-human conflicts.
- Grizzly bears are a generalist omnivore exhibiting significant diet plasticity, which makes it difficult to predict how the loss of a specific food will affect reproduction and survival.
- The best predictors of grizzly bear mortality on the landscape are human developments and the density of roads and homes, not the spatial distribution of whitebark pine trees.
- At present female grizzly bear survival remains above the level necessary to maintain population increase even in poor whitebark pine seed production years.

Bear Safety Tip

When backcountry hiking in bear country, you can reduce the chances of being injured by a bear by: 1) hiking in groups of 3 or more people, 2) carrying bear spray, 3) staying alert, 4) making noise in areas with poor visibility, and 5) not running during encounters with bears. During a surprise encounter with a bear, slowly back away. If the bear charges, stand your ground and use your bear spray. If the bear attacks during a surprise encounter (as evidenced by an immediate charge with head held low and ears laid back), play dead. If a curious or predatory bear (as evidenced by a direct focused approach with head up and ears erect) persistently stalks you, be aggressive and fight back. Fight back during any attack at night while you are sleeping.