WOLF CREEK
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2012 SPRUCE BEETLE MITIGATION STRATEGY:
SPRAY, REMOVE, BURN, SPADE & EDUCATE

Over the last decade, Wolf Creek Ski Area spent up to $100,000 a year in helicopter time identifying and removing beetle infected trees. However, last summer we discerned the magnitude of infestation coming up the Pass, and at this point, recognize this strategy is neither economic nor effective in mitigating the exponential growth of the spruce beetle invasion.

Wolf Creek identifies that this outbreak is a natural process, and accepts that a dramatic change to our existing landscape is unavoidable. We anticipate that the infestation and its ensuing fires are inevitable, and urge the general public to embrace this reality. We have explored many options, conducted internal research, and solicited information from specialists. As such, we have engaged in a multipronged mitigation strategy with the limited goal of preserving the natural beauty of our viewshed within the Special Use Permit.

SPRAY: This spring, Forest Service personnel and entomologists broached the option of spraying pesticides at Wolf Creek for the first time. Following this meeting, we researched certification requirements, and determined that we need our own spray system given concerns of contaminating live water, spraying birds' nests and other forest life, and fluctuating high mountain wind and weather patterns. We have discussed hiring a professional sprayer to work with our equipment and under our oversight to ensure the highest level of environmental and safety control.

We analyzed two of the recommended chemicals for spraying: carbaryl and permethrin. The Forest Service recommends carbaryl because it provides up to two years of protection per application. However, it is highly toxic to aquatic and estuarine invertebrates, as well as bees. Permethrin, on the other hand, is the more environmentally friendly chemical recommended for spraying, but it provides the least amount of protection and is more expensive to spray then carbaryl. It is also highly toxic to fish and aquatic invertebrates. With either of these chemicals, we will be diligent in spraying away from water, and only during a specific window of time to ensure that there is no spraying within 24 hours of rainstorms.

This fall we will consider spraying small, healthy trees on a limited basis, as per Forest Service suggestion.

REMOVE: We will continue to use the helicopter to remove standing dead hazard trees and trapped trees (green trees that are strategically felled before flight to attract the spruce beetle).This is an ongoing effort to identify heavily infested trees that are precarious to operations and somewhat easy to remove. As the Forest Service noted, spruce trees can stand dead for 40 years. While we're not required to remove all standing dead trees for safety reasons, we will continue to look at the permit and identify which trees need to be removed.

BURN: During the Little Sand Fire in Pagosa, we observed a migration of beetles preceding the smoke plume. We intend to mimic this natural strategy in order to reduce the mortality rate of our remaining trees. We

have plans for a significant amount of timber removal, particularly of lift corridors and hazard trees, which will need to be burned. We propose administering slash and burn piles timed with the emergence of the beetle. This policy aims to affect the behavioral pattern of the beetle by forcing them to migrate away from the permitted area we are trying to protect.

SPADE: We will continue to use our tree spade for moving saplings into favorable zones for re-vegetation as older trees die off. While this strategy elicits positive results, there are practical limitations due to defoliation from the equipment. The tree spade devastates low lying vegetation, triggers erosion, and increases sediment into streams. Therefore this will remain a limited tactic in our overall strategy of spruce beetle mitigation.

EDUCATE: Wolf Creek will engage its guests in a public information campaign about the impacts of the beetle invasion, and ways they can protect the next generation of spruce trees that may survive this attack. We purchased naturally colored bamboo (unlike the black and orange bamboo designating ski area boundaries and hazards), and behest the ski and snowboarding public to refrain from skiing over the tops of young saplings emerging from the snow. Wolf Creek experiences considerable changes in snow coverage throughout the course of the season, so we can't simply rope off trees. Therefore, we will visibly tag vulnerable trees with natural bamboo which guests should avoid as though the bamboo were a tree.

These tactics are based on the known experience with the spruce beetle; there are unforeseen consequences that must be dealt with as they arise. For example, there has been a dramatic increase of woodpeckers in the permit due to the abundance of beetles to feast on. The woodpeckers have also decided to nibble on our communication wires, obligating us to replace critical and expensive components on the Bonanza and Raven lift lines.

This approach should be understood as part of a greater acceptance of our changing landscape on a human timeline that is faster than we're used to. Wolf Creek Ski Area recognizes that none of these methods will stop the beetle, nor significantly change their footprint on the Pass. However, we will continue to be thoughtful and dynamic in our spruce beetle strategy in order to mitigate certain effects and prepare for its consequences.

Prepared by Nicole DeMarco