Slope Construction Methods Impact Ecology Differently

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Recent low temperatures and massive snow storms may have skiers ready for the slopes, but it's unlikely that a long run through fresh powder makes skiers question how the run was created.

When preparing a new run, any tall, woody vegetation is cut down low to the soil. This is termed clearing. Often ski resorts take an extra step, called grading, and use machines to remove tree stumps and boulders in an effort to level out the slope. The latter process is much more disruptive to the ecology, according to research published in the journal Ecological Applications.

The two options often result in conditions that differ enough to be recognized on aerial photographs, said Jennifer Burt, a restoration ecologist at the University of California, Davis, who studied ski resorts in California's Sierra Nevada Mountains.

"Graded and cleared ski runs have greatly different amounts of plant growth and erosion," said Burt. "Plants grow back better on cleared ski runs, which have greater vegetative cover and greater cover by shrubs."

Grading removes more vegetation than clearing and makes the soil less conducive for plant growth, which results in more erosion. Runs are typically only graded once, and both types of runs require clearing when vegetation grows more than a couple of feet high.

"Most ski area managers I've spoken with suggested that erosion control measures needed on graded ski runs were more time intensive than any additional vegetation maintenance pruning that might be needed on cleared ski runs," said Burt.

Although the study did not analyze the economics of the decision, Burt added that it would be important for such an analysis to consider the social and environmental impacts that are not very easy to quantify. Cleared runs require a thicker base of snow to ski on than graded runs, meaning that a graded trail could open about one week earlier with less snow.

"It would be very interesting for someone to conduct an economic study on the net cost differences between the different methods of ski slope construction," she said.