

# Ski Runs Are Not Created Equal

December 21 2009

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(PhysOrg.com) -- Building a new ski run by bulldozing a mountainside rather than only cutting its shrubs and trees is far more damaging ecologically, yet might offer only a week's earlier start to the downhill season, says a new UC Davis study. And even that extra week of revenue may be partly offset by higher summer maintenance costs.

UC Davis ecologist Jennifer Burt's study of seven winter resorts in California and Nevada's northern [Sierra Nevada](#) range found that ski slope grading, compared to clearing, is worse for plant abundance and diversity, reduces soil depth and fertility, and promotes erosion.

The study appears in the December issue of the journal [Ecological Applications](#).

"Most large downhill resorts in the United States are on lands managed for the public by the USDA Forest Service, which is supposed to encourage multiple uses while attempting to protect the ecosystem," Burt said. "But ski areas are managed primarily for recreation, when they might be better managed to minimize negative impacts on water storage, nutrient cycling and biodiversity."

"Cleared" runs are created by cutting and removing tall woody vegetation as needed to create open skiing and riding pathways, but leaving the top layers of soil and their existing seed bank largely intact. "Graded" runs are cleared -- and then also machine-graded or leveled to remove tree stumps, boulders and slope irregularities. The grading process disturbs or removes much of the topsoil and most of the

vegetation, resulting in significant decreases in all measures of ecosystem function considered in the study.

In fact, Burt said she found that cleared ski runs were functionally more similar to adjacent forests than they were to graded ski runs in terms of plant community composition, diversity patterns and soil characteristics.

"This begs the question as to why any downhill runs are graded," Burt said. "Resort managers told us that ski-run grading reduces surface depressions, hummocks and boulders, which means that less snow -- about 20 inches on average -- is required to open a graded run than a comparable cleared run."

At the Sierra resorts that Burt observed, graded runs opened about a week earlier than nearby cleared runs during the 2006-07 season.

"However, managers also indicated that graded ski runs generally require more total summertime maintenance effort, due to erosion-control seeding and water-bar repairs," Burt said.

The study, "Not all ski slopes are created equal: Disturbance intensity affects ecosystem properties," was co-authored by UC Davis professor of plant sciences Kevin Rice.

Provided by UC Davis

Citation: Ski Runs Are Not Created Equal (2009, December 21) retrieved 4 May 2024 from <https://phys.org/news/2009-12-equal.html>

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