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Vegetation responses to artificial snow

C. Rixen

Swiss Federal Institute for Snow and Avalanche Research SLF, Davos, Switzerland,
(rixen@slf.ch / Phone: +41 81-4170214)

The production of artificial snow in ski resorts has increased considerably in the last 20 years. Their ecological consequences are the subject of environmental concerns. The main direct impacts of ski piste preparation on the vegetation are related to the compaction of the snow cover, namely the induction of soil frost, the formation of ice layers, mechanical damage and a delay in plant development. The vegetation reacts with changes in species composition and a decrease in diversity. Snow-making modifies some of these impacts: the soil frost is mitigated due to an increased insulation of the snowpack, whereas the formation of ice layers is not considerably changed. The mechanical impacts of snow-grooming vehicles are mitigated due to the deeper snow cover. The delay of the vegetation development is enhanced by a considerably postponed snowmelt. Furthermore snow-making induces new impacts to the alpine environment. Artificial snow increases the input of water and ions on ski pistes, which can have a fertilising effect and hence change the plant species composition. Potential impacts of snow-making on alpine vegetation should be evaluated before the installation of new snowing facilities.