Assessing the effect of compaction from motorized winter recreation on snowpack properties in the Medicine Bow-Routt National Forest

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Abstract. Winter recreation, consisting of snowshoeing, skiing, snowboarding, and snowmobiling, has been increasing annually in Colorado's forests. This increase has led to conflict among these different users and creates direct and indirect wildlife interactions. Motorized winter recreation in the backcountry compacts the snow, possibly influencing the physical and mechanical properties of the snowpack. Snow depth, density, stratigraphy and grain characteristics contribute to the insulating properties of the snowpack and create habitat for small non-hibernating mammals. Changes to these physical properties and compaction of the subnivean space may be detrimental to these species. Two hypotheses were formulated: (1) the snowpack influenced by motorized winter recreation will result in changes to physical and mechanical properties of the snowpack important for subnivean habitats; and (2) motorized winter recreation compacts the subnivean space because the existing winter recreation management plan allows snowmobile operation on relatively shallow snowpacks.

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