ABSTRACT

The threat of avalanches to winter recreationalists and mountain communities is well known. Geographic Information Systems (GIS) technology has been used to augment avalanche forecast and control programs in many parts of the United States and Europe. Successful GIS approaches combine terrain modeling, historical avalanche data and avalanche flow modeling to identify and predict avalanche probability and intensity for relatively small geographic areas (e.g., highway corridors, commercial ski areas and municipalities) (McCollister and Birkeland 2006). However, little research has focused on the vast backcountry areas between such small, populated areas. With the advent of lighter, better equipment for both backcountry skiers and snowmobilers, recreationalists increasingly visit these areas and are at risk from avalanches. Thus, an effort to reevaluate and improve avalanche risk information available to winter recreationalists is warranted. This study developed and evaluated geoprocessing methods using readily available spatial data to identify two terrain features of particular importance in evaluating avalanche risk (e.g., depositional terrain traps and trigger points) and create a forest density coverage for display and geoprocessing purposes. Field trials with produced results demonstrated that such methods could improve decision making and route finding in winter backcountry areas.