Supplementary Data S1—Supplementary information on digital layers used for resistance modeling

We generally used the same data layers as Inman et al. (2013) to represent each variable. Inman et al. (2013) based vegetative factors (i.e., conifer cover and forest edge) on the 2001 National Landcover Dataset (NLCD, Homer et al. 2001). They calculated conifer forest cover and forest edge through a GIS moving-window analysis, in which they summed the number of cells that were conifer forest or forest edge, respectively, within a 300m radius of each cell in the landscape. Thus, cells in areas with large amounts of conifer forest or large amounts of edge habitat received high values in these two data layers. Elevation was based on 30m National Elevation Data and adjusted for latitude following Brock and Inman (2006). To measure topographic ruggedness, we calculated the terrain ruggedness index (tri, Riley et al. 1999) which takes values ranging from 0 (no terrain variation) to infinity (highest terrain variation). This index should be understood as a measure of topographic heterogeneity, with higher values potentially being characteristic of typical wolverine habitat (see Discussion in main test).

Layers for human population density and road density were from Carroll et al. (2001). As an alternative to population density, we also used housing densities derived from Wildland-Urban-Interface (WUI) data (Radeloff et al. 2005). We wanted to use housing density in addition to population density, because in some parts of the study area, low population densities do not reflect the amount of (seasonal) housing. In the WUI layers, housing densities are based on census blocks, and we simply converted these data into 1km grids. This is a rather coarse-scale representation of housing densities, and we discuss implications of this in the discussion section.

Snow depth was based on the average modeled snow depth of the Snow Data Assimilation System (SNODAS) from April 1, 2004 to April 1, 2005 (Barrett 2003). We used these data as an alternative to the binary representation of spring snow cover used by Schwartz et al. (2009), because we needed a continuous representation of snow that allowed us to rescale the data layer to range from 0 to 1 (see Step 2).

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