A GIS Suitability Analysis of Wolf Habitat in Maine

Methods continued. Land Cover was converted to show the most and least suitable areas of land cover (Figure 1). Road classes were classified to show that larger, more traveled roads are least suitable for wolves and no roads are most suitable (Figure 2). Points of high human population were assigned a 6 km boundary that classified increasing suitability every 2 km away from the point's center (Figure 1 and Figure 2). The Land Cover classification can be seen clearly in Figure 2. A layer containing information on the ownership of public, industrial, and non-industrial woodlots was reclassified to show woodlot areas potentially available for wolves, and a layer showing conservation land was added to show ownership that made areas most suitable for wolves (Figure 3). The reclassified layers were then combined and given different weight in the analysis according to their importance in the suitability of the habitat model (Table 1). Each value is a part of 100%, adding up to 1.0 (100%) in the raster calculator. The model results show high and low suitability within the areas chosen as suitable wolf habitat (Figure 5). Area of suitable habitat was derived from the attribute table by calculating the number of grid cells with given values multiplied by the cell size.

Results and Conclusions: The model output (Figure 5) shows potential suitable wolf habitat mostly in the northwest of Maine. This area is substantial in size, although some of the blocks are very fragmented. An additional analysis is suggested to try different weight on the components of the model, and to incorporate fragmentation, slope, and prey density as a factor affecting wolf colonization. Prey density is one of the most important factors affecting successful wolf survival (Paquet et al. 1999) but unfortunately it was not possible to incorporate prey into this particular model. Based on the available model, Maine provides 9,387,332 square kilometers of high suitability habitat (value of 8.31 to 8.94), and 40,322,877 square kilometers of additional habitat of medium suitability (value of 8.24). This amount is sufficient suitable habitat to allow for re-colonization of natural or reintroduced wolf populations.

References:

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