

How Far to the Nearest Road?

Kurt Riitters¹ and James Wickham²

¹US Forest Service, Southern Research Station, Research Triangle Park, NC

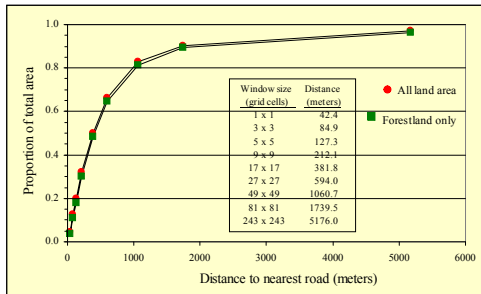
²US Environmental Protection Agency, National Exposure Research Laboratory, Research Triangle Park, NC

Ecological impacts from roads may be the rule rather than the exception in most of the conterminous United States. We measured the proportion of land area that was located within nine distances from the nearest road of any type, and mapped the results for 164 ecoregions and 2108 watersheds nationwide. Overall, 20% of the total land area was within 127 m of a road, and the proportion increased rapidly with distance, so that 83% was within 1 km of a road, and only 3% was more than 5 km away. For forest land area only, the proportions differed by less than 2% for all distances.

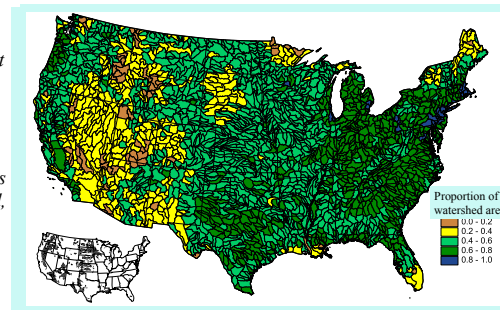
How dense are roads in your watershed? The figure below shows that 78% of the 2,108 Hydrologic Accounting Units in the conterminous United States have at least 40 percent of their land area within 382 meters of a road. Regions with more than 60% of their total land area within 382 m of a road include nearly all coastal zones, as well as substantial portions of the southeast US and the basins of the Ohio, Brazos, Colorado, Sacramento, and San Joaquin Rivers. Three hundred eighty-two (382) meters is about equivalent to one lap around an athletic field track.

Imagine that the conterminous US has been subdivided into 8.6 billion parcels the size of a baseball diamond infield, and then consider standing on home plate in each one. According to our data model, in one out of 22 cases you will find a road no farther away than second base (~43 m). In one out of every five cases, the road is no farther away than the center-field fence in Yankee Stadium (~125 m). This alone is a compelling reason to consider the possible systemic impacts of roads on ecosystems.

The proportion of total area located within a certain distance from the nearest road increases rapidly with distance.



The proportion of total area in a watershed that is within 382 m of the nearest road exhibits substantial geographic variation. Inset: Watersheds where roads are closer to forest land, in comparison to all land-cover types.



Publications

Riitters KH, Wickham JD. 2003. How far to the nearest road? *Frontiers in Ecology and the Environment*, 1:125-129.

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