

A Primer on the Environmental Effects of Utility Corridors and Access Roads

Documented research on the negative effects of utility corridors, all taken from the 1990 Andrews lit review entitled "Fragmentation of Habitat by Roads and Utility Corridors: A Review" (Australian Zoologist, Vol 26 (3 & 4).

"Powerlines fragment bird flight paths, leading to collisions of birds with the lines, resulting in injury and death. In the USA collisions with automobiles and powerlines were the most frequent cause of bird mortality (Stout and Cornell 1976)."

"A Venezuelan study showed the importance of placing powerlines away from areas where birds congregate to breed and feed" (Mcneil et al. 1985)."

"The amount of soil compaction affects the revegetation of the construction area. In Australian arid zones, the cleared grids of seismic lines have led to soil compaction which inhibits revegetation, leading to erosion and siltation of important watercourses (O'Loughlin 1989)."

"Although vegetation can regrow in utility corridors, it is usually maintained at an earlier successional stage by cutting, mowing, and spraying of herbicides. This affects the plants and animals living there. Studies undertaken in the United States have shown that in some habitats, such as deserts, the recovery of vegetation was slow, and revegetation programmes were expensive and could be unsuccessful" (Brum et al.1983).

"In the Sonoran Desert, areas cleared for the powerline corridor and towers suffered less environmental damage than the access road, and corridor succession of vegetation and insect colonization took place slowly (Johnson et al. 1981)."

"In the Mojave Desert, vegetation under a powerline had not completely recovered after 33 years (Vasek, Johnson, and Brum 1975)."

"The human-made edge is usually inimical to most wildlife, and species from the natural interior do not inhabit edges. Species with excellent dispersal abilities, capable of invading and colonizing disturbed habitats, are attracted to edges, and move into the core of natural habitats if a road or utility corridor carries the edge into a previously undisturbed area" (Ranney et al. 1981)."

Andrews continues, citing Ranney 1981: "The edge experiences a different wind and radiation effect, leading to a different microclimate. If habitats are fragmented too much, and the ratio of edge to interior favors edges, the habitat will no longer be suitable for the interior species we most need to conserve."

"A barrier need not be an impenetrable structure. There is nothing to prevent fauna crossing most roads, especially minor dirt roads which are also less used by vehicles. However, there is evidence that edges act as barriers (Yahner 1988), and a number of studies support the Canadian study by Oxley et al. (1974), who found that total clearance of 30 m or more (98.4 feet) was the main factor inhibiting movement of small mammals across roads."

"A barrier to dispersal of species can disrupt social organization. It can lead to local extinctions if an area is affected by fire or drought, can reduce the immigration of species to areas which may need replenishment, and also limit gene-flow, with subsequent 'bottle-neck' effects. 'For species with poor dispersal or dispersal-related problems...fragmentation may prove more critical than area as a determinant of extinction probabilities' (Shaffer and Samson 1985)."

"Laboratory tests were performed on three desert species, used to the silence of high dune areas. A sand lizard *Uma scoparia* and kangaroo rat *Dipodomys deserti* were exposed to less than 10 minutes of recorded dune buggy sounds played intermittently at lower intensity than normal. This induced hearing loss that lasted for weeks, leading to inability to respond to the recordings of predator sounds. A spade-foot toad *Scaphiopus couchi* was made to emerge prematurely from its burrow by playing 30 minutes of taped motorcycle sounds. These responses to off-road vehicles could cause death in the desert (Brattstrom and Bondello 1983)."

For more references
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