

Ingelfinger, F. and S. Anderson. 2004. Passerine Response to Roads Associated with Natural Gas Extraction in a Sagebrush Steppe Habitat. *Western North American Naturalist* 64(3): 385–395

Abstract: Natural gas extraction and field development are pervasive throughout the sagebrush steppe of Wyoming. We conducted this study to determine how roads associated with natural gas extraction affect the distribution of breeding songbirds in sagebrush steppe habitat. The study encompassed dirt and paved roads in the Jonah Field II and Pinedale Anticline Project Area in Sublette County, Wyoming. Sites are dominated by Wyoming big sagebrush (*Artemisia tridentata*), and common passerines include sagebrush obligates: Brewer's Sparrows (*Spizella breweri*), Sage Sparrows (*Amphispiza belli*), and Sage Thrashers (*Oreoscoptes montanus*); and non-obligates: Horned Larks (*Eremophila alpestris*) and Vesper Sparrows (*Pooecetes gramineus*). Species relative density was measured using 50-m-radius point counts during spring 1999 and 2000. Four roads with low traffic volumes (700–10 vehicles per day) were surveyed and point counts were centered at variable distances from the road surface such that relative densities were measured 0–600 m from the road's edge. Density of sagebrush obligates, particularly Brewer's and Sage Sparrow, was reduced by 39%–60% within a 100-m buffer around dirt roads with low traffic volumes (700–10 vehicles per day). While a 39%–60% reduction in sagebrush obligates within 100 m of a single road may not be biologically significant, the density of roads created during natural gas development and extraction compounds the effect, and the area of impact can be substantial. Traffic volume alone may not sufficiently explain observed declines adjacent to roads, and sagebrush obligates may also be responding to edge effects, habitat fragmentation, and increases in other passerine species along road corridors. Therefore, declines may persist after traffic associated with extraction subsides and perhaps until roads are fully reclaimed.