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Abstract: A new high-voltage transmission line in north-central Nevada, USA, was considered a potential threat to greater sage-grouse (*Centrocercus urophasianus*) because avian predators are attracted to and hunt from elevated perches. As a mitigation measure, perch deterrents were installed on the transmission line towers at the time of construction; in addition, 2 existing high-voltage transmission lines were retrofitted with deterrents. Previous published studies have investigated the efficacy of perch deterrents in preventing or reducing electrocution of avian predators and fecal contamination of insulators, but none have evaluated deterrents as a means of eradicating perching on towers. We conducted point transect surveys and perching-duration observations of corvids and raptors and determined that although perch deterrents did not prevent perching, the perching duration of raptors on the deterrents was reduced compared to other perching substrates. Perching of raptors indicated that some hunting most likely took place from the towers; therefore, the deterrents did not completely obviate the threat that avian predators posed to greater sage-grouse. Although the deterrents reduced the probability of avian predators perching on the towers, avian predators overcame the deterrents to take advantage of the height of the towers where no other perches of similar height existed. The perch deterrents as designed did not have the desired short-term effect on avian predators, but further monitoring may reveal longer-term effects and distinguish perching behaviors specific to different species of avian predators.