Manzer, D.L. and S.J. Hannon. 2005. Relating grouse nest success and corvid density to habitat: A multi-scale approach. Journal of Wildlife Management 69:110-123.

Abstract: Predators are the major cause of nest failure for prairie grouse, and corvids are widespread generalist predators that exploit land altered by humans where grouse are found. We studied how human-caused habitat change affected predator and prey by using habitat variables to model nests election, corvid density, and nest success for sharp-tailed grouse (*Tympanuchus phasianellus*) in Alberta, Canada, 1999-2001. Habitat was quantified over a range of extents (radius of observation) from 2 to 2,265 m. We predicted that habitat features associated with corvid density at broad extents would also relate to grouse nest success, and that nesting cover and the presence of avian predator perch sites would be important at smaller extents. Corvid density was higher in landscapes with higher proportions of crop and sparse grassland (1,600-m extent). Conversely, nest success was markedly higher (24 times) in landscapes with <10% crop and <35% crop and sparse grassland (aggregated) at broad extents (1,600 m). Moreover, nests were 8 times more likely to succeed in landscapes with lower relative corvid densities (<3vs. 23 corvids/km^2). At smaller scales, nests were more likely to succeed with greater heights of concealment cover within 50-m of nests. L and managers can likely improve nest success for grouse in grassland systems by targeting concealment cover heights of at least 13 cm measured over a 50-m extent, and focusing efforts in landscapes with <10% crop and <35% crop and sparse grassland (1,600-m extent).