Nesting Habitat Selection and Productivity of Northern Goshawks in West-central Montana [TWS]

Lorraine Clough

Beaverhead-Deerlodge National Forest, 1820 Meadowlark Lane, Butte, MT 59701

During the 1997 and 1998 nesting periods, I systematically surveyed for Northern Goshawks (*Accipiter gentilis*) using a randomized design across all available forest cover types in the northern Flint Creek Range in west-central Montana. The study was done to obtain an unbiased estimate of nest-site selection, quantify nesting habitat at five spatial scales (landscape, post-fledging family area, nest stand, nest-tree area, and nest tree proper), and compare the success and productivity of goshawk nesting attempts among habitats selected by goshawks. Results suggested that in an intensively managed landscape, goshawks selected a core area of mature forest (15 ± 3.6 ha) that was surrounded by denser, smaller-sized trees. Logistic regression predicted goshawk presence based on the proportion of land within the post-fledging family area that contained north aspects, high canopy closure, and fewer clear-cut harvest areas. At the nest-stand scale, discriminant function analysis (DFA) separated occupied nest stands ($n = 19$) from random ($n = 30$) based on greater canopy closure, shrub cover, large-sized tree density, and less wood litter; at the nest-tree area, greater total plant cover, canopy closure, large tree density, and less sapling density; and at the nest-tree, greater diameter at breast height and height to the lowest live limb. I also evaluated specific landscape and physiographic features associated with nests, and DFA separated occupied from random sites based on less distance from the nest to a forest opening, less distance from the nest to the edge of the nest stand, and lower elevations. Occupied nest sites were dependent on aspect with 82.6 percent located on north slopes. The number of young fledged per nest was negatively correlated with the size of the forest opening near the nest and sapling densities in nest stands, and was positively correlated with the density of large-sized trees in nest-tree areas. I suggest that well-designed management treatments that maintain large areas of mature forest and focus on reducing small-sized tree densities in the understory should be able to improve existing conditions for goshawks.