Maintain Riparian Vegetation Structure Diversity for Birds while Averting Catastrophic Wildfire

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Middle Rio Grande riparian areas historically comprised a mosaic of vegetative diversity which fostered patchy habitats with rich vertical structure (Van Cleave 1935). Although dramatically altered through human perturbation, vegetative communities remain remarkably diverse supporting the richest avian community of any major Southwestern river system (Hink and Ohmart 1984). A diverse forest structure can also be conducive to wildfire due to the presence of high amounts of ground and aerial fuels. These fires can be catastrophic, altering the balance between fire sensitive native vegetation and more fire tolerant exotic vegetation (Stuever 1997). Clearly, fuel loading must be reduced in riparian areas to avoid the incidence of catastrophic fire. However, these efforts should be tempered to avoid compromising use of these areas by birds.

To better understand the importance of riparian habitats to birds, an understanding of several riparian vegetative structure concepts is important. These concepts include foliage density, foliage height diversity, and foliage patchiness (Ohmart and Anderson 1986). Foliage density is the overall surface of woody leaves and stems in forest canopies, while foliage height diversity describes the distribution of foliage layers of vegetation. Foliage patchiness is correlated to foliage height diversity and describes openings within and between foliage layers. Each of these structure components drives some aspect of the avian community, whether favoring a specific avian feeding guild or contributing to overall species richness. For example, high foliage density can increase the number of insectivorous birds that utilize leaf surface for foraging. Foliage height and corresponding patchiness provide additional habitat niches for a variety of birds thereby increasing species richness overall (Anderson et al. 198).

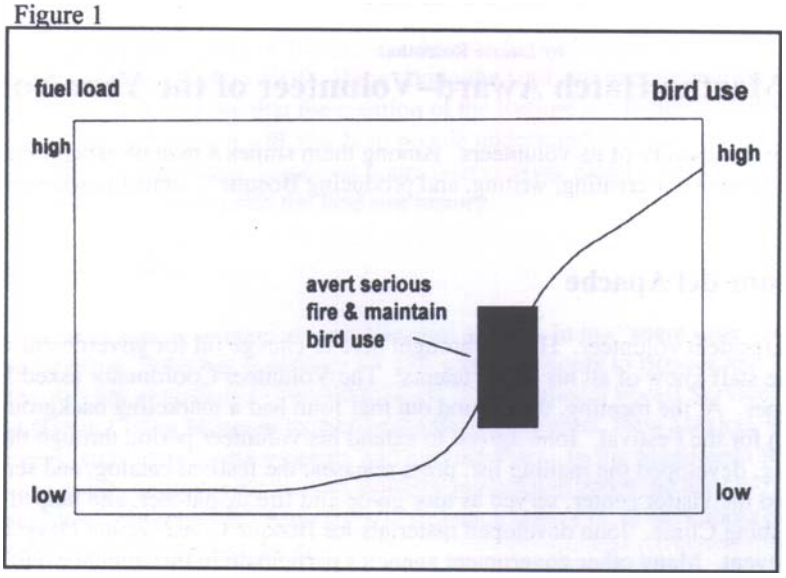
Other factors contributing to high bird use include the presence of snags and vegetative species that bear seed and fruit. Variable stand age and the amount of exotic vegetation in the stand are also important contributors. Snags provide nesting and roosting sites for cavity nesting birds, and are used extensively by timber feeding species (Sedgwick and Knopf 1986). The moist refugia snags provide facilitates primary and secondary nest excavation and creates a suitable environment for insects. The presence of seed and fruit bearing vegetation increases the food resources for seed - eating and frugivorous (fruit - eating) birds. These seasonably available food resources can include screwbean mesquite (Prosopis pubescens), wolfberry (Lycium andersonii), New Mexico Olive (Forestiera neomexicana), and mistletoe (Phoradendron flavescens).

As woody vegetation ages, the bird community using the site also changes. Young, dense vegetation harboring high numbers of insects are used by large numbers of warbler and flycatcher species (Yong and Finch 1997). These habitats are also important to nesting species such as the Southwestern willow flycatcher (Empidonax traillii extimus) (Sogg et al. 1997). As stands age, vegetation structure becomes more complex which increases avian species richness. This increasing richness is often represented by a variety of foraging guilds. (Farley et al. 1994). Finally, although there is overlap in bird use of native vegetation

dominated by cottonwood (Populus fremontii) and willow (Salix spp.), and exotic vegetation dominated by saltcedar (Tamarix ramosissima) and Russian olive (Eleagnus angustifolia), some differences are apparent. Cottonwood dominated forests harbor more unique species than saltcedar dominated areas (Ellis 1995) and recent findings by Finch and Yong (2000) suggest that native cottonwoods and willows support more neotropical migrant birds during stopover periods than saltcedar. Russian olive is used year-round by a variety of bird species and in conjunction with cottonwood overstory was one of the most important habitats used by birds in the Middle Rio Grande Valley (Hink and Ohmart 1984). Russian Olive is an aggressive competitor to native vegetation, however. When the species dominates wide areas, avian species richness is reduced and timber - feeding guilds are displaced (Knopf and Olsen 1984, Olsen and Knopf 1986).

High foliage densities in each structural layer combined with abundant snags will increase both avian carrying and species richness. Understandably, these are the very characteristics that can lead to heavy fuel loading and catastrophic wildfire. A compromise to this dilemma is to reduce fuel loading to levels that would avert catastrophic wildfire. Fuel reduction prescriptions to avert catastrophic wildfire are available which consider fire risk based on the type and dept of ground fuels (Wicklund 1999). Prescriptions that provide for the measured removal of dead and downed fuels, and reduce the amount of exotic vegetation through thinning and herbicide application, may not adversely affect riparian communities (figure 1). Currently, research is being conducted to evaluate the effect of various fuels reduction prescriptions on birds and other wildlife (Finch et al. 2000). These finding should allow managers to fine tune fuels reduction efforts to avoid adversely impacting riparian wildlife.

Figure 1



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