

Managing Longleaf Pine Habitat for Bobwhite Quail

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Ecologists often refer to the bobwhite quail as a “longleaf associate.” Quail are closely associated with the longleaf pine community primarily because of their dependence on fire. Fire is the most important natural process that allows the longleaf pine community to thrive, and frequent fire is essential for maintaining suitable quail habitat. Once covering approximately 90 million acres, the fire maintained longleaf forest provided a complex landscape suitable for quail. The modern landscape, however, is a more simplified and fragmented landscape to which quail are not adapted. Also, fire suppression and the elimination of fire have contributed to the loss of herbaceous plants required by quail for food and cover. Eventually, herbaceous plants are replaced with a dense hardwood midstory, creating a forest structure not suitable for quail.

So, what is quail habitat? It’s all the essential resources consistent with quail adaptations (morphological, physiological and behavioral) required for survival and reproductive success. This includes both living and non-living components of the environment. More specifically, quail require native clump grasses for nesting, woody/shrubby cover for protection and thermal cover, seeds and insects for food, and bare ground – the non-living habitat component. Bare ground is important to facilitate mobility and allow quail to locate and secure food resources. Interspersion and juxtaposition of habitats are important to quail and should be considered when developing habitat management plans. Interspersion is the intermixing of different habitat types, and juxtaposition is the measure of the proximity of year-round habitat. Quail require a high degree of interspersion and because they are not highly mobile, year-round habitat should be in close proximity to minimize travel and exposure to predators.

Quail are adapted to an open forest structure that is characterized by a 40 to 60 percent open longleaf canopy, an absence of midstory hardwoods, and herbaceous ground cover with sparsely scattered shrubs. An open longleaf canopy and the absence of mid-story hardwoods allow sufficient sunlight to reach the forest floor and stimulate the growth of herbaceous ground cover. Ground cover should be dense enough to provide protection from predators, but not too dense to impede quail movement. The structure of a forest provides the habitat context for quail...and quail predators. Therefore, longleaf management should seek to maximize habitat space for quail and minimize the risk of predation. Historically, a suitable forest structure was accomplished by land use practices and natural processes, today, it must be planned.

Why longleaf pine for quail? The longleaf pine has an open

morphology (i.e. form) that allows more sunlight through the canopy compared to other southern pine species. And, unlike other southern pine species, longleaf pines can be burned early, often, and throughout the rotation of a stand – this allows the retention of quail habitat throughout the rotation. Fire, however, is the key! Fire reduces litter accumulation and creates bare ground; sets back plant succession; inhibits woody invasion; stimulates germination of grasses, forbs, and legumes; increases insect production; and creates a mosaic of plant communities. When fire is removed from longleaf forests, the herbaceous plant community is lost, quail populations decline, and longleaf loses its ability to naturally regenerate. Eventually, the longleaf community is replaced with a hardwood community – one not suitable for quail. Herbert Stoddard, one of the first quail experts and the author of *The Bobwhite Quail: Its Habits, Preservation and Increase*, referred to the bobwhite quail as the “firebird.” Stoddard, who spent much of his career advocating the use of fire, understood the positive relationship between fire and healthy quail populations. Like Stoddard, we too must be advocates for the prudent use of fire if we expect to conserve quail and other species closely associated with the longleaf pine community.

When using fire to manage quail habitat, consideration should be given to fire frequency, season of burn, and extent of burn. Generally, a two to three year return interval is sufficient for maintaining suitable quail habitat. However, because site and habitat conditions differ across the landscape, the proper fire frequency will vary. Growing season burns are seldom considered when developing habitat management plans. However, these burns are more effective at controlling woody brush, and where woody dominance occurs, they can be used to reduce woody competition and improve quail habitat quality. Approximately 50 to 70 percent of an area should be burned in a given year, leaving 30 to 50 percent of the area unburned. When burning a large area, create a patchy burn pattern that consists of burned and unburned patches throughout the area. A patchy burn pattern leaves cover for quail within a burned area. When burning a small area (e.g. 40 acres or less), a complete burn pattern (i.e. all vegetation is consumed by the fire) can be created if suitable quail habitat is adjacent to the burned area. Habitat managers should monitor the effects of burns to determine the proper fire prescription to accomplish habitat goals.

In the fall of 2007, the Alabama Wildlife Federation (AWF) and National Wildlife Federation formed a partnership to assist landowners in restoring longleaf pine habitat in Alabama. If you are a landowner and interested in restoring longleaf pine habitat for quail, or other wildlife, contact the AWF at 334.285.4550.