Quail Habitat Management

Management Practices to Enhance Agricultural Lands

To provide quality nesting areas and brood rearing habitat in agricultural lands, field borders (also called buffers or transition zones) should be established. A 2-6 foot (1-2 meter) border should be left unplanted around the edges of fields to provide beneficial edge habitat for quail. Field borders provide important nesting and brood rearing cover, as well as valuable food in the form of native weed seeds and insects. Once these borders have been established (after two years), one half of the area should be lightly tillled fields. Information on no-till farming is available during the critical summer growth period in no-till, or conservation tillage, yields benefits for soil quality and other pine species. Natural regeneration (seed tree and shelterwood) provides greater habitat diversity than artificial regeneration.

A selective thinning program opens up the pine stand and allows sunlight to reach the forest floor which, in turn, stimulates the growth of legumes and other plants valuable for quail. A thinning regime assures that the canopy remains open. A basal area (the cross-sectional area of a tree at diameter breast height (DBH) expressed in square feet per acre) of 50-70 square feet per acre is a good compromise between timber production and quail management. A very dense timber stand with a basal area of 80-100 square feet per acre or greater will allow little or no sunlight to reach the forest floor. Areas below 50 square feet per acre would be similar to an open, park-like forest with much sunlight available. Edge (the ground buffer strips, or streamside management zones, adjacent to creeks, rivers and other drainages should be unharvested for at least 100 feet wide. These areas often contain valuable mast producing trees, protect waters from sedimentation and provide travel corridors for wildlife.

Management Practices to Enhance Forest Lands

Forestands can also be manipulated to provide suitable quail nesting and brood rearing areas. A very dense timber stand with a basal area of 80-100 square feet per acre is a good compromise between timber production and quail management.

Feasibility Study Recommendation

A very densely populated quail stand will remain a valuable habitat for quail if seedlings are excluded. A thinning regime assures that the canopy remains open. A basal area (the cross-sectional area of a tree at diameter breast height (DBH) expressed in square feet per acre) of 50-70 square feet per acre is a good compromise between timber production and quail management. A very dense timber stand with a basal area of 80-100 square feet per acre or greater will allow little or no sunlight to reach the forest floor. Areas below 50 square feet per acre would be similar to an open, park-like forest with much sunlight available. Edge (the ground buffer strips, or streamside management zones, adjacent to creeks, rivers and other drainages should be unharvested for at least 100 feet wide. These areas often contain valuable mast producing trees, protect waters from sedimentation and provide travel corridors for wildlife.

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The annual life cycle of quail is a precarious one. Studies have shown that nesting success is highly variable but averages about 36 percent. Nest predation is also about 35 percent, and nest abandonment accounts for the rest. Roughly 90 percent of nests will be located in one-year-old unburned sites and less than 5 feet from bare ground. Nests will also be located near blackberry or plum thickets that produce soft fleshy fruits consisting of sugar. This is essential since the berries provide high levels of needed energy to an incubating hen. Quail chicks are quite small, weighing less than 1/4 ounce at hatching, but can move and feed themselves only hours after leaving the egg. Within the first two weeks of hatching, broods are highly susceptible to predation and/or severe weather causing about 70 percent mortalities. Insects are an especially important source of protein for young chicks and will comprise more than 80 percent of their diet.

Habitat management for bobwhite quail should focus on providing habitat during all phases of its life cycle, including nesting cover, brood rearing cover, escape cover, feeding areas, loafing areas, and roosting areas. Suitable habitat should be available on a year round basis. The subtleties of changes in habitat may go unnoticed by us but may have a major impact on quail populations. Most landowners provide escape cover and food but are not aware of how important nesting and brood rearing habitats are for quail management success. Providing this type of habitat cannot be overemphasized.

Nesting Sites for Quail

Fall quail populations are dependent on the reproductive success of the preceding spring and summer months. Adequate, high quality nesting cover allows quail and other ground nesting birds ample opportunity for nest site selection, and reduces nest losses to predators. Quality nest sites are characterized by bunchgrasses (e.g., bromesedge) and annual weeds with bare ground and space available between the stems of the grasses. Areas managed for nesting habitat should be located on well-drained soils with brood rearing areas and escape cover nearby.

Broom Rearing Areas for Quail

Annual weeds, such as ragweed and partridge pea, provide ideal brood rearing habitat for quail due to the abundance of insects found in such areas. These plants also provide the type of structure and cover required to allow ease of movement for quail chicks while protecting them from predators.

How to Provide Suitable Nesting and Brood Rearing Habitat

Nesting and brood rearing sites can be created, enhanced and maintained simply and economically by discing or the use of prescribed fire. Mechanical disturbance or burning will set back vegetative succession, creating areas dominated by annual grasses and weeds. Disc or burn no more frequently than every two years, as dead vegetative material from the previous growing season is often used in the construction of quail nests. Likewise, all nesting cover should not be manipulated in any given year in order to provide constant opportunity for nesting or renesting with suitable habitat well distributed across the property. Discing stimulates the growth of beggarweed, ragweed, and partridge pea, which are excellent at attracting insects, an essential food for chicks. Of course these plants also produce valuable seeds that are preferred by adult birds.

Blackberry patches and plum thickets near nesting sites should be protected, as they provide an important high energy food source for nesting hens and shade for hens and broods. Plum thickets are especially susceptible to fire damage, and should be protected during prescribed burning.

Management Practices to Enhance Pasture Lands

Introduced pasture grasses, such as fescue and Coastal Bermuda grass, are very aggressive and usually out compete desired native quail food and cover plants. They also hinder effective establishment of permanent and annual food plantings. These grasses must be controlled or eradicated in areas where quail habitat management is desired. Some control may be achieved by repeated discing in hot summer months or several burns but they usually reemerge. The long term solution for suppressing fescue is to burn, heavily graze or mow the plants and then apply a suitable herbicide to the regrowth. Before herbicide application, always check the product’s current use for suitability and apply only at recommended rates.

Native warm season grasses are better for ground nesting birds because they provide open space at ground level and spread upright forming an overhead canopy. This allows for easier movement by the hen and her chicks and the canopy serves as shade as well as protection from predators. These grasses also provide a food source as well as attract insects. Native warm season grasses provide better nesting and brood rearing habitat than the introduced grasses. When planting warm season grasses, use a combination of two or more such as switchgrass, Big Bluestem and Indiangrass. Native warm season grasses combined with a rotational grazing system can be established to benefit livestock and enhance wildlife habitat. Contact your local Natural Resources Conservation Service (NRCS) or Clemson Cooperative Extension Service (CCES) for detailed information.

Newly created open areas, abandoned fields and reclamed pastures are ideal for discing strips that will provide quality nesting and brood rearing habitat. Time of discing will determine the species of plants that invade these strips. Discing between November and March will generally stimulate the growth of plants such as beggarweed, partridge pea, and ragweed, which are desirable quail foods. The ideal situation is to have a strip of bare ground, a strip of one-year-old and two year old vegetative growth available throughout the field. Strips should be irregularly shaped, 50-100 feet in width and extend the length of the field. Once strips are established, the fallow strips should be discarded the next year and other strips allowed to develop into fallow land, preferably one of the spring strips. The bare ground provides a dusting area preferred by quail. Limiting and fertilizing (0-15-30-0-14-14) or similar nitrogen-free fertilizer) freshly disced strips may improve growth of desirable plants.

Sources of Technical and/or Cost-Share Assistance

Small Game Project, South Carolina Department of Natural Resources, PO Box 167, Columbia, SC 29202 (803-734-3609) - Technical Assistance

South Carolina Forestry Commission, County Office - Technical and Cost-Share Assistance

USDA, Farm Service Agency, County Office - Cost-Share

USDA, Natural Resources Conservation Service, County Office - Cost-Share and Technical Assistance

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Small Game Project

Nesting & Brood Rearing Habitat: Critical to Quail Management Success

The low basal area in this stand allows for an abundance of sunlight that stimulates the growth of beneficial nesting vegetation.

Ragweed plant structure provides sparse vegetation at ground level that allows for easier mobility. The thick cover at the top of the plant supplies shade and protection from avian predators.