

Increasing Pine Plantation Wildlife Habitat and Recreational Value with Hub and Spokes

By Rick Hamrick

Creating quality wildlife habitat, in addition to pine production, is a top priority for many forest landowners. Landowners may be interested in encouraging an abundance of deer and other game for personal hunting and/or to increase revenue opportunities from hunting leases. Still others do not hunt at all and are happy just to enjoy watching or photographing wildlife on their property. Regardless of the landowner's motivation, the key to success in wildlife management comes down to providing essential habitat with ample food and cover for wildlife on a year-round basis. Forest landowners using selective herbicides, such as Arsenal® herbicide Applicators Concentrate (Arsenal AC), in a Quality Vegetation Management™ (QVM) program find that applying selective herbicides can encourage the growth of food and cover sources desirable to many wildlife species. But despite management strategies, adequate food and cover resources for wildlife are limited during certain times of a pine stand's lifespan (such as before the first thinning or after canopy closure). To create long-term habitats rich in food and cover and conducive to hunting or wildlife viewing, landowners can utilize a land-management technique known as Hub and Spokes™.

Spokes Attract Wildlife

The Hub and Spokes technique involves creating a small clearing with 3 or more "lanes" leading away from the clearing in different directions, similar to how spokes radiate outward in a wheel. Incorporating Hub and Spokes into new or existing pine plantations will make the stand more accessible for hunting and viewing wildlife and maintain early successional habitat (grasses and forbs) throughout the life of the stand. The spokes, typically 30 to 75 feet wide and up to 200 yards long, can provide clear shooting lanes for hunting and allow for easier wildlife viewing. In addition, the

clearing provided within the spokes is an ideal area to plant food plots for wildlife. The spokes can be made slightly "wavy", if desired, rather than simply creating straight-line openings. The hub, where the spokes converge, offers an area where visitors can view wildlife down each spoke. Landowners often erect a viewing deck, shooting house, or deer stand in the area of the hub, allowing a bird's-eye view of wildlife along each spoke.

How Much Timber Acreage Is Given Up with Hub and Spokes?

Obviously, the wider the spokes, the more acreage that could be devoted to growing trees is sacrificed. However, 30-, 60-, or even 100-foot-wide spokes may not remove as much acreage as one would think from pine stands 20 acres and larger (Figure 1). For example, a hub with four 60-foot spokes in a 40-acre stand comprises only 3.5 acres, or 9% of the stand. The examples in Figure 1 are somewhat simplistic (for example, wavy spokes would remove a little more acreage than straight spokes), but this provides a basis for evaluating how much timber acreage is given up under several spoke-width scenarios. Basically, the decision on how wide spokes should be comes down to each landowner's objectives. If timber production is a greater priority, narrow spokes are recommended. If maintaining more long-term grassland wildlife habitat throughout the stand rotation is a greater priority, wider spokes are more appropriate.

Creating Hub and Spokes

The easiest way for landowners to create Hub and Spokes is during site preparation and planting. After using Chopper® herbicide, OneStep® herbicide, or Arsenal AC to control competing hardwoods, plant pines as usual, but leave the hub and spoke areas unplanted. For established stands, Hub and Spokes habi-

tat can be created during thinning, using spokes as skid trails and the hub as a loading deck. The hub and spokes can then be used for skidding and loading in all future logging operations. The spokes can also be used as fire breaks that partition a timber stand into smaller blocks for prescribed burning.

If the only goal is to manage the Hub and Spokes specifically for deer, then each year during late summer, apply a non-selective herbicide in the spokes to eliminate broadleaf weeds and till the soil about 2 weeks later. Then plant foods such as clover or winter grains for in the spokes. To attract turkey, quail, and other grassland wildlife, manage Hub and Spokes by rotational strip-disking during fall through spring. Disking helps reduce woody plant invasion, stimulate growth of seed producing annual plants, and reduces litter accumulation. Bare ground created by disking also exposes seeds and gives birds a place to dust themselves. For spokes less than 60 feet wide, disk one-half the length of each spoke on a 2-year rotation (Figure 2). In fall or spring of the first year, disk the first strip of land and leave the second strip “undisked.” In the second year, disk the second strip and protect the first (disked during previous year). Continue this rotation treatment, disking strips every other year. For spokes greater than 60 feet wide, you can disk half to a third the length of each spoke on a two- or three-year rotation as described above. Alternatively, you can split each spoke into plots and rotationally disk in a “checkerboard” fashion (Figure 2) on the same schedule outlined above for strip-disking. Prescribed burning is more cost-effective than disking and can replace strip-disking, if desired, as conditions in pine stands become safe for burning. These rotational soil disturbance patterns maintain grassland habitat and create a greater diversity of plant communities that meet the different habitat needs of birds throughout the year. Spokes can further be enhanced by creating scattered patches of shrubby habitat (e.g. plum thickets) throughout the spokes. Portions of disked strips or plots can be utilized to plant rotational summer and winter food plots each year. However, permanent cover is important to grassland birds. If creating bird habitat is a



Aerial view of a Hub and Spokes system of forest openings (photo: Bobby Watkins).



View of a “spoke” managed for deer forage production (photo: Bobby Watkins).



Shooting/viewing house placed at the “hub” (photo: Rick Hamrick).

priority, focus less on food plantings and more on a diversity of permanent herbaceous cover (for example native warm-season grasses and legumes) created through the techniques described above.

Conservation Reserve Program Pines and Hub and Spokes

For landowners with Conservation Reserve Program (CRP) pine acreage enrolled in CP3 or CP11 beginning with Sign-up 20, 10-20 percent of this acreage was required to be in permanent openings for contracts offered with a

Wildlife Habitat Cover Benefits score of 50. Hub and Spokes openings are excellent ways to meet CRP openings requirements. Each state has different criteria for how wide a forest opening must be, and the minimum width ranges from 60 to 100 feet (recall Figure 1 for an example of how much stand area might be converted to openings). Once created, openings must be managed with strip-disking or prescribed fire. Mid-contract management cost-shares are also available to manage both CRP pines and forest openings. In many of the southeastern states, these mid-contract management cost-shares are 50% of the

actual cost of applying the management practice (not to exceed certain limits). Approved mid-contract management cost-share practices vary by state, although most include prescribed fire and strip-disking in CRP pines and openings. Some states also include selective herbicide treatments, as necessary.

It is important to note that these mid-contract management practices must be incorporated into a CRP contract and management plan. Contract holders must modify their Conservation Plan of Operation (CPO) to reflect the timing, frequency, and extent of approved mid-contract management practices. This requires visiting the county USDA Service Center, describing to the FSA personnel the suite of management practices you wish to apply, and developing a prescription and schedule of activities. This prescription and schedule will be incorporated into a contract CPO. The FSA personnel will involve the NRCS District Conservationist and/or a registered forester to provide technical guidance in developing an approved CPO. Prescribed burning should be conducted by or under the supervision of a certified prescribed burn manager. Strip-disking and prescribed fire should be limited to October through February to produce desirable annual weeds and grasses. No management

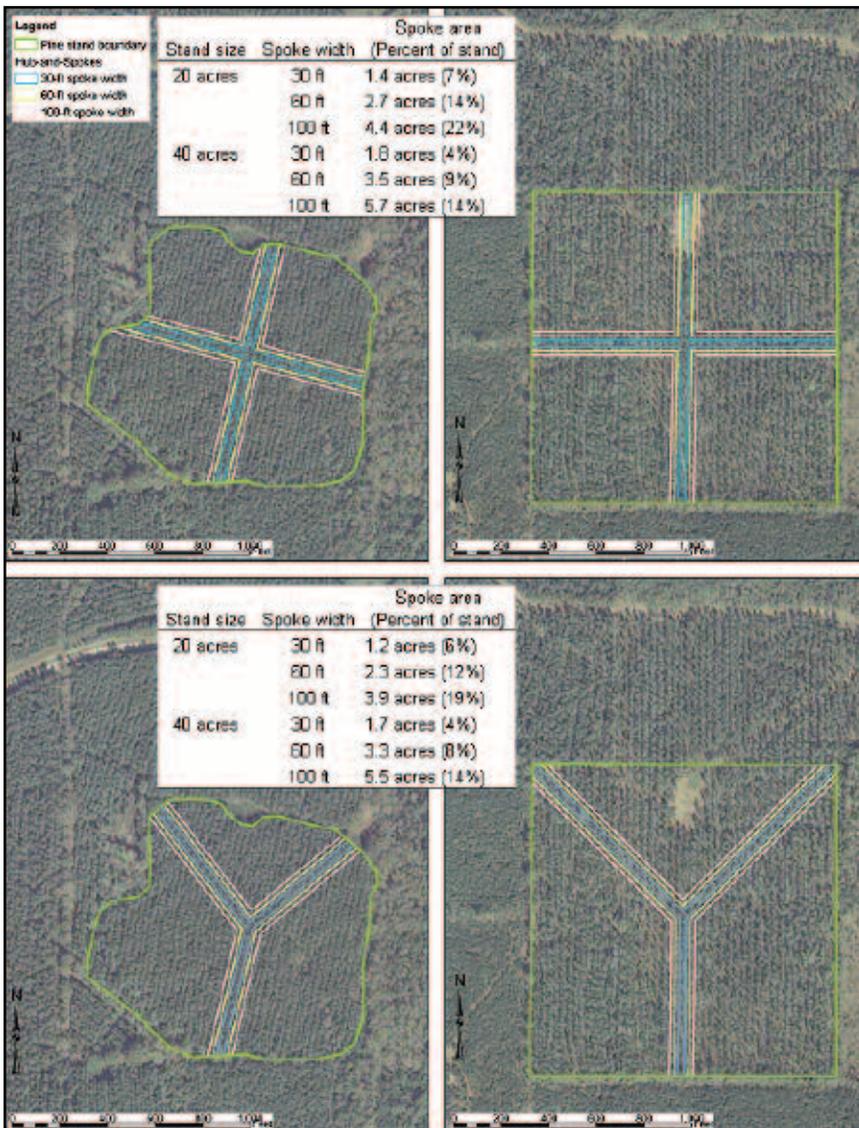


Figure 1. Examples of a 20-acre (left) and 40-acre (right) pine stand and amount of acreage removed by 3 different spoke widths in a "t" (top) and "y" (bottom) shaped Hub and Spoke design.

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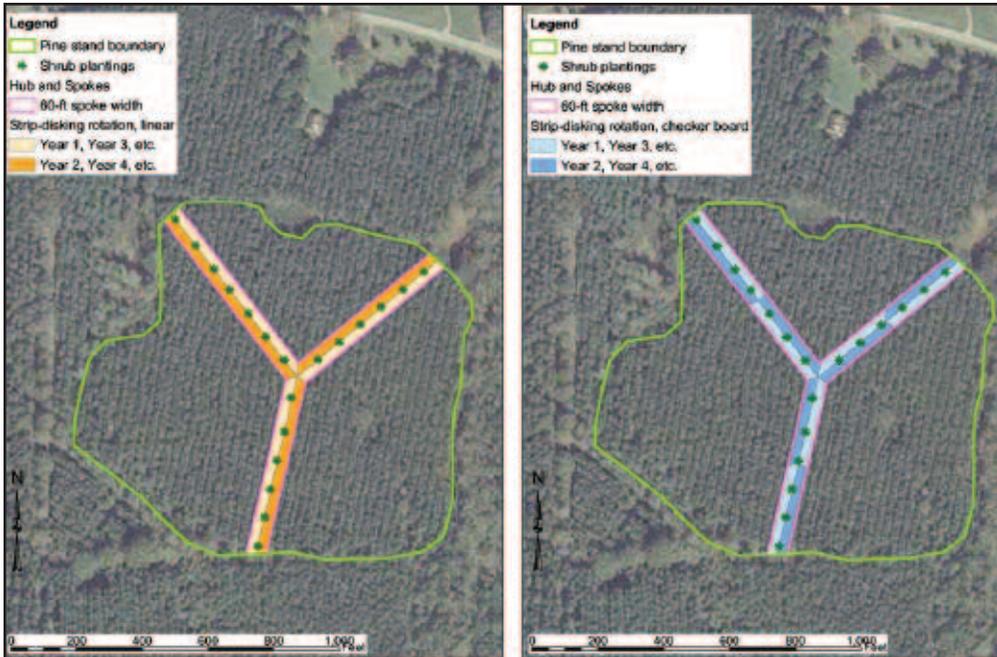


Figure 2. Suggested management of Hub and Spoke openings. Scattered shrub plantings provide good protective cover for grassland wildlife (protect shrubs from disking and fire). Example of 2-year rotation linear strip-disking (left) and 2-year rotation plot-disking in a checkerboard design (right). This type of design could easily be extended to a 3-year rotation on Hub and Spokes wider than 60 feet.

activities can be applied during the primary nesting period established by each NRCS state office. Total cost-share payments for mid-contract management may not exceed certain limits. For example, mid-contract management cost-shares in Mississippi cannot exceed \$50 per acre per year or \$100 per acre for the entire 10-year CRP contract period (\$125 per acre for contracts that exceed 10 years).

Closing Remarks

Many landowners have found Hub and Spokes areas to be the best areas in a forest for hunting and viewing wildlife. The technique

provides excellent deer forage production within pine plantations and can help landowners achieve higher hunting lease rates. Hub and Spokes areas also help to support some grassland wildlife habitat that would otherwise be lost to pine canopy closure prior to or shortly after initial thinning. With Hub and Spokes openings, forest landowners can simultaneously improve wildlife habitat, meet CRP program objectives, and improve the recreational value of their land.

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