

# Wildlife Habitat Development on Reclaimed Lands

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PHOTOS BY RON BRENNEMAN

Mention surface mining to turkey hunters and many immediately fear the worst: no more food for game; my favorite ridge is gone; the turkeys will surely leave the country. True, in the years before the industry was regulated, many acres were left barren after the coal or other minerals were extracted. But today, mining operations are subject to strict guidelines and procedures, especially where land reclamation is concerned. With current mining technology and equipment, large amounts of land can be transformed, seemingly overnight. Wildlife managers are working cooperatively with the mining industry to develop new and productive habitats on these mined lands. Often, wildlife habitat development is more economical than standard reclamation methods and can significantly increase the value of the area to wildlife, especially wild turkeys. Once established, these reclaimed sites require little or no maintenance.

Wildlife habitat plans are designed not only to prevent soil erosion and sedimentation in adjacent streams, but to provide new and replacement habitat types for wildlife. This can be accomplished using four basic techniques: seeding of grasses and legumes, creating shelterbelts, planting “clumps” of trees and shrubs, and developing water sources. Implementation of these techniques varies depending on which wildlife species the plan will feature.

## SEEDING:

Selecting the best grass and legume species and planting rates is the first and most important step in developing wildlife habitat on reclaimed mine land and should be done well in advance of the mining activity. Establishing ground cover to control soil erosion is the first objective of any land reclamation effort. Crown vetch, flatpea, and sericea lespedeza have historically been used and will control erosion, but should be excluded from wildlife habitat plans because they limit growth and survival of shrubs and trees and eliminate any natural reseeding, or succession, that might occur. These species, especially if planted at high rates, tend to form mats so dense that they restrict the movements of small animals, especially turkey poults. Likewise, some



AT LEFT: Reclaimed area seeded with a grass mixture. BELOW: Birdsfoot trefoil and clover.

grasses, while equal in their ability to stop erosion, provide many more benefits to wildlife than others.

Planting the right seed mix at the correct rate provides valuable wildlife habitat. Forage for deer and rabbits, seeds attractive to dove, quail, and a host of songbirds, and seeds and insects vital to broods of turkey and grouse can all be produced by properly seeding reclaimed areas. Mine sites located in the mountainous regions of the eastern U.S., reclaimed with wildlife in mind, can provide excellent dove hunting opportunities previously unavailable in the heavily forested terrain. They also provide turkey, quail, and grouse brood range especially valuable because of the scarcity of this type habitat in continuous forest land.

Recommended seed mixes for reclaimed land should contain one or two legumes plus a cool season grass such as orchardgrass, timothy, or redtop. If at all possible, Kentucky 31 tall fescue should **not** be included in the mix because it tends to dominate the site and is not very palatable to wildlife. Although warm season grasses provide enhanced wildlife benefits, most are not readily suited for reclamation efforts since they may take two years to become well established. Deertongue, however, is a warm season grass that can be used in conjunction with other



grasses on mine sites, especially in the Northeast. Other warm season grasses may be used to convert strips of cool season grasses and legumes on level areas after the site has been stabilized with the original cool season grass/legume mix. Suggested legumes for reclaimed lands include birdsfoot trefoil and mammoth red and alsike clovers. For a more detailed description of legumes, see NWTF Wildlife Bulletin No. 9 "Planting Legumes for Wildlife." Other publications in this series that would provide additional information relative to reclamation projects include No. 13 "Regional Recommendations For Planting For Wild Turkeys" and No. 12 "Tree and Shrub Planting Techniques" A seed mixture used successfully in West Virginia for several years has consisted of orchardgrass (10-15 lbs. per acre), birdsfoot trefoil (10-15 lbs. per acre), and mammoth red clover (10 lbs. per acre). In the southern region of the state, bicolor lespedeza is

sometimes added to the hydro-seeder mix at 2 to 5 lbs. per acre. Cover, or nurse, crops are also used when seeding reclaimed sites. Depending upon time of year, cover crops include buckwheat (25 lbs. per acre) and foxtail millet (10 lbs. per acre), for late spring and summer seeding, barley and annual rye or ryegrass (20 lbs. per acre) for late summer and fall seeding.

Application of lime and fertilizer to reclaimed lands is usually dictated by state and federal mining regulations. Mine soil tests indicate the levels of amendments necessary to establish a soil pH of at least 5.0 and provide nutrient levels required for plant growth. The minimum amount of mulch, cellulose combinations or blown hay, is also regulated and normally included in the hydro-seeding operation.

## TREE AND SHRUB PLANTINGS:

Shelterbelts, or linear plantings of several rows of trees and shrubs, provide dependable food sources valuable to most wildlife species. These shelterbelts should consist of 3-5 rows of shrubs and trees that provide cover and food and should be designed to connect clump plantings and undisturbed forest. This arrangement of vegetation creates a maze of interconnecting travel lanes that allow wildlife to use a much larger percentage of the reclaimed site. Without this cover, some animals would only rarely venture past the forest edge, at least until natural succession provided sufficient protective cover in 15 to 20 years. This component of the wildlife habitat plan is vital in providing additional turkey brood range and providing small game habitat in a relatively short period of time. Tree and shrub planting should be done as soon after seeding as possible. Waiting several years after the grass/legume mix is established will reduce the survival of woody seedlings because of root competition.

Tree and shrub species commonly used for shelterbelt plantings include dogwoods, hawthorn, crabapple, sumac, chinquapin, mountain ash, chinese chestnut hybrids and alder. Non-native species such as autumn olive, russian olive, and japanese barberry provide excellent food and cover but planting of these species may be restricted in some areas. Please check local regulations prior to developing the

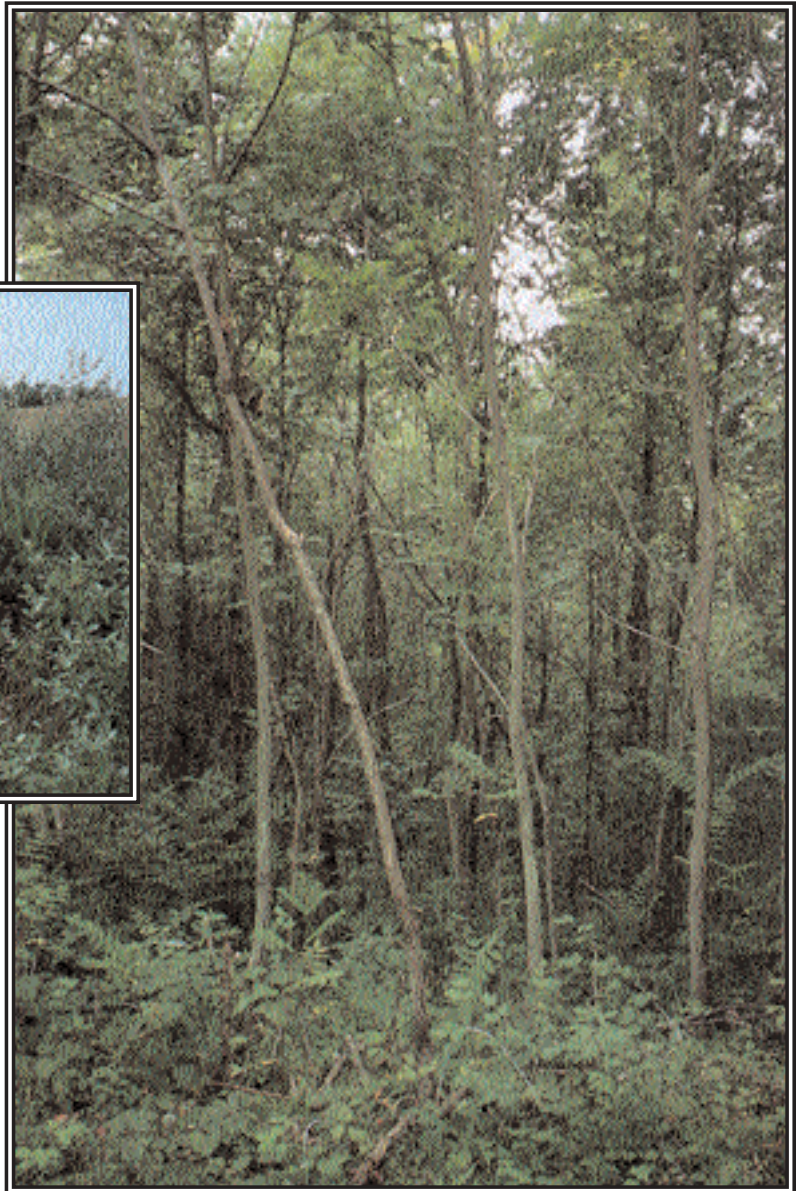
species from Asia, has shown some promise on reclaimed mine sites, especially if planted adjacent to sediment ponds and ditches, and has the ability to produce acorns in as little as 5 to 8 years. The use of tree shelters where possible will enhance seedling growth and survival (see NWTW Wildlife Bulletin No. 11 "Tree Shelters").

Clump plantings are recommended on sites where large (75 acres or more), open areas are left after mining. Clumps should be approximately an acre in size (200 x 200 feet) and planted with 6 rows of food-producing shrubs on each side and 10 rows of conifers in the middle. Conifers are used primarily to provide additional cover for turkeys during inclement weather, especially periods of deep snow. Species recommended for reclaimed sites include red pine, white pine, white spruce, and scotch pine. Spacing between the shrubs should be 5 to 6 feet apart with a 20-foot-wide open area between each 3 rows of shrubs. Conifers should be planted 8 feet apart and can be thinned in later years. Bicolor lespedeza can also be used as a border.



ABOVE: Shrub planting on reclaimed area. AT RIGHT: Good wildlife habitat 20 years after mining.

reclamation plan. Unfortunately, most oak species do not do well on reclaimed sites. Dry, infertile conditions combined with extremely compacted mine soils prevent development of the root system required for survival of both red and white oak species. Northern red oak may survive on sites that have been backfilled with mine spoil but not compacted by heavy machinery. Sawtooth oak, an introduced



## **WATER SOURCES:**

Since the availability of water could be a limiting factor for some wildlife species, settling ponds and diversion ditches constructed to control sediment during mining should be left intact after mining. Trees and shrubs such as alder, willow, and shrubby dogwood species can be planted adjacent to these water sources to provide cover and food.

More recently, biologists and mining companies have been investigating the possibility of creating shallow water wetland habitat on surface mined land. Developing this type habitat during mining activity can maximize the wildlife benefits of reclaimed mine lands. In addition to providing a water source and wildlife habitat, these wetland areas may also improve water quality. Cattail marshes and other wetland systems act as a natural sponge, slowing and storing water runoff while filtering some of the iron, manganese, and other elements that may impact water quality downstream of the mine site.

## **ADDITIONAL MANAGEMENT POTENTIAL:**

Although wildlife reclamation projects are designed to require no additional or yearly maintenance, there are several management options available if the company or land manager wishes. By carefully segregating spoil during the mining process, level areas can be backfilled with less rocky mine soil, planted, and mowed annually. On good sites, it may be possible to develop plots that could be disked and planted each year with annual grains such as buckwheat, millet, milo, etc. Annual applications of fertilizer and lime can be applied if needed. Prescribed fire can also be used in grassed areas to enhance wildlife benefits. Fire should be excluded from shrub plantings. Wood duck boxes can be placed around sediment ponds and ditches, but they must be maintained on an annual basis to be effective. Brush piles for rabbits and other small game can be established adjacent to shelterbelt and clump plantings.

## **SOURCE OF SEED AND SEEDLINGS:**

Most all seed, seedlings, and tree shelters needed for reclamation projects can be obtained through the NWTF's Project HELP program. For a free Project HELP catalog call 1-800-THE-NWTF or [click here](#). Special pricing is available on larger orders. Contact the NWTF, P.O. Box 530, Edgefield, SC 29824, Phone (803) 637-3106, for prices and special orders. Large orders should be placed as early as possible. Tree seedlings are available for shipment from mid-December to the end of April. Do not wait until spring planting time to order shrubs and trees, as stock may not be available.



PHOTO BY RON BRENNEMAN

*Bluebird nest box on reclaimed area.*