

# Edge Feathering

The area where two or more habitat types, such as forestland, grassland, or wetland, meet is called edge. In most natural situations “edge” consists of a gradual transition from one habitat type to another over a horizontal distance. In other words, there is not a definite place where the forest stops and the grassland begins. Instead, edges consist of a mixture of plants and animals from each of the adjoining habitats, producing a greater overall diversity of species than is found in either of those single habitats. This increased species diversity is called the “edge-effect” and can provide an abundance of food and cover for many species of wildlife within a relatively small area. The mixture of plants from two different communities may also produce a wide diversity of vertical structure (plants of varying heights) within edge habitats. For instance, an edge between grassland and forest may consist of a transition from primarily short grass/weed cover, to taller briars, then even taller shrubs, and finally large forest trees. Therefore, there are at least three parameters that can be used to describe an edge and its potential value to wildlife; 1) width, 2) species diversity, and 3) diversity of vertical structure.

Activities such as clearing land for pasture within a predominantly forested area can



Figure 1. Gradual edge effect showing (front to back) short grass, brushy briars and weeds, shrubs and mature forest.





Figure 2. Edge from short grass to shrubs.

*In most natural situations edge consists of a gradual transition from one habitat type to another over a horizontal distance.*



*Edges consist of a mixture of plants and animals from two or more adjoining habitats producing an edge-effect.*

fragment large blocks of a particular habitat type, and produce edges. Unfortunately, these edges are often abrupt, lacking the width, species diversity, and structure that are associated with more gradual edges. An example of this would be a situation where a grass pasture is kept mowed or grazed, right up to a point where the mature trees of a forest begin. This type of abrupt edge can actually be detrimental to many wildlife species. Because abrupt edge has very little width, wildlife that nest in such an edge

are much more susceptible to predation. It is easier for a predator to hunt a narrow strip of habitat than a wider one. Wildlife species that nest in mature forest are also subjected to increased risk for nest predation as well as nest parasitism by brown-headed cowbirds. This is because there is no buffer present to separate the grassland (where the cowbirds reside) from the mature forest. The lack of vertical habitat diversity in an abrupt edge may also exclude certain types of wildlife altogether. For instance, a “clean edge” that is kept mowed right up to the woods may lack wildlife that nest in briars or shrubs, such as eastern cottontails, Carolina wrens, and golden mice.

Fortunately, edge habitat between forestland and grassland can be actively managed to reduce negative impacts of clean or abrupt edge and produce the gradual transition or feathered effect desired by many types of wildlife. The first step may simply be to evaluate the characteristics of a particular edge, remembering the parameters described above, to determine if it is too abrupt. The width of edge habitat that should be maintained will depend on factors such as topography of the land and adjoining land uses. In general, the wider the edge the better. An ideal recommendation would be to maintain a 150-foot wide belt of edge habitat divided into at least 3 zones comprised of vegetation of different thickness and height. A managed edge should be a minimum of 50 feet wide in order to achieve the gradual transition of habitat that is desired. If an existing edge lacks width and density of vegetation, then you should consider implementing one of the following edge treatments, or a combination of them, to produce a gradual, feathered edge.

### **Edge Treatments** Thinning of Overstory Trees

Abrupt woodland edges can be feathered effectively by thinning the overstory trees in an area. This is an especially desirable edge treatment if the land adjoining the forest is being intensively managed, such as cropland or

pasture. This practice involves three different zones, which are thinned with progressively less intensity from the edge into the forest. The first zone, adjacent to the adjoining habitat, will be thinned the heaviest with at least 75% of the overstory trees being cut. The second zone will have approximately 50% of the overstory trees removed. The last zone should have only 25% of the overstory trees removed. Again, each zone should be 1/3 of the total desired width of edge. For instance, if a 150-foot feathered edge is desired, then each zone would be 50 feet wide.

Cutting trees in this manner will produce a gradual transition from smaller vegetation to larger trees by stimulating new growth of forbs, briars, vines, and young trees and shrubs. Where possible, during the actual thinning process, trees that are unhealthy or of limited value to wildlife should be cut, leaving healthy trees of mast producing species such as oaks or dogwoods (see *Habitat How-To* on Timber Stand Improvement). This method of edge feathering provides a great source of firewood that is easily accessible by truck or tractor. Tree tops and other brush produced during thinning can be used to build brush piles\* along woods edges, providing additional cover for wildlife. After several years, additional thinning will be required to maintain the edge in the desired stage of growth.

### Natural Revegetation

Another method of producing a feathered edge between a woodland and its adjoining habitat is to allow the area immediately adjacent to the woods to grow up into natural vegetation. This may be as simple as not mowing a field within a determined distance from the woods edge. However, if there is thick fescue sod or other invasive plants present that might impede the establishment of desirable native vegetation, some site preparation may be necessary. This could be accomplished by conventionally tilling the soil or by spraying the problem vegetation with an appropriate herbicide (see Fescue Eradication and Natural Revegetation *Habitat How-To's* for more details).

Whether site preparation is required or not, natural revegetation along the edge can be encouraged in stages to produce even more of a gradual transition between habitats. After determining how wide of an area will be allowed to grow up, divide this total width into three sections or zones similar to those described previously. The first zone, closest to the woods, should be allowed to grow



*Abrupt edge has very little width, making wildlife that nest there more susceptible to predation and nest parasitism.*



*Figure 3. An edge containing tall weedy vegetation and shrubs will support nesting from several species including Carolina wrens and golden mice.*

*The width of edge habitat that should be maintained will depend on factors such as topography of the land and adjoining land uses.*



*A clean edge that is kept mowed right up to the edge of the woods may lack wildlife such as eastern cottontails, Carolina wrens, and golden mice, which nest in briars or shrubs.*

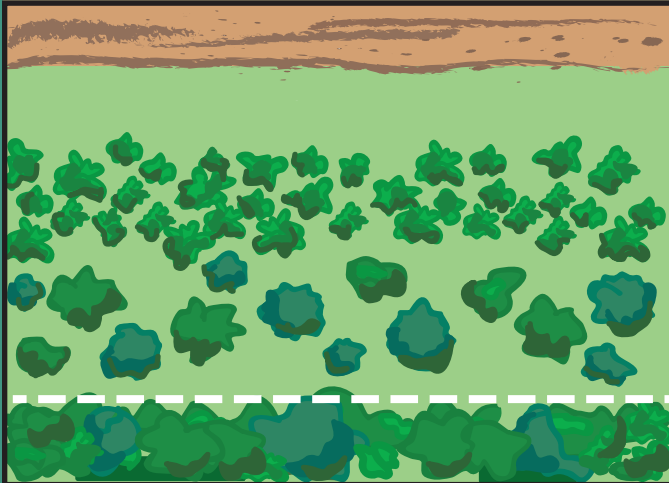
up for three to five years. After this period of time the first zone would continue to grow up and the next zone would be allowed to begin growing up for approximately the same amount of time. Finally the last zone would be allowed to grow up. By this time you should have a zone with large saplings (12 – 15 years old), a zone with small saplings and briars (6 – 10 years old) and a zone in a weedy/briar stage. In this scenario the outermost zone of the edge may be mowed every three to five years to keep it in a briar stage and prevent larger trees from becoming established. To maintain the next two zones at a desirable stage of growth, it may be necessary to periodically thin these areas as previously described.

### Plantings

The third method of enhancing abrupt woodland edges involves plantings of trees\*, shrubs\*, and grasses. In this type of edge treatment, evergreens or small deciduous trees, especially species that produce fruit or seeds, such as flowering dogwoods, hawthorns, or crabapples, would be planted in the area closest to the woods. In the next zone shrubby species such as wild plum, silky dogwood, arrowwood viburnum, or hazelnut would be planted. Depending on the desired results, these trees and shrubs could be planted in a close spacing (8' X 8' for trees and 6' X 6' for shrubs) to produce thick cover (see *Habitat How-To on Cover Thickets\**). The alternative would be to plant them farther apart and allow natural regrowth of woody plants to fill in the gaps. Native warm season grasses\* could then be established next to the shrubs. Maintenance of this type of edge treatment would involve periodically cutting large trees out of the tree and shrub plantings and maintaining the native warm season grasses through prescribed burning,\* mowing,\* or strip disking\*.

As you can see, all of the edge treatments described above basically involve managing different zones to produce a gradual transition from smaller vegetation to large trees over a horizontal distance to effectively simulate a more “natural” edge. For this reason it is possible to combine different aspects from each of these treatments to achieve the same effect. For example, you could thin the overstory trees a shorter distance back into the woods, then plant shrubs next to the thinned edge, and finally allow briars to grow up next to the shrubs. There is no one design that works best and it is likely that edge-feathering methods will need to be tailored to suit different management objectives and existing edge conditions.

## Edge-feathering by planting



Strip disked area

Zone 1- Native Warm Season Grass

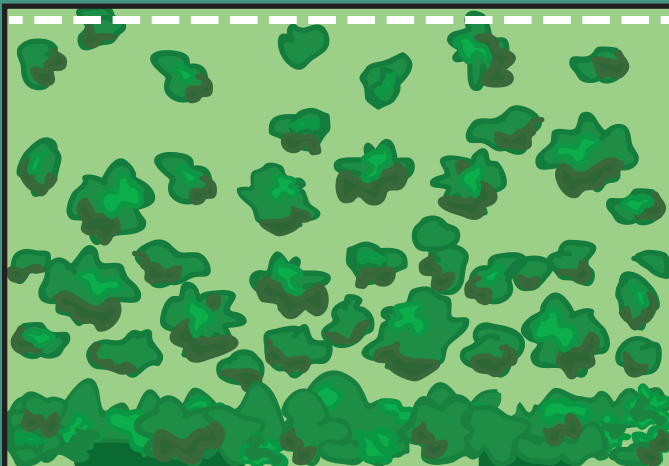
Zone 2- Small shrubs such as silky dogwood or hazelnut

Zone 3- Evergreens and/or small trees and large shrubs such as crab apple, wild plum and hawthorn

--- Original forest edge

Unthinned forest

## Edge-feathering by thinning



--- Original forest edge

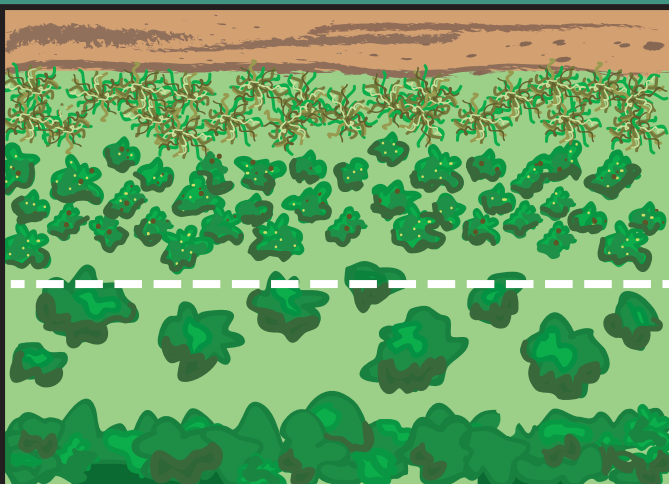
Zone 1- 75% of canopy removed

Zone 2- 50% of canopy removed

Zone 3- 25% of canopy removed

Unthinned forest

## Edge-feathering using a combination of thinning, planting and natural revegetation



Strip disked area

Zone 1- Maintain in briar stage by mowing once every 3 - 5 years

Zone 2- Plant a variety of mast producing shrubs or small trees

--- Original forest edge

Zone 3- Approximately 50% of overstory removed

Unthinned forest

## SUMMARY OF OPTIONS:

### Managed Edge:

Gradual edge is desired

### Desired Width:

150 feet optimum, 50 feet  
minimum

### Edge Treatments:

Thinning, Natural  
Revegetation, Plantings

### Maintenance:

Thinning, Mowing,  
Burning, Strip Disking

### \*Related *Habitat How-To* references:

Brush Piles  
Cover Thickets  
Field Borders and Filter Strips  
Forest Regeneration  
Mowing  
Natural Revegetation  
Native Warm Season Grasses  
Prescribed Burning  
Strip Disking  
Trees and Shrubs  
Timber Stand Improvement

### *Planning for My Property*



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