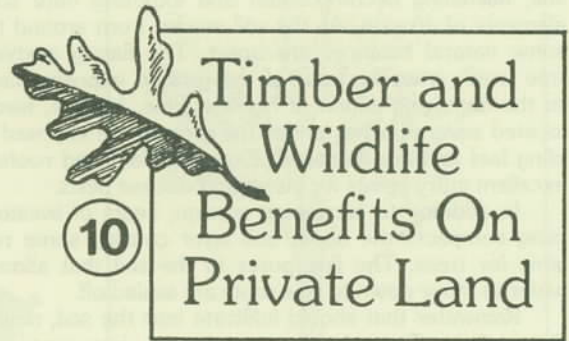


# Woodland Protection and Wildlife Management



The forests we now manage have a history of damage from many forces. Major and minor natural disasters such as fires, weather, insects, diseases and wildlife are constantly destroying single trees or small groups of trees. Occasionally, a large forested area is damaged or destroyed by such natural forces.

Protection of woodlands from naturally caused or man-made damage is intended to save trees for their lumber value, maintain watershed cover, preserve wildlife habitat and guard human lives or property.

Trees and wildlife often rely on disturbance and damage to the forest for their very existence. Some thrive on the stability and tranquility of the undisturbed forest. Most important for the woodland manager to keep in mind is that change caused by damage to the forest is not always bad for all wildlife. Plans to keep or improve habitat for one or a few wildlife species may be disrupted by damage to the forest. However, other wildlife may find the damaged area quite useful.

Major forest protection concerns include livestock grazing, fire, insects, diseases, severe weather and soil erosion. While some of these problems can be controlled others must be taken in stride and the resulting damage modified to best benefit wildlife.

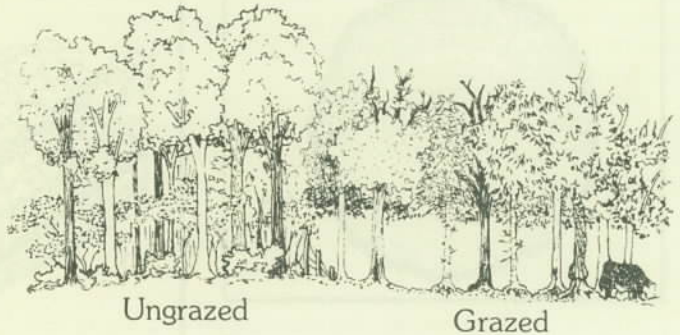
## Grazing

Years of grazing in Missouri's hardwood forests by domestic livestock has damaged timber, wildlife and soil resources. Even though grazing damages the woodland, it is frequently allowed with the best of intentions. Woodlands provide a cool place in the summer, wind protection in the winter and shelter in the calving season. Unfortunately, cattle grazing in woods can be harmful.

Much of the damage done by grazing is not readily visible to the naked eye and shows up only as a long term effect. Damage to woodlands can take many forms including damage to the trees, destruction of wildlife habitat, increased soil erosion and soil compaction. Young tree seedlings and saplings are the first trees to suffer from grazing. Young trees representing the whole next generation are eaten and destroyed. Saplings are broken, stripped of bark and trampled. Even large trees suffer wounds from rubbing and the chipping of sharp hooves at the base of the tree.

Over the years, the appearance of a grazed woodland changes. As trees are harvested or die of old age, there are no young trees to take their place. Some trees that are more resistant to grazing may increase in number as the less resistant, but more valuable, oaks are grazed out. Hickories can tolerate more soil compaction than oaks and will survive better in grazed woodlands. Honeylocust seedlings are thorny and seldom eaten by livestock. In addition, cattle will eat honeylocust seed pods and spread undigested seeds everywhere.

Wildlife food and cover disappears when hungry livestock consume and destroy the plants growing on the forest floor. Since there is little else for cattle to eat in the woods, the "browse line" in a grazed woodland is readily visible. Everything is consumed from the ground to as high as grazing animals can reach. Wildlife needing thick timber edges and low growing plants have difficulty surviving in a grazed woodland.



An obvious "browse line" forms in grazed forestland, destroying layers of wildlife habitat.

Mast, especially acorns, is an important food source for woodland wildlife. The ability of trees to produce fruit depends on their vigor and health. Grazed woodlands are less vigorous and the trees produce less mast. When hogs and cattle are run in a woodland, the entire mast crop may be consumed, leaving nothing for wildlife.

The soil erosion on a grazed woodland can be eight to 110 times greater than erosion on an ungrazed woodland. As shown here ungrazed forest land is the best possible protector of soil, holding erosion to amounts nearly too small to measure. In many situations forests create soil faster than it erodes away. The key to such good protection is the thick layer of dead leaves that build up on top of the soil for years and gradually decompose into the soil.

### Influence Of Grazing On Erosion Potential in Forest Land

	% Ground cover	Erosion potential
Non-grazed forest land	95+	Minimal
Lightly grazed	85-95%	8 times
Moderately grazed	50-85%	30 times
Heavily grazed	0-50%	110 times

Churning feet of livestock mix the leaf litter layer into the soil, hastening decomposition and exposing bare soil to the elements of erosion. As the soil erodes from around the trees, some natural balances are upset. The flaring portion of the tree trunk is washed out of the ground exposing large roots to the damaging action of hooves. Fine, hairlike, feeder roots located several inches under the ground are exposed to trampling feet and are damaged. Exposed, damaged roots are also excellent entry points for insect and disease pests.

In addition to increasing erosion, years of livestock trampling compacts the upper soil layer causing some real problems for trees. The fine pores in the soil that allow air and water to move down to tree roots are sealed off.

Rainwater that should infiltrate into the soil, now runs off the surface. Trees become weakened, lose vigor and slow their growth. They are more likely to be attacked by insects or disease and cannot tolerate drought. Diameter growth slows as the tree has lessened ability to put on new wood.

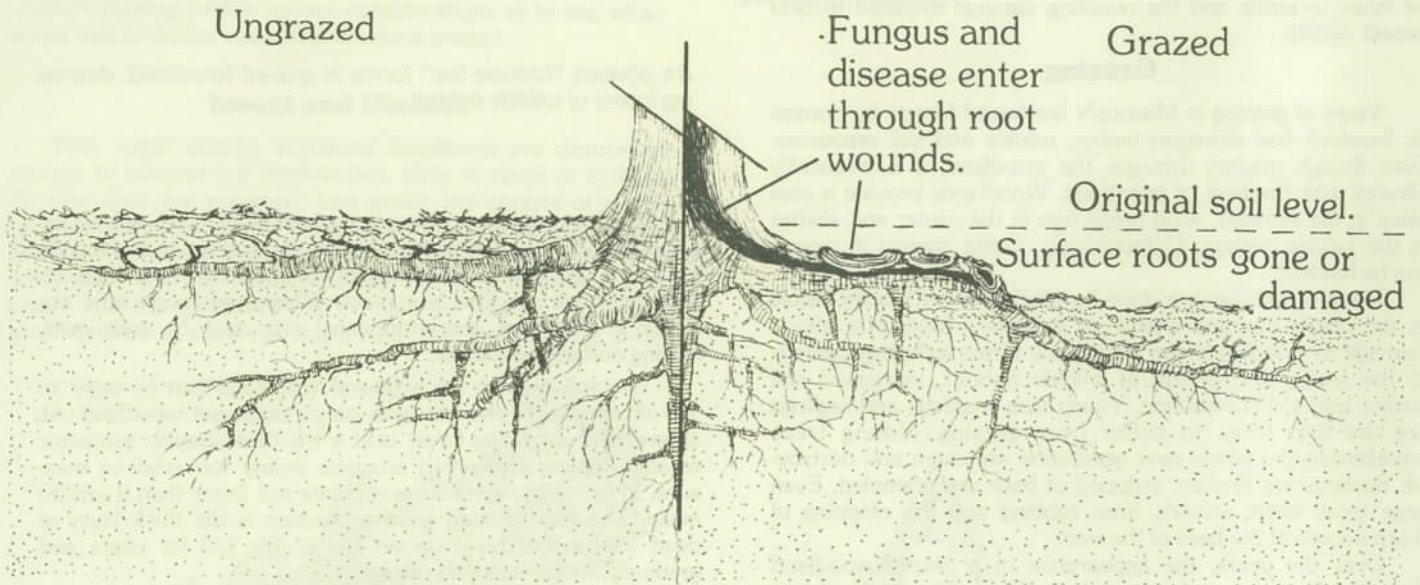
Hardwood forests produce very little forage of very poor quality for livestock. One acre of managed pasture is worth anywhere from 20 to 40 acres of woods pasture. Money is best invested in the management of existing pasture land while leaving the woodland to grow trees.

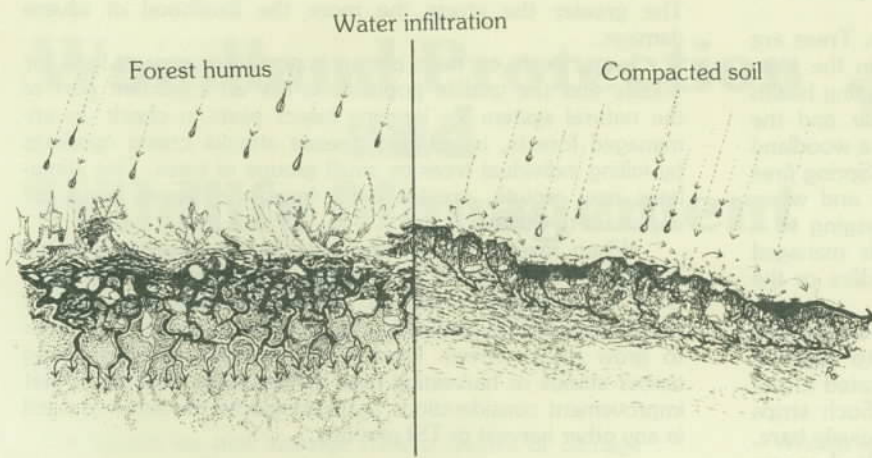
Where livestock need shelter, limit use to only a small area of woodland. Plant both cool season and warm season grass pastures that can be rotated throughout the year as growing seasons dictate to take the pressure off the woods as a standby pasture.

To return a grazed woodland to good wildlife habitat, fence woodlands in all seasons of the year to keep livestock out.



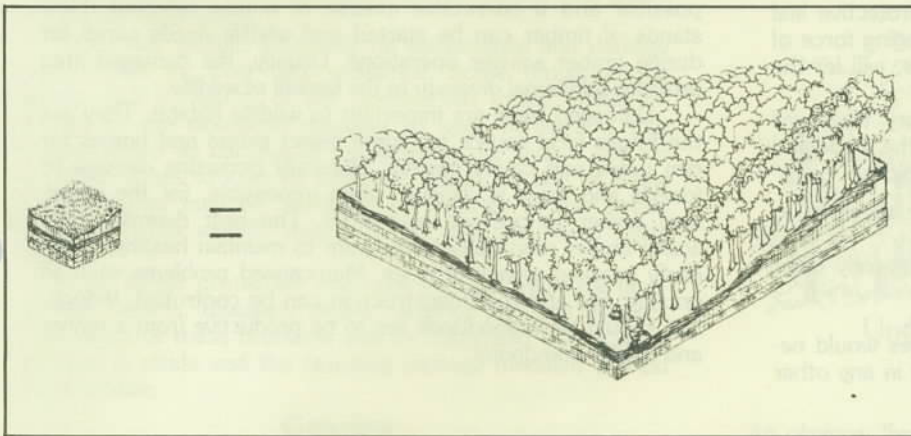
Livestock grazing tramples the soil (above), exposing tree roots to a variety of damage (below).





Water infiltration is greatly reduced in soil compacted by grazing.

*It takes 20 to 40 acres of woods pasture to produce as much forage as one acre of grassland.*



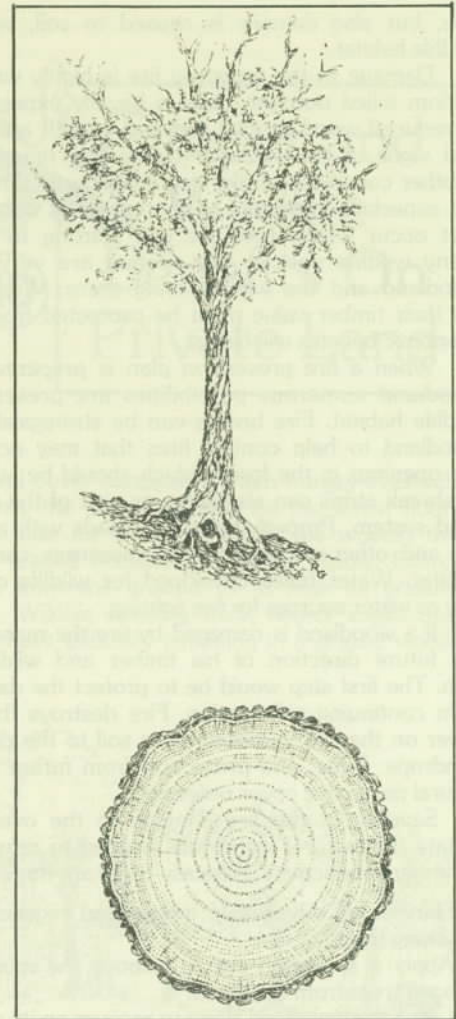
### Erosion

Conservationists have long known keeping forest cover on land is a sure protection against soil erosion. The build up of dead leaves on the forest floor protects soil from the splashing action of raindrops (similar to shingles on a roof). When this deep layer of dead organic matter is in place, forest soils absorb rainfall faster than the water can run off.

Damage done to forest soils by grazing is the greatest cause of soil erosion in woodlands. However, erosion may also occur in woodlands as a result of some poor forest management practices. Poorly located access roads, trails and logging roads will have high erosion rates and will not naturally "heal" in a short time.

On highly erodible soils, steep sites and long slopes the potential for erosion associated with logging roads and skid trails greatly increases. Proper placement of roads and follow-up treatment after trees are harvested may be necessary to avoid erosion problems. Consider these items when planning for harvesting operations on woodland tracts to prevent erosion:

- 1) Avoid logging during wet seasons on deep or soft soils. Rutted roads and trails concentrate water movement and increase gully formation.
- 2) Keep skid trails and logging road grades below 10 percent whenever possible.



*Tree growth and vigor is adversely affected.*

- 3) Leave a buffer strip of protected vegetation between streams and any nearby roads, skid trails, or other such areas where soil has been distributed.
- 4) Avoid logging in or close to streams. Install water breaks on logging road and skid trails to divert water away from traffic area.
- 5) Seed landing and roads to grass/legume mixtures following logging operations to control erosion and to maintain open condition for future use and wildlife habitat.
- 6) Restore water breaks after logging is completed on roads and skid trails when the average grade is 5 percent or more.

The recommended spacing is:

Road grade	Approximate distance between waterbreaks
5%	125 feet
10%	80 feet
15-20%	50 feet
25+%	40 feet

### Fire

Fire damage to a forest is a major protection concern. Not only are trees damaged by fire, resulting in economic

loss, but also damage is caused to soil, water quality and wildlife habitat.

Damage to the forest by fire is highly variable. Trees are seldom killed outright. Loss is usually expressed in the form of reduced wood quality, reduced growth and declining health and vigor of the stand of trees. The time of year and the weather conditions on the day a fire burns through a woodland are especially important to the extent of damage. Spring fires that occur when trees are just starting to grow and when many wildlife species are nesting are very damaging to a woodland and the wildlife living there. Woodlands managed for their timber value must be protected from wildfire or the economic benefits will be lost.

When a fire prevention plan is prepared for a managed woodland numerous possibilities are presented to improve wildlife habitat. Fire breaks can be strategically located in the woodland to help contain fires that may occur. Such strips are openings in the forest which should be left relatively bare. Firebreak strips can also serve as part of the woodland access road system. Properly cared-for roads with appropriate seeding and other erosion control measures can add to wildlife habitat. Water holes developed for wildlife can serve a dual role as water sources for fire fighting.

If a woodland is damaged by fire the manager must decide the future direction of his timber and wildlife management plan. The first step would be to protect the damaged woodland from continuing soil erosion. Fire destroys the protective leaf cover on the soil, exposing bare soil to the damaging force of raindrops. Time, and protection from future fires, will let the natural protective cover redevelop.

Severity of the fire damage to the overstory trees will dictate the cultural techniques needed to return the woodland to timber productivity. Basically there are three choices.

- 1) Harvest all salvageable timber and regenerate the area to young trees.
- 2) Apply a sanitation cut to remove the most severely damaged trees from the stand.
- 3) Leave the woodland alone to recover on its own.

Selection of either of the first two alternatives would necessitate making wildlife habitat considerations as in any other timber sale or timber stand improvement project.

### Insect and Disease

Few insect attacks in natural woodlands are destructive enough to warrant our intervention. Only in cases of extreme damage does the economic loss justify the control of a pest by chemical applications. Fortunately insect and disease epidemics are usually controlled by other natural forces which bring them back to tolerable levels. The best defense against insect and disease attacks is to maintain healthy, vigorously growing, diverse stands of trees. Any time the trees are under



*Insect pests are also food for wildlife and are often kept in check by natural forces.*

stress they are more susceptible to insect and disease attack. The greater the stress the more the likelihood of severe damage.

Insect pests on trees are an important source of food for wildlife and the wildlife populations are an important part of the natural system for keeping insect pests in check. In unmanaged forests, insect and disease attacks create openings by killing individual trees or small groups of trees. This stimulates new growth, creates dead trees and leaves snags; all important to wildlife.

When insect and disease attacks do cause excessive damage to a woodland, it is usually a sign that the woodland is in an unhealthy condition. Timber management activities should be aimed at eliminating the problems causing the timber to grow under stress. Usually this involves thinning young timber stands or harvesting over mature trees. Wildlife habitat improvement considerations again should be the same as used in any other harvest or TSI practice.

### Weather

Weather damage is an uncontrollable factor in timber management. Individual trees can be destroyed or damaged by wind and lightning. Larger areas of forest can be destroyed or damaged by drought, wind, flood, hail or severe ice storms.

Weather damage must be taken in stride. The extent and severity of the damage should be assessed as quickly as possible and a corrective course of action selected. New stands of timber can be started and wildlife needs cared for during timber salvage operations. Usually, the damaged area provides additional diversity to the benefit of wildlife.

Damaged trees are important to wildlife habitat. They are the future food source for some insect eaters and homes for den users and cavity nesters. Naturally occurring damage to forests and trees is difficult, often impossible, for the woodland owner to prevent or control. The best defense is an active timber management program to maintain healthy, vigorously growing stands of trees. Man-caused problems such as grazing, fire and road construction can be controlled, though, and should be if woodlands are to be productive from a timber and wildlife standpoint.



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