

Overcoming The Timber Harvest Blues

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Those who practice the science of forestry are keenly aware, and regularly proclaim, that there are two types of timber harvesting jobs: ugly ones and really ugly ones. There is nothing necessarily attractive about a forest where trees have been felled, dragged, bucked-up and hauled away. The appearance and personal sensation are not unlike those experienced following a strong wind or ice storm, or even a tornado. To the forest, these are all major disturbances, but one disturbance is human-induced (harvesting), while the others are natural events.

In many ways, natural disturbances to a forest can be far more visually unpleasant than a timber harvest, with trees completely toppled/snapped/uprooted, branches broken, trails blocked, creeks plugged and views permanently changed. Natural disturbances are not planned and occur with inadequate warning. Further, no revenue has been generated, rather there is a financial loss. Sometimes the loss is substantial, leaving the landowner with a major challenge of attempting to salvage the damaged trees (concurrent with many other landowners also attempting the same).

A CONTROLLED TORNADO

Some have compared a timber harvest to a controlled tornado. It is controlled in that rather than the event being sudden and random, foresters offer expertise and insight, making the event systematic. Consider the following:

Payment for timber – when timber is sold, in most cases, a contract is signed, indicating how much will be paid and/or by what method.

Preparation - with timber harvests, landowners are prepared for the harvesting, can observe the progress and can make special requests about lanes, fences, vistas, creeks, etc.



Figure 1. Timber damaged by straight-line winds.



Figure 2. Timber damaged by tornado (very challenging to salvage).

Timing – unlike natural disturbances, timber harvests can be properly timed to coincide with landowner plans, such as debt payments or retirement.

Which trees are to be cut – one of the greatest benefits of an organized timber harvest is that landowners have a say in which trees are to be harvested and by what method. In contrast, natural disturbances make no distinction in which trees succumb. Any and all trees are vulnerable.

Still, a timber harvest can be very upsetting, even when properly planned and anticipated. Shaver (2019) summarizes the matter clearly,

“If we work with a professional forester, have a contract that protects us and manage the harvest properly, we can help ensure that our forest will recover and be healthy and productive over time. But even the best timber sale is ugly, messy and changes the forest. The change, the mess and the disturbance to the forest can be very unsettling. The post-harvest blues can set in quickly unless you have a plan to help the forest recover.”

THE RECOVERY PLAN FOR YOUR FOREST (AND YOU)

One surety is that forests grow back. Once the noise of the harvesting equipment ceases, the dust settles and the initial shock is overcome, the forces of forest restoration and aesthetic renewal begin. If guided by a plan, action steps, resolute patience and “faith in a seed,” forest rebirth begins.

Forest recovery through tree seed distribution is inevitable. Whether by wind, gravity, water or wildlife (burying or ingesting and defecating), from seeds, tree seedlings sprout. The sun, having been absent from the forest floor for

decades, warms the soil. Seeds that have laid dormant for years suddenly germinate, while stumps often re-sprout, and a new forest arises. Sometimes, even native prairie grasses and forbs or American chestnut sprouts, long suppressed from lack of sunlight, will “pop up” seemingly from nowhere after a harvest and add diversity to the forest. It is reassuring to understand that a timber harvest in this sense is not the

end of a forest, but a renewal. Landowners benefit knowing that the mature trees they sold at one time began as seedlings initiated by others.

The regrowth of forest openings created through the harvest of timber results in the establishment of early succession habitat.



Figures 3 and 4. The same site immediately following a timber harvest and six years later.

This forest renewal provides excellent habitat for nesting and brooding turkeys, lactating does and a full host of other species. The lack of early forest succession habitat is of primary concern across the nation. Landowners conducting timber harvests can thus feel reassured about playing an important role in restoring this valuable forest component (Natural Resource Conservation Service, 2007).

There are many facets of a timber harvest that need attention prior to and upon completion. To aid in visual improvement and forest recovery, landowners should consider the following.

FOREST RESTORATION PLAN

A forest restoration plan is a vital initial step. Plans can be simple or complex, depending on the extent of work desired. Professional foresters develop these plans. As opposed to pine, with hardwood forests, rarely is replanting trees necessary. Tree seedlings emerge either because they were present in the understory prior to the harvest (known as advanced reproduction) or they originate from seed following the harvest (known as germinants). Quite often there are residual overstory trees that could be deadened to increase sunlight and benefit the growth of the seedlings. This is known as site preparation for natural regeneration. Sometimes, with perseverance, improved hardwood seedlings can be planted into harvested land. If pines are to be replanted, then a tree planting plan will be needed.

INVEST BACK

Perhaps one of the best ways of overcoming regret that may follow a timber harvest is to consider giving back to the forest from which you benefitted. Whether you intend to retain or sell the property, reinvesting a portion of the sale proceeds helps the property to recover value more rapidly. Several practices can be considered, but timber stand improvement (TSI) should be principal among them.

TSI is the application of cultural practices to a forest to improve the composition, stocking and growth of trees in order to better achieve landownership goals (Mercker 2018). After a timber harvest, invariably there will be additional trees that could be deadened or felled. For instance, there may be culls. Culls are trees which cannot fulfill their intended purpose due to defect. Culls may be hollow, crooked, excessively branching, split, etc. There may also be younger stands within the forest that were not included in the timber harvest. These areas may be overstocked and, much like a garden, in need of weeding. TSI accomplishes this too. Culls and unmerchantable trees, where readily accessible, could otherwise be utilized for firewood or may be left for wildlife if they hold active dens.



Figures 5, 6 and 7. Post-harvest improvement can include deadening culls, site preparation or planting oak seedlings.

Landowners interested in growing shiitake mushrooms may find an abundant supply of material for mushroom inoculation among the culled logs and TSI stems. Mushrooms are becoming increasingly popular in restaurants and farmers markets and can provide a source of income. For information on growing shiitake refer to “Growing Shiitake Mushrooms in an Agroforestry Practice” (Bruhn, J., 2008).

Additionally, reinvesting in your property can include planting trees, controlling exotic invasive species, establishing food plots or prescribed burning. All these practices, including TSI, may be eligible for cost-share assistance from state and federal agencies. And the portion that is not cost-shared may be eligible for deduction from income tax. Landowners, through having a timber harvest, may find that this process introduces them and their family to a new world of opportunities and activities in which they can engage. All these enhance the enjoyment of owning forestland. Growing ginseng and other medicinal herbs, for example, is another activity that could provide additional income and help comfort landowners as the appearance of their harvested forest recovers.

TREE TOPS AND BRANCHES

Loggers are interested in the merchantable portions of timber. Mostly this includes the bole of a tree. The bole is the trunk, including the butt and upper logs, normally down to a 10 inch diameter. Unless pulpwood markets exist, slash is normally left behind. Slash is the common term for nonmerchantable residue left on the ground after harvesting. Included are tree tops, broken branches, uprooted stumps, defective logs and bark. Slash can have

certain ecological benefits such as adding nutrients to the soil or providing wildlife habitat.

Much like the residue that remains after row crops are harvested, branches rot quickly and return to the soil as organic matter. During decomposition, branches bring a sudden arrival of new habitat for a host of small mammals, reptiles, amphibians and birds. Frederickson, et. al. (2000) reported that following a timber harvest, retaining snags and cavity trees benefit mammals and birds, whereas large woody debris (logs, stumps, bark and slash piles) benefits amphibians and reptiles. Further, some wildlife achieves maximum abundance in lightly harvested stands (mammals and amphibians), while others in more heavily harvested stands (birds and reptiles).

For many landowners, tree tops are the most unappealing part of the harvest. They are messy and impede the forest view. Eliminating tree tops and branches is not necessary, other than for aesthetics. If however, aesthetics is important, tree tops can be cut for firewood or just “lopped.” Lopping tops infers cutting the tops so they fall to the forest floor where, due to contact with the moist soil, they decompose more quickly. Lopping tops may be more essential where vistas are important, such as along trails and roadways. Where deer populations are high, and over-browsing negatively impacts the regeneration of oak seedlings, tree tops can provide beneficial barriers that protect young seedlings as they grow past the height of deer browsing. Be careful when lopping tops though. The branches in tree tops, particularly when intertwined, can be bent and have tension wood. When cut, tension wood can launch with great force in unanticipated directions and cause great bodily harm.



Figure 8. Although unsightly, tree tops provide valuable wildlife habitat or they can be utilized for firewood.

LOG LANDINGS

Log landings, also called log yards, are places at the harvesting site where logs are assembled and loaded onto trucks for transport. Larger logs are dragged from the woods to the landings where they are often bucked into smaller logs, loaded onto trucks, and hauled to the mills. Log landings receive considerable impact due to the dragging of the logs and to the array of heavy harvesting equipment. Vegetation is cleared to create log landings and the soil is compacted. It is often desired to locate landings nearer to roads, for easy access by haul trucks. Ideally, a buffer strip should remain between the landing and public roads, to minimize the visual impact.

As larger logs are bucked into smaller logs, customarily there will be sections that have major defects. Mills reject these sorts of logs. Defects may include rot, hollow, excessive knots, cracks, shake (the separation of growth rings), etc. Defects are cut from the logs before loading onto the haul trucks. These “cut-offs” are normally piled and left at the landing, where they will become wildlife habitat. Some landowners have aversion toward the appearance of the cut-offs, and if so, they can be pushed out of view or cut for firewood.



Figure 9. Defective log “cut-offs” are not usable by sawmills and are left. They provide unique wildlife habitat (particularly for nongame species) or they can be utilized for firewood.

After harvesting ceases, log landings can be sown into wildlife friendly cover and maintained for future log landings. The greening of the site will conceal the exposed

soil, making the site more visually appealing. However, the soil will require considerable loosening for good seed bed preparation.



Figures 10 and 11. A log landing yard immediately following harvesting and after reseeding. These openings are used by a variety of wildlife.

SKID ROADS

Roads or trails over which logs are dragged (or transported) from the stump to the landing, are termed skid roads. During harvesting, skid roads receive extensive traffic. Modern harvesting equipment is large and heavy and causes soil compaction, rutting and sometimes erosion when dragging logs from the woods to the landing.

Your forester will discuss the location and number of skid roads with the timber buyers. Normally it is preferred to minimize their number (unless increasing the number is necessary to avoid wet areas). Loggers generally prefer roads to be straight and near the log landing area. This improves harvesting production.

At harvest completion, loggers should establish water bars on the steeper portions of the skid roads. A water bar is a diagonal ditch or hump in a trail or road that diverts surface water runoff to minimize soil movement and erosion. Water bars should extend slightly beyond the width of the skid road, be angled downslope, and be placed at approximately six-foot drops in elevation. Skid roads can be used to provide future management and recreational access. As with log landings, skid roads can be seeded to a wildlife mix to become linear food plots. For more information on creating wildlife friendly skid roads, refer to UT Extension Publication “PB 1885 Forest Stand Improvement: Implementation for Wildlife in Hardwood Stands of the Eastern US.” (Harper 2020)



Figure 12. Skid roads can be seeded to develop “linear” food plots.



Figure 13. Skid roads can be seeded to develop “linear” food plots. Image by C. Harper, courtesy UTIA.

DAMAGE TO RESIDUAL TREES

There will be trees damaged in a harvesting operation. It’s unavoidable. Even the most conscientious logger will occasionally fell one tree onto another or bump a residual tree while dragging logs.

Directional felling will minimize damage to residual trees. Directional felling is a form of careful tree cutting to ensure that trees fall in a predetermined direction to protect the residual trees from harvesting damage and to allow for easier log skidding (Mercker 2018). Long log lengths can also be problematic. Logs, when cut and dragged from the woods, can reach 60 feet or longer. It is very challenging to not damage the base of residual trees when making turns or curves on skid roads while dragging logs. If logs don’t bump the residual trees, the equipment might. This is particularly the case with selection (or intermediate cuts), whereby many trees are retained for future sale.

The goal is not to eliminate all the damage to residual trees but to minimize it. Careless loggers should be stopped if excessive damage is occurring, and in some cases the damaged trees should be paid for. Harvesting damage is often addressed in the timber sale contract and your forester can evaluate what is acceptable. Most trees recover from minor bark scuffing, but too much damage will degrade the butt log, allow stain-producing fungi to enter and lower future value. It is not recommended to apply wound dressing to the butt damage. Doing so may hinder the natural ability to seal. The wound will remain inside the tree once it completely seals.



Figures 14, 15 and 16. Minimal, moderate and significant butt damage to residual trees (seven years after the damage occurred).



Figure 17. Expect some tree tops damaged with residual trees during harvesting. Some trees will recover fine; others should be felled and allowed to re-sprout.

STREAMSIDE MANAGEMENT ZONES

Streamside Management Zones (SMZ) are established adjacent to rivers, streams, ponds, lakes or other bodies of water. With SMZ, a buffer strip of trees or other vegetation is intentionally left (or disturbed only lightly) to protect water quality (Mercker 2018). Loggers are trained in understanding SMZ. Generally, the goal is to maintain a minimum of 50 percent crown canopy adjacent to SMZ and to minimize equipment operation within them. If the slope leading to a body of water is more steep, then the SMZ should also be wider.

Upon harvest completion, any tree tops, logs, culverts, etc. located in stream channels should be removed. The portion of skid roads adjacent to streams should be stabilized and reseeded or protected with stone. For additional information related to SMZ in Tennessee, refer to Guide to Forestry Best Management Practices in Tennessee (Tennessee Department of Agriculture 2003) and UT Extension publication “PB 1679 Forest*A*Syst: Self Assessment to Prioritize Your Forest Uses” (Mercker 2016).

EXOTIC INVASIVES

An exotic invasive is a species that becomes established outside its natural range, forms a breeding population and becomes a pest that may threaten biodiversity of the local ecosystem. Just as with native plants, many exotic invasive plants thrive on the conditions that occur following a timber harvest, namely exposed soil and sunlight. If left unchecked, exotic invasives can become a major concern and controlling them can become expensive.

The time to consider exotic invasives is not after the harvest, but before. Of particular concern in the southeastern U.S. region are these species: kudzu (*Pueraria lobata*), privet (*Ligustrum spp.*), bush honeysuckles (*Lonicera spp.*), Bradford pear (*Pyrus calleryana*), Japanese stiltgrass (*Microstegium vimineum*), and paulownia (*Paulownia tomentosa*). If these species are near the intended harvest area, then their control is recommended prior to the proposed timber harvest. If control is not feasible (for instance the plant is on a neighbor’s property), then a buffer of uncut timber should be left between the invasive plants and the harvest area to reduce the chance of spreading. There is no confirmed rule on the width of such a buffer, other than the wider, the better.

WOOD PRODUCTS AND EMPLOYMENT

A timber harvest may appear unsightly for a time, but landowners can take solace in knowing that the many unique, natural and useful wood products derived from forests could not be produced otherwise. From artisan guitars and fiddles to whiskey barrels and log cabins, much of Tennessee’s rich cultural heritage revolves around its wood supply.

Sustainably harvested, Tennessee-grown timber contributes to the economy, accounting for \$24.3 billion (3.7 percent) of the state’s \$499.9 billion economy (2017). Exports contribute nearly \$350 million, and the primary industries account for 30.3 percent of the forestry workforce, while secondary industries employ 69.7 percent. When combined and added to related supply and associated industries, Tennessee’s forest industry accounts for nearly 100,000 workers. Hardwood and softwood lumber and pulp, plus a wide variety of wood products are produced in Tennessee, including logs, lumber, cants, biofuel pellets, crossties, decking, houses, furniture, cabinets, flooring, custom furnishings, firewood, handles, paper and packaging. Purchasing forest products from Tennessee suppliers helps support local landowners and businesses, and maintains healthy, working forests (Menard et. al., 2019).

CONCLUSION

Undertaking a timber harvest can be shocking and sometimes leaves landowners with a sense of remorse. To overcome the blues, consider investing back into the forest. And remember that time heals. Natural resource professionals have been trained to understand the complex processes of forest disturbance and eventual recovery. Conveying this reassurance and engendering confidence with private forest landowners is the intent of this publication. You are encouraged to work with professional foresters to administer a timber sale. Doing so helps to avoid (or overcome) the timber harvest blues.

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