Erosion control when skidding logs

This article explains how loggers and landowners can skid logs from the woodlot to a road or landing while minimizing sediment runoff during a timber harvest.

Log skidding is a normal, accepted practice in the Northeast. Unfortunately, it can lead to severe soil erosion and destruction of standing trees that forest owners would otherwise want saved.

After a tree is cut and de-limbed, it must be moved through the forest to the landing, where it will be loaded onto a truck for transport to the log yard or mill. This process is called "skidding" because the long logs (8 - 24 feet long) are chained to a machine and dragged along the ground.

In recent years, skidding machinery has become more powerful and capable of driving up or down slopes that used to be off-limits. Four-wheel drive, excess horsepower, and hydraulic steering have made most forested areas accessible for skidding. With all this power and capacity, this machinery also has the potential to create erosion by tearing up forest soils. Along with forest roads, skid trails appear to create more erosion potential than any other timber harvest activity.

Crawlers and horse-drawn skidding have less impact than conventional skidders, especially where roads were first built for these "low tech" forms of log hauling.

A lot of forest erosion from skidding starts unintentionally. Logging crews tend to overlook the significance of small, forested stream courses and dry channels. These areas fill with fast-moving water in the spring and after rainy periods. If the soil around them has been disturbed, the edges quickly degrade and wash away. Most skidding equipment is capable of driving through or directly over small stream channels and dry washes. This disturbance is now thought to be one of the main causes of declining forest soil integrity.

Forwarding is an alternative to skidding. A forwarder is a combination mechanized arm and wheeled cart. They carry logs out of the forest, rather than skidding them. Forwarders can be equipped with tracks, in addition to rubber wheels to minimize soil rutting and are considered more "gentle" on the forest floor. Because of their design, forwarders cannot be used on steep slopes.

By following best management practices, logging crews can move logs as needed in a forest and minimize erosion. Skidding across waterways is necessary, but should be done in a way that minimizes stream damage, including streams that are often dry. Beyond
erosion, log skidders should avoid damaging standing trees, except those designated as bumper trees.

**Log skidding best management practices**

**Take information about sensitive areas into the work site.**
While preparing for a timber harvest, wetlands, streams, and gullies should be noted on a map. Take this map and other documents to the timber harvest site to identify areas that should be avoided due to potential soil erosion problems. Keep the planning process consistent with the actual forest work.

**Use existing trails if they are suitable.**
Try to find existing trails and minor roads that can be used for skidding. Use these access lanes to reduce skidding distances. If a route with less environmental impact can be identified, close down old roads and skid trails permanently. Skid trails should occupy less than 8% of the area of the harvest.

In some cases when weather conditions permit, a temporary steep skid road is necessary to reduce the area of woods impacted. These should be stabilized immediately after completing the skid work in that area.

**Flag or mark skid trails before skidding work begins.**
If older trails are not suitable (poorly constructed, wrong location) or new trails are needed, avoid the temptation to drive a skidder or bulldozer right into the woods without planning the route. Walk across the slope and mark the skid trail with surveyor’s flagging. Change the color or pattern of flagging to designate main and side trails. Do not use paint, as it may be necessary to remove the markings if a different route becomes available. Once planned skid trails are built, stay on them.

**Skid cross-slope and use winches on steep slopes or gullies.**
To prevent soil erosion, it is almost always better to skid logs across a slope, rather than driving up or down. The skidder operator should make sure the tail end of the logs does not slide downward, damaging other trees. Of course, there are many times when the timber is either upslope or downslope from the main skid trail. In these cases, plan to use a combination of directional felling and winches to move the logs. A bulldozer may be needed to create a more level trail across a hillside, sloped inward to control water runoff. With some planning, extra work and the problem of forest erosion are avoided.
**Break up long, straight skid trails.**
Skid trails should have small turns and bends. These turnouts prevent rain or snow melt water from gathering momentum and eroding the trail. Some skidder operators have used the skidder wheels to create effective, temporary cross-ditches on skid roads.

**Protect dry stream beds and small rivulets.**
Before crossing over shallow, dry stream channels, temporarily place waste logs or slash in a protective layer across the channel. Use this crossing as necessary to prevent damaging the existing course of the stream. Tires should not make ruts through these stream channels.

If a wet swale is crossed, use pole timber or a rubber mat to create a more durable surface.

**Skid on dry or frozen ground.**
When soil is fully frozen or dry enough to support skidding equipment without rutting, it is good for skidding. During a "real winter," many intermittent stream channels are solid enough to be crossed without eroding. Watch for and avoid springs and seeps that remain soft even in the coldest or driest weather. A heavy rain or warm winter day can soften forest soils quickly, especially around otherwise dry stream channels. Shift operations to more stable areas or focus logging labor on preparation, safety training, landowner meetings, and machinery maintenance, all of which reduce lost time.

**Make sure water running on skid trails does not wash directly into streams.**
Just before crossing a stream, make a turn that will cause water flowing on the skid trail to spread out into the forest, not run right into a stream. Maintain or install filter strips near stream courses to trap sediment before it enters the water.

**Use low value trees and stumps as bumpers.**
When flagging the skid trail route, designate some low-value trees as "bumper trees." These are used to intentionally pivot long logs around a bend without harming more valuable trees.

**Monitor weather forecasts and prepare trails for heavy rain by constructing temporary water bars and turnouts.**

When skidding is completed, inspect the skid trails to make sure water is controlled and the soil is stabilized.

Look for long runs to be broken up, steep trails that need water bars, and trails near streams that should be seeded and mulched.

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