

LOW-IMPACT FOREST PRACTICES

Terry Pearson

There is a modest literature on “low-impact logging” and another on “low-impact forestry”. For our purposes here we will regard the two terms as one and the same.

I have gathered here several articles by authors interested in forestry techniques which are minimally disruptive of the land and the trees growing on it. First is an item by Stephen J. Milauskas. At the time the article appeared, in 2002, Mr. Milauskas was a Forest Operations Specialist at the West Virginia University Appalachian Hardwood Center. I have made some editorial changes to make the content more relevant to northern operations. Placed here with permission of the author and the publisher.

WHAT IS LOW IMPACT LOGGING?

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Managing and harvesting the forest with gentle or low-impact methods can have different meanings to different types of landowners. For the purposes of this article, I will use the terms “low-impact” and “gentle logging” as if they mean the same thing. Despite somewhat different definitions among people, most landowners usually share such objectives as minimizing damage to the residual stand (the trees that are left after logging).

Smaller woodlot owners across the country have taken a keen interest in these low-impact logging methods for several reasons. Many newer landowners from more urban areas have a different set of management objectives than traditional farm or woodlot owners. They are often concerned with management for wildlife, recreation, and aesthetics, along with timber management. Traditional farm woodlot owners bring another set of interests to the table. They have increasingly expressed interest in forestry operations that are sustainable, produce income, and support local community interests. Low-impact logging methods are increasingly looked at as a way to help meet these changing landowner objectives.

Low-impact has different meanings to different individuals, landowners, and organizations. For some, low-impact means logging with horses; others look to using high-tech machines that leave lighter “footprints” on the land. We can have traditional or conventional logging systems that are low-impact or alternative, truly unconventional systems that minimize impacts and incorporate some social or community values. Some of the newer concepts for making smaller woodlot management and logging sustainable

and profitable can be exciting. Education and commitment by individuals will be very important if any of these methods are to succeed. This article describes some of the commonalities, definitions, and advantages of low-impact systems.

What is gentle or low-impact logging?

Generally, gentle logging systems incorporate several practices that most foresters, landowners, and conscientious loggers could agree on regardless of the type of equipment used:

- * having a written forest management or stewardship plan
- * planning roads and trails before the harvest
- * employing directional tree felling
- * cutting stumps low to the ground
- * constructing roads and trails to minimum widths
- * constructing landings to minimum size and spacing
- * minimizing ground disturbance
- * paying attention to aesthetics or how the site looks after harvest
- * minimizing residual stand damage
- * following best management practices
- * having a good understanding among landowner, logger, and forester of how the site will be harvested, what will be removed, how it will be removed, and measures taken to protect and enhance the remaining stand of trees

Gentle or low-impact forestry and logging also imply other meanings and objectives to some landowners, foresters, and loggers. It begins with how sustainable forestry is defined. Meeting current needs without compromising the ability of future generations to meet their needs is a common definition of a sustainable practice. Some view sustainable forestry on woodlots as the ability to produce a steady flow of timber harvests and income from their land. Timber stand volume and quality are to be enhanced over time. This typically means many smaller periodic harvests rather than one or two large cuts in a lifetime.

Such a strategy takes discipline since potential current income may be sacrificed for greater future returns. Low-impact logging here means removing the worst trees first to improve the forest for the future. Since many of the best, high value trees are left to grow, reducing or eliminating damage to the remaining trees is absolutely critical. Trees skinned or damaged by machines, skidded logs, or poor felling can significantly reduce the future value of the stand. Logging costs could be higher when strict constraints on residual stand and site damage are written into a contract.

A holistic approach

Many see low-impact logging as part of a holistic approach to forestry. With this approach, low-impact logging should contribute to sustaining forests and local

community values, favor local labor and markets, and fit with value-added processes. Practices promoted as making smaller woodlots more profitable to the owner by adding value over time are:

- * removing inferior and undesirable trees to improve the value of the timber stand
- * logging your own timber using smaller equipment such as a farm tractor
- * hiring a proven, committed low-impact logger that either horse logs or uses smaller, less obtrusive equipment, ensuring minimal stand and site damage and adding value to the future stand
- * processing logs into lumber with portable sawmills on site
- * drying lumber in smaller solar kilns
- * processing into secondary products such as flooring, cabinets, or novelties

The idea is to add value and increase landowner returns by avoiding middlemen, maximizing on-site processing, and retailing direct to consumers. Implementing such practices requires a large commitment of time and personal energy. In some parts of the country, landowners have joined together in forestry cooperatives.

Landowner-run cooperatives can provide services and market forest products that give individual smaller landowners an opportunity to maximize the value of their timber. By providing the added monetary values to the timber, specific gentle, low-impact, sustainable forestry methods preferred by members become more affordable, practical, and profitable. The landowner organization might own a portable sawmill or contract with the owner of a mill to do custom cutting. The forest could be managed and harvested across boundaries to ensure that smaller woodlots can be economically and sustainably logged. These larger, cooperatively managed areas may be necessary in order to promote stable relationships with loggers dedicated to using certain low-impact methods.

Low-impact logging systems gaining popularity

Four basic types of harvesting or logging systems are used in low-impact logging. These systems differ from one another but have many of the same objectives.

Horse logging

Horse logging is the method of choice for many with environmental leanings. Sometimes, horses are used to skid the trees to main or permanent roads where machine skidders or forwarders take over. Proponents of horse logging point out that horses cause less soil compaction and ruts than heavy machinery, that skidding log lengths rather than tree lengths allows tighter turns with less residual stand damage, and that the operation is quiet. A specially designed arch on wheels can be used to raise the front of the log up off the ground during skidding. This prevents the front of the log from digging into the ground when it is pulled.

Horse logging is not a high-production system. Horses can skid several thousand board feet of logs per day depending on terrain, slope, log size, skidding distance, etc. Depending on conditions, this might be 15 to 30 logs 24 feet long and 20 inches in diameter.

Small farm-type machine systems

Small woodlot farmers use farm tractors with specialized attachments such as grapples, winches, blades, and log forks to harvest and process their own timber. Woodlot owners and workers should be trained in safety and be aware of the hazards of logging. Nova Scotia has several fatalities and many serious accidents each year from logging activities. Contact the Federation of Nova Scotia Woodland Owners if you need a schedule of logging safety classes. Consider contracting with a professional feller if you have many trees to harvest.

A wide assortment of machines and equipment have been designed or modified for the small-scale woodlot logger. Felling by chainsaw is common. Skidding can be done with several techniques. The most common method is a four-wheel drive farm tractor with a winch or grapple. The tractor should have rollover protection. Remote radio-controlled winching can be an option. The winch allows the tractor to stay on a road or trail, which reduces soil compaction and disturbance. Some special attachments are now made to adapt all-terrain vehicles for skidding smaller logs. Log loading can be done with a farm tractor's front-end loader equipped with forks or tines. Farm tractors can also pull specially built trailers equipped with an attachment that loads the logs and keeps them off the ground (forwarding). This will minimize any ground disturbance.

Conventional logging systems

Traditional logging systems use manual chain saw felling, limbing, and topping; then skidding to a landing; bucking into log lengths; sorting for specific products; and finally loading onto a truck or trailer. Several variations of this system are used depending on site conditions, season, and contractor preference. In many situations, these conventional logging systems have as much potential for reduced site impact as any alternative system if the owner, supervisor, and operators are trained, take careful measures, and have the "right" attitude. Conventional logging systems using smaller skidding machines, cause less damage to remaining trees, and provide improved profitability on stands with smaller diameter timber. A 1999 U.S. Forest Service study found that matching machine size to size of wood allows timber stands with smaller diameter trees to be economically harvested earlier, thereby adding value and quality to the future stand. The smaller machines with their tighter turning capabilities and lower weights should result in less stand and site impact if operators are carefully trained and conscientious.

Cut-to-length systems

Cut-to-length systems use combinations of tracked or wheeled harvesters and forwarders. These systems have become very popular in some areas of the country.

Several loggers in Nova Scotia use them. The machines in these systems typically cost well over \$100,000 each and can approach \$200,000 or more. They operate on larger tracts where sufficient timber volume supports their relatively high operating and ownership costs. These high-tech machines can leave very gentle “footprints” in a variety of difficult terrain and conditions. Although production rates are usually less than with some conventional systems, they can operate with less disturbance on wet sites and steep slopes. Because these systems are usually operated with smaller crews, they can be owner operated or family companies.

The tracked harvester reaches out with its arm to select the trees marked for harvest, reducing damage to residual trees. The machine operates on tracks that minimize rutting. It is also much safer for the feller since he is in a protected, environmentally controlled cab. After the felling machine cuts the tree, it usually will pick up and place the stem in a position for bucking and delimiting. Some machines have special processing heads that can delimit and cut to proper log lengths based on information in an on-board computer. After delimiting and bucking, a forwarder will use its loading arm to pick up the logs and then haul them to the deck or landing. This forwarding function is a major difference from a conventional logging system. In a conventional system, the logs would be dragged to the landing by a skidder. Dragging the logs disturbs the soil, which can increase the potential for erosion.

Using forwarders to carry logs rather than skidders that drag logs can also reduce the number and density of necessary roads. This in itself will reduce impact to the site and stand. Because forwarders carry logs on wheels, they can be driven on truck roads without causing damage and can usually operate economically at farther distances than conventional skidding. Forwarders are equipped with six to eight large wheels, resulting in a low ground pressure and minimizing ground impact. Lowering tire pressure, adding chains or tracks, and putting on wider tires or bogies can all help reduce ground impact in special situations. Many combinations of harvesters, skidders, forwarders, and loaders are used, depending on local site conditions, markets, and customs. The logs can then be piled or directly loaded on a truck or trailer.

Best fit

Four general low-impact logging systems that can be gentle on the land, trees, and overall environment have been described in this article. No one system can be said to be the “best” in all circumstances. It is critical to match the logging system with the harvest and management plan, landowner desires, site, and stand characteristics.

Perhaps the most important factor in any system is the care, training and dedication of the contractor and operators doing the work. Many conventional or traditional logging contractors already use low-impact practices. A logger’s attitude can be more important than size or type of equipment. Even horse logging can cause skinned trees if not done carefully. Landowners who demand certain special practices must understand that there is an added cost to the logger. Loggers who make specific efforts to lower impacts may need to be paid incentives or higher logging rates.

The real challenge is logging smaller woodlots in a sustainable manner using low-impact methods. It is in these smaller woodlots that minimizing damage to the residual trees and site is especially necessary. The left trees are the growing stock for the future stand and as such are extremely valuable. The growing stock that is left should include valuable species with good form, quality, health, and potential for growth. In some ways, managing smaller woodlots is more challenging than larger acreages since there is little room to compensate for negative practices. Landowners using gentle logging methods will have much satisfaction and pride, along with periodic income from their forest.

Bob Matthews: Low-Impact Logger in Baxter State Park

by Mitch Lansky

Most people get into logging because their fathers or some other family members were loggers. Bob Matthews, who went to high school in Houlton, Maine, entered logging, after "bailing out of college" (he was studying forestry at University of Maine) because he needed work and was offered free training. "I never touched a chainsaw before that," he said. Bob started out in landscaping, but was soon working for a contractor on woodlots and in the industrial forest of Maine's north woods.

Bob told me he had, "a romantic vision of what it might be like based on naive fantasies. They were totally off base." Bob found he liked logging, however, but he did not like what companies were doing in the woods. He calls typical industrial practices, "overly abusive and brutal." Most of his cutting was a form of diameter-limit cutting--where all trees above a certain diameter, by species, are removed. In some cases, where the diameter-limits were high, (18 inches for some species, for example) he left some acceptable stands. But this, he found out ten years later, was just the prelude to an "overstory removal." In general, diameter-limit cutting is more high-grading than silviculture. You cut the best and leave the rest.

What Bob found was that logging was geared to removing wood as fast as possible, not to leaving behind a well-stocked forest of good quality trees. There was peer pressure to cut 100 cord a week. Foresters liked Bob's work, but he was paid the same for his attempt to protect the residual stand as loggers who had little or no concern of the residual stand. He was paid for what he took out, not what he left. He started looking for alternatives. He started reading forestry literature. He started attending workshops and conferences. He joined the Low-Impact Forestry Project at its formative stages.

Alternative machinery. Four years ago, Bob attended a class on forest ecosystem management, taught by forest ecologist Dave Perry. At that meeting, a representative of Nova Sylva, a forest equipment company specializing in low-impact machinery demonstrated a mini-skidder, the Turbo Forest 42 C, that caught Bob's attention. Bob was

used to working with cable skidders, and this machine made sense to him. He ended up buying it.

The Turbo Forest is a little over six feet wide, while most "small" skidders are more than eight feet wide. It has hydrostatic drive, rather than gear drive. This means it has much better traction and will not spin its wheels. Most skidders tend to dig deep ruts until the wheels hit something hard. The Turbo Forest leaves a very light footprint. Best of all, it has two radio-controlled winches. These winches allow him to do minimum damage while pulling wood to the machine, without having to be on the machine to turn the winches on and off. He can have a twitch on one cable and can pull individual stems in with the other cable, giving him greater flexibility.

Bob started using his new machine on local woodlots. While he was impressed with the low-impact aspects of his new skidder, he was also frustrated by its slowness and by all the mechanical problems. A teenager itching to lay a patch of rubber on the highway with the miniskidder would be disappointed. There is a tradeoff for the traction benefits of hydrostatic drive.

Bob now is very aware of the risks one takes in buying a new model of an innovative machine. He spent many frustrating hours getting the initial "bugs" out of the system. "The company was very accommodating," said Bob of the dealer who sold him the machine, "but they are now out of business." Parts are still available from manufacturers, who are scattered around the globe. Bob now knows his machine well enough so that most repairs are "routine," though he is concerned about the potential for electronic and hydraulic failures, which could be major headaches. The machine will be totally paid for by this fall.

Alternative employment. While describing his experiences with low-impact logging at a conference in Presque Isle, Bob caught the attention of Jensen Bissell, the manager of the Baxter State Park Scientific Management Area (SFMA). Jensen mostly employs single-grip mechanical harvesters combined with large forwarders for logging in the Park. But he had a need for some hand labor. So he made an offer to Bob.

This was an offer Bob could not refuse. "Baxter State Park has been my Mecca," said Bob. He has gone there for years for hiking, skiing, fishing, and camping. He has climbed Mount Katahdin in every season, including winter. This offer was a dream come true.

The Baxter State Park system. The wood to be cut in selection cuts at the SFMA is marked. "I've been working in the woods since 1973, but never had to cut forester-marked wood until about five years ago," Bob said. He relies on controlled felling with bore cuts to ensure minimal damage of residual trees. With the bore cut, "the trees go where I want them to go, not where they want to go."

Bob has learned that it is best to cut the wood to length after limbing and pull out short wood, rather than tree-length boles. With tree-length logging, the logger tries to cut the tree to line up with the skidder, even if this leads to stand damage. With short-wood

logging, he can fell the tree where it will do the least damage, buck the tree into logs, then spin the logs to line up with the skidder. He pre-bunches his logs to forwarder trails spaced 400 feet apart. The trail system takes up less than 3.5% of the woods, compared to 25% for feller buncher/grapple skidder trail systems.

Bob is very aware of stand damage. When I last visited one of his cutting sites, he walked me through many acres before he was able to show me one of his mistakes, a nick in one tree trunk. I spent several days watching Bob cut, and found almost no damage to residual trees and very little footprint on the ground from his machine. In Bob's words, his system is very "forest friendly." "My biggest critic," said Bob, "is me. I do the best job I've ever seen."

Working for the Park has helped Bob to improve his logging skills. Because of the Park's mandate to be "scientific," Jensen keeps good, long-term records that he shares with Bob. "They tell me what I'm doing, why I'm doing it, and how to make it better," said Bob.

Jensen has had Bob do two types of cuts. One is marked selection cutting. Jensen is managing for well-stocked stands with good quality wood. Where Bob has cut, it still looks like a forest and shows much less evidence of cutting than the nearby stands cut by mechanical harvesters. There the trails, which take up more than 20% of the forest, are very evident and so is residual stand damage.

Jensen now has Bob doing gap cuts. These cuts are supposed to mimic small-scale disturbances, and leave scattered openings that are approximately 70 feet in diameter (based on average height of surrounding trees). Jensen plans to make entries into a given acre every ten years and estimates that an individual gap will be cut again in 140 years.

With Bob's gap cutting, the forester locates the center of the gap with GPS, rather than marks trees. Bob does not clearcut these gaps. He makes decisions about where to place the cuts and which trees to leave both for silvicultural reasons and to protect diversity. If he sees promising young spruce, he does pre-commercial thinning to give these trees a head start. The small width of Bob's machine means the gaps are not as extended by woods trails as they would be with bigger equipment. The forwarder trails to which Bob hauls his wood are spaced 500 feet apart.

Jensen and the silvicultural committee that oversees management in the park are pleased with the results of Bob's gap cutting. For the foreseeable future, Jensen plans to have Bob doing these gap cuts, rather than marked selection.

Life in the woods. The SFMA is in the northwest corner of the park, far from any public roads. Bob stays in a furnished cabin in the park for 5 days a week, then goes home to his wife and children in Houlton on the weekends. He sometimes shares his cabin with a processor operator who also works in the park. He does his own cooking. On days when the weather makes logging impractical, "I get a lot of reading done," he said.

Because he works alone, Bob has to work extra carefully. Intelligence, he said, is the best preventative for accidents. "I'm not suicidal." As a precaution, he has a radio phone with which he can reach rangers at the park or in Millinocket.

While the mini-skidder and short-wood logging system have improved Bob's ability to minimize residual damage, they have also lowered his productivity. The economics of wood harvesting have not been encouraging in recent years, and with the decline of a number of mills, the situation is getting worse. "You can't discount the importance of markets," said Bob.

With the collapse of Great Northern, the Park got stuck with a lot of pulpwood, which it had to sell to other markets at a loss. This loss was big enough so that Jensen temporarily lowered rates paid to the loggers to spread the pain.

Global markets too are having their effects. Mills in Maine have to compete with mills elsewhere where wages are lower, raw materials are cheaper, and environmental protections fewer. As a result, the cost of a product, such as a 2X4, does not reflect all the real costs that led to the production of the product. When you cheapen the product, you cheapen what created the product, including the forest and forest workers.

"People think they can have a cheap 2X4 and sound forestry at the same time. They don't understand that there are people trying to make a living in the woods, and some of them really care about the forest," said Bob. But not as many of these people are left. If forest products were valued more, this would create the opportunity for major improvements in forest practices.

For Bob, the fulfillment of doing good work in the woods is his primary motivation. "I'm part of a miracle. I see the big picture--the interrelationship of everything in the forest--it's a Goddamn miracle, and I'm part of it. I fit right into it, even though I consume it. Everything I do is with a sense of reverence and respect. To be part of it, you have to be involved in it. You have to get your hands dirty. Bloodletting is part of the natural process. Things live. They die. I understand I'm killing a tree. I do it, and I can still sleep at night because I do it with a sense of reverence. I take pleasure being part of the miracle and not apart from it. You can't put a dollar value on that. You can't justify what I do in strictly dollars and cents."

While Jensen appreciates Bob's low-impact technology, he feels Bob would do a great job operating a John Deere 440. It's not so much the machine as the person on the machine that makes the difference. Jensen told me he could foresee managing much of the SFMA, especially where spruce is predominant, using the techniques Bob is pioneering, if he could only find workers as dedicated and passionate as Bob. "If there are any other Bobs out there reading this," Jensen said, "call me. I want 30 more Bobs!"

Mention is made in the Milauskas article of some of the equipment used in low-impact logging. In Nova Scotia, as elsewhere in the developed world, yarding with horses and oxen is rare. But it is not non-existent. If you have an interest in finding someone to do this sort of work on your lot, please call our office and we will attempt to put you in touch with someone who can help.

A machine which has found favor with some landowners wanting to leave a light footprint is the Forcat, available from the Quebec firm Tremzac (www.tremzac.com). This is a small, tracked skidder available in both gasoline and diesel models. It is 124 cm (49 inches) long, has 32 cm (12.5 inches) of ground clearance, and weighs in at 3100 pounds (1400 kg). Its small size and excellent torque allow it to maneuver large drags in a confined space. A trailer with integrated loader is available for it. A very interesting 9-minute video showing the Forcat at work in the woods is available as a link to the Tremzac website. The following comments by a Forcat user appear on the Woodweb page: http://www.woodweb.com/knowledge_base/Lowimpact_logging.html

I have a 400cc Outlander ATV with logging arches (front and back) and I can carry spruce 16" X 16' but having a large woodlot, I found it was not strong enough to log on a commercial scale. Two years ago after a major storm that destroyed over 200 mature maple and aspen, I purchased a Forcat 2000, mini skidder and I used it to recover over 120 tons of wood over a 6 month period over weekends. It has an 8000 pound winch, a front blade and is very strong for the size.

I have pulled 36"X 12' Maple logs or I can skid 4 or 5 16' logs 12' in diameter but this is an upper limit. In some places I had very long skids of over 1/2 mile. It is just 4 feet wide and has a very low ground pressure and being a tracked vehicle I can turn on a dime! I have also used it as a mini bulldozer to make trails for XC biking and to clear snow in the winter. For the person who outgrows an ATV it is probably the next step to consider.

Some low-impact harvesters use an all-terrain vehicle for part of their work; I'm one of them. Our home is surrounded by about 5 hectares (11 acres) of forested land, and I have used an Arctic Cat 400 4X4 for cleanup operations and some commercial thinning. This has worked well. Accessory equipment consists of a five-foot trailer, pulling plate, chain-choker, snatch block, polyester sling (for attaching the snatch block), and skidding cone. These items, all of high quality, were purchased from Nova Jack (www.novajack.com), a Quebec firm whose products I highly recommend. (This does not imply endorsement by the Federation of Nova Scotia Woodland Owners.) Much of the work has involved trees which died as a consequence of damage from the severe ice storm of January, 1998. The snatch block, in conjunction with the ATV's winch, has been particularly useful in pulling down lodged trees.

The machines best suited to ATV logging are heavier, four-wheel-drive versions with two-speed transfer case. The user will quickly discover that his efforts will be

traction-limited, rather than torque-limited. Still, with the right equipment and careful work, very substantial loads can be moved.

A good solution for hauling firewood is a flat-bed trailer, five to seven feet long with either sideboards or racks. (A good selection can be found at scotttrailers.com.) This will hold from one-third to one-half a cord, and over reasonable terrain it will be handled easily by a quad of 400 cc or more. Or, one can use a more elaborate trailer, say, eight feet long, equipped with an electric or manual loader. Trailers like this tend to be very expensive, and the operator should consider making one himself, or having it fabricated in a local shop.

Skidding can be done in two ways: with a skidding cone, or using a logging arch. The skidding cone, available from Nova Jack, is constructed of an extremely tough form of plastic. (No, you probably won't wear it out.) It is slipped over one end of the log and the skidding chain is passed through a hole at the front. As the log moves forward, the cone prevents it from digging into the ground. This is very effective.

Logging arches come in a variety of forms. One type raises one end of the log off the ground and supports it on a bogie. This makes towing much easier. Another transports the log on wheeled carriages at both ends, further easing the tow. Over reasonable terrain a setup like the latter will allow the operator to pull a log weighing a half-ton or more.

The following links show a variety of logging arches. One version sold by Norwood actually lowers the front of the log on a downhill slope, reducing forward momentum and improving safety.

http://www.novajack.com/en/0101_06.htm

<http://www.norwoodindustries.com/product.aspx?prodID=1039&cID=1009>

<http://www.futureforestry.com/>

An example of the two-bogie type can be seen at:

http://www.northerntool.com/webapp/wcs/stores/servlet/product_6970_200356854_200356854

A few operators move wood using a snowmobile. Here's what one fan says (quoted in http://www.woodweb.com/knowledge_base/Lowimpact_logging.html)

Outside of renting an excavator to move boulders or undo deep ruts caused by logging done during wet conditions in 1987, my only option was to log in the winter. A 1971 Ski-Doo Nordic with a homemade 1" square metal tube trailer atop downhill skis pulls anything. I can ratchet a strap down to it that I can drag and lift.

It's definitely not the easiest way, but there is no impact whatsoever and it beats me into shape. Since I am doing shelter wood and firewood cutting log length is not important, but I have pulled a couple 16" diameter 10' long maple logs in before with some ridiculously long smaller diameter pieces atop. The sled is a 640cc, lightweight, and doesn't steer very well at all, like most sleds of that era. Today's work sleds are far better; you often will see them pulling grooming equipment.

Of course, it is vital to select the right kind of machine. In particular, it should turn well. A good candidate would be the Alpina machine, which can be seen at: <http://www.alpina-snowmobiles.com/>

The Ski-Doo Skandic (Wide Track or Super Wide Track) would also be a good choice. These sleds can be viewed at: <http://www.ski-doo.com/en-US/Snowmobiles/Skandic/Overview.htm?Sled=SkandicSWT.htm>

Low-impact forestry methods work best on small to medium-size woodlots. The equipment and techniques are well suited to firewood collection, storm damage cleanup, trail construction, crop-tree thinning, and work around watercourses, ponds, and lakes. They also serve well in campgrounds, RV parks, and urban areas where noise and damage to landscaped areas must be kept to a minimum.

If you have any questions about this article or any other post on this website, please do not hesitate to contact our office.