

FIREWOOD SAFETY

*In 3 parts. – By Brian Lawrence, retired (formerly with Workplace Safety North)
excerpts from issues 101, 105, 106 of The Ontario Woodlander*



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SAFETY MUST BE YOUR PRIORITY WHEN CUTTING FIREWOOD

By Brian Lawrence, retired (formerly with Workplace Safety North)

Cutting your own firewood provides you with not only a source of heat for your home, but also with a sense of accomplishment. In addition to a feeling of self-sufficiency we get fresh air and exercise. Working in your woodlot, however, can be dangerous! Make sure that your firewood cutting does not end in tragedy!

I spent 26 years as a trainer with Workplace Safety North (and its legacy organizations). Sadly, during that time, I investigated more bush accidents involving fatalities and serious injuries than I care to think about... I also personally know of two local “weekend warriors” who were killed while cutting their own firewood! Every one of these accidents was avoidable!

In this article, I would like to focus on three particularly important topics that relate to woodlot safety:

1. Chainsaw selection
2. Personal Protective Equipment
3. Comprehensive Training

1. CHAINSAW SELECTION:

In Ontario, the Regulations for Industrial Establishments (RIE) under the Occupational Health & Safety Act (OHSA) require that chainsaws be equipped with “a device which will effectively stop the chain in the event of a kickback”. This of course is a chain brake. While the Act pertains to commercial operations (e.g. where people are being paid for their work, logs are being harvested and sold, etc.) and is enforced by Ministry of Labour (MOL) inspectors, people bleed the same whether or not they are being paid! Using a chainsaw without an operating chain brake in a commercial

establishment, can result in fines to the operator, supervisor, and employer. So, while the MOL may have no mandate to be in your privately-operated woodlot, it is HIGHLY recommended that you do NOT operate a chainsaw without a functioning chain brake!

While there are many manufacturers of chainsaws, it is recommended that brand-name saws be used as they are likely to have better motor mounts (therefore less hand vibration), have better spare parts availability, are more reliable and have sighting lines that assist in the tree felling process (more about that later). When selecting a saw, the manufacturer, motor size (CC’s), bar length, and chain type and size are factors that should be considered. Chainsaw sharpening (using the proper files, guides, and gauges) and maintenance are important issues that need to be addressed and are usually covered in comprehensive chainsaw training courses.

2. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Wearing the proper PPE is vital to chainsaw handling. Even seasoned loggers have been seriously injured or killed when they failed to wear the proper PPE. Items such as CSA-approved hard hats, face screens and safety glasses, hearing protection, hand protection, leg protection, and safety footwear are all part of the PPE that should be worn when working in a woodlot. Many of these PPE items are available in two levels of protection - basic and higher. For example, hard hats with a foam lining provide more side impact protection (from falling limbs, etc.) than hats without the foam; cutter

pants or chaps with calf protection provide more complete protection than those without it; cutter boots with cut-resistant material built in provide more protection than regular steel-toed boots. PPE is often called your “last line of defense”, that is the last thing between you and an injury. The PPE may prevent or lessen the severity of an injury, but it does NOT guarantee that an injury will never occur! One fatality that I investigated involved a logger being struck on the head with a dead limb of a tree while he was wearing a hard hat. The force of the falling limb deflected the hard hat and caused severe injury to the logger’s head that resulted in his immediate death! People have also cut right through cutter pants and chaps! You are better off wearing the PPE than not wearing it, but proper chainsaw handling and felling techniques are still required!

3. COMPREHENSIVE TRAINING

In Ontario, under the Regulations for Industrial Establishments (RIE) under the Occupational Health and Safety Act (OHSA), loggers are required to be certified through the Ministry of Labour, Training and Skills Development (MLTSD). This certification involves a two-stage process: First, a participant attends an appropriate “common core” classroom training session with an “approved trainer” and is then permitted to work in a logging operation to receive hands-on instruction. Second, once the participant has developed the proper skills, they are evaluated in the bush by an approved trainer/evaluator. When the appropriate documents have been submitted to the MLTSD, the participant receives



their certification. This certification is only available to loggers, so there is no certification available (or required) for the private woodlot owners who consume their own harvested materials. There are, however, approved and unapproved trainers who offer training to private individuals who are not official loggers. For this reason, it is “buyer beware” when it comes to choosing a trainer or training session.

In recent years, some trainers are teaching safer techniques for felling trees. Some of the major chainsaw manufacturers have also embraced these techniques and have made changes to their saws to facilitate the implementation of these techniques. The recommended technique for felling a tree is called “boring” or use of a plunge

cut. It is the shoving of the saw through a tree. While many trainers have historically promoted boring for “heavy-leaning” trees to prevent barberchairs, more and more trainers are realizing the benefits of also boring trees that do not have a significant lean in the “desired direction of fall” and may require the use of a felling wedge. Boring trees has two major benefits: First, a hinge (the most critical component of the tree felling process) is established while the tree is held in place by “holding wood” (rather than as a final step as the operator is frantically wondering when the tree is going to start to fall and worrying about getting away from the tree as it falls). Second, a “tab” or “strap” holds the tree in place until the operator is ready to release the

tree once assured that no one has entered the felling area, a proper escape route has been prepared and there is sufficient fuel in the saw to safely cut the tab or strap. Some chainsaw manufacturers now add sight lines to their saws to assist in the boring of trees! These lines are in addition to the lines that are used to aim the saw at a target when making a notch.

Although I retired from Workplace Safety North in 2014, I continue to provide chainsaw training courses on my own. If you would like more information or are interested in setting up a training session, please feel free to contact me at 613-332-8464 (cell) or at brilaw84@gmail.com.



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SAFETY MUST BE YOUR PRIORITY WHEN CUTTING FIREWOOD

By Brian Lawrence, retired Consultant-Trainer with Workplace Safety North, Bancroft-Haliburton Chapter

Editor's Note: The chainsaw use information and techniques presented in this article are intended only to illustrate the type of in-person training required, and provided by Brian Lawrence through his courses. There is no substitute for direct and in-person safety training, especially when using a chainsaw to fell trees.

Part 1 of this series was included in the December 2020 issue (101) of the Woodlander as a stand-alone article on safety in the woodlot. After it was published, I was contacted by several people who requested more information and/or who expressed an interest in attending a training session. Although I am very keen to see that everyone who uses a chainsaw **receives at least some basic training**, COVID-19 restrictions make it more difficult to organize in-person training sessions. We decided to provide some additional information on the felling of trees by expanding this discussion into a three-part series. Part 3 is to be published in a future article of the Woodlander. Both Parts 2 and 3 include some diagrams to help to explain the felling techniques that are described.

The techniques presented here in Part 2 are for felling “normal” trees; that is trees with a diameter less than the length of the bar on the chainsaw and which have a moderate lean in the direction the tree is to fall. Please note that cutting a tree should only be attempted **by experienced chainsaw users or those who are under the direct supervision of an experienced user!**

Part 3 will address some more **complex felling techniques**. However, it should be noted that all three parts of this series, do not deal with all of the “problem trees” that would be covered in a hands-on training session. Some people have asked about

the possibility of participating in an **on-line “classroom” training session** and I am currently exploring that idea as COVID-19 restrictions continue.

The original December 2020 article (Part 1 of the series) covered the following topics:

1. Chainsaw Selection
2. Personal Protective Equipment (PPE)
3. (The importance of) Comprehensive Training

BASIC TREE FELLING

Most people who have some chainsaw experience, understand that there are **two main activities** when it comes to felling a tree:

- (1) making a **notch** in the desired direction of fall (DDF) and
- (2) making a **backcut** to allow the tree to fall.

Unfortunately, without proper training, if these tasks are not completed properly, trees may fall out of control and **cause serious injury or even death!**

SITE PREPARATION:

Before starting to cut any tree, it is critical that the felling area be prepared by removing **all hazards** and ensuring that at least one “**escape route**” has been created. Although a detailed discussion of **site preparation** is beyond the scope of this article, some basic principles are identified, the reader is encouraged to attend an actual training session for a more comprehensive discussion of the subject.

Hazards found in the felling area consist of such things as:

- dead trees,
- dead limbs in live trees,

- limbs on the tree being felled that obstruct the making of the notch and backcut,
- saplings and other trees that interfere with the tree being felled, and
- obstacles such as buildings, fences, powerlines, etc.

Another critical component of site preparation is ensuring that there is at least one unobstructed path that the cutter can use to get away from the stump as the tree falls, which is known as the “escape route.” There are several reasons why using this escape route is important. If a tree strikes any other trees as it falls limbs can be bent, broken off and catapulted back towards the cutter. If the tree has not been felled using the proper techniques and it strikes another tree, it might slide back over the stump towards the cutter.

The preferred direction of the escape route is back and away at a 45° angle. As the tree falls, the cutter should move away from the stump to a distance of at least 20 feet and, whenever possible, tuck in behind another tree for protection from any flying limbs. This escape route must be free from any tripping hazards or other obstacles and in the winter, the snow is to be tramped. It is important that the cutter remain in this retreat position until all loose limbs or other hazards have safely fallen to the ground before moving back to the felled tree.

BASIC TREE FELLING

The following is a discussion of the proper techniques to be employed in felling a tree with a diameter that is **less than the length of the bar** on the chainsaw and that has a **moderate lean in the desired direction of fall (DDF)**. As indicated above, the techniques



consist of two main activities – making a notch and then a backcut. Unfortunately, not everyone does this correctly as shown below.

Figure 1 – Improper notch and backcut (three common mistakes)

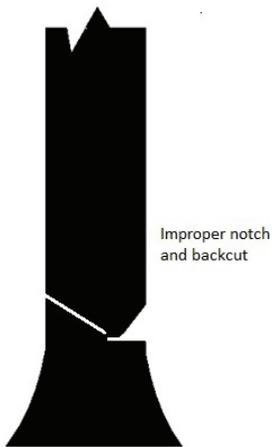


Figure 1 illustrates the **three common mistakes** made by some people as they make their notches and backcut. **First**, the two cuts of the notch do not meet “cleanly” as the horizontal cut extends beyond the diagonal cut, creating what is

known as an “overcut notch”. This improper notch can result in a “barber chair” where the tree splits as it falls, creating a very hazardous situation (see note below for more information on a barber chair). **Second**, the backcut should be flat and level and 1 to 2 inches above the apex of the notch creating a “step” in the stump as the tree falls to help keep it from sliding back off the stump should it hit another tree while it falls. **Third**, the backcut extends too close to the notch and removes the “hinge”.

Figure 2 – Proper notch and backcut

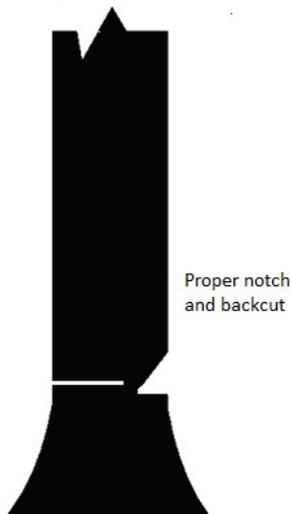
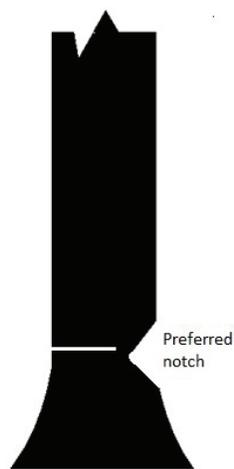


Figure 2 illustrates how a proper notch and backcut should be made. A notch should be between $\frac{1}{4}$ and $\frac{1}{3}$ of the tree’s diameter (more about that later). When making the backcut, it is critical that it does not ex-

The techniques presented here are for felling “normal” trees

tend all the way to the notch. Approximately 10% of the tree’s diameter (to a maximum of 2” for large trees), is left uncut. This uncut wood is called the **hinge** and is the **most critical part of the felling process** as it guides the tree as it falls. In order to get a tree to fall in the desired location, it is critical that the notch be **aimed in the right direction**, but it has no magical powers to force the tree to fall in that direction. Just as hinges on a door allow it to swing in two directions only — open and closed, the hinge in the tree allows it to fall either straight forward or straight backwards. (Note: felling wedges are used for trees that do not have a sufficient lean in the desired direction of fall and are discussed in Part 3 of this series).

Figure 3 – V notch



and is called a “V” notch as it looks like the letter V on its side. With a V notch, the stump is cut into a “ramp” so that when a tree falls, it tends to **slide down the ramp** and land further away from the cutter. Remember that it is important that the cutter moves back and away from the tree along the prepared escape route as it falls. Not only is the V notch safer, but the ramp also makes it easier to skid a log over the stump.

Figure 4 – Notch, hinge and backcut (top view)

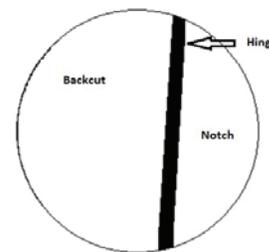


Figure 4 illustrates a **top view** of a stump of a tree that has been felled using normal felling methods. It shows the three elements –

the **notch**, the **hinge** and the **backcut**. It is a good idea for a cutter to examine each stump to confirm that each element has been created properly and if necessary to take corrective action on cutting the next tree. These felling methods are valid for cutting most smaller trees that have **somewhat of a natural lean** in the desired direction of fall but should only be employed by people with **some chainsaw experience** or who are **under the direction of an experienced chainsaw operator**. There are, however, many possible “problem trees” that may be encountered in a woodlot. These challenges include trees with no natural lean, those that lean opposite to the desired direction of fall as well as those that have a very definite lean. Those trees with a very definite lean are commonly called, “**heavy leaners**”. These trees, if cut using **conventional felling methods**, could easily result in what is known as a “**barber chair**”. (For an example of a barber chair, see <https://www.youtube.com/watch?v=2YAf61zz5VU>).

Trees with a **heavy lean** and those **without a lean** in the desired direction of fall (DDF), will be discussed in Part 3 in this series.

Figure 5 – Notching sight line

The saw shown in Figure 5 has a “notching site line” and as the name implies, is used for making the first (top) cut of a notch. (experienced chainsaw users may also recognize a second line that will be discussed





in Part 3). Many manufacturers have been incorporating **felling sight lines on their chainsaws** for several years. On some saws, the lines are molded into the saw housing and are painted black (as shown in Figure 5). On other saws, the lines are molded into the housing but are **not painted** (or the paint may have worn off). For those saws it is recommended that the lines be “painted” with a **permanent marker** so that they are more visible. **Some saws have no line at all.** For those saws, it is recommended that the saw be placed on its side (bar side down) and that one leg of a **carpenter’s square** be placed over the **centre of the bar** and the other leg on the **saw’s housing** where the sight line is shown in Figure 5. A sight line can then be drawn on the saw’s housing with a **permanent marker**. A second line can also be drawn on the opposite side of the saw if so desired.

As stated above, this notching sight line is used to make the first cut of the notch. Before felling a tree, it is important to decide where the tree is to fall—called the “desired direction of fall” or DDF. This depends on factors such as:

- the **lean of the tree,**
- **heavy branches** on one side,
- **obstacles** such as other trees,
- the **wind direction and speed,** and
- the location of the skid **trail** (if appropriate).

Once the DDF has been established, a **target** should be selected in that **direction.** This target could be a **rock, a stump, a tree,** If available, a collapsible cone makes an excellent target. The target should be **at least a tree length** from the tree being felled. The **notching sight line** on the saw is then **aimed at this target** when the first

(top) cut of the notch is made. To assist with the making of this first cut, I promote what I call the “**left, left, left**” technique:

1. The **left hand** is placed on the **corner of the forward handle** of the saw (so that the saw naturally hangs on a **45° angle**);
2. the **left shoulder** is placed **against the tree** (so that the cutter’s body is behind the sight line as it is aimed at the target); and,
3. the **left knee** is placed **behind the tree** (so that the tree is between the saw and the cutter’s knee).

In this position, the cutter makes the top diagonal cut of a conventional or V (preferred) notch to a depth of between $\frac{1}{4}$ - $\frac{1}{3}$ **of the tree’s diameter** at an appropriate height above the ground. Once this cut is made, the cutter can use it to provide a “**window**” into the tree as the second cut of the notch is made. The **second cut** should either be **straight in on the horizontal** for a **conventional notch.** or **sloping upwards** for a **V notch** as shown in **Figure 3.**

The window helps to align the two cuts and **prevent an overcut notch.** Once the notch has been created, there are **two important steps!** **First,** it should be examined to ensure that there is **no overcut** as shown in **Figure 1.** Any overcut should be **corrected** by extending the shorter cut until both **cuts meet cleanly** as shown in **Figure 2.**

Second, the **direction of the notch** should be checked to confirm that it is **aimed at the target.** **Checking the direction** of the notch is accomplished by **setting the bar of the saw back into the notch, standing behind the saw** and verifying that that **sight line is still aimed at the target.** If it is not, the **direction** of the notch can be **modified** by **cutting away more wood** from **either side of the notch** and then **reconfirming** its direction. Although it has been stated that notches should be **between $\frac{1}{4}$ and $\frac{1}{3}$** of the tree’s diameter, it is **recommended** that $\frac{1}{4}$ be used. Correcting overcuts and changing notch directions involves removing more of the tree and thus increasing the depth

of the notch. If the notch is already $\frac{1}{3}$ of the tree’s diameter, it could be up to half or more by the time the notch is cleaned and/or its direction has been corrected. This leaves less room for boring and wedging which will be discussed in **Part 3.**

Notching site lines are extremely valuable to the cutter who knows how to use them correctly!

SUMMARY

The **basic felling techniques** described above are for trees that have a **diameter that is less than the length of the saw bar** and that have a **moderate lean in the DDF.** These methods should only be performed by people who have some correct **chainsaw experience** or who are being **instructed by someone with experience.** These techniques are **part of an overall training course** that I provide to chainsaw users. Courses vary in length from a half day to 3 days. Most courses that involve tree felling are 2 days long. The **first day** is conducted in a **classroom setting** while the **second day** includes hands-on **chainsaw sharpening, maintenance, and tree felling.**

I have been conducting chainsaw training courses for over 30 years. Since I retired from Workplace Safety North in 2014, I continue to provide these courses on my own. I welcome every opportunity to provide this life-saving information to anyone who wants it. If anyone would like more information or is interested in setting up a training session, please feel to contact me at 613-332-8464 (call or text) or at brilaw84@gmail.com. I live in the Bancroft area but am willing to travel **almost anywhere in Southern Ontario** to conduct a course. I also have several videos on YouTube that I am willing to share. (More about that in Part 3!)

Stay tuned for the next article (Part 3) on felling some “problem trees”, where we will discuss additional felling techniques based on what we have learned here. It should be remembered however, that just reading about tree felling techniques is NOT a substitute for actual training.



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Part 1 of this series was included in the December 2020 issue (101) of the Woodlander. After it was published, I was contacted by several people who requested more information and/or who expressed an interest in attending a training session. As I am keen to see that **everyone who uses a chainsaw receives at least some basic training** and because of COVID-19 restrictions it is more difficult to organize training sessions, I decided to provide some additional information on the felling of trees in a **sequel to the first article**. When this sequel became quite lengthy, however, it was decided to make this into a **three-part series**.

Part 1 (the original article) covered the following topics:

1. Chainsaw Selection
2. Personal Protective Equipment (PPE)
3. Comprehensive Training

Part 2 (in the December 2021 issue 105) covered **basic tree felling**, which is felling trees with a diameter less than the length of the bar on the chainsaw and that have a moderate lean in the desired direction of fall (DDF).

This article (Part 3) addresses some more **advanced tree felling techniques**. Specifically, it covers **two types of “problem trees”**, they are (1) **trees with a heavy lean** in the DDF and (2) **trees without a lean** in the DDF. As this article **builds on the information** covered in **Parts 1 and 2**, reading them **first** will help the reader understand the techniques discussed below.

The information presented in this series of articles includes tree felling techniques that **if not carried out correctly could result in serious injury or even death!** For this reason, these techniques should only be attempted by **experienced chainsaw users or those who are under the direct supervision of an experienced user!**

The information provided in this three-part series does not deal with every type of “problem tree” that is covered in a face-to-face training session. (I have been asked about the possibility of conducting **on-line “classroom” sessions** and I am currently exploring that option as the COVID-19 restrictions continue.)

Advanced Tree-Felling Techniques

1. Trees with a Heavy Lean

As indicated above, this article deals with more advanced felling techniques and should only be attempted when the basic techniques presented in Part 2 have been “mastered”. If trees with a substantial lean are felled using the basic techniques discussed in the previous article, it is very possible that the tree will split into a “barber chair” (For an example of a barber chair, see <https://www.youtube.com/watch?v=2YAf61zz-5VU>). This occurs when the saw **does not cut into the tree fast enough** to create an **appropriate hinge before the tree starts to fall**. The **hinge is too wide** to allow the tree to **pivot properly**. Part of the tree **falls** and **part of it remains in place**. A falling tree that results in a barber chair represents an **extreme hazard**

that can result in **serious injury or death to the cutter!** The technique for felling heavy leaning trees with a **diameter of at least 10”** and less than **the length of the bar** on the chainsaw, is shown below. (It should be noted that while this technique is **critical** (i.e., should be considered **mandatory**) for preventing the **barber chairing** of a heavy leaning trees, it also works for **any tree with a defined lean** in the DDF).

Figure 1 – Felling heavy leaning trees

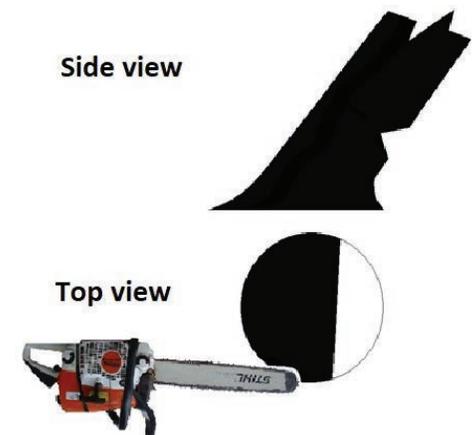
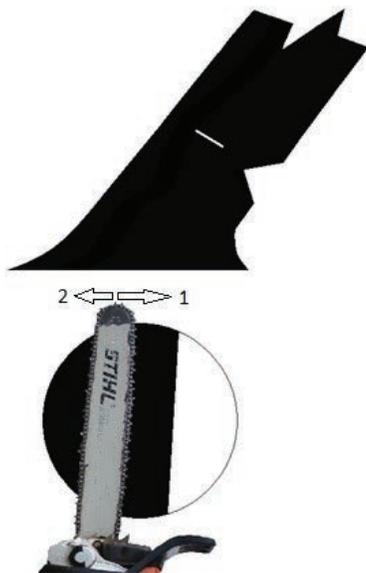


Figure 1 illustrates how heavy leaning trees should be felled. Again, this felling method should only be attempted by **experienced chainsaw operators or those who are under the direction of an experienced operator**. Instead of making a conventional backcut, after the notch is made, (see Part 2 for information on making a proper notch) heavy leaners are “bored”, that is, the chainsaw is shoved through the centre of the tree parallel with the notch. But to prevent kickback, **the bore cut is started with the bottom of the bar** as shown in Figure 1.

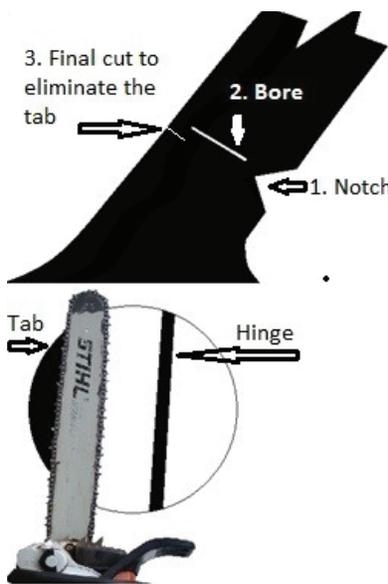
Figure 2 – Felling heavy leaning trees (cont'd)



As shown in Figure 1, once a pocket (this is absolutely necessary to prevent kickback!) is created with the tip of the bar, the saw is rotated so that it is parallel with the notch and perpendicular to the trunk (not parallel with the ground) and then shoved right through the tree as shown in Figure 2. (As noted later in this article, many chainsaws are now equipped with “boring sight lines” that assist with making a bore cut.) Once the saw has poked through the other side of the tree, a “tip check” is done to confirm its position relative to the back side of the notch. Then, as shown, the saw is carefully advanced towards the notch (arrow 1; Figure 2) until a proper hinge is established (again consisting of uncut wood of about 10% of the tree’s diameter to a maximum of 2”). Then the saw is moved towards the back of the tree (arrow 2; Figure 2) and a “tab” (see Figure 3) or “strap” of uncut wood amounting to about ¼ of the tree’s diameter is left to hold the tree in place. (Note: as the boring of trees requires a high level of skill to be done properly,

in face-to-face training sessions, participants are given the opportunity to practice notching and boring on high stumps of felled trees until they develop competency before attempting these activities on standing trees!)

Figure 3 - Felling heavy leaning trees (cont'd)



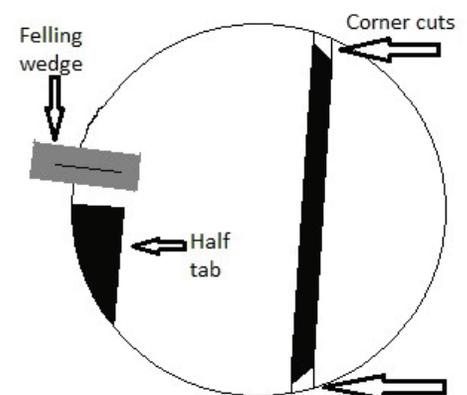
When it is safe to do so, (i.e., no one has entered the felling area and a proper escape route has been prepared) the tab is eliminated by making a cut parallel with the notch and 1 to 2” below the bore (as shown as step 3 in Figure 3). As soon as the tree starts to fall, the cutter moves away from the tree along the prepared escape route and if possible, tucks in behind another tree for protection from any limbs that may be thrown back as the tree falls. The cutter remains in this retreat position until the tree and any broken limbs have fallen to the ground (this may take several seconds!). Only then is the tree to be limbed and topped. For valuable logs, many loggers make “corner cuts” on the outsides of the hinge (as noted in Figure 4) to prevent “side scarring”

(where the strong sap wood at the outside of the hinge tears wood from up the tree, instead of breaking cleanly). As side scarring not only downgrades the value of the log, but it can also redirect the tree as it falls, and so corner cuts are recommended on trees that are sound and at least 12” in diameter.

2. Trees Without a Lean in the Desired Direction of Fall (DDF)

Normally there is a variety of trees found in a typical bushlot. Usually there are trees of various species, size, and shape. Also, some trees will have a lean in the direction they are to be felled, while others will not. Trees without any natural lean can be made to fall in the DDF with the use of one or more felling wedges. While many people have been shown how to use a felling wedge using a conventional backcut, that technique often results in several problems. These include: (1) having the saw being pinched by the tree as it sat back on the stump before a wedge was inserted, (2) damaging the chain with the wedge and (3) accidentally cutting off the hinge before the tree starts to fall. The technique discussed below, when carried out properly, eliminates all these problems.

Figure 4 - Felling trees without a lean in the desired direction of fall



In recent years, **many cutters (and chainsaw manufacturers!)** have come to realize the value of **boring most trees** (not just **heavy leaners**) instead of making backcuts. When a **backcut** is made, the moment when a **tree** starts to fall, depends on **multiple factors** such as the **amount of the lean** of the tree, **wind direction and wind speed**, etc. When a **tab** is created, however, the **cutter decides** when the tree will start **to fall**. (More **advantages** of the **boring** technique are discussed **below**). For trees **without a lean** in the desired direction of fall and therefore require felling **wedge(s)**, the boring technique discussed above, is **modified slightly**. The tree is **notched and bored** to establish both the **hinge and the tab**. Then as shown in Figure 4, instead of making one cut below the bore to eliminate the tab (as described above), the tab is cut in **two stages**, with only **half** of it being **removed at a time**. The **first stage** involves cutting the **first half** of the tab. This is accomplished by orienting the chainsaw **perpendicular** to the **notch** at the **side of the tree** with the bar at the **same height** as the **bore cut** and then carefully cutting towards the **centre** of the tab (while making sure that the **tip of the bar** is not too deep into the tree where it can cut the **hinge!**). A **felling wedge** is then inserted into the space where the **half** of the tab was **removed**. The wedge is then **pounded** into the tree to create a lifting force on it. If desired, **corner cuts** can then be made at the sides of the hinge. When the cutter is satisfied that **no one** has inadvertently **entered the felling area** and that a **proper escape route** has been prepared, the **remaining half** of the tab is **removed** by cutting from the **outside** of the tree towards the **wedge**. (As shown in Figure 4, the **wedge** is less likely to be **cut by the saw** if a **small space** is left between it and the remain-

ing half tab.) Once the tab has been **completely removed**, if the tree **does not start to fall**, the wedge is **pounded** to provide more lifting force. For **large trees**, the use of **multiple wedges** spreads the **lifting force** over a **larger area** and aids in the felling process. As noted above, as soon as the tree **starts to fall**, the **cutter** moves away from the tree along the **prepared escape route**. During face-to-face training sessions, **participants are** shown a **variation** of this technique that is **simpler** (and somewhat **less risky!**) This **alternate technique** is especially useful for those who are **new** to the practice of **boring** trees.

Advantages of the boring technique

From the above discussion, it is evident that the **boring technique** offers **several safety advantages** over the conventional **backcut** method. These advantages include:

1. The **hinge** (the most critical part of the felling process) is **established to the proper size and shape** (optional shapes are discussed during actual training sessions) while the **tree is held in place by holding wood** – not (as is the case with a backcut) as the cutter is wondering when:
 - a. the tree is going to start to fall, and it will be time to leave the stump and head for the escape route,
 - b. if someone might enter the danger zone **unannounced**,
 - c. if there is a possibility of **accidentally cutting the hinge off**, or
 - d. if there is a **possibility of slipping and falling** before leaving the stump (particularly in winter and on side hills), etc.
2. The **cutter decides when the tree is going to start to fall** – by removing

any remaining tab when it has been established that **no one is entering the danger zone unannounced**, and a **proper escape route has been prepared**.

3. The **cutter is behind the tree** (and thus closer to the escape route) when the final portion of the tab is removed, and the tree can start to fall – **not beside the stump** (and thus **further away from the escape route**). This is particularly important in winter on side hills or anywhere where there is not good footing available.
4. The whole **felling process is broken down into specific steps**, with the **release** of the tree (by **removing any remaining tab**) being the **final step**. The **tree does not move until this final step is completed!** This **removes the anxiety** that might be felt while using conventional notching and backcutting operations. This is particularly **important** for those who are **inexperienced and are being instructed**. Each step can be **completed** and **verified** before proceeding to the next step. Experience has shown that this **step-by-step method** has been **critical** in **instilling confidence** in chainsaw operators, particularly those who attend a course with **little or no experience!**

As stated earlier, some of the **chainsaw manufacturers** have now **embraced the promotion of the boring techniques** for felling trees. They have done this in **two ways**: (a) by **modifying** the felling techniques shown in their **owner's manuals** and (b) by **adding "boring" sight lines on their saws**.



Figure 5 – Notching and boring sight lines



The chainsaw shown in Figure 5 has two different sight lines. The **notching sight line**, (as discussed in **Part 2** of this series), is at **right angles to the bar** and is used for aiming the saw at a **selected target** while making the **top cut of the notch**. The **boring sight line** is **aligned with the center of the bar** and indicates where the bar is positioned inside a tree while it is being bored. This is particularly important when trying to avoid accidentally cutting into the hinge! While many manufacturers have been incorporating **notching sight lines on their saws for several years**, the **addition of boring sight lines is a more recent development**. If the saw is not equipped with a boring sight line, it is relatively easy to add one with a permanent marker by **using a straight edge** aligned with the centre of the bar. It will be at **90° to the notching sight line**.

These **two lines are extremely valuable** to the cutter who knows **how to use them correctly!**

Summary

The **falling techniques** described above are for trees with a **diameter of at least 10"** but are **less than the length of the bar** on the saw (Note: in an **actual course**, participants are shown how to safely fell trees that are up to **three times the length of the bar!**). These techniques cover trees **with or without a lean** in the DDF and are **part of an overall training course** that I provide for chainsaw users. Courses vary in length from a half day to 3 days. Most **courses that involve tree felling are 2**

days long. The **first day** is conducted in a **classroom** setting while the **second day** includes hands-on chainsaw sharpening, maintenance, and tree felling. The course consists of **eight specific modules**. Participants are given **resources that provide a permanent record** of the information presented and can be **referenced at any time** in the future. During the course, I also provide a **"4-line mantra"** that makes it **easier to remember the specific steps** to fell a variety of problem trees **safely!**

I have been conducting chainsaw training courses for **over 30 years**. Since I retired from Workplace Safety North in 2014, I continue to provide these courses on my own. I **welcome every opportunity** to provide this **life-saving information** to anyone who wants it. If anyone would like more information or is interested in setting up a training session, please feel to contact me at 613-332-8464 (call or text) or at brilaw84@gmail.com. I live in the Bancroft area but am willing to travel **almost anywhere in Southern Ontario** to conduct a course.

I also have **several videos on YouTube** as indicated below.

Heavy Leaning Tree:
www.youtube.com/watch?v=-J4OWrJ5eHw8&t=49s

Trees Without a Lean in the DDF:
www.youtube.com/watch?v=P088bMP7jq0

There are also other videos for topics such as delimiting and bucking trees.

After being employed with a safety association for many years and having investigated several bush-related **injuries and fatalities**, it is my strong desire to **share information that can save lives and reduce injuries**. If the information presented in this series has been helpful and if there are any comments or questions that have arisen, I would be more than **willing to discuss these issues with woodlot owners!**

Let us all harvest our firewood safely!!

