



How I cleared a large parcel of land on my own with a late-model backhoe, a couple of critical attachments, and a plan.
by James Starbuck, *copyright, 2004*

Table of Contents

1. Preface - The Reason For This Book
2. Before We Get Started - A Little Personal Background
3. Introduction - A Mission To Reveal The Land
4. Land Attributes - Inventory of Positive Features
5. Looking For A Method - One Man Operation And Little Less Destructive
6. Alternatives To “Do It Yourself” - Or You Could Hire The Job Out
7. The Good News - It May Be A Big Job, But One Man Can Do It
6. Get To Know The Land - Day One: Safety Glasses, Gloves, And A Machete
8. Tools And Accessories Research - Some Hand Tools, Some Bigger Stuff
10. Heavy Equipment - Nothing's Perfect - But What To Get, All Things Considered
11. Three Tools You Gotta Have - According To Me
12. Getting To Work – “Don't get out of the machine...”
13. Six Categories - How To Make A Mess, Then Clean It Up
14. After The Dust Settles - You Need A Big Boy Rake To Tidy Things Up
15. Handy Things To Have - A section of miscellaneous beneficial items
16. Maintenance - Some people love it, I just live with it
17. Other Helpful Resources - Here's a list of reference links that I found helpful

1. Preface

The Reason For This Book

This is the story of how I cleared a large parcel of land that had become choked over many years with weeds, brush, vines, invasive plants, and nuisance trees. All this undergrowth and overgrowth I toppled, plucked, piled, lifted and moved on my own during long weekends over the summer.



Here's a thicket of poplar, wild apple, buckthorn. I could've aimed the camera just about any direction from here to show you similar views.

It occurred to me how valuable it would've been if I'd known in the beginning, what I know now, about clearing land. But despite all my research into various equipment and the features of each, I found very little information about how to go about it.

Although, I found lots of information about a variety of hand tools, motorized machines, and heavy equipment designed to dig, scrape, doze, lift, and move, I found virtually no information about specific methods and hints to follow to get the work done. So, I decided to write down my experiences.

Keep in mind, though, I'm not a professional, nor am I suggesting that the methods I've used as a private landowner on my property will work the same on yours. It is simply a pleasant recollection of my experiences and accomplishments on my own land. That is in fact, one of the major points of this story. I was just a private landowner who wanted to see what could be done on my own.



This is along the edge of a field. Over the years, the field slowly recedes as small bushes encroach. Each year, the farmers would mow a slightly inside the previous year's perimeter.

The poison ivy also really likes the semi-shade beneath.

2. Before We Get Started

A Little Personal Background

Not long ago, about 60 acres of land in my hometown came into my possession. It was part of a larger parcel that had been in my father's family since the 1920's. We moved there to live year-round in the 1960's. After I moved away, I still visited regularly. I would have been happy to have things go on that way indefinitely.



My family home in the late 1800's.

But things change, and recently the needs of my parents caused a review of the situation. What resulted was the proverbial homestead downsizing. We subdivided the house and several acres of land from the rest of the property and sold it. In time, a portion of our remaining land came to me. It held some attractive topographical features, such as rock outcroppings, rolling pastures, some lakeshore, and even about 25 acres of woodland.

Over the years, the land had gradually changed, too, just as we had. I had long known where the "nice spots" were, but with time they had become overgrown. Fields had been encroached upon and former pastureland was snarled up every which way.

For example, trees occasionally fell from the hedgerows into the fields. The farmers who hayed our land would simply mow around them to keep up the pace. The following season each field was a shade smaller. Add fifty years and see what you get. (Actually, I can look in the mirror and see what fifty years gets, but that's a different story.) So over time ponds got choked, buckthorn grew thick where the horses used to graze, years of frost pushed rocks to the surface, and gullies blossomed with sumac. And so on, amen.

But hold on. I accept that not much can be done to reshape what time has brought to my family and me. But what about the land? Can a person, working pretty much solo, reclaim a piece of land that's been overgrown by the years? In a word, yes.



Lake views have disappeared except when the leaves are down.



This beautiful old field oak is near my former home where we always cared for it with the rest of the lawn.



This beautiful old oak, on the other hand, has been gradually overtaken by brush of all kinds.

Before I'm through, I want the one on the right to look like the one on the left.

3. Introduction

A Mission To Reveal The Land

This is a fairly close rendition of what somebody said to me while working on the land last summer: *"I know what you're up to... you're on a mission to reveal your land. You want to show it off by uncovering its natural attributes."* Yeah, that sounds about right.

Some country landscapes catch your eye as you pass, and without explanation, hold your attention. You could say it's a coincidence, or caused by some internal resonance or something. But I say landscapes that grab you are not accidental. I'll see one and say, "Look at the way that farmhouse is angled to the barn and the how the drive runs through those oaks. That's great, somebody worked to get that." I don't know. Maybe they are accidental. Maybe there's a book out there, "How To Create A Really Fabulous Country Landscape, By Accident!" Regardless, I try to identify what combination of features or attributes make these settings seem so special to me. Why? Because I'd like one of my own.

4. Land Attributes

Inventory of Positive Features

Most parcels of land have some positive attributes. Before I began clearing my land, I took inventory of it, just as I would any other asset. You should, too, if you own land and are planning to clear some. You should take stock of more than just how many acres it is, or how many feet you own on the town road.



When dead trees fall into a field from the hedgerow, they usually are left to rot and simply mowed around. In a short time, brush fills in and the open area is slightly reduced.

I've noted every significant potential feature, elevation, slope, boulder, and depression on my land I could find. If your land is destined to be a house site, when the time comes to build, you should be well acquainted with your entire parcel. That way, you can take all its attributes into account as you proceed. What a shame so many people situate their homes simply based on what offers the shortest driveway.

Of course, if your land-clearing project is to just make enough room for a house, then a contractor can carve that out just before the foundation goes in. What's

wrong with that? You can always go back later with a pruning saw and add some dimension, right? Not likely. Well... maybe in fifty years you'll find the time. And only then discover some wonderful rock outcropping that could have been designed into your home site. So, take stock of your entire property, in advance, to make the most of what nature has provided.

By the way, I don't favor clear cutting - the practice of cutting all sizable plants from a tract of land. Unless you're interested in creating acreage for agriculture, tree farming, vineyard, or some grand sweeping lawn, clear cutting is not for me. In those situations where clear cutting is called for, my clearing methods would certainly work just as well. But for me, areas of screening, dense vegetation, and woodland are of equal importance, and combined with open land in the development of a great country setting.

Enough already. This book is mostly about the specific land clearing techniques I've developed and had success with. I'm just offering this big picture stuff as background before I get to the ripping and tearing part.

5. Looking For A Method

One Man Operation And Little Less Destructive

Before I bought a backhoe, other attachments, and developed my, "How To Clear Land By Your Lonesome" methods, I didn't know much about it. I knew my feelings about my land and what it had to offer. I knew it had gone to seed in a big way. I had seen other beautiful country landscapes and wanted to reveal one on my land. But I did not know whether it would realistically require one person, or twenty. I didn't know whether you could get it done with a chainsaw and a burning permit... or a dozer and a dump truck. And moreover, I didn't know if it would cost a little or a mint. To be honest, I suspected it would not be cheap - but how much was the question.

What I needed was to get a sense of the scope of the project. Then I needed to figure out what could be accomplished by the different methods available. And finally, what each method might cost to produce the desired result. It didn't take much investigation to discover that to get the result I was imagining was not a simple case of hiring the biggest bulldozer I could find and letting him loose for a couple of days.

That's because each type of equipment I investigated seemed to be very good at doing part of the job, but badly lacking in one way or another. As you'll see when I discuss the various earth moving machines later on, each type of machine has its benefits and drawbacks.



There are beautiful rolling pastures to see beyond this thicket.

The big land clearing projects I came across during my research period always seemed to be using a combination of heavy equipment and operators. And they went at it in a real big way. This is how it goes: bulldoze a huge mess, tearing up the good with the bad and piling it all, stumps, brush, topsoil, you name it. Then pick it up with a loader or excavator. Load the debris into tandem trucks and cart it away to who knows where. The remaining terrain gets graded and the topsoil is replaced. Box, rock, and/or motorized landscape rakes are used as needed. Seed, plant, and get out. Price: A billion dollars.

As much as I enjoy watching this equipment at work, I needed to develop a more affordable and less destructive approach. Despite the fact that I was a fledgling in the world of heavy equipment and land clearing, I did know something about what I was after. Thus, I began to draft my **Land Clearing Methodology Checklist**. My preferred land clearing technique would:

- Be as close to a one man operation as possible
- Be able to selectively clear a large tract of land (in my case, 10-15 acres)
- Cause minimal damage to valuable topsoil
- Not disturb or damage quality trees
- Allow the moving of debris over significant distances for disposal
- Avoid burning
- Remove stumps and boulders with the same equipment
- Include minimal chainsaw work
- Result in smooth terrain, suitable for mowing with brush hog mower
- Not cost a million dollars or take me forever to accomplish
- Not make me a physical wreck
- Provide fun as well as satisfaction

OK, this became a taller and taller order as I added more and more bullet items to my list. In fact, it required several months of investigation, research, shopping, and equivocating to settle on a course of action. It took some additional time to purchase equipment, fit it up, and get my operator skills and techniques down. However, once the pieces were in place and I began work on site, I steadily learned how to handle all sorts of vegetative debris, rocks and boulders, in my grand design for land reclamation and improvement.

6. Alternatives To "Do It Yourself" Or You Could Hire The Job Out

Here's an odd section for a **How To Do It Yourself** book. But I want to include it because it was part of my research and the things I learned contributed to decisions I made.

At some point when I was sufficiently baffled by research, I decided I should try to calculate the expense of hiring the land clearing work out to a professional and forget the Do-It-Yourself concept. Of course, I would have missed out on many other pleasures and pains, but I figured it was a good thing to investigate. I quickly found that there aren't too many outfits in my neighborhood that are specifically **Land Clearing Specialists**. There are however, loggers, landscapers, tree surgeons, excavators, farmers, and people I ran into who said things like, "I know somebody who might be interested in helpin' you out..."

It did not take long to discover what a whopping amount of money can be quickly spent taming the land. Hiring out my land-clearing job is not the way I decided to go, so I won't spend long talking about it. But just to provide a little background on the prospect of using others to get it done, here's what I encountered.

1. Hire A Chainsaw Man Only...

I could hire, in my upstate New York hometown, a skilled chainsaw man for \$15-\$20 an hour. That's only for his saw and labor. Using it, he can drop whatever's in his way. He can let it lay, as felled, or trim it and cut it into lengths so it lays flatter and theoretically looks better and rots faster.

What's good about this method:

- A lot of things can get knocked down pretty quickly

- A skilled feller can get into awkward spots

- Trees that are too large for my method can be handled properly

- Trees that are close to power lines should be dropped professionally

What's NOT so good about this method:

Stumps - not just the big ones - all of them
Roots remain and most will spring back with a vengeance
Terrain cannot be mowed until cleaned up
Dangerous tangled debris
I don't care what people say, this stuff does not rot fast

2. Hire A Logger With A Skidder...

I found a skilled and honest young logger who owns a small log skidder who could saw anything, then use his skidder to cinch debris and pull it to anywhere on my land. He charged \$45 an hour. I was actually very happy to have his help from time to time. If I had any trees that were of lumber quality, he could cut and pile them, then arrange for log truck to pick them up. In that case, we split the proceeds and he didn't charge for his labor.

He was especially helpful in my land-clearing project in two specific ways that I would have had a hard time accomplishing on my own. 1. He competently felled nuisance trees that were close to power lines. 2. He also created my all important, and under recognized, **Stump Dump**. I'll describe this feature, so critical to my operation, in the **Getting To Work** section. As fair as his rate is, it can add up. I tried to use his services sparingly, and have come up with alternatives to reduce his time.

What's good about this method:

A lot of things can get knocked down pretty quickly
Trees that are too large for my method can be handled properly
Trees that are close to power lines should be dropped professionally
Skidder can drag large piles of debris long distances in reasonable time

What's NOT so good about this method:

Stumps - a skidder can push out some small ones, but not too good at it
Roots remain and most will spring back with a vengeance
Although terrain can be cleared pretty well with skidder, it leaves the little stuff
Not meant for dozer work
Not practical for general clearing work
Expense - \$400 - \$500 a day

3. Hire A Tree Surgeon...

I haven't used any tree surgeons in my land-clearing project. However, I see them called in for many land-clearing jobs. With cranes, saws, and chippers, they can reduce a large tree to chips in no time. This is especially helpful in hazardous situations like along a road. They can also send a crew to knock down brush in a right of way. They can do all sorts of things, but the primary reason tree surgeons don't figure in my plan is that the scope of my project is so large and tree surgeons are so expensive, that I'd be broke in a

week. It's just not a practical fit. A tree surgeon is a good choice to get rid of one problem tree in the middle of your beautiful lawn. If you've got a big clearing job, forget it.

What's good about this method:

- A large tree oak can be turned into mulch in an hour
- Awkwardly or hazardously trees can be handled properly
- Trees that are close to power lines should be dropped professionally

What's NOT so good about this method:

- Tree felling - big \$\$\$
- Stump grinding - big \$\$\$
- Brush chipping - big \$\$\$
- Showing up with a fleet of trucks - big \$\$\$
- You get the picture

4. Hire A Landscaping Firm...

Here's another method I didn't investigate too long. Landscapers do have some tools and expertise that relate to land clearing, or at least brush removal. But I think they're much more maintenance oriented and would have balked if presented with a project like mine. I can almost hear it: "Call us after the grading and raking, we'd love to help you with some great plant material and maintain it for you."

Landscapers often work by contract retainer. They might have a hard time pricing a land-clearing job, as there's no predictability or repetition to the work.

What's good about this method:

- They could subcontract the work out to somebody else for you
- They often have an aesthetic design approach that rougher types don't
- They often handle other infrastructure like watering and lighting systems

What's NOT so good about this method:

- They tend to focus on lawn and garden projects
- There's just too much area involved in my project
- They likely have other ongoing maintenance contracts that take priority
- They like to sell new plant material - my land's not ready for that

5. Hire An Excavating Company...

Now, excavating companies hold some promise. They generally own and operate the basic set of earth moving equipment, and often more. Some of which works just fine for clearing land. They also transport their equipment. The excavators I have known are good at "eye-balling" a job and figuring out how to get things done. They are also comfortable with dealing with whatever shows up midstream.

Excavators generally work at an hourly rate for each piece of equipment. Sometimes the operators are included in that rate, and sometimes not. They usually charge a fee for transporting their equipment. I've paid these amounts on other non-land-clearing jobs:

Backhoe - \$45 - \$50 an hour with operator

Excavator - \$50 - \$60 an hour with operator

Bulldozer - \$60 - \$75 an hour with operator

Tandem truck - \$30 - \$50 an hour with operator

What's good about this method:

They can bulldoze or topple a lot of vegetation pretty quickly

Trees that are too large for my method can be handled properly

Trees that are close to power lines should be dropped professionally

What's NOT so good about this method:

Excavators are not necessarily familiar with logging techniques

You'd still need a chainsaw guy once in awhile for large trees and power line issues

They would likely urge multiple pieces equipment to do the job

Transport fees

You probably wouldn't get your job well raked without additional equipment

Big \$\$\$ fast, so you better be on site directing

7. The Good News

It May Be A Big Job, But One Man Can Do It

It was after investigating the last alternative approach that I decided to clear the land on my own. An excavating firm, maybe a local guy between jobs, could have been a decent alternative. But I concluded that to hire others I'd have to set my sights lower. I would have had to settle for clearing a dramatically smaller area. I'd always be wondering if it was just a big self-indulgence and pull back from the Big Plan.

On the other hand, I could try to pull the whole job off on my own. If I could identify and afford the single best-suited piece of equipment for my purpose that would be a start.

Benefits thereafter would include the ability to work at my own pace. I could alter the focus of work at will. I would not be pressured to employ the equipment in a concentrated time period. I could adjust my work to avoid bad weather. And the satisfaction of revealing a landscape on my own was a big deal for me. So, that's what I did. I bought a late model backhoe and began my weekend land-clearing career.



Of course, I was my only client. That was fine with me. I also learned a lot about maintenance, parts, and have had my share of frustration. But, there are people out there who help people like me keep their equipment going. So far, it's been really, really worth it. I could never have afforded to hire others to do all the work I have accomplished on my land, on my own. It's that simple.

Now, I'm so convinced that large-scale land clearing is practical by regular folk like me that I'm writing my experiences down. I'm putting them in black and white, with photos, and even a "Show-Ya-How-I-Did-It" video. I don't imagine there are millions of people who are interested in this subject. But for those who are, and haven't found much on the subject, I'm hoping this will help fill the gap by offering some moral support and practical information.

8. Get To Know The Land

Day One: Safety Glasses, Gloves, And A Machete

My first mission was to begin to grasp the size and scope of my project. When you're heading out to familiarize yourself with a large, completely overgrown, tract of land, you don't want to drag around a chainsaw and its supplies. I was going to be all over the place, so I traveled light with safety glasses, gloves, and a machete. I was also armed with other lightweight stuff, such as a compass, baseball cap, survey map, and bug repellent. But it was the safety glasses, gloves, and machete that were the most important. For those who really thrive on detail, the machete's blade was embossed with the word "Austria". I'm guessing that machete is my only Austrian made belonging.

My first task, as I said, was to learn the lay of the land. I wasn't thinking about clearing anything yet. The copy of the survey was to make notes and sketch significant features on. Among other things, I used the compass for orienting myself, locating noteworthy features, and tracking the best sunlight conditions. If I didn't have a survey, I could have used an enlargement of the county tax map that shows my parcel. They are much less detailed but something to start with.

Anyway, that's why the machete was the ticket in the beginning. It's light, and can easily cut woody plants up to an inch, and more, without much effort, believe it or not. It's also a quiet tool, and smell-free, which was very pleasant, while I roamed around assessing features and contemplating possible courses of action. The purpose of safety glasses and gloves is obvious. If you go out assessing, don't let a slapping twig catch you in the eye - just do the right thing - they cost five bucks.

Despite this armament, it's surprising how claustrophobic and difficult it can be to see great landscaping potential while standing in a thicket. I climbed trees. Cut sight lines with the machete. Tried to find higher vantage points. I kept walking around. It gradually came together, even if some of it, for the time being, was only in my mind's eye.



A few hazards I encountered were thorns, ticks, poison ivy, holes, ground bees, old barbed wire, and all sorts of other metal and glass artifacts. I didn't see any snakes. Dangerous ones don't hang out much in the Adirondacks. Although I've heard we harbor rattlers somewhere. Never seen one, though. But hey, what are a few snakes from the cab of a backhoe, right? Just keep an eye out while hoofing it.

This is typical... buckthorns, prickles, vines, and a lot of other nasty stuff. You want to go at that with a chainsaw?

Summary: Wear long pants. Buy a machete. Get to know the land, in peace and quiet, and on foot. Take as much time as you need, you'll always fondly remember your machete and mapping phase.

9. Tools And Accessories Research

Some Hand Tools, Some Bigger Stuff

You already know that I chose a backhoe as my fundamental land-clearing tool and I'm going to explain how I came to that conclusion later. But, now I'd like to tell you a little about the other kinds of equipment I looked into along the way. When I first entertained self-clearing my land, I wasn't thinking about equipment as large as backhoes, excavators, and bulldozers.

First I reviewed the tools I already owned and knew how to use. What I currently had in the arsenal was our family's 1966 International Harvester Brush Hog. I first operated it 37 years ago to cut our lawns. I still use today. Now, that's value. It can still mow down brambles and small brush with no effort. I had other potentially serviceable tools, including my old chainsaw, pruning loppers, and trimming saws. I also had a nice machete.

The first new tools I contemplated are ones that can be found at lawn equipment dealers. Having seen them, I gotta tell you, nothing I saw struck me as very spectacular. There wasn't anything revolutionary.

Machetes: Get a good machete. I bought a good one with a sheaf at a local Army Surplus - plus I have my Austrian one. I don't know where that one came from... other than Austria. \$25

Pruning Saws: Buy a hand held saber style pruning saw. They're inexpensive. They're quiet. They start right up as soon as you move your arm. They cut surprisingly fast, and don't need a lot of maintenance or petroleum based supplies. This is a good tool to have for about \$20.

Trimmers: Forget 'em. We're here to clear!

Pole Saws: OK, they put a dinky chainsaw on an eight-foot pole. Don't need one of those. And I don't particularly want to walk around with a chainsaw over my head anyway. An aluminum or fiberglass manual pole saw with a sharp saber style blade with push me pull you teeth is good to have around. I bought three six-foot sections of aluminum pole that you screw together and use to float concrete slabs. The thread on the end is the same as on replacement saber pruning saw blades. With it, I can make a 6, 12, or 18-foot manual pole saw. It works great, but I wouldn't want to have to use it much.

Brush Mowers: There's a breed of brush mowers out that I bet could cut down sunflower stalks and sumac shoots pretty well. That is, until you ran over your first sizeable rock. I want to **clear some land**, not reclaim the part of the lawn that got away from me last summer.

There's a brush mower you can attach a round pizza pan size chainsaw blade on. I actually thought about that a little, but in the end, anything that leaves a stump, leaves a problem.

Chainsaws: I thought about a new and powerful, yet lightweight, chainsaw to replace my old Jonsereds. The new lights ones aren't that powerful and the new powerful ones aren't much lighter. I had mine serviced, including a new chain. The chain break works fine, cuts great, move on.

Besides, if you're clearing land primarily using a chainsaw, you're in trouble. You're creating stump and root problems with every cut you make. Some other machine has to come along and deal with them before they re-sprout, get hidden by grasses, or puncture a tire. If you use a bulldozer to dig them up, you'll wind up carving away good topsoil, which could cause erosion problems. Ultimately you'd wind up with windrowed piles of soil packed stumps and roots that will sit there forever or have to be carried away. And what a big bill you'd get! Oh, my.

Chippers: A big, powerful chipper might be nice to have around. The reason I didn't get serious about it is you have to handle the debris too much. You have to spread it around so it doesn't get all snarled together. It's also handwork. I have way too much to clear to lay hands upon every piece.

Also, I have a lot of buckthorn and wild rose. Thorny debris can really hurt as it pulls by you on the way in. Chippers can be run off the PTO (power take off) of a tractor (which I don't have) or by their own mounted engine. That's fine, but now you've got another engine to maintain. Also, you generally drag chippers close to your debris. That's not so easy when you're taming the land for the first time... or in a long time... or when the ground is soft... or if it's not level. Forget the chipper for now. Maybe later, when things are settled down.

Rakes: There are a number of kinds of rakes that could be used in a land-clearing project. I looked at a bunch. None of the ones I'll mention here are the kind you could hang in the garage or use by hand.

Box Rakes and Rock Rakes: These are dragged behind a tractor or other towing machine and are designed to pick up rocks up to a certain size. They use rotating spindles of various designs to usher stones into a container. When it's full, you go dump it somewhere.

Landscape Rakes: These are also drawn behind a towing machine and are often used to smooth out and rake the final grade after topsoil has been added. It employs a rotating drum that has thumb-sized steel protrusions spaced in a pattern around the drum. It can be set up to windrow small stones out the side or collect them. It's not for rough terrain, large rocks, or high capacity.

Root Rakes: These attach often to the back of a bulldozer, although they can be setup other ways. They are simple, but very heavy-duty devices that contain a 7-9 curved teeth the size of your forearm and hand together. These intimidating teeth are spaced perhaps a foot apart and can be lowered to break up the soil and any roots and rocks within. Often there will be a shield to deflect the debris to the side to create a windrow. This kind of rake is too aggressive for my needs. And, of course, it won't fit on a backhoe.

York Rakes: This brand name rake has become synonymous with any rake of the same style. It is usually drawn behind a tractor by means of its three-point hitch. It can be set to an angle like a snowplow to guide the debris it collects off to the side. It's many slender steel teeth are bent into a C-shape and spaced close together along its spine.

It's a classic rake and I bought an old one and rigged it up my backhoe's loader to see if it would work. I think a York rake is best suited for finish work. It doesn't deal with the volume, variety, and snarled up nature of the debris I've got. I

couldn't get 50 feet without getting the thing all jammed up with stuff. Then you get off your machine and pull and pound on it till it comes out. Then repeat. I think a York Rake is best for things that don't really need raking anymore. For example, once your land is all cleared, leveled, and raked out... then, if you feel like it, you can York Rake it.

The Indispensable Front

End Loader Rake: Now this is a rake like none of the others. No moving parts. Not expensive. It attaches to the cutting blade of my backhoe's front-end loader. It works like a charm, doesn't clog up, and functions equally well going forward or backward. Because it's front mounted, you use it facing forward and it can



be worked very close to obstacles. This rake is described more completely in the section, **Three Tools You Gotta Have**. Why's it in that section? Because, if you're serious about clearing land, you need one. Not expensive: about \$800.

Forks: Several companies make heavy-duty forks that can be attached to backhoes, front-end loaders, etc. They are all welded together in a single hefty unit. They are quite expensive (\$1500- \$3000) and too heavy for a man to handle alone.

Although this type of fork is overkill for my work, I have a smaller pair of forks that clamp to my loader. Although each tine is pretty heavy, maybe 80-90 pounds each, I can drive right up to them, heft them on, and get



The backhoe is nearly hidden by this very large load of debris carried on the forks. A “Big Bite”.

them tightened in a couple of minutes. They, along with the loader rake attachment, have become **indispensable**. I use the forks to lift and move large piles of brush and small trees toppled and arranged by my backhoe. If you're serious about clearing land, you need a pair of forks. I describe mine in detail in the section, **Three Tools You Gotta Have**. Also not expensive: about \$700.

10. Heavy Equipment

Nothing's Perfect - But What To Get, All Things Considered

At some point I decided that:

- My job required more than could be handled by light equipment
- I'd prefer to do the work myself, and not hire it out to others
- Despite being a novice, I was willing to invest in a piece of heavy equipment and learn how to use it



This man volunteers at the nearby SPCA. They walk the dogs along my road cause it's less busy and the dogs like it. That's a worthy cause.

Once I drew the three conclusions above,

I began to focus on heavy equipment. I didn't know anything about it. I didn't know what type, brand, model, condition, vintage, or price would serve me best. I went from dealer to dealer learning about the specs and relative benefits of various machines. I sat in all models of new, late model, and in fact, some pretty old machines, too. I'd sit there and try to visualize if this was just the ticket to get my job done. Everywhere I went I learned a little more about how this or that machine held up over time and which brands you could get parts for fast. I investigated buying new from a dealer, leasing, loans, auctions, buying online, using a finder, and purchasing from an operator.

First I concentrated on determining what **type** of machine would be best suited for the job. Then I thought about **brand names** and **models**. Then I considered **vintage** and **condition**. I was always thinking about **price**. The internet has been great in that regard.

Types: Here are the four types of heavy equipment I thought seriously about:

Skidders: I'll get skidders out of the way first, cause it didn't take long to conclude a skidder wasn't right for me. A skidder is a great tool. It bends in the middle for tight navigation. All its tires are equal size, so it's very stable and can crawl over and around anything. They often have a small dozer blade in front for pushing and piling. The wire ropes and winch allows you to cinch onto quite a load of logs or debris piles and drag them a long distance in good time. **However:** A skidder can't dig or grade. It doesn't have the strength of hydraulic pistons. The operator has to get out of the machine to grab onto debris. If I can only have one machine, then a skidder isn't the one that's best for me.

Bulldozers: I was more serious about bulldozers. They're very powerful. Dozers don't get flat tires. They can grade, actually change the shape of the terrain, and not just scrape it. You can work stumps and boulders out. **However:** I gathered from talking to lots of people that bulldozers generate a lot of vibration and can gradually shake themselves into maintenance problems. Bulldozers are only doing work when they are in motion. Consequently, the machine is always working, unlike an excavator or backhoe, that set up and use other mechanics to do some of the work. Replacing undercarriages is expensive. I wasn't going to be buying a new machine, no matter what type it was, and was therefore concerned about undercarriage wear. Bulldozers are not fast. I wanted to be able to remove debris at least 1000 feet or more to a stump dump. That's a lot of additional running for a tracked machine. So again, if I can only have one machine, then a bulldozer isn't the one that's best for me.

Excavators: I thought a long time about excavators. I actually think I was close to going that route. They are very popular now, almost the hip thing to have. They come in all sizes. They are stable and have a light footprint on the ground (low ground pressure per square inch) because of the tracks. You don't have to change seat positions to switch from moving the machine to digging. The reach is 360 degrees for fewer machine moves. Visibility is excellent and they don't have stabilizers to deploy every time you move. The machines generally weigh less than comparable backhoes and are easier to transport. **However:** I still wasn't going to be buying a new machine, so since they are tracked machines like bulldozers, I was still worried about undercarriage and track condition.

Excavators are slow. I'd grow old waiting while dragging debris to the dumping area and waste the undercarriage if I did. When an excavator is fitted with a dozer blade, it's small and not designed to deal with large brush piles. The blade is worthless. There's no loader capability. I didn't realize at the time how important it would be to have a front-end loader. As much as I like the features of an excavator, if I can only have one machine, then it's not the one.

Backhoes: I backed my way into a backhoe. When I was a kid, I wanted a backhoe. Well into adulthood I said to people, "If you ever see me with a backhoe, you'll



know I've made it!" However, in the last few years, backhoes have started to feel like has-beens to me, overtaken by the new and fashionable excavator breed. All the extra turning of the seat and the raising and lowering of arms and buckets for stability now seemed unnecessary and clunky. It took awhile to see them again for what they are - an extremely versatile, all round, go fast, dig deep, lift high, load heavy, kind of machine that deserves a lot of respect. This was confirmed when I started asking excavator contractors I know, "What machine would you choose if you could only have one?" I think you know the answer.

Regarding the type of machine I was looking for, I decided it was a backhoe.

I forgot to do the **However** part for backhoes. **However:** Backhoes can get stuck, get flat tires, you have to swivel the seat around all the time, you have to raise and lower the flaps, you have to move the machine a lot. That's enough. Cause, "If I can only have one machine, then a backhoe would be it."

A backhoe is also on my list of **Three Tools You Gotta Have**. I describe mine in detail in the section, **Three Tools You Gotta Have**. Unlike the other two tools, a backhoe is pretty expensive. Used, \$18,000 - \$25,000 ought to get a good one.

Brand Names: Now I started looking for a brand name. This got worked out quickly. I wanted a quality brand with nearby parts and service. In this region of the country, three brands can offer that: Caterpillar, John Deere, and Case. OK, that's settled. I had never owned any of these before, I was happy to consider any of the three. What I needed was to find a good used one for a fair price. I won't go into the relative merits of these three manufacturers. I don't know enough to offer a comparative analysis.

Models: I focused on Cat 416's, John Deere 310's, and Case 580's. The size was right and I could find used ones in the market.

Vintage: I wanted the latest model, least engine hours, and best serviced machine I could get for the money. That's all.

Condition: There are about ten million moving parts on a backhoe. I tried to systematically check all the mechanical, hydraulic, electrical, and engine systems on all the machines I was interested in and got close to. When I got close to a purchase, I had a mechanic check it out, too. I discovered when a right machine showed up, and at the right price, (in my case as a trade-in through a nearby Cat dealer) I had to be prepared to move.

Price: I ended up buying a 1994 John Deere 310D 4x4 Turbo with an Extend Hoe with 3300 hours. I paid \$20,000. Don't bother telling me I paid too much or too little, it's all over now and I'm happy. I put 450 hours on it last summer on my land-clearing project.



11. Three Tools You Gotta Have According To Me

My equipment research phase did not proceed in a straight line from total ignorance to the land-clearing fanatic I am now. I had so many second thoughts I got sick of counting them. Ultimately, the decisions I went with were really just my best guesses at the time.

However, over time I developed some techniques, gained practical experience, modified a few things, and then got results. It wasn't too long before I realized I was onto something that worked really well. I was actually getting a huge job done that my friends thought I was nuts to attempt on my own. Now, here's the point of this section: Of all the miscellaneous tools and equipment I had gathered and was using, there were three absolutely indispensable tools I needed to pull off a big land clearing project. They are a **backhoe**, a **pair of forks**, and a **front-end loader rake**.

Tool One: Backhoe with Front End Loader

On the first day of land clearing I only had one of the tools on my, **Three Tools You Gotta** list. I had the backhoe. I remember talking on the phone with a heavy equipment dealer in western New York when I was still trying to figure out what features it should have. This short conversation, with a man I never met, shaped the core of what I would require in buying a used backhoe. Here is what I think a land clearing backhoe ought to look like:



The Preferred Backhoe Loader Should:

Be a quality brand and popular in the region where it will work (parts and service)

Have an extend-a-hoe (you'll need it - don't argue with me on this)

Have 4-wheel drive, run on diesel fuel, and be a turbo

Have ROPS (roll over protection structure) - enclosed cab is best

Not be a rental unit - if you can help it

Be a late model, if you choose to buy used - up to 12 years old - younger is better

There's a ton of information and opinions available on the subject of backhoes. Other than the outline offered above, which constitutes my preferred machine, I'm sure you'll find better specific information elsewhere.

I'll have more things to say about the forks and the rake, the other two tools on my "must have" list. Even though they are accessory attachments, I can't stress enough how they expanded my capabilities and fulfilled tasks that I could not have done without.

Tool Two: A Pair of Forks

I didn't get all the **Three Tools You Gotta Have** at the same time. At first, all I had was the backhoe. Once I started knocking things down, I learned real fast how quickly debris gets in the way of progress. Organization of debris is almost immediately a concern. Before I had forks, I arranged the debris in rough rows along the side of the backhoe. I'd work it back away from the machine enough so that I could pass it by and keep making progress. More on exactly how that works later.



A roughly 30 foot long pile of debris is being carried on the pair of forks attached to the front end loader. They are the ones I call, The Long Forks.

Often I found myself hemmed in by the results of my own work. Before long, it became apparent that I needed to remove the debris to a cleared or open area. The solution: A pair of forks clamped to the cutting blade of the front-end loader. These forks are extra long, which allowed me to slide under and lift very large piles of debris and move them out of the way to the "bone yard". The "bone yard" is my nickname for the intermediate holding area where I stored carefully arranged ranks of debris, safely away from the action, until final dumping.

This all gets explained later. The point is I needed forks. I found a couple of different kinds available through my heavy equipment dealer. One had tines about 30" long and

cost around \$500. Another pair was longer around 40" and cost \$800. They have a u-shaped pocket and slide over the cutting blade on the bottom of the front-end loader. They all have a very heavy bolt that gets turned down to pinch the loader. I didn't buy either of these, but they looked well-built and heavy duty.



As I said, we call them, The Long Forks because, you guessed it, they're really long.

I actually chose to have this pair of attachable forks built for my application. I learned in my first few weeks of work that the length of my forks was going to be important. They needed to be quite long in order to slide far enough under, or through, my debris piles so that when I tipped and lifted the loader bucket the piles would ease up and settle back against the loader bucket. If they are not long enough, the debris pulls itself back out as you lift or you get much less of a load

than the machine can easily carry. When you're carrying debris a long way, you want to take as much as possible each time.

The pair I had built is 54" long, out in front of the loader. Because they are long you have to be careful and get accustomed to them. Mine are also pinched to the loader bottom by a large bolt. However, we made two critical modifications after I used them a few times. One change was to the forks themselves and one to the backhoe. The results were great.

This Was The Problem: Before these alterations, I found that the forks could be dislodged, and pushed out of line by tree trunks, stumps, and dense tangled brush. Even though each fork offered 6" inches of surface along the loader edge, no matter how tight I made the pinching bolt, it could be jarred loose. Then you have to get out, straighten them up, and try to tighten them more. Sometimes they even fell off when I backed away from a load if something got hung up on them. This is not good.

The Solution: Two simple improvements made all the difference. I had 2 large washers welded into the base of the loader, positioned so that they would receive the tightening bolts on the forks. The welder held the washers up off the base of the loader about 1/8th of an inch and then filled in all around creating a sort of crater for the bolt to sink into. The welder also added a bar across the inside of the mounting pocket that added about 8" of additional length to each side of the fork where it meets the loader's leading edge. The anchoring effect of the washers and the lateral stabilizing effect of the pocket bar were all

they need. I have not had to get out of the machine to retrieve or adjust a fork since. Want to clear land? You gotta have forks.

The Preferred Forks Attachment Should:

Be just like mine.

Tool Three: The Indispensable Front End Loader Rake

I've looked at a number of rakes. None of them fit on a backhoe. I wanted a rake that I could attach to mine. The job I needed to take care of was to rake up all kinds of smaller brush, branches, roots, and rocks. I also wanted to be able to fill holes left by removing stumps and boulders. I also wanted to level the ruts left by the machine, rip out really small stuff, and smooth out the terrain well enough to be able to mow it later with my little International brush hog.



**No moving parts. It's really strong. No clogging!
It's easy to get on and off. That's what I want in a rake.**

I hadn't seen anything that might do all that, so I designed something myself and had it fabricated by a talented welder in town. He didn't laugh at me outright, which was a plus. The design was not like anything I've seen. It has no moving parts and is attached to the leading edge of the loader by a ratcheting hold down on each end. It looks a little like something you'd see stuck on the front of a truck in a bad science fiction movie.



This is the newly cleared front lawn, taken from the upstairs of a seasonal residence on my land. Piles, ruts, and small debris waiting to be taken away. Compare it with the photo on the next page.



This photo shows the same area, from ground level, after raking. The large piles have been taken away by using the long forks. Then the area was raked with the Loader Rake.

Now, just one pile of sticks, small rocks, and dirt still needs to be taken away in the loader bucket.

Because the topsoil was not too badly damaged, the native grasses starting popping back up within weeks.

During the first few hours of operation, a couple of the teeth on the first version were bent and battered by stress and encountering half buried stones. I took it back in for analysis and he beefed it up by adding bracing to every tooth and a few other places, too.

Ever since, it's raked, and raked, and raked, without a hitch. Through successive beatings, it stays in place, doesn't clog, and functions going forward or reverse. Because it's front mounted, you face forward while operating it. It also can be worked in very close to obstacles.

The use of it is pretty simple. Debris gets raked into manageable piles. Then the rake is removed and the piles are picked up with the loader. Once again, this rake is used after the land has been cleared of major vegetation, but is still potholed, uneven, and strewn with small debris and rocks. It may be simple, but when it's done, the land is smooth. You gotta have one.

The Preferred Front End Loader Rake Should:
Be just like mine.

12. Getting To Work

"Don't get out of the machine..."

I started clearing land in early April. It's common in the Adirondacks to still get the occasional snowfall at that time, and we did. But it didn't last long and it didn't lessen my enthusiasm to get working. It turned out to be a soggy time of the year to learn to use a

backhoe. However, the frost came out of the ground, the snow melted, and soon I was picking my way around looking for solid areas to work in. It was not as methodical as I would have liked. In fact, at that point, nothing I was doing was very methodical.

One of my first lessons was learning how heavy a backhoe is on soft ground. If the ground is not solid, you won't be driving in any predictable direction for long, despite the four-wheel drive. There you have a ton of power and no place to go. The weight on the



four wheels can really pump up a lot of water in a few passes. If the soils are heavy, (ours is laden with clay) you can get in a big mess fast. I never got so stuck that I needed outside help, but I got mired enough that it wasted time, made a mess of the machine, and was really aggravating. If you can, wait for solid ground. It's a lot more pleasant.

This is still fairly early in the season. Past the frost, and surface mud, but still a lot of water in the ground. At this time of the year, you still have to pick and choose where you can work, because the ground is so soft.

Consequently, the first couple of weekends were a land-clearing free-for-all. It was certainly exciting, but involved a lot of

learning and was not so productive. At several times, I had second thoughts about how practical this project might be and the sinking feeling that this job just might be too big. There were times when I felt that the machine's backhoe wasn't as powerful as I thought it should be. Times I couldn't believe what a fight a seemingly ordinary little weed tree could put up. Times I felt like a numbskull, offering up nasty commentary about my poor coordination at the controls.

Nonetheless, the weather gradually faired and my control of the machine improved. The ground firmed up and I could move about with a little more confidence. I was definitely knocking things down now. But I was also making a mess. And although I thought about it a lot, I didn't have a plan about how to get rid of the debris. For a while, I sort of ignored the random and overly large piles I was creating, in the hopes that something would dawn on me.



This is an example of an “early pile”. Very bad pile. Roots aiming in every direction... and it's too long. I should be ashamed. But what did I know?

Not only did the piles look bad, they were getting in the way of further clearing. I started thinking about the piles while I worked. I thought about them at lunch... and dinner. I thought about them at night. Who wants to think about piles of debris that much? Nobody.

I needed to develop some procedures before the mess got more out of control than the overgrowth. And though it wasn't pretty, nor as quick as I would have liked, I did gradually develop some procedures that worked. And with practice they were improved. Now I follow them almost by habit.

I'm going to describe my land clearing steps in 6 categories. It takes six major maneuvers to get the job done. Also, maybe now is a good time to mention a mantra I like to repeat to myself often, "Don't get out of the machine... Don't get out of the machine..." Repeat, with me, "Don't get out of the machine..."



See the vantage point from which I took this picture... inside the cab of the machine? Keep it that way. Stay inside the machine as much as possible. There's nothing outside there but trouble.

All of the steps below involve displacing, and moving, heavy, ornery, and tangled items. These things don't necessarily look like tough customers from inside the cab of a backhoe. But nature is built to last, especially its weedy things. Every choice I ever made about a machine or a process was aimed at avoiding hand-to-hand combat with



Avoid hand-to-hand combat with vegetation.

vegetation. You'll notice that all the techniques below involve using the equipment to do the work. The only time you should willingly get out of the machine is to go to the bathroom, eat, or quit for the day. In fact, consider bringing a lunchbox and a bedpan. Just kidding. Actually, you should probably get out of the machine and walk around every now and again to stretch and get the blood moving in your legs. The point is, let the machine do as much of the work as possible.

13. Six Categories

How To Make A Mess, Then Clean It Up

All the steps and techniques I used to transform a thickly overgrown and treed area into a cleared one, fell into six defined categories: Toppling, Plucking, Piling, Lifting, Moving, and Dumping. I don't know if these terms are proper Land-Clearing lingo, I just made them up as I worked. But I think they do a fair job of outlining the process. Below is the How To Book I wrote for myself to use. Let's take a close look at each one in order.

1. Toppling

Check the conditions. Toppling is Step One in clearing land with a backhoe. It's where you come face to face at last with the gnarly enemy. First, take into consideration the conditions of the area under attention. If you can, approach objects you intend to remove from the high side, if the terrain is sloped. In general, it is easier to pull yourself forward, as you make progress, if you are tipped with the slope as opposed to against it. Also, it's nice if you can have the sun at your back, or off to the side. Not only is the glare somewhat hazardous, it can get hot in the summer.

Pick a spot along the battlefield. I think of the face of any brush wall I'm confronted with as my battlefield. I don't attack it along whole face; I pick a spot and make an inroad. To work along the whole battlefield will result in having to repeatedly reposition the machine, by turning the seat around, retracting the stabilizers, driving forward and down a little, then back and into a new position along the front, switching the seat around again, and lowering the stabilizers. If you can help it, don't do this wasteful sidestepping.



The line of brush on the right side of this photo is my current “battlefront”. The area to the left was recently cleared. From this point, the area on the left is ready for the Loader Rake.

Position the machine. Instead, choose a likely spot, that runs with the slope, doesn't put the sun in your eyes, and avoids quality vegetation or trees that you'd like to leave intact. Back the machine up to this spot on the battlefield in a way that the backhoe roughly

squares up to the most formidable object that you have set your sights on. Get the machine into what I call the, "sweet spot". It's the area that the backhoe can bring the greatest hydraulic pushing, pulling, digging, and lifting power to. Then lower the stabilizers, level the machine, and set the parking brake if needed.

Clip the roots. Now the machine is positioned close enough to engage undesired material with good range of motion, but not so close that it cramps the machine or is



First clip the roots on one side of the trunk.



Then clip the roots on the other side.

hazardous. Next, lay the bucket on the ground to one side of the trunk, a foot or two away and behind the trunk. Sink the bucket into the ground perhaps a foot deep, curl the bucket inward, and pull the dipper stick of the backhoe toward the machine. The point of this is to "clip" some of the roots and start to loosen the plant. Doing this on one side or the other is often enough to move on, sometimes you need to do both sides. What we also want to accomplish is reduce the disturbance of the topsoil and root structures of nearby grasses or other material that is beneficial to the land.

Topple material away from the machine.

Now raise the backhoe bucket, curl it under, and lay the back of the bucket against the trunk of any object you wish to remove. The height from the ground at which you place the bucket depends on the brittleness of the tree, how securely it is anchored to the ground, and how much help, or momentum, you can get from the item itself as it topples over. But the main point is that it gets pushed on. And always in a direction that's **away from you and the machine**. Apply increasing force evenly and take note of how the plant is reacting. What you'd ideally like to see is the tree, or whatever



Always topple brush and trees away from you and the machine.

you're working on, topple over in one piece. I even try to keep the branches intact. There were, of course, many times that adjustments were made for one reason or another.

Finesse is good. The less smashing and crashing of vegetation, the easier the cleanup will be. The toppling phase is often more about finesse and the accurate application of power than brute force. Even smallish trees can be very tenacious if you ignore the root-clipping step. Take that bit of time, while briefly digging at the base to reduce its grip on the ground, to better understand each plant's situation and how to best overcome it.

Three more loose ends about toppling. 1. Never latch on to anything and pull it toward the machine unless it's **completely on the ground**. And even that should be with care. 2. As you work, you'll quickly get a feel for what each piston on a particular machine can accomplish before exceeding its limits. 3. You'll also quickly learn the nature of the different species of vegetation and how each responds to pressure. For example, pine and large sumac are brittle woods. If you push on them too high on the trunk they can break and create two, or more, broken things to clean up, instead of one nice long one that will lie nicely across your forks.

Let's summarize. It's time to topple. I started pretty small. But it wasn't long until I was toppling much larger trees if that's what was called for. Having "clipped" the roots, the bottom of the backhoe bucket is placed against the trunk of any unwanted item. Then the backhoe arm is extended slowly away forcing the plant to topple over away from the vehicle. Variations on this procedure, such as using the extend stick to get additional reach, or in some cases, not having to bother with the "clip-the-roots" step, may arise. What's most significant here is that something that was, moments before standing, is now, more or less, lying on the ground.

2. Plucking

Toppled, but not disconnected. However, toppled vegetation is rarely completely disconnected from the ground. Oh, no, not likely. It has been toppled, but it has not yet been **plucked**. I decided to give this next step the curious name, plucking, because that's what it felt like I was doing. Despite the largeness of the vegetation I was clearing away, this step felt like picking, or plucking, things in a somewhat gentle way.

Take it easy on the land. I make this distinction because my intent was to not disturbing the surrounding native soils and grasses any more than I needed to. All the steps of my land clearing process are



Curl the bucket under the root ball and lift, pulling it up and out.

designed to take it easy on the land. It is roughly opposite the bulldozer and root rake method of land clearing which uproots everything in its path, not only the undesired vegetation. It also carries away the topsoil and every existing native root so necessary to preventing potential further damaging erosion.

Pivot the trunk... lift the root ball. You may keep the machine in the same position. If the plant's fallen position is straight away from the machine, use the backhoe to pivot its trunk and canopy so that it's angled at least 45 degrees out of parallel with the machine. This is in order to make the grabbing onto the root ball easier.

Proceed to pluck the toppled plant by curling the backhoe bucket under its root ball. Then close the bucket tight on it and lift it up in whichever direction frees it most easily from the ground. Some additional digging to cut remaining roots may be needed. Before going on to the next step, try to knock or shake off any loose soil clinging among the roots. It helps fill the leftover hole, it's valuable topsoil, it's a lot of unnecessary extra weight to lift, and it's harder to balance loads when moving. I call it, "Replacing The Divot".

Let's summarize: You have to disconnect the plant completely from the ground before trying to pile it. So, cut more roots if you have to, swing the plant around so you can access the root ball without the trunk being in the way of closing the bucket. Lift it up by the root ball and shake out the soil.

3. Piling

More on making inroads. In order to make the most efficient progress clearing land, I make an inroad from a likely point along my battlefield. I clear what I can reach from the current machine position, and then move forward. Often, by taking the machine out of park, I can drag the machine with the backhoe without having to switch seat positions. I only do this maneuver under safe conditions. This first inroad heads straight, or wanders depending on the mission at hand or the lay of the land. Later, other inroads are started



Gradually, your inroads begin to intersect and the land becomes steadily more clear than unclear.

from other points, leaving certain areas to remain un-cleared or refined. Gradually, these inroads begin to intersect and the land becomes steadily more clear than unclear. Despite how it may look, it's quite organized. A big part of that organization is dealing with debris as you are creating it.

So make some piles. Not so fast. Debris on the ground is as big, or bigger, than when it's standing and you'll quickly get boxed in, or

blocked from further progress if you don't handle the debris properly. Also the orderliness and direction of debris piles, plus how long you make them, and how big you let them grow are important. Especially when it's time to move them.

Decide in advance - which side. Piles are important. Before you topple any plant or tree, you decide in advance where you're going to pile it. The foremost mission is to keep it out of the way of progress. But, in addition to that, the side of the machine you choose to pile an object on determines which side of the plant you attack it from. Really? Yes. If you want to pile something on the left side of the machine, then you keep that in mind while you're toppling and plucking it. If you want something to end up in a pile on the right side, you work it so that its canopy is off to the left.

Aiming in the same direction. The purpose of this maneuver is to get all the roots of all the debris in any pile aiming in the same direction, which is toward the bone yard if you can help it. No matter which side of the machine debris is piled on, all the roots are, so to speak, "Headed For The Barn". Or in this case, the bone yard.

Left is right and right is left. The process is actually pretty simple. Let's say you're placing current debris on the left side of the backhoe so that you can keep moving forward. In this case, you carry out the "topple" and "pluck" steps in such a way that when the plant is down the canopy is laying off to the right. Just make it part of the routine to pivot the canopies of felled items to the right during the plucking process, if you are going to be piling on the left.

Grapple and swing. After you've finished the root ball shake out, release the debris, and swing the backhoe along the length in such a way as to be able to grab it about half way along, or at whatever point will roughly balance the object. Grapple on to the object as best you can by curling the bucket underneath it and lifting. Now carefully swing the backhoe with its loaded item around to the left of the machine, reaching and maneuvering as needed to create a reasonably neat pile.



Maneuver the canopy around in order to be able to grapple it at a balance point.



Then swing it around to the side.



Keep piles from overlapping and tangling with each other. Piles should be no longer than the tallest felled item in the pile.

How big is big enough. After building a pile that is about 6-8 feet tall, no longer than the tallest felled item in the pile, and no wider than the forks can reach beneath, stop adding to it. Move the machine forward to a new spot, well positioned to topple a new chunk of vegetation and start a new pile. Keep debris piles well to the side and away from the machine. The back of the digging bucket, in combination with the extendable arm, work excellently to accomplish this. It is aggravating to not have good visual contact with the base of

whatever you're work on. Also, pile sizes may vary according to awkwardness, balance, and weight.

No overlapping, please. Do not let the roots of the new pile overlap with the canopy (branches, twigs, and leaves) of the pile you just left behind. Space them out just enough so they do not overlap. Just a little entanglement of the foliage of one pile with the roots of another is enough to mess up a clean get away when lifting and moving piles. Though you should be mindful to conserve space, keep the piles separate.

Let's summarize: No matter which side of the machine you pile debris on, aim all the roots in the same direction, backward toward the bone yard. Don't build any piles too high, too long, too deep, or too heavy to lift later. Don't overlap piles or let them tangle. Now, get piling.

4. Lifting



When you've toppled and plucked enough. There you are. You've been moving forward making inroads into the unknown. You've been carefully toppling and plucking unwanted overgrowth, and building discrete, organized piles as you go. At some point you'll say, "That's enough for now. I want to do something different. In fact, I'd like to get rid of some of this stuff so I can admire my work." That's when it's time to do some lifting.

Troops, fix bayonets! If they aren't still attached from some previous lifting episode, then now is the time to attach the long forks to the front-end loader. Whenever the forks are attached to the backhoe, you must be especially aware of their presence to avoid running them into things as you maneuver. If I have them attached while toppling, plucking, and piling, then I make a habit of keeping the loader bucket tipped completely up so that the forks are aiming nearly straight up in the air.



Getting used to long forks. Since my forks are extra long, (about 14 inches longer than other long ones I'd seen) it took me a little while to get accustomed to them. I almost had my welder cut them down; he suggested that the length was going to work once I got the hang of them. Well, it didn't take long and I was very thankful he talked me into leaving them as I had originally designed them. What I had to get the knack of was getting these long tines to skim along parallel and just above the terrain, even when it was sloped and despite being a long way out in front of the backhoe. One benefit of their length, however, is that their ends can just be seen over the top of the front-end loader until they slide into the debris. After a few tentative trials, I can still remember my amazement when I saw two or three good-sized buckthorn trees rise and nestle back against the front-end loader bucket as I curled it up.



Getting well balanced, full loads became an obsession. I called them, "Big Bites".

Don't drag it... carry it. What a thrill. I laughed out loud as watched the gnarly branches settle together. I knew, even though this load would sway on its ride, these babies were going to stick together, held aloft by the forks. Which is another good reason to use forks: debris is not dragged away, along the way only to drop pieces or snag. It was going to ride up off the ground.

Taking big bites. In a short while, you can get the feel for what constitutes a big bite. Often, it was one pile, or even just one tree. But, shortly I fine-tuned my loading and lifting skills so that I could quickly adjust unbalanced loads, retrieve orphaned and dropped items, and combine small piles in different locations into a large single load. One method that worked well to pick up an unruly and bulky pile was to squeeze it against a nearby standing tree or other firm vegetation. You bring the loader against the load with the forks positioned to straddle (one tine on each side) the tree, which acts as a firm backstop. Compress firmly, tip up a little, back up a smidge, and bring it up some more. Voila, you're done. Don't use this trick against a valuable tree if it might damage it.

Let's summarize: Put the forks on the loader. Use extra long ones. Get used to them. Take big bites. Learn some neat tricks for compacting, handling, and lifting debris using this simple attachment.

5. Moving

In the beginning, there were no forks. I've beat myself up pretty badly for owning the backhoe one day without forks. Think about all that stuff my logger pulled away in the beginning with his skidder. I could have lifted and carried it myself to the stump dump, or at least to the bone yard. I still think it's best to have the skidder push it the last 200 hundred feet to the dump, squash it under the skidder, and saw the loose ends.

Look Ma, no hands on vegetation. But think of it, now that I had the forks I could carry, and did, (see the photos) 25-30 foot long trees and debris. With loads laid carefully across the six-foot gap between the forks, I was now making trip after trip a thousand feet and more to the bone yard without assistance. And remember, you never get out of the machine. All right, you have to pump diesel once in awhile, and a few other things. But the point is, all the steps in this process are carried out by an operator in backhoe... virtually no hands on vegetation.



Wide load, look out. With a big bite of brush, trees, and/or other debris, you head for your designated bone yard. The path you take is probably a very rough one, created by yourself, by means of your own earlier clearing. Hopefully, you diligently backfilled your divots when you were there, to somewhat smooth your passage now.

The long and winding road. The route you take may wander, as it needs to be at least as wide as the load that's laid across the front of your backhoe. There may be trees you want to preserve without damage or other obstacles that prevent a direct route. Even if you don't cause damage by scraping into things, it still could cause you to spill your load. As



best you can, plan and open up a way back to the bone yard that will accommodate your widest load. I'll admit I've had many close encounters where my solution was just to push through. The loads are often so bulky that visibility is restricted; so use a familiar path, and like I said, take your time.

Let's summarize. Do your best to avoid

banging into things while moving loads, especially wide ones. Look for a level route. Choose the passage that works best, get familiar with it, and use that one as much as possible. Take your time. If it feels like you're going real slow and it's going to take forever to get there... take a good look at the big bite up in loader that's floating in space out in front of you. Then think of how much time it would take to cut up and remove that load by hand. Believe me, this is a fabulous method.

6. Dumping

When I first considered my options regarding permanent disposal of the huge amounts of debris created by my land clearing, I didn't care so much for the choices.

Burn it. In my town, I could get a very restrictive burning permit that would allow me to burn approximately two litter barrels of leaves every four years, so long as I set up a Lazy Boy and stared at it all day. Our local



Let's face it. You make a lot of debris and it has to go somewhere.

burning permits are just plain stupid. Burning would never have worked because of the volume and diameter of the materials I had to deal with. Besides, my neighbors, despite being a ways off, would probably have killed me because of the smoke.

Pack it in the hedgerows. I could pack the debris as tight as I could in the existing hedgerows, or make some new ones with it, and let it rot. I don't think so... I'm trying to create something nice here. Huge rows of rotting debris isn't gonna do.

Carry it away. I could load it into tandem trucks and carry it off to somewhere else. This option is just too ridiculously expensive to talk about.



While you're dealing with land clearing issues, always keep in mind what you're working toward.

Chip it. Chipping it in place and spreading the mulch could work for the small stuff, but there's way too much and it gets all mixed up with the big stuff. Also, it's all handwork. I'm not gonna topple things over, pluck them out by the roots, and then get off the backhoe and stuff 'em in a chipper. We're here to clear land, not get tennis elbow.

Build a Stump Dump. The idea concept of creating a stump dump sprouted from the merging of four thoughts:

Thought 1. I remembered the first time I ever heard the term, "Stump Dump" was many years ago when I took some untreated wood to Montpelier, Vermont's Town Stump Dump.

Thought 2. I recollected visiting the new home of a friend in Lake Placid, a couple of years ago. They cleared their land. they built their home. They showed me their own small in-house Stump Dump. This was where they disposed of; well you guessed it, stumps. Beautiful land... beautiful home... and their own stump dump. My kind of people.

Thought 3. On my property, not overly far from my clearing project, there's a broad and deep, amphitheatre-shaped depression at least several hundred feet across and fifty feet at its deepest. It's in a thickly wooded area I call, the back land. With an old logging road running along the top, it would make a great stump dump.

Thought 4. I hated all my other options.

Logger consultation. After consultation with my logger, we decided to dispose of all the land clearing debris in my own stump dump. He widened the old logging road by cutting a few trees. Simply the dragging of debris behind his skidder suddenly reopened it. His job was to cinch onto large piles of debris I had assembled in ranks nearby. This bone yard was the debris holding area where my work left off and his began.



Skidder creates fab stump dump.

He took over the final disposal process because I could not do with my backhoe, what he could do with his skidder. He grabbed large chunks of debris with his steel ropes, pulled them in close behind his skidder, and pulled them to the rim of the stump dump, perhaps a couple of hundred feet into the woods. He released his load, parallel to rim, then maneuvered the skidder around the to the side of the pile. He then came broadside at the pile with his blade and slid it sideways down into the depression. As he added more and more material, he kept working it deeper and tighter together. He gradually worked some soil from along the high side of the depression down into mix with the debris. He ran the skidder repeatedly up and over the growing mass to compact and spread it. Over time, it became civilized and wide enough for me to carry loads all the way into the dump and push them fairly well into the depression. Although I can now carry debris all the way into the stump dump, I'll still have him come over once in awhile to squash it in and make more room.

I hired a talented young logger with a small skidder to build my stump dump. Everybody should have their own stump dump.

Get yer'self a stump dump. This fabulous stump dump is completely hidden and even if there were no trees at all, the highest debris is still ten feet below the rim of the depression. This stump dump will hold everything I can topple, and more. Everybody should have one.

14. After The Dust Settles

You Need A Big Boy Rake To Tidy Things Up

It all starts to blend together. I found, as I perfected my skills, that the 6 major steps of the process started to blend together. For example, while clipping roots during the toppling step, I tried to begin to knock off excess soil, which helped later in the plucking

step. As the steps are refined through practice, toppling, plucking, piling, lifting, and dumping all start to blend together. And it's not too long before you realize you've really done some work and open areas begin to appear.

Getting to the small stuff. It's very exciting to watch a piece of land be renewed by thoughtful suppression of brush, overgrowth, and invasive trees. New views, pasture reclaimed, rock outcroppings, pleasant undulations, pond site possibilities, quality trees revealed, and more. However, after the major clearing has been accomplished in an area, there is a lot of small debris, surface stones, partially exposed boulders, potholes, tire ruts, and scrubby shoots that remain after the dust has settled. What I went looking for was a method to clean up the small stuff.

A rake to write home about. As I described in my section about rakes, I looked at a bunch of them (read that section for the details) and none were practical for me.

I mentioned earlier that I tried a York style rake fitted up to the loader. It can't deal with the volume, variety, and tangled nature of the debris left by clearing. I couldn't get 50 feet without getting the thing jammed up with stuff. The result is you stop, get off the machine and yank yourself silly till it gets freed up. Then you do it again fifty feet later.

So I designed something I thought might work and had it fabricated locally. Shortly, I took it back to get it super-



beefed-up, when I discovered how much force can be generated out at the cutting edge of a front end loader and I bent some teeth. Since those improvements were made, this rake has been my right hand man for gathering up all the small stuff.



Raking, and meaning it. I attach this rake to the front-end loader with ratcheting, heavy equipment hold-downs. I drive it back and forth over whatever is left after initial clearing. After making three or four passes, most the nasty, pain in the butt, stuff has been pushed into a windrow. I make a single windrow along one side of an area to be raked. I then turn 90 degrees, and do the same thing along the adjacent side. The rake not only clears the small debris, but with

subsequent additional passes, it continues to smooth and level the terrain. This simple little rake has helped eliminate tire ruts, uneven areas, and all sorts of small holes left over from clearing.

Don't rake too deep. One thing I did not want to do, while raking was dig too deep through the surface layer. This rake's shallow saw tooth shaped teeth are two inches deep, plus there's an additional two inches of perpendicular depth that allows the rake to act as a very shallow grader rake. Therefore, this rake does its work only at the top few inches of the ground.



Come at it from the end. Once the small sticks, rocks, vines, broken roots, branch parts, and small brush has been windrowed, I detach the rake from the loader. Then I come at the windrow from the end loading the debris into the bucket by proceeding endways along the pile attempting to get as big a scoop as I can get. Then it's off to the stump dump, or other appropriate place for this kind of debris.



Let's summarize. Get a backhoe, get some forks, get a rake, locate a stump dump, clear your land, be careful, take your time, create a beautiful setting... enjoy yourself. Life is good.

In time, the rake does its job.
At times, I found it hard to believe it worked as well as it did without falling off, or getting clogged, or breaking teeth, etc.



15. Handy Things To Have

A section of miscellaneous beneficial items

Fuel storage tank. We used to keep regular leaded gas around for use in our brush hog. We had a 200-gallon tank for that purpose which had fallen into disuse. It had a few gallons left in it. I decided I didn't want to have to haul diesel fuel around in my car so I moved the tank next to where I park the backhoe have diesel fuel delivered in bulk. Here are the few steps it required:

Pump out the remaining fuel into 5 gallons plastic fuel tanks, put some fuel stabilizer in, swish it around, and burn it up in the brush hog.

Clean the tank out thoroughly, let it thoroughly air out, degrease the outside, clean and lubricate the pump mechanism, undercoat the bottom, and paint it with rust inhibitor paint.

Level a spot next to where the backhoe is parked, place some asphalt shingles on the ground to keep the grass down, put down four cement cap blocks, lay a couple of pressured treated two by sixes across the blocks.

Place the tank on the two by sixes in such a way that the hose will reach the backhoe's fill cap when the machine is parked. Call your favorite fuel oil supplier.

It's a big convenience to have good fuel supply available and avoids diesel fumes in the car.

An electric outlet near the machine.

This may sound ridiculous, but it was quite awhile before I installed an electric outlet adjacent to where I parked my backhoe. For periodic maintenance, repairs, battery charger, air compressor, music, light after dark, and every other electrically powered gizmo, this handy electrical outlet is now regularly in use and very appreciated.



This is a summer residence we call the Red Barn

A machete in the backhoe. I said

earlier in the book that I used a machete to create sight lines and get from one place to another on foot in dense vegetation. I also said it's not for land clearing work, cause many things you cut with a machete will quickly sprout back triple strength. However, a machete in the cab is handy and I use it once in awhile to extract a vine that's gotten tangled in a wheel or fallen over the hood.

Don't think that vines will just break or slide off if you keep moving. Vines can be very tough. If something gets jammed up in the machinery, stop, put the parking brake on, and although I said over and over not to get out of the machine – get out of the machine and deal with it.

For the same reason, in addition to the machete, I also carry a small pruning saw. And believe it or not, if I'm going to be around old barbed wire fencing, I carry a pair of small bolt cutters. Collecting old metal trash, wire, and glass is another rare reason you would want to get out of the machine.

Water spigot. A pressurized water supply is a great thing to have nearby. Say no more.

First Aid. I have been fortunate and have had no serious injuries on the job. My first aid requirements have been limited to the areas of sun protection (even in the cab of the backhoe) bug repellent, Band-Aids, and the treatment of poison ivy. However, a well-stock First Aid kit is a good thing to have.



I don't have a photo of a water spigot, so here's a picture of a tree.

Local repair help. A working relationship with the parts and service dealer for your brand of machine is valuable and a virtual requirement. But, in addition, I’ve been lucky to find, in my local town, a couple of mechanics that have been of great help. You’ll get your parts from the dealer, but you might get your butt saved by a guy down the street or a call to a friend back at the office who knows engines. This is especially significant when the machine sits a long way from the dealer, like mine does.

Beneficial odds and ends. Over the course of time, some assorted noteworthy items have made their way to my jobsite, such as hydraulic jacks, socket sets, bolt extractors, hand cleaner, crescent wrenches, needle nose pliers, and all sorts of other odds and ends. These items have helped keep my project safe, pleasant, and moving forward, with their significant and varied contributions. I won’t go on and on more names or what they do. I just want to pay respect to the many dozens of other important tools that helped me reveal a healthy and beautiful landscape.

16. Maintenance

Some people love it, I just live with it

Get to know your parts counter. There should definitely be a whole section on maintenance, but I’m just not that excited about it. Yes, heaven knows you’ve got to maintain your equipment. It’s a commitment you make. Much of the periodic service can be quickly learned at the dealer’s parts counter and on stickers glued on various parts of the machine. The John Deere heavy equipment dealer I use really knows their stuff and they’ve been very helpful. In addition, it’s all spelled in the Operator’s Manual that you got with the machine, found on Ebay, or bought through the dealer. You may spend \$60 to \$120 for a new Operator’s Manual.

Get the Operator’s Manual. No, you don’t absolutely need the manual, but for diagnosing problems, explaining the major systems, and troubleshooting, the manual has been really be important for me. For my machine, the manual is actually a set of about six books in a binder. I didn’t get the even larger Service Manual. The Service Manual is for those who feel like taking the transmission out, or other similar procedure that I’m not about to get into.

Grease the machine 48 times a day. Regarding periodic maintenance, even though it seemed like a big pain at first, I pretty soon got the hang of it. Periodic maintenance boils down to following the directions on the stickers I mentioned above. Keep track of the engine hours... read the sticker... do what it says. Most of it’s very sensible, doesn’t happen that often, and isn’t that big a deal.

Except, that is, for the grease. There are, I think, around seven hundred and fifty grease fittings on a backhoe. That’s a huge exaggeration, but that’s what it feels like after you’ve lubed halfway around the machine on a hot day.

Also, I guess it's standard practice to grease the thing morning, noon, and night. According to the people I've talked to about it, you cannot possibly get too much grease into a backhoe. I buy grease tubes by the case. I have backup grease guns. I have a whole grease control center.

Here's what I do: Check the fluids and tire pressure every working day. Do what the sticker says regarding replacement parts and grease all the fittings every ten hours of operation. Oh... and wipe off the excess globs of grease that fly all over the place.

Repairs. In addition, to maintenance, there will be repairs. Hopefully there will be fewer of them, due to conscientious maintenance. So far, I have only needed to make small repairs. I have handled some myself and called out for local reinforcements twice. I have not yet needed the more distant John Deere cavalry. I'm fortunate to have a good machine. Accept no less for yourself.



17. One Last Thing

Actually, I hope there never is one last thing

Before I hit the save button on this story, I'd like to say how much fun I've had and satisfaction I've felt from the work associated with this project. My most enjoyable time is spent, as you might imagine, in the backhoe.

I guess it's a guy thing, but there's nothing like knocking things down, grabbing them from the earth, giving them a shake, mashing them together, and picking up the whole mess and packing it off like a lumbering giant. Is that a little too picturesque? Well, you do it for a while and tell me if you don't feel the same.

“How To Clear Land”

I think the gratification comes from a combination of things. You have to be adult enough and responsible enough to own and operate a heavy piece of equipment. But there's also a whimsical side. Commanding a tree to get out of the way, and then actually make it happen, is a kid's dream come true. You approach a gnarled thicket and say something like, “Get thee back to hell, Demons!” and then go about the methodical process of ripping the unwanted demons asunder. But, not so asunder that you can't efficiently clean them up later.



I can't explain it any other way... it's a blast. You start off thinking it's a very serious reclamation project you've undertaken and pretty soon you're feeling like the King of the World. Remember, I'm only talking about unwanted, nuisance, and invasive vegetation. But believe me, there's plenty of that... and it's hiding the beautiful setting within. It's got to go! You can always go back to work on Monday and be a grown up.

OK, here's my last thing... but it kind of bugs me because it's on the mature side: A good late model backhoe has very high resale value. Even after the whole project is done – and I hope mine never is – you can still get most your money back on it. Isn't that a hoot?

Got land? Get thinkin'. Take care. Jim



18. Other Helpful Resources

Here's a list of reference links that I found helpful

Here are some links to additional helpful resources:

Machinery Trader: <http://www.machinerytrader.com/>

Iron Planet: <http://www.ironplanet.com/>

John Deere: <http://www.deere.com/>

Case Equipment: <http://www.casece.com/>

Caterpillar Equipment: <http://www.caterpillar.com/>

Bobcat: <http://www.bobcat.com/>

Manual and Parts: <http://www.ssbtractor.com/>

Power Box Rake: <http://www.ditchwitch.com/>

York Rake: <http://www.yorkmodern.com/>

Power Landscape Rake (Harley): <http://www.glenmac.com/>

New York State's DEC (every state has one): <http://www.dec.state.ny.us/>

Digging safely: Dig Safe: <http://www.digsafe.com/>

Pond Construction: <http://www.ext.vt.edu/pubs/fisheries/420-011/420-011.html>

Soil erosion: <http://www.gov.on.ca/OMAFRA/english/engineer/facts/87-040.htm>

Soil conservation: <http://www.nrcs.usda.gov/>

Weather: <http://www.weather.com/>

USGS Maps and Aerial Photos: <http://mapping.usgs.gov/partners/viewonline.html>

Historical USGS Maps: <http://historical.maptech.com/>

Tree and plant identification: <http://ilvirtualforest.nres.uiuc.edu/id/treeplantid.htm>

Wildlife identification: <http://homestudy.ihea.com/wildlifeID/011wildlife.htm>

