

Buckthorn: A Battle Worth Fighting

by Greg Lamp, Prairie Smoke member

With lifestyles being as busy as they are for most people, we have to pick and choose the battles we wish to fight. We need to put a lot of thought into the things that we care about most in life, then try to do what we can to improve or protect our choices. Being introduced to the outdoors at an early age by my father, I've always enjoyed the time I've spent with nature, especially time spent in the woods. Whether hunting squirrels with my son, collecting wild raspberries for a treat on ice cream, or my favorite pastime of bow hunting deer, I would have to rate the time I spend in the woods as one of the things I care about the most, thus its preservation is a battle that I'm willing to take on. One might ask, "What kind of battle could he take on in the woods? The woods have been there for a million years, and will be there forever." Well, in the relatively short amount of time I've been enjoying the woods, I've come to realize there is something growing more prevalent in the woods every year. The plant that is growing is called common buckthorn.

Please bear in mind, I don't have a degree in forestry, nor am I an expert in invasive species. But I have consulted with a number of experts, attended seminars, and have done research on the internet to gain a fair amount of knowledge of buckthorn. Through this article, I hope to increase public awareness of buckthorn and provide some options for landowners to control this rapidly expanding invasive species.

Buckthorn is a tree-like shrub that was introduced to North America in the 1850s to be used as an ornamental shrub in gardens, fence lines, and wild life habitats. It was sold up until the 1930s, when a combination of problems the plant introduced convinced nurseries to stop selling it. First of all, buckthorn easily escaped the areas where it was planted. Birds ate the berries the tree produced and the seeds that are in the berries passed through the bird and were deposited in their droppings, possibly miles away. Another problem was that buckthorn was found to be a carrier of crown rust fungus, which degraded oat crops of the early 1900s. A more recently discovered characteristic of buckthorn is that it serves as a winter host for soybean aphids, which infest soybean fields during the growing season. Today, the most invasive varieties of buckthorn are listed as restricted noxious weeds by most states, and are illegal to sell.

Most of the woods and groves in this area are made up of a combination of hardwoods such as oak, basswood, cherry, walnut, hickory and maple. Next time you get a chance, take a slow walk through your favorite woods, and take a close look at the trees. My guess is that you'll find that the majority of the desirable trees in the woods are fairly mature. You'll probably have a hard time finding many young desirable trees present with exception of a few along the exterior edges where they can find some sunlight. I'm guessing you'll probably be fighting a bunch of thick undergrowth in some areas as you do your inspection, and there's a strong possibility that the undergrowth is buckthorn. If your favorite woods doesn't have the characteristics I mentioned above, you're very fortunate, and I'd advise you continue to read through this story to see how you can keep your woods from becoming infested with buckthorn like so many other woods have.

Buckthorn is currently a serious problem in 23 states, mainly in the north and east part of the country. In Minnesota, 68 of the 87 counties are currently infested with the plant. Buckthorn is in the process of competing with native plants for the sub-canopy ecosystem of our woods, savannas and prairies. Native shrubs and trees such as high bush cranberry, chokecherry, dogwood, wild plum, and hazelnut to name a few, cannot compete very well with the more aggressive buckthorn tree. Buckthorn has a characteristic of being one of the first trees to get its leaves in the spring and is one of the last trees to lose its leaves in the fall. Because of this, many native plants are deprived of sunlight, which may prevent their seeds from germinating, or eventually weaken or kill young sprouting plants. Buckthorn is very prolific. To some degree, we're fortunate that buckthorn is a dioecious plant, meaning there are male and female trees. Only the female trees produce berries. If all the buckthorn trees produced berries, we would be in a greater mess than we are! Each female tree produces thousands of

berries. Each berry has multiple seeds in it. Most berries fall to the ground directly below the tree, but many are eaten by animals and birds and the seeds are spread in their droppings. Seeds from buckthorn remain viable in the soil for five years, and the plant is tolerant of most any soil type and light conditions, so there are plenty of opportunities for a seed to become a tree.

With all the things going favorably for proliferation of the buckthorn tree, if left unchecked, I believe buckthorn will eventually completely take over the sub-canopy in many of the woods and farmland groves of our state. As the remaining mature desirable trees in our woods die of old age or are blown down in a storm, they'll have a very hard time regenerating themselves due to the competition desirable seedling will get from the thick buckthorn canopy. I can foresee some of our hardwood groves eventually turning into a patch of box elder and buckthorn.

For all the reasons above, I've decided to pick buckthorn as a battle worth fighting in the small grove surrounding my country home.

About 10 years ago, I saw an article in the Minnesota Volunteer magazine that advertised the DNR Forest Stewardship program. I signed up for the program, and within a year, an employee of the DNR Forestry Division came to my home to take a walk through my grove to assess its health and provide recommendations for keeping it healthy. One of the concerns the Forestry employee expressed even before walking in the grove was buckthorn. As soon as we entered the grove, he pointed it out to me. I had noticed this plant in the woods before, but I never paid much attention to it before his visit. For the next year, I started to pay more attention to what I learned from the Forestry visit. I began to notice this same problem in many other woods in the area. I soon decided that I needed to learn as much as I could about this invasive species, and what could be done to remove it from the woods.

Before I started my battle with buckthorn, I did some inventories of my 20 acre grove to see how infested it was. This was done by staking out several 21 foot by 21 foot square areas and counting the buckthorn within the square. Take the number of plants found and multiply it by 100 and you have the approximate number of buckthorn per acre. I concluded that I had anywhere from 4,000 to 9,000 buckthorn per acre on my property. Most of the buckthorn that I found was an inch in diameter or less, with about 5 percent of the buckthorn between an inch in diameter and 10 inches in diameter. There were some areas underneath larger female trees that had a solid carpet of four to six inch tall seedlings.

After learning the extent of infestation of the buckthorn in my grove, I had a better idea what type of process I wanted to use to eradicate this "weed of the woods." The choice of methods that can be used to remove buckthorn vary from simply pulling the tree out of the ground, to use of fire, to various methods of chemical treatments. Depending on the size of your project, the level of infestation, your thoughts on the use of chemicals, as well as the amount of time, money, and manpower you have available to dedicate to the project, you will want to match the method of removal with your individual situation. If you would like to see a list of proven methods of buckthorn removal, and have access to the internet, I'll provide a web page at the end of this article that you can review.

I'll explain a couple of methods that are generally accepted for buckthorn removal. The simplest method is to pull the tree out of the ground. Buckthorn is a very shallow rooted plant, and is relatively easy to pull out of the ground if the trunk is an inch in diameter or less and the ground moisture is moderate. For larger buckthorn up to three inches in diameter, there is a tool called a weed wrench that can be used to help pull the tree out of the ground. The pulling process requires little more than a strong back and time. There are conservation groups in the area that would let you borrow a weed wrench if you were willing to put it to work. For your awareness, I have read that some folks are concerned that pulling the buckthorn could promote additional buckthorn to sprout due to the disturbance created to the soil. Another thing to consider is the possibility of soil erosion if the trees are pulled from an area that would be susceptible to washing after a heavy rainfall, such as on a hillside.

Another method of removal, cut stump, is accomplished by sawing the buckthorn tree off an inch or so from the ground level. Immediately after the tree is cut, you must spray the cut stump with a stout mixture of a glyphosate (Roundup, Big N' Tuf, etc) type product, or within a month spray the stump with a triclopyr (Garlon, Crossbow, etc) product. Failure to treat the stumps will result in vigorous sprouting from the cut stump, and instead of having one tree, you will have six or eight young trees coming out of the cut stump. The cut stump method is very effective if you have more than one person on the crew. One person can cut the tree off, and the other person can follow and immediately spray the stump before you lose sight of it. This method requires (in my opinion) more than one person on the crew, and little bit more labor, but on the other hand, it will use less chemical and a cheaper chemical than the next method I'll describe.

Basal bark spraying is the method that I chose to do in my grove. This method is accomplished by simply spraying a triclopyr ester product (Garlon 4, Crossbow, etc) on the bottom six to 12 inches of the tree. This work can be done any time of the year, but is most effective during the late summer to early winter seasons, when the buckthorn plant is storing energy into its root system. The chemical permeates the bark of the tree and then the tree pulls the chemical into the root system where it is very effective at killing the tree. An advantage of this method is that the tree does not need to be cut down, so there is not much physical labor involved. The tree will deteriorate in a couple of years, and will soon fall over and decay. Another advantage is that this method can be accomplished by a single person. Disadvantages of this method are mainly cost related. You'll use a little more chemical per tree with basal bark spraying than with the cut stump method, and the triclopyr product that you must use for basal bark spraying is about three times the price of the glyphosate product that can be used for cut stump. You'll want to use a special sprayer to spray this expensive chemical. I use an ultra low volume sprayer manufactured by Arborchem that is designed especially for this kind of spraying. The spray wand costs about \$150, but will very quickly pay for itself as this wand can save as much as 75 percent of the cost of the chemical due to its precision of application compared to a standard spray wand.

Last year, I used the basal bark spraying method on approximately five acres of my grove. This summer and fall, I would go into my grove and stand along the line where I quit spraying last year. The difference was phenomenal! If I looked in the direction where I had treated the woods, I could see 75 to 100 yards. If I looked in the direction yet to be treated, I could only see about 10 yards due to the buckthorn canopy. Also, I'm already claiming a mini victory, as I saw a dozen or so bur oak seedlings in the middle of the grove in the area that I sprayed. I have no way of knowing if these seedlings would have occurred had I not treated this area, but I failed to see any seedlings in the area yet to be treated, so I'm content that I'm making progress and improving the woods.

So far this year, I've managed to give a second basal bark treatment to the five acres I treated last year. I did this to hit the buckthorn trees that I must have missed. I'm quite confident that if you get the chemical on the tree, you will kill it, so any trees that survive were most likely missed the first time through. When you have 4,000 to 9,000 buckthorn trees per acre, you're probably going to miss a few trees in your efforts. The second pass on the five acres went pretty quickly compare to the first pass. I then proceeded to hit about nine more acres of my grove for the first time, completing a first pass of my grove on the south side of Deer Creek.

My property adjoins property on each side that also has a buckthorn problem. With this in mind, I contacted my neighbors Clair Mrotek, and Loren Nelson, and obtained permission to treat some of their property. I'm spraying most of the buckthorn I see on their property, but I'm specifically targeting the female trees to eliminate the seed production. I feel this is important to do so I'll have a larger buffer of buckthorn free area to protect my property from re-infestation.

With the level of infestation I have on my property, the use of basal bark spraying, and working by myself, I estimate that I've spent about 250 hours in the last two years to do the initial treatment on 14 acres, and a second treatment on five acres of my 20 acres of woods. I also used just a little over 10 gallons of chemical at \$100 per gallon and 40 gallons of diluents at \$3 a gallon. So, if your property is anywhere close to the same as mine, I think you can reasonably expect to have to invest about \$80 to \$100 as well as 15 to 20 hours per acre

for land that you want to treat. This is quite a bit of money and time to invest, but if the health of the woods is improved, the time I spend in the woods for the rest of my life will be even more special knowing that I made a difference.

I have to look realistically at my efforts at fighting buckthorn on my property. My opinion, based on current technology, is that buckthorn will eventually overtake most all areas not treated and maintained, and will eventually start to take over the treated areas 20 to 30 years after the treatment stops. My goal in treating my property is to remove the buckthorn from my grove for 20 to 30 years, long enough for some desirable trees to germinate and grow up through the sub-canopy. If this can happen, even if the buckthorn eventually comes back, this grove of hardwood trees should last for another 100 years.

If you are interested in learning more about buckthorn, or if you have any questions, take a look at some of the web pages listed below. Feel free to give me a call as well.

Here are some web sites that may be of interest to see pictures of buckthorn, removal methods, and other information on the plant.

www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/index.html

www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/control.html

www.nps.gov/plants/alien/fact/rhca1.htm

www.arborchem.com