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MINNESOTA TREE LINE

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Identifying Elm Firewood

For communities interested in managing Dutch elm disease, one of the most important steps is removing and disposing of all dead or dying elm wood. Though many people correctly take care of diseased trees as they cut them down, they frequently overlook elm wood in firewood piles throughout their towns.

Elm firewood is an especially good breeding place for the bark beetles that carry Dutch elm disease. As many as 1800 new adult beetles have been found in a single fireplace log 3½ inches in diameter and 22 inches long. So, even a few logs in a town can pose a big threat to control efforts. As a homeowner you can help to control Dutch elm disease in your community by learning about the role of elm firewood in spreading the disease and by checking your woodpile for elm wood.

THE IMPORTANCE OF FIREWOOD PILES

Dutch elm disease is caused by a fungus that lives and grows inside elm trees. Two species of elm bark beetles (native and European) spread the disease to elms in much the same way that mosquitos spread malaria to people.

Adult bark beetles look for dead or dying elm wood and lay their eggs under the bark. One adult generally produces between 50 to 80 eggs. If that elm tree has died from Dutch elm disease, the fungus will be inside the wood and it will stick to the new beetles. When these new adults come out and go to feed on healthy elms, they carry the fungus on their bodies. In feeding, the beetles chew through the bark of a healthy elm, leaving openings where the fungus can enter the tree's vessels.

Later these adults will seek out dead or dying elm wood. They will then breed and produce still another generation of beetles to potentially spread Dutch elm disease (figure 1).

Both types of beetles require elm wood to survive and that elm wood must have its bark on for the beetles to breed successfully. If you destroy the breeding sites (logs) before the new beetles come out, then there will be fewer beetles to pass on the disease. This is the reason why removing all elm wood is so important. The beetles fly around and feed from about April 1 to September 15, so it is especially important to get rid of all elm firewood during that period or completely debark it. Since burning elm firewood kills the beetle grubs, eliminates beetle breeding sites, it is the most desirable method of disposal.

IDENTIFYING ELM FIREWOOD

One of the reasons people don't dispose of their elm firewood properly is because they are not sure how to tell it from other wood they may have on hand. It is not as easy to recognize elm as some other kinds of wood, such as white birch. However, elm does have a few special characteristics you can look for when you check your woodpile.

Three kinds of elm are native to Minnesota, American, rock, and slippery elm. American elm, also known as white, soft, or water elm is the most common tree, but in some areas slippery (red) and rock (hard) elm may be present in significant numbers. All of these kinds of trees are susceptible to Dutch elm disease, so all kinds of elm firewood must be disposed of or debarked.

Since most firewood has some bark on it, it seems logical that looking at the bark would be the easiest way to spot elm logs. This is not entirely true, though. The form, size, color, and character of bark varies considerably, depending on the age of the tree and growing conditions. Thus, looking at the *outer* bark may not be the best way to check.

Looking at the *inner* bark coloring, however, is very helpful. Both American and rock elm bark is composed of alternating light and dark layers. You can usually see these layers easily by looking at the ends of logs, as shown in figure 2. Ash (figure 3) and other common hardwoods do not show these sharply contrasting layers. If you are unsure whether a certain log is elm, it may be helpful to make a fresh cut in the bark with a knife or axe. Remember that the white and brown layering is present only in American and rock elm and cannot be used to identify slippery elm.

Another way to tell if you have elm in your woodpile is to look closely at the wood structure. Elm, regardless of species, has a distinctive pore arrangement that you can usually see quite easily. Figure 4 shows the wavy concentric line pattern as it appears at approximately 3x magnification. You can see the difference between the elm and oak, shown in figure 5 at

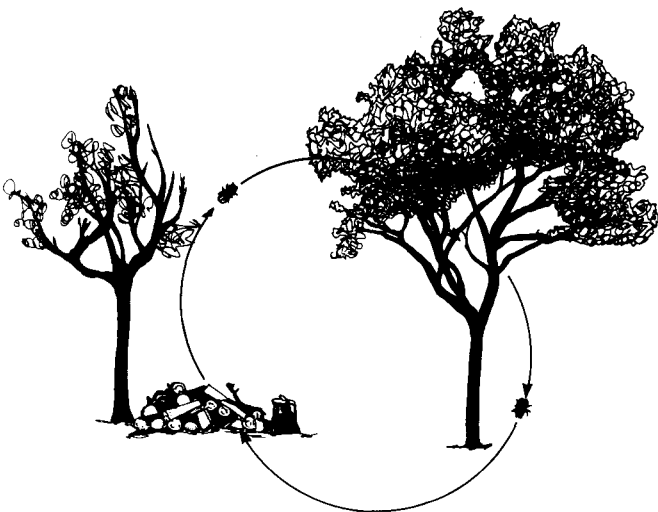


Figure 1. Elm bark beetle life cycle.



Figure 2. Characteristic layering of elm bark.

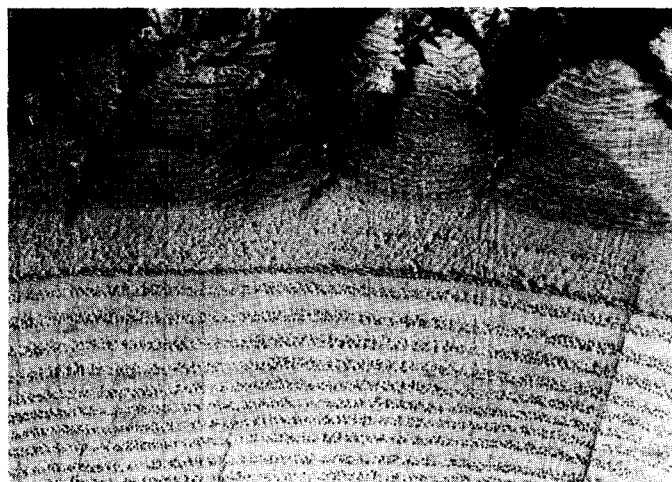


Figure 3. Cross section of ash bark.

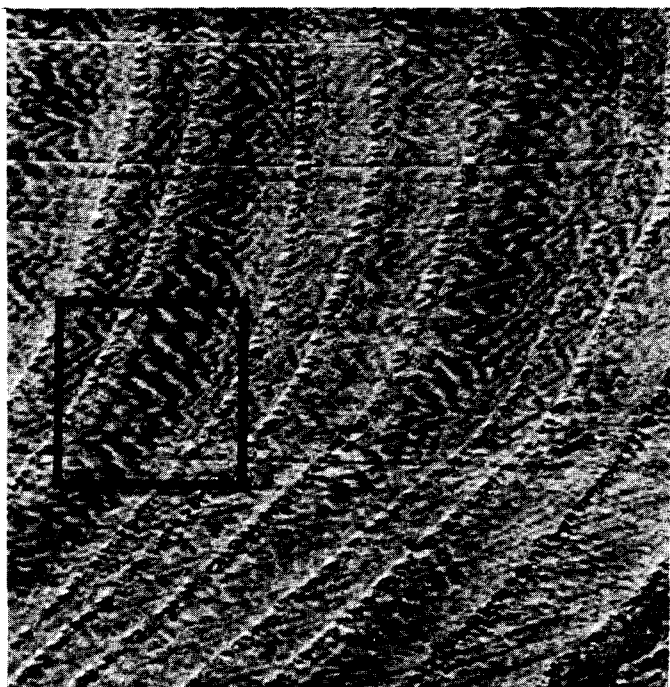


Figure 4. Wavy line pattern of elm wood, magnification 3x.

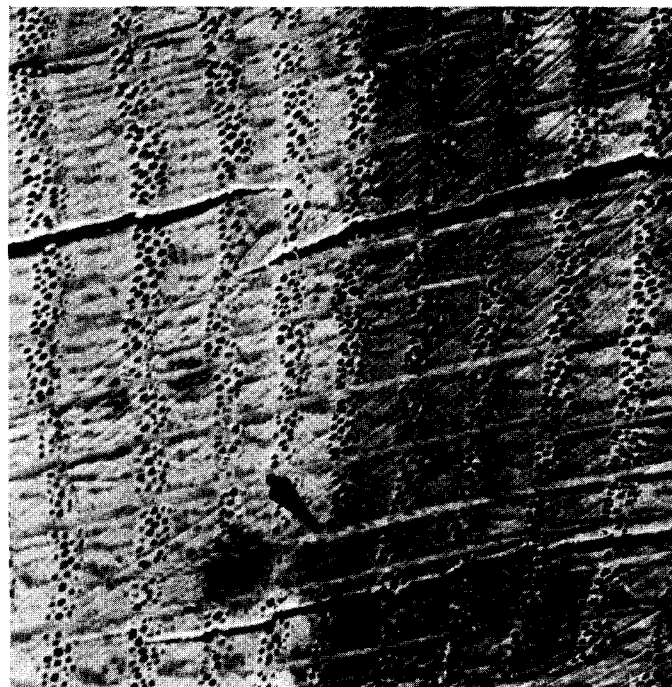


Figure 5. Characteristic rays of oak, magnification 3x.

the same magnification. Note the rays (see arrow) that are a special feature of oak. No other common hardwood has rays of comparable size.

You can usually see the wavy lines on a freshly sawn end of an elm log. If you do have difficulty finding them, make a sharp axe cut as shown in figure 6 and the lines should be quite visible. Hackberry, a close relative of elm does show the same wavy pattern. However, it is not a very common kind of firewood and if you have some in your woodpile, you can easily identify it by its warty bark.

Elm is usually thought of as difficult to split because of its interlocking grain, but this is not a hard and fast rule. It is generally true for American and rock elm, but not slippery elm which is normally straight-grained and easily split with a maul or axe.



Figure 6. Cutting angle for elm identification.