



# Ecology and Management of Ironwood/ Hophornbeam

*Ostrya virginiana*



## Identification

*Ostrya virginiana*, also called "ironwood," American hophornbeam, hornbeam, and leverwood, is a native small, short-lived tree scattered in the understory of forest communities. It can be easily identified by the following characteristics:

### 1. Leaves

- Simple, alternate, and oval with a sharply pointed tip.
- Serrated (toothed) edges resembling birch leaves.
- The upper surface is slightly rough, while the underside may have fine hairs.
- Typically, 2 to 5 inches long.

### 2. Fruit (Catkin-like Structures)

- The fruit resembles hops used in brewing beer.
- Clusters of papery sacs contain small nutlets inside.
- These fruit clusters hang from the branches.

### 3. Flowers

- Male flowers form in catkins and appear in fall but remain dormant until spring.
- Female flowers are smaller and less conspicuous.

### 4. Twigs and Buds

- Slender, reddish-brown twigs with small, ovoid buds.
- Buds are pointed and covered with overlapping scales.

### 5. Bark

- The bark is brown to gray-brown, scaly, rough or shaggy.

## Ecology

The bur oak/ ironwood habitat type is typically found in drier, lower elevations of the Black Hills. This habitat often occurs on lower slopes and in drainage areas, with or without streams which is considered a dry riparian zone, and generally does not appear right next to surface water.

This habitat is defined by an overstory of oak and the abundant presence of ironwood/ hophornbeam. Other hardwood trees such as American elm, or green ash can be found in this habitat type with occasional ponderosa pine presence. The growth and reproduction success of bur oak is common in this community.



**Figure 1. Ironwood Understory Wisconsin Department of Natural Resources**

The understory varies, but common shrubs include western snowberry, chokecherry, Oregon grape, and gooseberries.

The herbaceous layer can be diverse, sometimes featuring sarsaparilla, Lindley's aster, mayflower, fairy bells, and meadow rue. In some areas, grasses like Kentucky bluegrass, clustered field sedge, and rough-leaved ricegrass dominate. In other spots, species such as dry-spice sedge, false Solomon's Seal, and Rocky Mountain woodsia are more common.

In the Black Hills, sensitive species of local concern such as bloodroot and occasional highbush cranberry are typically found in the oak-ironwood community.

## Uses

The wood produced by ironwood/ hophornbeam trees is known for its strength and its durability, making it suitable for a variety of practical uses. It has traditionally been crafted into fence posts, tool handles, mallets, and golf club handles, and wooden kitchen utensils.

Native American tribes utilized the bark and inner wood to treat ailments such as tooth aches, sore muscles, and coughs. Indigenous communities also used its branches to make arrows and bows.

The bud and catkins of eastern ironwood/ hophornbeam serve as a vital food source for wildlife, comparable in value to aspen and birch. Ruffed grouse particularly rely on it, along with other species like wild turkey, and sharp tail grouse. To a lesser extent, bobwhite, red and gray squirrels, cottontails, whitetail deer, ringneck pheasant, purple finches, rose-breasted grosbeaks, and downy woodpeckers. The trees hop-like fruit, which contains a nutlet, also provides winter forage.





## Management

Ironwood/ hophornbeam, is generally not cultivated for timber production, and is often removed from stands managed for that purpose. Firewood can be a byproduct of control.

Control methods typically aim to maintain or improve forage for livestock, increase regeneration of other species, and improve recreation.

Common methods for eradication with herbicides include techniques such as girdling or chopping into the wood and spraying it, applying herbicide to foliage, and treating freshly cut stumps. Basal bark herbicide applications require no exposed live wood and have been shown to achieve over 75% control when applied in the spring.

A Wisconsin Department of Natural Resources study suggests that a viable non-chemical approach is high-stumping or cutting trees at least one foot above the ground. This has a 68% effectiveness, however, complete mortality typically takes three or more years following cutting. To achieve better control, begin management early in the regeneration cycle.

Periodic controlled burning, especially in the spring after leaf on, is particularly effective for both managing and eventually eradicating this species.

If chemical control is desired, consult your local agricultural extension office or county weed specialist for advice on the most effective and safe treatments in your area. Always follow product labels and safety guidelines. The USDA NRCS notes that while specific trade names may be mentioned for informational purposes, other equally effective herbicides may exist.



**Figure 2 Before Treatment**



**Figure 3 Following Cutting and Application of Herbicide**

## Citations

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Treatment	% Who Have Used Treatment	% Effective	% Ineffective	% Neither Effective or Ineffective
Girdling with herbicide	20	93	0	7
Basal bark herbicide application	36	92	2	6
"Hack and squirt" herbicide application	23	91	6	3
Foliar herbicide application	25	69	19	11
High-stump study		68		
Mowing/grinding with forestry mower	30	63	19	19
Manual felling with high-stump (>2.5')	39	9	11	30
Prescribed fire	20	54	11	36
Manual felling at or near ground level	80	52	18	30
Running over as part of timber sale	90	38	26	35

**Figure 4 Evaluating the efficacy of high stumping as a mechanical treatment to control ironwood (*Ostrya virginiana*)**  
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