

Project Subject/Title: Thunder Lake Oak Study

County: Oneida

TRS: T38N R10 E sec. 11

Contact Person: Ray Briggs, Rhinelander DNR Ranger Station – 715-365-2635

Type of Prescription: shelterwood/various site preparation

Year Initiated: 1990

Abstract/Prescription:

Thunder Lake Wildlife Area is located in Vilas County and the study was located on a small oak island. The objectives to this study were to enhance the establishment of oak seedlings, treat competition, and to monitor growth rates. Various treatments were used to regenerate oak. Prior to harvesting in the winter of 1990 the stand consisted of small size oak and pole sized red maple, white birch and red oak. The area was marked as a shelterwood harvest by removing red maple, aspen and white birch. Residual stocking was 53 square feet per acre. One area was treated in the spring with the herbicide Garlon. Another area was burned in spring. These treatments were established in two areas: one with over 40% crown cover and the other with less than 40% crown cover. These areas plus control plots were monitored for ten years. Thirty permanent plots were established (ten in the control, ten in the herbicide, ten in the burn area). At each plot ten oak seedlings were tagged and the height measured. Deer exclosures were established in the various treatment areas.

Monitoring plots included control open, control shelterwood, herbicide open, herbicide shelterwood, burn open, burn shelterwood.

Results:

- Deer browsing on tree seedling/saplings was evident in all plots affecting tree growth rates except in the exclosures. In summary, the data shows no significant growth difference between the treated and control areas. The deer exclosures show that eliminating the deer, growth increased by 338% over the ten year period. Average annual growth in the exclosure was 5 inches. Average annual growth was about 1.5 inches for nearly all treatments with the herbicide/shelterwood treatment site having average growth of 2 inches. Competition by shrubs was very evident. The herbicide shelterwood treatment seemed to control some of the competition. In areas where crown density < 60%, the oak seedlings had better growth

Discussion/ Recommendations:

- Preinventory count of seedlings is necessary.
- Herbicide is good at controlling competition combined with mechanical release.
- Shelterwood with crown cover <60% more successful for growth of seedlings.

Site/Conditions:

Covertime: Red Oak

Herbicide: Garlon 4 with fuel oil (4 oz. To 1 gal fuel oil) spring treatment

Prescribed Burn in spring

Habitat Type: AQV, Seedlings/ac: 4500/ac.

See document enclosed

HISTORY

Prior to the harvesting during the winter season of 1989 - 1990, this stand consisted of small sawlog size oak, pole size oak, white birch, red maple and a few scattered aspen. The west end of the island was not stocked as well and had hazel brush in the understory. The eastern end of the island had balsam fir saplings and seedlings in the understory.

This area was marked as a shelterwood harvest by removing all the red maple, aspen, and some of the white birch. The residual stocking was 53 square feet of basal area per acre in trees larger than five inches, at breast height. Due to the decline of the white birch, all the birch was cut during the harvesting, reducing the residual stocking to 45 square feet of basal area per acre in oak small sawlogs and poles.

Because of the property manager's interest as well as our own in perpetuating the oak, there was mutual feeling that this area was well suited for trying different methods to enhance the establishment of oak seedlings.

RECON DATA COLLECTED 9/30/91

Thirty sample plots were taken and the following information recorded. Seedlings per acre were counted using a one-hundredth acre plot, % crowncover was taken using the Sloan densimeter, ten factor basal area plots were taken, and competition was measured on a scale of 1 - 3, with 1 being light, with 2 being moderate, and 3 being heavy.

The thirty plots average 4,560 oak seedlings per acre, 40% crowncover, and 45 square feet of residual oak per acre.

This information was then put on maps to determine what we had and where. With this information we could better plan the direction of this project.

OBJECTIVE

To enhance the establishment of the oak seedlings. To treat the competing vegetation by using methods that would be considered reasonable to an average landowner or property manager, with the results being measured against an area not being treated. The two methods chosen to be conducted on this area are by control burning and the use of herbicide.

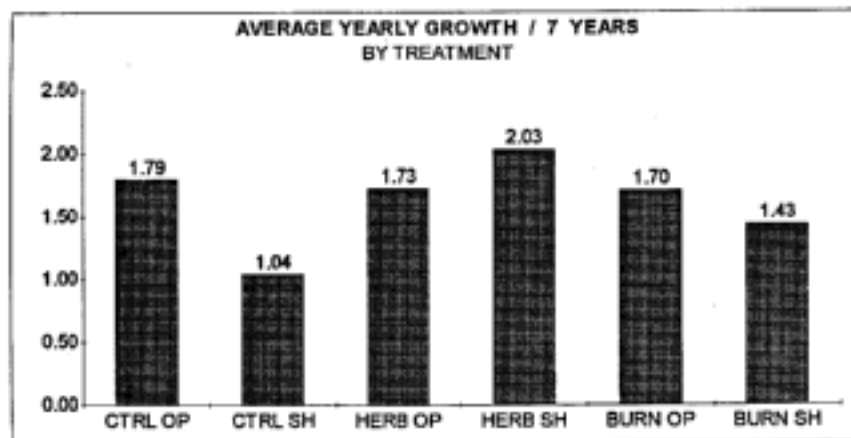
The total area has been broken down into three areas as follows; a control area, where no treatment will be conducted; the burn area, where burning will be used to control the competing vegetation; and the herbicide area, where the competition will be controlled by using herbicide. Each of these three areas have been broken down once more, with one half having over 40% crowncover, and the other one half with less than 40% crowncover.

Thirty permanent plots have been established, with each plot center being marked by an iron stake and with a spike pushed just under the ground. At each one of these plots ten of the oak seedlings were staked with a wire with an aluminum tag that has the plot number

9/27/91

1 Gather base data - Oak Island, Thunder Marsh Wildlife Area. This area received a shelterwood harvest during the winter of 1990. Red maple, white birch and aspen were cut, leaving the oak. The habitat type is AQV.

1. Seedlings / acre : 30 1/100 acre plots were taken throughout the island. Seedlings per acre averaged 4,583, from a low of 700 per acre to a high of 17,500 per acre.
2. Crown-cover : 30 plots were taken using the Sloan densimeter. The average crown-cover on this area is 46 percent, varying from 0 - 98 percent.
3. Basal area : was taken at each plot center. Basal area averaged 51 sq. ft./acre, varying from 0 - 100 sq. ft. per acre.
4. Competition : was evaluated on each plot. Species were listed and rated from 1 -3, 1 being light, 2 being moderate, and 3 being heavy.



CTRL OP - CONTROL OPEN
CTRL SH - CONTROL SHELTERWOOD
HERB OP - HERBICIDE OPEN
HERB SH - HERBICIDE SHELTERWOOD
BURN OP - BURN OPEN
BURN SH - BURN SHELTERWOOD

