

Forest Service
- Huron-Manistee National Forests
Cadillac, Michigan 49601

2470
2630

Regional Forester, R-9

October 12, 1966

John von Barga, Forest Supervisor, By

Your reference: 8/24
(2470 and 2650)

**Silvicultural Practices
Management of Wildlife Habitat (Kirtland's Warbler Management Area)**

Attached is a copy of a report of the stocking survey that was made this summer on the 1964 burn on the Kirtland's Warbler Management Area.

As you can see, everything isn't "coming up roses" (or jack pine) on this area. We feel that some course of action may be needed if the area is to be satisfactorily stocked with jack pine and produce warbler habitat. We feel that it may be a bit too soon to work on restocking the entire area, but we should possibly try some various methods of seeding on a limited basis under various conditions on the area. It might be that we will find planting to be the most feasible method of restocking the area.

We would certainly appreciate any thoughts you may have on how we should approach what may be a problem in the making. We hope that what research comes up with on the next burn may allow us to refine our techniques so we can be more sure of producing the desired conditions and not work on a hit or miss basis.

Enclosure *mark*

xcc

Warbler Burn Stocking Count
July 1966

Intent of survey:

To find out what stocking success was achieved after the burn of 1964. Work done by Arthur Reese, Forester and Larry Smith, Forestry Aid.

Method:

Plots 1/500 acre in size were taken at two chain intervals on east-west strips that were five chains apart. The enclosed map shows the strips (in Roman numerals) and plot numbering (running from west to east) that was used. A two chain tape was used to measure plot distance and a radius stick was used to determine the plot boundary.

Site:

Average with some good (60) on the north side of the burn area.

Data Collected:

Jack Pine seedlings by quantity and age on each plot. Hardwood seedlings by origin (seed or coppice). Quantity of slash in 1964 (high, medium, low), quality of seedbed in 1964 (from FSH 2472.1 R-9 Reforestation Handbook section 145.3-3) and whether soil was compact or scarified.

Quality of seedbed in 1966:

Presence of the following vegetation and quantity grass, sedge, moss and lichen, sweet fern, blue berry, bar berry, animal weeds, willow ground cherry, pine or fire cherry and bracken fern.

Due to the findings on the first two strips (V & X, 76 plots) no further plots were taken. The results from this rather insignificant appearing number of plots was conclusive enough for the extensive management procedures that are available to us at this level. This sample indicated that additional regeneration activities are necessary. Due to the slight deviation that existed between stocking tallies, even this small mechanically randomized sample is probably statistically significant.

Of the 76 plots taken, one (V-20) was on a main trail road that will be kept open so the plot had to be dropped. This plot, due to a number of reasons (some of which unknown) was well stocked (12 seedlings). A break-down of the jack pine regeneration plot data is presented in the following chart.

continued

# seedlings per plot	<u>Plots by seedling population</u>					<u>Total Plots</u>
	0	1	2	3	4	
Strip V	28	6	2	0	1	37
Strip X	26	7	4	1	0	38
Total	54	13	6	1	1	75

Over 60 percent of the plots were not stocked and two thirds of the stocked plots had only one seedling each. Essentially all seedling observed were two years old. Mortality in this age group was occurring and further losses are occurring due to a prolonged mid-summer drought.

On the strips sampled, more plots were stocked to oak than were stocked to jack pine (21 plots to 24 plots).

The present seedbed quality for direct seeding is medium to poor. Most of the plots had a developed quantities as was sweet fern and ground cherry. Although the latter two probably exerted little influence on the site as far as competition was concerned. Where the burn had been particularly hot (as evidenced by charcoal and stump or slash remains) the ground was still relatively free of competing vegetation. Better stocking on these areas was not apparent nor was the age distribution of the seedlings altered. A portion of the area returned several days after the initial fire and this area lacked the quantity of competing vegetation as was witnessed in the areas where intense and prolonged heat had prevailed. Again however, there was no apparent difference in regeneration even in the seedling plots that were located on the reburn.

One factor which showed up consistantly through the burn was that where scarification occurred either prior to or after the burn, regeneration was prevelant although not necessarily adequate.

The seeded areas (shown in purple on the enclosed map) proved to be a disappointment. Only a few sampled plots fell in the seeded areas so additional plots were taken throughout the seeded area and no appreciable stocking difference was observed.

One draw back pertaining to the seed used has come up. There is no record of a seed germination or viability count for the seed supply used. For this reason, it is difficult to arrive at any conclusion regarding the poor regeneration success on the seeded area. Research personnel seemed to think that if there was no germination record, it probably was not done.

continued

P.S. I have kept an eye on the prescribed burn for regeneration results. In three locations I have staked out location of seedlings and noted their progress. My general conclusions:

1. I have never found a seedling in the post burn seeded area.
2. There has been a constant germination, seedling development and die off.
3. Bulldozer blade top soil and cover removal and fire plow furrow bottoms have been most productive of seedlings that have remained alive followed by Athens harrow soil disturbance.
4. Scattered, well established patches of seedlings are found in trail road centers and along wheel tracks. Possibly due to soil compaction and/or less competition from competing grasses and woody plants.



UNITED STATES GOVERNMENT

Department of Agriculture--Forest Service
Region 9 - Milwaukee, Wisconsin - 53203

Memorandum

TO : Forest Supervisor, Huron-Manistee

File No. 2630

FROM : H. A. Svensen, Assistant Regional Forester
Division of Recreation, Range & Wildlife, By

Date: November 2, 1966

SUBJECT: Habitat (Kirtland's Warbler Management Area) Your reference: 10/12

You asked for any thoughts we might have on the problem of regenerating jack pine on the Kirtland's Warbler Area:

1. Primarily, you need to develop more specific standards by which to judge the success of controlled burns. It seems that there has been a strong tendency to write off results to date as a failure. This appraisal appears to be influenced by standards we have developed over the years from a timber management viewpoint.

The analysis of the limited data you submitted might be given the following interpretation:

54 Plots,	or 70%	of the area is open
13 "	"	17% has 500 seedlings per acre
6 "	"	8% " 1000 " " "
1 Plot "	2%	" 1500 " " "
1 "	"	2% " 2000 " " "
1 "	"	1% may have up to 6000 per acre

It is perhaps more realistic to combine plots with "0" reproduction, and plots with "one seedling per plot" with the assumption that 35% of the area has openings of one-quarter acre or larger and 52% has approximately 160 seedlings per acre. Thus, your survey indicates a patchy pattern exists in the average stocking of about 250 seedlings per acre. The questions are: (1) How does this type of stocking compare to the better nesting areas in the Mack Lake Burn? (2) Does it provide good nesting range, but represents too great a sacrifice in timber values? e.g., territorial requirements of Kirtland's Warblers may limit density of nesting as well as the pattern of openings and thicket.

2. We agree that it is "a bit too soon to work on restocking the entire area." Your report indicates "constant germination seedling development and die-off." If we are still getting new seedlings, more favorable weather conditions might still result in a satisfactory regeneration.
3. Timber Management advises that jack pine seed is not available in the region. It should be collected for any seedling you contemplate.

4. Experimental plantings and seedlings in obvious fail areas are approved.
5. You have advanced the cutting of blocks over the schedule outlined in the management plan. We verbally approved this with the understanding you were to add more cuts to the Kirtland's Warbler Area, which would round out a million cuts in large classes by blocks. When can we anticipate a written report to include these changes?
6. If oak and other species threaten seedlings over jack pine, the plan should recognize and provide for control.

We think research can help you in this problem, especially if you define more clearly the amount and pattern of jack pine reproduction we hope to secure.

W. D. 9 22 00