SECOND DAY

August 8, 1956

## MARKING SYMPOSIUM IN AN ALLEGHENY HARDWOOD STAND

### TREE MARKING PLOT, WOLF RUN EXPERIMENTAL FOREST HISTORY, STAND DATA, AND QUALITY RATING OF THE TREES[1]

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For the purposes of a meeting of the Northeastern Forest Tree Improvement Conference, a half-acre circular plot has been laid out in Boulder Trail Compartment, Wolf Run Experimental Forest of the Armstrong Forest Company. In order to improve visibility within the plot, the lower branches have been trimmed from the trees, worthless small trees removed and considerable beech less than eight feet in height cleared out. As indicated on the map (pp. 12, 13) two feeder roads cross the plot.

The plot is located on soil classified as Dekalb Channery silt loam - a shallow, well drained, light-brown acid soil derived from acid sandstone, with a sandy subsoil. This is one of the better Dekalb soils since it has a fairly high percentage of clay and fair water holding capacity.

The plot is located in a 59-year-old stand which resulted from clear cutting in 1896-97 Some hemlock and beech, suppressed and small at the original cutting, still remain on the plot. In 1940 another cut was made for sap-peeled pulpwood; the major portion of the plot was cut to an eleven-inch diameter limit, but a small portion in the northwestern part was cut to eight inches. At this time about 464 cubic feet was removed from the plot; equiqalent to approximately 10.1 cords (peeled, 128 cubic feet) per acre.

The stand is now 59 years old and has 2,921 cubic feet (31.8 standard peeled cords) per acre in trees 6 inches and up. In addition there are 9 dead trees on the plot from which 118 cubic feet (1.3 cords) per acre may be recovered in a cutting to be made shortly. Including the 1940 yield the plot has grown an average of about 66.0 cubic feet (0.72 cords) per acre per year since the clear-cutting. In the same compartment, but on other plots which were cut to an 11-inch diameter limit, the average annual increment was 65.9 cubic feet during the 10 years following that cutting in 1940.

Total height of dominant trees in the stand averages 69 feet; merchantable height (to a -inch top diameter) of 10-inch trees averages 14 feet. Ten crop trees are marked on the half-acre plot, which represents about the usual number so marked.

Three types of damage of considerable consequence, especially in regard to value of sawlogs, may be observed on the plot. The maple borer has caused extensive damage to hard maple in this region. Porcupine damage to cherry on the plot is severe, and breakage caused by ice storms of 1936 and 1950 is still quite apparent on the plot.

[1] Copies of this paper pp. 9-11) and of the sample plot map (pp. 12,13) were distributed at the meeting.
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DATA ON TREE MARKING PLOT

Stand Table - Number of Trees
(including 2 cull trees)

| D.B.H. | Cherry | H.Maple | S.Maple | Beech | Y.Birch | B.Birch | Hem. | All Species |
|---|---|---|---|---|---|---|---|---|
| 1 | | 11 | | 26 | | | | 37 |
| 2 | | 40 | | 17 | | | | 57 |
| 3 | | 30 | | 10 | | | | 40 |
| 4 | 1 | 22 | 4 | 13 | | | | 40 |
| 5 | | 13 | 2 | 6 | 2 | 1 | | 24 |
| 6 | | 10 | 1 | 8 | | | | 19 |
| 7 | | 6 | 3 | 2 | 2 | 1 | | 14 |
| 8 | | 6 | 3 | 1 | 2 | | | 12 |
| 9 | 1 | 6 | | 1 | 3 | | | 11 |
| 10 | 3 | | 2 | | | | | 5 |
| 11 | 3 | 3 | | | 1 | | | 7 |
| 12 | 3 | 2 | 5 | 2 | | | | 12 |
| 13 | 4 | | | 1 | | | | 5 |
| 14 | 1 | | 4 | | | | | 5 |
| 15 | 1 | | 1 | | | | 1 | 3 |
| 16 | | | | 1 | | | 1 | 2 |
| 1"to5" | 1 | 116 | 6 | 72 | 2 | 1 | | 198 |
| 6" up | 16 | 33 | 19 | 16 | 8 | 1 | 2 | 95 |
| Total | 17 | 149 | 25 | 88 | 10 | 2 | 2 | 293 |

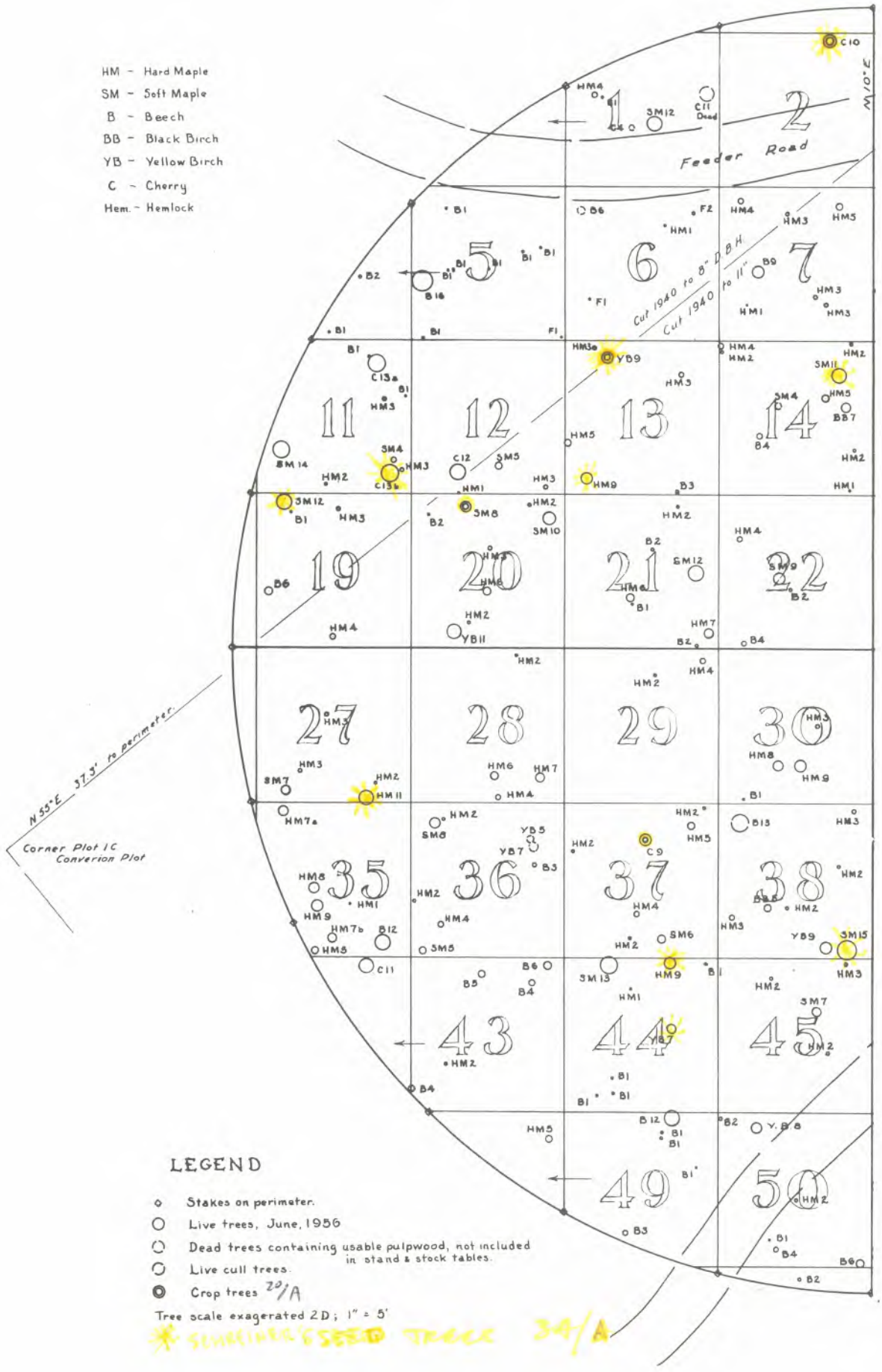
Basal Area - Square Feet
(Without the 2 cull trees)

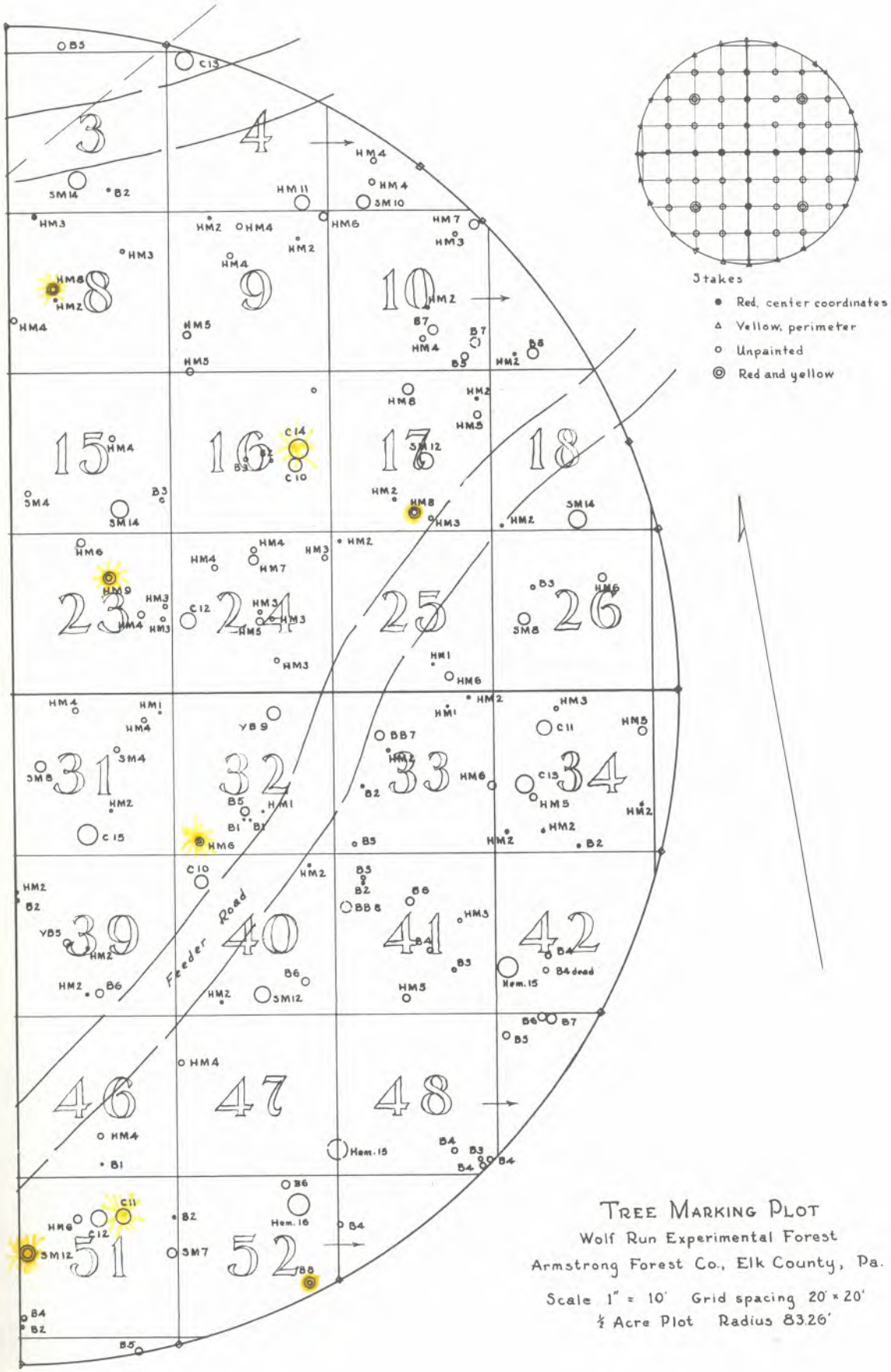
| D.B.H. | Cherry | H.Maple | S.Maple | Beech | Y.Birch | B.Birch | Hem. | All Species |
|---|---|---|---|---|---|---|---|---|
| 1 | | .055 | | .130 | | | | .185 |
| 2 | | .880 | | .374 | | | | 1.254 |
| 3 | | 1.470 | | .441 | | | | 1.911 |
| 4 | .087 | 1.914 | .348 | 1.131 | | | | 3.480 |
| 5 | | 1.768 | .272 | .816 | .272 | .136 | | 3.264 |
| 6 | | 1.960 | .196 | 1.568 | | | | 3.724 |
| 7 | | 1.602 | .801 | .534 | .534 | .267 | | 3.738 |
| 8 | | 2.094 | 1.047 | .349 | .698 | | | 4.188 |
| 9 | .442 | 2.652 | | .442 | 1.326 | | | 4.862 |
| 10 | 1.635 | | 1.090 | | | | | 2.725 |
| 11 | 1.930 | 1.980 | | | .660 | | | 4.620 |
| 12 | 2.355 | 1.570 | 3.925 | 1.570 | | | | 9.420 |
| 13 | 3.688 | | | | | | | 3.688 |
| 14 | 1.069 | | 4.276 | | | | | 5.345 |
| 15 | 1.227 | | 1.227 | | | | 1.227 | 3.681 |
| 16 | | | | | | | 1.396 | 1.396 |
| Total | 12.483 | 17.945 | 13.182 | 7.355 | 3.490 | .403 | 2.623 | 57.481 |

DATA ON TREE MARKING PLOT-Continued

Quality Rating of Trees 6 inches and up in d.b.h.

| Block No. | Tree | Quality |
|---|---|---|
| 1 | SM 12 | Good |
| 1 | C 11 dead | |
| 2 | C 10 crop | Very good |
| 3 | SM 14 | Good |
| 4 | C 13 | |
| 4 | HM 11 | Poor |
| 4 | SM 10 | Good |
| 5 | B 16 | Very poor |
| 6 | B 6 dead | |
| 7 | B 9 | Very poor |
| 8 | HM 8 crop | Very good |
| 9 | HM 6 | Very good |
| 10 | HM 7 | Fair |
| 10 | B 7 | Very poor |
| 10 | B 7 dead | |
| 10 | B 8 | Very good |
| 11 | SM 14 | Very good |
| 11 | C 13 a | Very poor |
| 11 | C 13 b | Very good |
| 12 | C 12 | Very poor |
| 13 | YB 9 crop | Very good |
| 13 | HM 9 | Very good |
| 14 | SM 11 | Very good |
| 14 | BB 7 | Very poor |
| 15 | SM 14 | Good |
| 16 | C 14 | Good |
| 16 | C 10 | Very poor |
| 17 | HM 8 | Very good |
| 17 | SM 12 | Very good |
| 17 | HM 8 crop | Very good |
| 18 | SM 14 | Fair |
| 19 | SM 12 | Very good |
| 19 | B 6 | Very poor |
| 20 | SM 8 crop | Very good |
| 20 | HM 6 | Fair |
| 20 | YB 11 | Good |
| 20 | SM 10 | Fair |
| 21 | HM 6 | Very good |
| 21 | SM 12 | Very good |
| 21 | HM 7 | Fair |
| 22 | SM 9 | Fair |
| 23 | HM 9 crop | Very good |
| 23 | HM 6 | Very good |
| 24 | C 12 | Fair |
| 24 | HM 7 | Very good |
| 25 | HM 6 | Good |
| 26 | SM 8 | Fair |
| 26 | HM 6 | Good |
| 27 | SM 7 | Very good |
| 27 | HM 11 | Very good |
| 28 | HM 6 | Very poor |
| 28 | HM 7 | Fair |
| 30 | HM 8 | Very good |
| 30 | HM 9 | Fair |
| 31 | SM 8 | Very good |
| 31 | C 15 | Good |
| 32 | HM 6 crop | Very good |
| 32 | YB 9 | Very good |
| 33 | BB 7 | Very good |
| 33 | HM 6 | Good |
| 34 | C 11 | Fair |
| 34 | C 13 | Very good |
| 35 | HM 7 a | Poor |
| 35 | HM 7 b dead | |
| 35 | HM 8 | Very good |
| 35 | HM 9 | Poor |
| 35 | B 12 | Poor |
| 36 | SM 8 | Fair |
| 36 | YB 7 dead | |
| 37 | C 9 crop | Good |
| 37 | SM 6 | Good |
| 38 | B 13 cull | Very poor |
| 38 | YB 9 | Very poor |
| 38 | SM 15 | Very good |
| 39 | B 6 | Fair |
| 40 | C 10 | Fair |
| 40 | SM 12 | Very good |
| 40 | B 6 | Poor |
| 41 | BB 8 dead | |
| 41 | B 6 | Good |
| 42 | Hem 15 | Very good |
| 43 | C 11 | Poor |
| 43 | B 6 | Very poor |
| 44 | SM 13 | Very good |
| 44 | HM 9 | Very good |
| 44 | YB 7 | Very good |
| 45 | SM 7 | Very poor |
| 48 | Hem 15 dead | |
| 48 | B 6 | Good |
| 48 | B 7 | Good |
| 49 | B 12 | Very poor |
| 50 | YB 8 | Fair |
| 50 | B 6 | Fair |
| 51 | SM 12 crop | Very good |
| 51 | C 12 | Good |
| 51 | C 11 | Good |
| 51 | HM 6 | Fair |
| 51 | SM 7 | Very good |
| 52 | B 6 | Poor |
| 52 | Hem 16 | Very good |
| 52 | B 8 crop | Very good |


HM - Hard Maple
SM - Soft Maple
B - Beech
BB - Black Birch
YB - Yellow Birch
C - Cherry
Hem. - Hemlock
Feeder Road
Cut 1940 to 8" D.B.H.
Cut 1940 to 11"
N 55° E 37.3' to perimeter
Corner Plot IC
Conversion Plot
LEGEND
Stakes on perimeter.
Live trees, June, 1956
Dead trees containing usable pulpwood, not included in stand & stock tables.
Live cull trees.
Crop trees 20/A
Tree scale exaggerated 2D; 1" = 5'
SUNFLOWER SEED TREE 34/A




# Tree Marking Plot

Wolf Run Experimental Forest

Armstrong Forest Co., Elk County, Pa.

Scale 1" = 10' Grid spacing 20' x 20'

½ Acre Plot Radius 83.26'

Fig. 6-A

Figs. 6-A,B,C.

Three panoramic views of the sample plot on which the marking symposium was held. Photos A, B, and C were taken from W to E, respectively, from the same camera-point on the north-south center line between sections 50 and 51.

Fig. 6-B

Fig. 6-C

Fig. 7.

Fig. 8.

Figs. 7 and 8. Basal porcupine damage on black cherry. Approximately $\frac{1}{2}$ the circumference girdled on tree C-15 (Fig.7) more severe girdling on tree C-10 (Fig.8)

U. S. Forest Service Photos

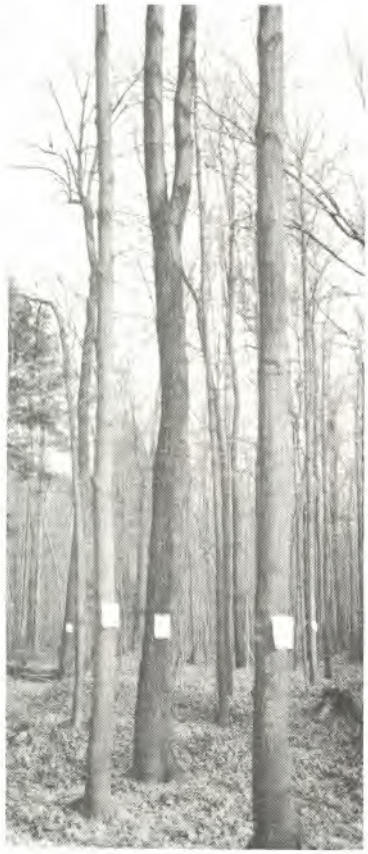


Fig. 9.

Fig. 9. A forked red maple. There is evidence that forking in this species is strongly inherited and that such trees should not be left as seed trees (see p. 40)

U. S. Forest Service Photo

SUMMARY OF MARKINGS

Trees from 6" d.b.h. marked for cutting.
(Trees in parentheses are dead)

| Bl. No. | Tree 1/ | Marked by: Bennett | Heiberg | Hough | Heim-burger | Ibberson | Mergen | Peterson | Stotz | Schreiner |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SM 12 | | | | | | | | | |
| 1 | (C 11) | X | X | X | X | X | X | X | X | X |
| 2 | C 10 Good Crop | | | | | | | | | |
| 3 | SM 14 | | | | | | | X | | |
| 4 | C 13 | X | X | X | X | X | X | X | | X |
| 4 | HM 11 | X | X | X | | X | X | | X | X |
| 4 | SM 10 | | | X | X | X | X | X | | |
| 5 | B 16 | X | | X | X | X | X | X | X | X |
| 6 | (B 6) | X | | | X | X | X | | X | X |
| 7 | B 9 | X | X | X | X | X | X | X | X | X |
| 8 | HM 8 Crop | | | | X | | | | | |
| 9 | HM 6 | | | | X | | | | | |
| 10 | HM 7 | | X | | X | X | | | X | |
| 10 | B 7 | X | X | X | X | X | X | X | X | X |
| 10 | (B 7) | X | X | X | X | X | X | X | X | X |
| 10 | B 8 | | | | | | | | | |
| 11 | SM 14 | X | X | | X | | | | X | |
| 11 | C 13a | X | X | X | X | X | X | X | X | X |
| 11 | C 13b | | | | | | | | | |
| 12 | C 12 | X | X | X | X | X | X | X | X | X |
| 13 | YB 9 Crop | | | | | | | X | X | |
| 13 | HM 9 | | X | | X | | X | | | |
| 14 | SM 11 | X | | | | | | | | |
| 14 | BB 7 | X | X | X | X | X | X | X | X | X |
| 15 | SM 14 | X | X | X | X | X | X | X | | X |
| 16 | C 14 | X | X | | X | | | X | X | |
| 16 | C 10 | X | X | X | X | X | X | X | X | X |
| 17 | HM 8 Crop | | | | | | | | | |
| 17 | SM 12 | X | | X | | | X | | | X |
| 18 | SM 14 | X | X | X | X | X | | X | | X |
| 19 | SM 12 | | | | | | | | | |
| 19 | B 6 | | | X | | X | X | X | X | X |
| 20 | SM 8 Crop | | | | | | | | | |
| 20 | HM 6 | | | X | | X | | | | |
| | | 17 | 16 | 17 | 20 | 18 | 17 | 17 | 15 | 16 |

1/ B = beech; BB = black birch; C = black cherry; Hem = hemlock; HM = sugar maple; SM = red maple; YB = yellow birch. The figure following the species designation (e.g. HM 12) is the d.b.h. in inches.

SUMMARY OF MARKINGS-Continued

| Bl. No. | Tree | Marked by: Bennett | Heiberg | Hough | Heim-burger | Ibberson | Mergen | Peterson | Stotz | Schreiner |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | YB 11 | | | | | | X | X | X | X |
| 20 | SM 10 | X | | X | | X | | X | X | X |
| 21 | HM 6 | | | | X | | | | | |
| 21 | SM 12 | X | | | | | | | | |
| 21 | HM 7 | | | X | X | X | | | X | |
| 22 | SM 9 | | X | | X | X | X | X | X | |
| 23 | HM 9 | Crop | | | | | | | | |
| 23 | HM 6 | | | | | | | | | |
| 24 | C 12 | | X | | | | X | | X | X |
| 24 | HM 7 | | | | | | | | | |
| 25 | HM 6 | | | | | | | | | |
| 26 | SM 8 | | | X | | X | | | X | |
| 26 | HM 6 | | | | | | | | | |
| 27 | SM 7 | | | | X | | | | X | |
| 27 | HM 11 | | | X | | X | | | | |
| 28 | HM 6 | X | X | X | X | X | X | X | X | X |
| 28 | HM 7 | | | | | | | | | |
| 30 | HM 8 | | | X | | X | | | | |
| 30 | HM 9 | | X | | X | | X | | X | X |
| 31 | SM 8 | | | | | | | | | |
| 31 | C 15 | | X | | X | | | X | X | X |
| 32 | HM 6 | Crop | | | | | | | | |
| 32 | YB 9 | | | | | | | X | X | |
| 33 | BB 7 | | X | X | X | X | | | X | |
| 33 | HM 6 | | | | | | | | | |
| 34 | C 11 | X | | X | | X | | X | X | X |
| 34 | C 13 | | X | | X | | | | | X |
| 35 | HM 7a | X | X | X | X | X | X | X | X | X |
| 35 | (HM 7b) | X | X | X | X | X | X | X | X | X |
| 35 | HM 8 | | | | | | | | | |
| 35 | HM 9 | X | X | X | X | X | X | X | X | X |
| 35 | B 12 | X | X | X | X | X | X | X | X | |
| 36 | SM 8 | | | | | | | | | |
| 36 | (YB 7) | X | X | X | X | X | X | X | X | X |
| 37 | C 9 | Crop | | | | | | | | |
| 37 | SM 6 | | X | | | | | | | |
| 38 | B 13 | | X | X | X | X | X | X | | X |
| 38 | YB 9 | X | X | X | X | X | X | X | X | X |
| 38 | SM 15 | X | | | | | | | | |
| 39 | B 6 | | X | | | | | | X | |

SUMMARY OF MARKINGS-Continued

| Bl. No. | Tree | Marked by: Bennett | Heiberg | Hough | Heim-burger | Ibberson | Mergen | Peterson | Stotz | Schreiner |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | C 10 | X | X | | X | | X | X | X | X |
| 40 | SM 12 | | | | | | | | | |
| 40 | B 6 | | X | X | X | X | | X | X | X |
| 41 | (BB 8) | X | X | X | X | X | X | X | X | X |
| 41 | B 6 | | | | | | | | X | |
| 42 | Hem 15 | X | | X | X | X | | X | | X |
| 43 | C 11 | | | | | X | X | | | X |
| 43 | B 6 | | X | X | X | X | X | X | X | X |
| 44 | SM 13 | X | | | | | | X | | X |
| 44 | HM 9 | | | | X | | X | | | |
| 44 | YB 7 | | | | | | | | X | |
| 45 | SM 7 | | | X | | X | X | X | X | X |
| 48 | (Hem 15) | X | X | X | X | X | | | X | X |
| 48 | B 6 | | X | X | | X | X | X | X | X |
| 48 | B 7 | | X | X | | X | X | | X | X |
| 49 | B 12 | X | X | X | X | X | X | X | | X |
| 50 | YB 8 | | | X | | X | X | X | X | |
| 50 | B 6 | | X | | | | X | | X | X |
| 51 | SM 12 Crop | | | | | | | | | |
| 51 | C 12 | X | X | | X | | X | X | X | X |
| 51 | C 11 | | | | | | | | | |
| 51 | HM 6 | | | X | | X | X | | X | |
| 51 | SM 7 | | | | | | | | | |
| 52 | B 6 | | | | | | | | X | |
| 52 | Hem 16 | X | X | X | X | X | | X | | X |
| 52 | B 8 Crop | | | | | | | | | |
| | | 8 | 11 | 12 | 10 | 13 | 13 | 12 | 15 | 15 |
| | | 37 | 43 | 44 | 46 | 47 | 42 | 43 | 51 | 45 |