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UNITED STATES DEPARTMENT
OF AGRICULTURE

Forest Service
Northeastern Area

Evaluation of Ozone Damage
to Vegetation on the Lye Brook
Wilderness in 1993

Survey Report
April 1994

Buyer's Name: J. C. O. / Buyer's Address: Forest Health Protection, P. O. Box 640, Durham

Cooperators: William Manning, University of Massachusetts and Richard Poirot, Vermont Air
Pollution Control

ABSTRACT

white_ash (*Fraxinus americana* L.) and *vermontanus* Blanch.). Usually the same trees or clones (blackberries) were examined in 1988 through 1992.

¹ A third cooperator was the Carthusian Foundation of Arlington, VT. The Foundation provided the site and access to electric power.

In 1992, only 2 white oak and 10 black oak



CROUP
○ BLACKBERRY PLOT
0 1K 2K
CONTOUR INTERVAL 100M

Figure 1. Map of Lye Brook Wilderness, Green Mountain National Forest,

RESULTS

2. 1955-1956 season in 1955

was not reached, in fact that concentration has been reached in only 2 of the 4 years in which sampling was conducted. Nevertheless, some injury to vegetation has occurred each year and 1993 was no exception. The ratings given both the trees that were rated reflect the fact that many of the leaves were affected but they were only lightly injured. One of these, tree 1 of group 3, is known to be quite sensitive, having shown injury every year since 1988 except 1992.

That injury was slight was indicated also by the absence of injury to blackberry plants. At least some blackberries were injured every previous year since 1988, even in 1992, a year of low concentrations. It was because of the low concentrations that injury to vegetation was light in 1992. In 1993, in contrast, concentrations were high enough to cause injury, but even less injury occurred. Dr. Manning, who examined vegetation near the monitor throughout the summer of 1993, thinks the hot, dry weather conditions that occurred during that summer protected the plants by causing the stomata to close. The closing of the stomata is the means by which a plant limits water loss through transpiration, and inadvertently the plant shuts out ozone at the same time.

FUTURE PLANS

Plans are to continue the ozone concentration monitoring indefinitely, in order to discern long term trends in ozone concentrations. Though presently the Forest Service monitor on Mt. Equinox cannot be available

1990	45	47	50	47	44	42	39	41	44
1991	50	47	47	45	42	35	32	43	45
1992	54	46	48	36	36	36	31	41	42
1993	46	45	46	42	49	37	48	45	46