


AN EVALUATION OF THE BALSAM WOOLLY APHID ON THE  
MOSES H. CONE MEMORIAL PARK, BLUE RIDGE PARKWAY,  
NORTH CAROLINA

U.S. Forest Service  
Asheville, North Carolina



U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE  
SOUTHEASTERN AREA, STATE AND PRIVATE FORESTRY  
DIVISION OF FOREST PEST CONTROL



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By

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ABSTRACT

An inspection of the fraser fir, *Abies fraseri* on the Moses H. Cone Memorial Park, Blue Ridge Parkway revealed no reinfestation of protected areas by the balsam woolly aphid. Some aphids or aphid damage was found where trees had not been treated.

INTRODUCTION

The 3,600 acre mountain estate of the late Moses H. Cone was donated to the National Park Service by his heirs as a memorial park to be maintained by the Park Service for the public to enjoy. Recreation facilities at the Park include a craft center in the mansion, sight-seeing, horseback riding, hiking, and fishing in any of the three lakes present on the property. It's location on the Blue Ridge Parkway, near the resort town of Blowing Rock, North Carolina, makes it a very attractive and highly used recreation area ( Fig. 1 ).

Although hardwoods are predominant on most of the Park's timbered lands, there are several small stands of fraser fir, *Abies fraseri* in the area.



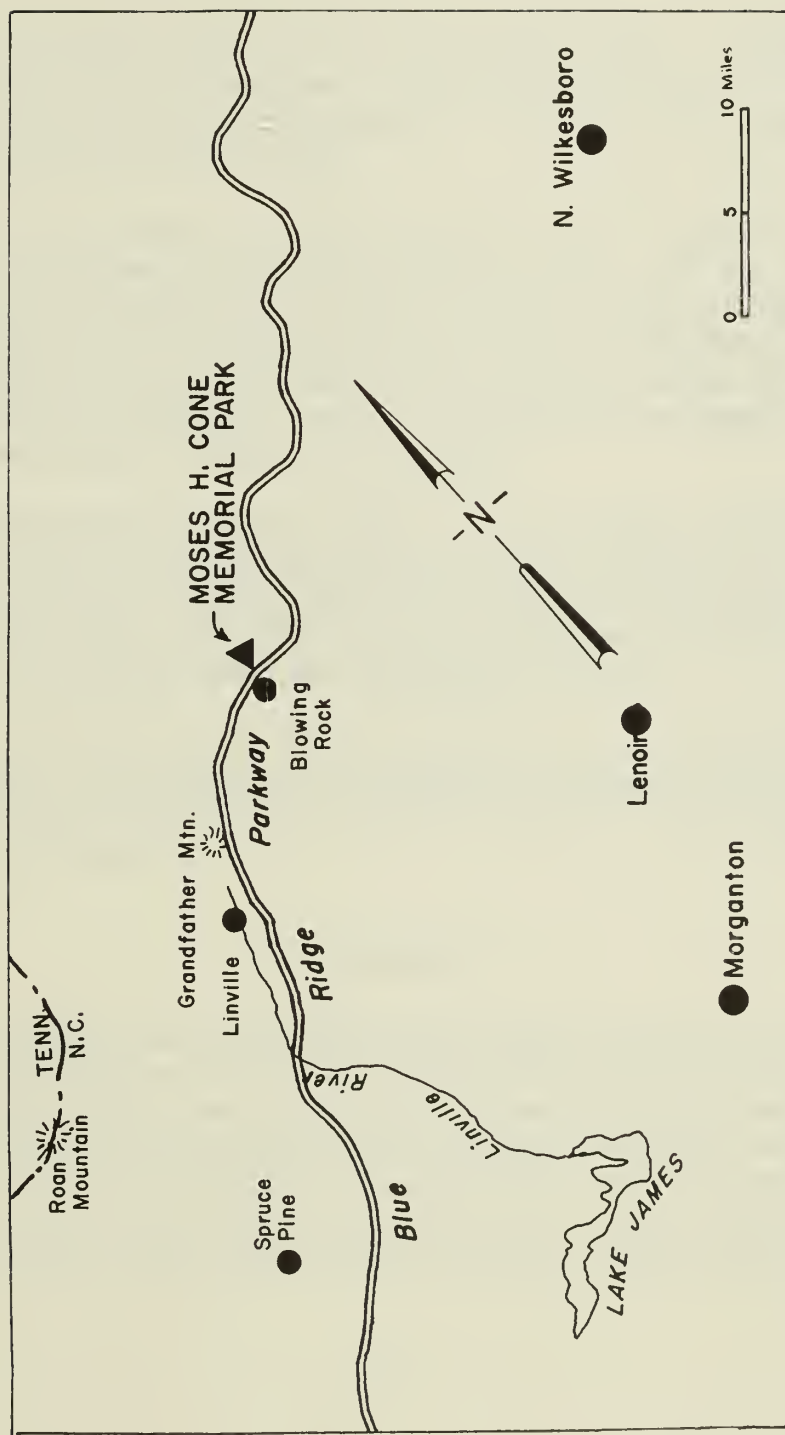


FIG. 1 LOCATION OF THE MOSES H. CONE MEMORIAL PARK



One of the largest fir stands is a two acre plantation established in 1910 bordering the southern shore of one of the small lakes. Another stand of scenic importance is clustered around the burial site of Mr. and Mrs. Cone on a knoll overlooking the mansion. Other firs are scattered in small groups throughout the Park.

The balsam woolly aphid, *Adelges piceae* Ratz., has been causing fir mortality in this area since 1963 (Ciesla, *et al.*). During a 1964 evaluation survey, it was discovered that *Fomes annosus*, a root rot fungus, was causing mortality in the aforementioned two acre fir plantation. At that time the stand had already suffered 47% mortality. Although the balsam woolly aphid was epidemic in the stand, most of the mortality was attributed to the fungus pathogen (Astin, *et al.*, 1965).

In 1967 the Park Service, in an effort to prevent further mortality, sprayed accessible fraser firs with a one-eighth percent solution of Lindane. This included the remaining living trees in the plantation and several small roadside groups of fir. The firs around the grave site were not sprayed since they are in the Blowing Rock watershed system.

The purpose of this evaluation was to determine if the aphid had reinfested the spray areas. Participants in the April 9, evaluation were Carl B. Hanson, Park Ranger, Blue Ridge Parkway and T.H. Flavell, Entomologist, Division of Forest Pest Control.

## METHODS

Aphid infested trees can be located either from visual crown symptoms, i.e. flagging of the foliage, or by carefully examining the bark for the adult aphids. Both methods were used in the course of this evaluation. Detection of adult aphids by bark examination was hindered because the flocculent white waxy material secreted by the adults during the growing season is not produced during the winter months. At the time of this evaluation, only the weathered remains of the wax covering last year's adults was present.





## RESULTS

Two firs showing considerable flagging on one side of the crown were noted along the lake road bordering the northern edge of the two acre plantation. An additional infested tree was found on the eastern edge of the plantation where it adjoins private land. Most of the trees in the interior of the plantation had died, but none of the living ones examined showed any sign of aphid infestation.

A slight amount of flagging was prevalent in several of the trees surrounding the Cone grave site. No adult aphids, however, could be found.

## DISCUSSION

The trees sprayed in 1967 still appeared to be protected from aphid attack. It is the author's opinion that the two infested trees along the lake road may not have received a thorough coverage of insecticide since the infested side was away from the road. It was known that the other infested tree found in the plantation was not sprayed because of inaccessibility.

The early stages of an aphid infestation were evident in the trees around the Cone grave. Left unprotected, mortality may be expected in this area in three to four years.

## RECOMMENDATIONS

1. Re-spraying the accessible fir type in the Cone Park should be delayed at least another year with the following exceptions:
  - a. It would be desirable to spray the trees along the lake road as they form a highly visible and attractive border to the road.
  - b. The trees surrounding the Cone grave comprise the only woody vegetation on the knoll and thus add materially to the atmosphere of the site. Since they are in the Blowing Rock watershed they could be protected by a yearly application of lime-sulphur in water. A dilution of one part lime-sulfur to ten parts water applied during the dormant season has proven effective in controlling this aphid. Spraying can be done anytime between November and March.



## REFERENCES

- Ciesla, W.M., H.L. Lambert and R.T. Franklin. 1963. The status of the balsam woolly aphid in North Carolina and Tennessee. USDA, USFS, SA, S&PF, Div. FPC, Asheville, N.C. Rpt. No. 1-11-63.
- Astin, J.S., C.E. Cordell, and R.T. Franklin. 1965. An evaluation of disease conditions in a fraser fir plantation, Moses H. Cone Memorial Park, Blue Ridge Parkway, North Carolina. USDA, USFS, SA, S&PF, Div. FPC, Asheville, N.C. Rpt. No. 65-1-3.



More detailed information can be obtained by writing to the Forest Pest Control Division Field Offices listed below or to the Atlanta Office.

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