

DETECTION AND EVALUATION OF BARK BEETLE INFESTATIONS  
LONG CANE AND EDGEFIELD DISTRICTS  
NATIONAL FORESTS IN SOUTH CAROLINA

by

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#### INTRODUCTION

A detection survey and biological appraisal of bark beetle infestations on the Long Cane and Edgefield Districts of the National Forests in South Carolina was made during the period September 3-5, 1963. The objectives of this survey were to determine the level of bark beetle activity, particularly of the southern pine beetle, Dendroctonus frontalis Zimm., in this area and the consequent need for suppression. The field observations were made by W. M. Ciesla, Forest Insect and Disease Control Branch, U. S. Forest Service, Asheville, North Carolina, and A. B. Rogers, Jr., Timber Management Assistant, National Forests in South Carolina.

Bark beetle activity has been at relatively low levels in this area during the past year (Ciesla, 1962; Drooz, et al., 1962) in spite of the fact that the southern pine beetle has been at epidemic levels in other portions of the upper piedmont in South Carolina. The current observations indicate that D. frontalis, although present, is causing only limited damage and there is no apparent need for a control program at this time.

#### SURVEY METHOD

**AERIAL SURVEY**--An aerial survey of both districts was made by flying pre-determined flight lines running roughly northwest and southeast, spaced at five-mile intervals. Two observers sketchmapped red-topped and fading pines on a half-mile strip on either side of the survey plane, flying at an air speed of 90-100 m.p.h. at an altitude of 1000 feet above the ground level.

**GROUND CHECKS**--Eleven spots of red-topped and fading pines were ground checked over the two districts.

#### TECHNICAL DATA

**CAUSAL AGENT**--The southern pine beetle, Dendroctonus frontalis Zimm., was the causal agent in five of eleven spots checked. Ips avulsus (Eichh.) was infesting crowns and upper portions of the base of trees attacked by D. frontalis. Both species appeared to be attacking the trees at the same time.

Ips grandicollis (Eichh.) and the black turpentine beetle, Dendroctonus terebrans (Oliv.), were observed infesting trees which were struck by lightning, mechanically injured or declining from littleleaf disease.

HOST TREES ATTACKED--Shortleaf pine, Pinus echinata Mill., and loblolly pine, P. taeda L., were infested.

TYPE OF DAMAGE--Trees attacked by bark beetles are girdled and killed. In addition, D. frontalis and Ips spp. are vectors of blue staining fungi, which hasten the death of infested trees and reduce their market value.

BIOLOGICAL INFORMATION--Brood survival of D. frontalis appeared to be relatively low. This was shown by the small number of emergence holes in the infested trees and by the absence of pupal chambers adjacent to the egg galleries.

Clerid and ostomid larvae, predators of bark beetle larvae and pupae, were frequently collected from old egg galleries of D. frontalis. Adults of the clerid Thanasimus dubius (F.) were collected from trees infested with D. terebrans.

ENVIRONMENTAL FACTORS--Temperature and precipitation, as recorded at the Greenwood Weather Station, has been near normal for the first half of 1963 (Climatological Data, South Carolina - 1963).

D. frontalis activity is restricted to the northern half of the Long Cane District. This area consists of typical upper piedmont sites and contains heavily eroded soils, and a high volume of shortleaf pine declining from littleleaf disease.

LOCATION AND EXTENT OF OUTBREAK--D. frontalis infestations occur in Abbeville County in the vicinity of Parsons Mountain, the Little Muckaway Creek drainage and Curtail Creek (Fig. 1). Spots ranged in size from 5-50 trees and four of the five spots examined were currently inactive.

Ips spp. and D. terebrans are scattered over the two districts and are at relatively low levels. The largest spot of D. terebrans activity consisted of three trees. Ips grandicollis was restricted to single trees.

A concentration of Ips spp. and D. terebrans activity was detected adjacent to a recently constructed gas pipe line in the vicinity of Coon Creek and Black Branch, on the Edgefield District, where infestations occurred on trees damaged as a result of construction.

TABLE 1.--Summary of Aerial Survey Data, Long Cane and Edgefield Districts, September 3, 1963

District	Aerial Survey <sup>1/</sup>	
	Single Trees	Multiple Tree Spots
Edgefield	8	2
Long Cane	9	9
Total	17	11

<sup>1/</sup> Based on a 20% area coverage.

#### DISCUSSION

Bark beetle activity appears to be at an endemic level in the Long Cane and Edgefield Districts. The current southern pine beetle activity in the Parsons Mountain section appears to be a chronic area for this insect where some losses occur each year. Similar activity was observed in 1962 and is reported to have occurred in previous years by district personnel. Low brood survival and high proportion of inactive spots indicates that there is no immediate damage of increased losses by D. frontalis.

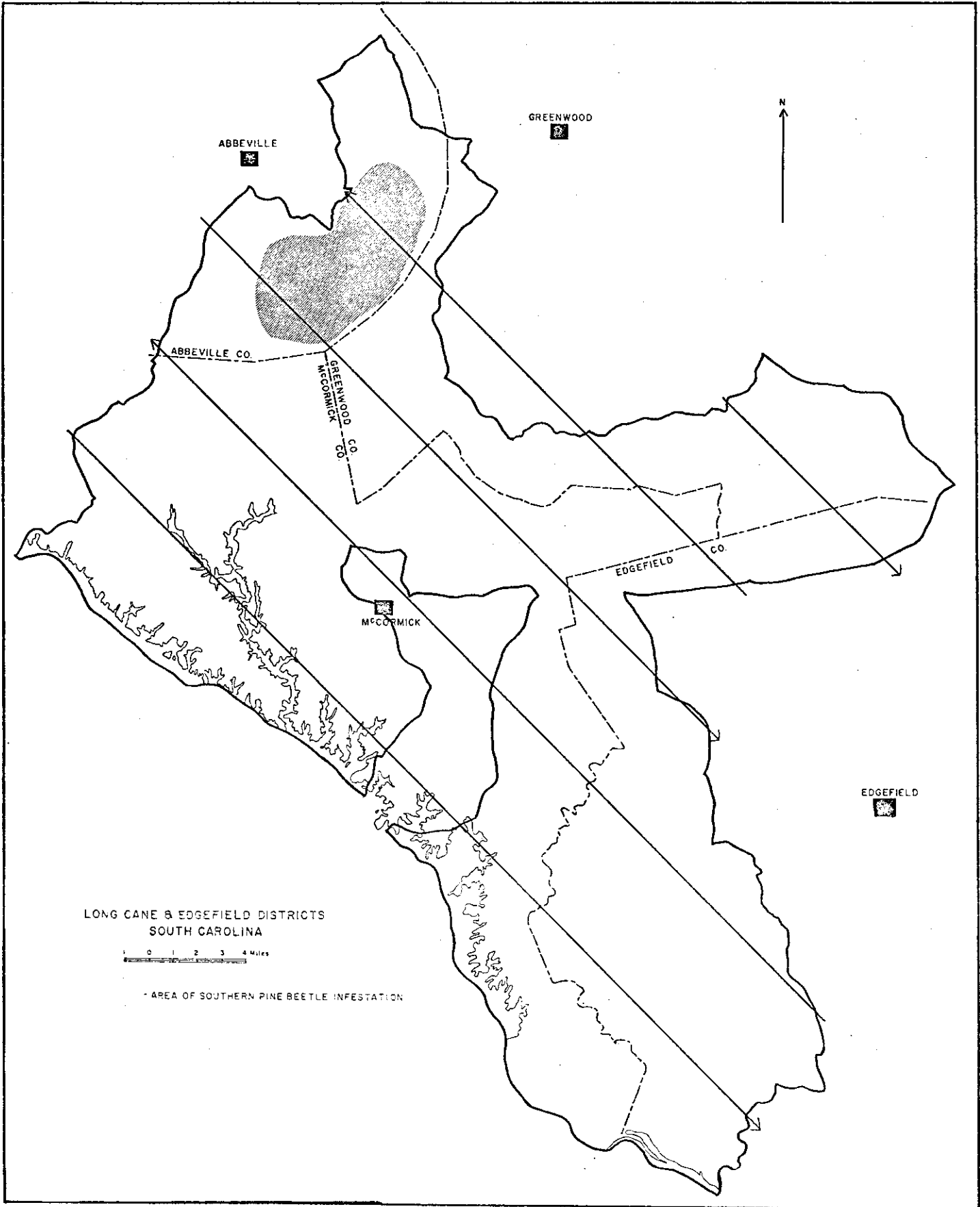
#### RECOMMENDATIONS

Bark beetles are currently at an endemic level on the Long Cane and Edgefield Districts. A suppression program does not appear justified at this time. The following recommendations are made:

1. Salvage all infested trees where practical.
2. Continue field surveillance; report any apparent increases in activity to the Zone Entomologist, Asheville, North Carolina.
3. A detection and appraisal survey should be made by Zone 1 personnel in April, 1964.

#### REFERENCES CITED

1. Ciesla, W. M., 1962. Biological Evaluation of Southern Pine Beetle, Long Cane District, Sumter National Forest, South Carolina, U.S.D.A., Forest Service, Div. S&PF, Atlanta, Ga., Report No. 62-64, 3pp.
2. Drooz, A. T., R. L. Flora and W. D. Buchanan, 1962. Biological Appraisal of Bark Beetle Infestations, Long Cane Ranger District, National Forests in South Carolina, U.S.D.A. Forest Service, Div. S&PF, Atlanta, Georgia, Report No. 62-126.
3. U. S. Department of Commerce, 1963. Climatological Data-South Carolina. 66(106).



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GREENWOOD

ABBEVILLE CO.

GREENWOOD CO.  
MCCORMICK

EDGEFIELD CO.

MCCORMICK

EDGEFIELD

LONG CANE & EDGEFIELD DISTRICTS  
SOUTH CAROLINA

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AREA OF SOUTHERN PINE BEETLE INFESTATION