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Forest Insect Conditions

IN ARIZONA AND NEW MEXICO

1955

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By

M. Yasinski

ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION.

Raymond Price, Director

Fort Collins, Colorado

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X FOREST INSECT CONDITIONS IN ARIZONA AND NEW MEXICO,

1955 X

U.S.D.A., NAL

MAY 28 1953

By

F. M. Yasinski, Entomologist^{1/}

7 Albuquerque Forest Insect and Disease Laboratory,

CATALOGING PREP

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^{1/} Rocky Mountain Forest and Range Experiment Station, Forest Service, U. S. Department of Agriculture, with central headquarters at Fort Collins, Colorado, in cooperation with Colorado A & M College, Fort Collins, Colorado.

REGIONAL FOREST INSECT CONDITIONS IN BRIEF

The drain on timber resources of Arizona and New Mexico by forest insects continued at an epidemic rate in 1955. The spruce budworm caused light to heavy defoliation on 400,000 acres of mixed conifer type. Ponderosa pine stands were plagued with several species of pine bark beetles; approximately 131 million board-feet of timber was killed by these insects. Volume of Douglas-fir killed by the Douglas-fir beetle is placed at 10 million board-feet. Aspen defoliation by Great Basin tent caterpillar continued to increase in severity and extent. One insect pest, the fir engraver beetle, was less destructive than in 1954.

A brief résumé of important forest insect infestations during 1955 follows:

1. The southwestern pine beetle and associated bark beetle species were responsible for most of the insect-caused losses of ponderosa pine. The heaviest and most concentrated areas of tree killing were in northern and central New Mexico and near Springerville, Arizona.
2. Spruce budworm defoliation of mixed conifer and spruce-fir stands increased in severity and extent in all known centers of infestation not sprayed with DDT during 1955. In addition, a new center of heavy budworm feeding was found in the Chuska Mountains, Navajo Indian Reservation. In fact, all stands of mixed conifer and spruce-fir in Arizona and New Mexico appear to be infested to varying degrees. Areas that had been treated on Mt. Taylor in 1953 and on the Sandia Mountains in 1954 were heavily reinfested in 1955.
3. Great Basin tent caterpillar epidemics occur in many of the aspen stands. Defoliation is heaviest in the extensive aspen stands of northern New Mexico and northern Arizona.
4. The fir engraver beetle infestation in white fir in the Sandia Mountains, Cibola National Forest, killed an estimated 37,000 trees in 1954. Tree-loss estimates for 1955 are not available, but results of an observational survey in the fall of 1955 indicate a subsiding infestation.
5. The Douglas-fir beetle continues as a serious enemy of Douglas-fir throughout the stands of Arizona and New Mexico. The volume of timber losses in 1955 is estimated at 10 million board-feet, with no indications of a decrease for 1956. Current infestations are largely limited to inaccessible areas of low economic value.

6. Black Hills beetle activity in the region was markedly reduced by direct control measures. An epidemic outbreak on the Chuska Unit of the Navajo Indian Reservation was reduced substantially by direct control action.
7. Engelmann spruce beetle activity on the Tres Piedras District of the Carson National Forest is being controlled by nature. The flareup was caused by beetles that bred in cull logs and windthrown trees in logging areas.

AERIAL RECONNAISSANCE

Funds for aerial reconnaissance were insufficient for a systematic aerial coverage of all forest lands in Arizona and New Mexico in 1955. Priority areas were selected with the cooperation of land-managing agencies in the region. The flight schedules in Arizona and New Mexico were arranged in conference with various land-managing agencies to cover remote timber areas suspected of having increased beetle activity in 1955 and known bark beetle problem areas. The survey covered parts of seven National Forests, four Indian Reservations and one National Monument. Total flying time was 35 hours and 50 minutes, of which 25 hours and 20 minutes were devoted to actual survey time and 10 hours and 30 minutes to ferrying time. The survey was made during September and October. The planes used on survey, a Cessna 180 and a Piper Cub Tri-pacer, were chartered from private companies operating in Arizona and New Mexico.

STATUS OF MAJOR INSECT PESTS DURING 1955

Pine Bark Beetles

The southwestern pine beetle (Dendroctonus barberi) and associated bark beetle species (D. convexifrons and D. approximatus) killed approximately 131 million board-feet of ponderosa pine timber in Arizona and New Mexico in 1954. Estimated losses for 1955 equal or surpass this figure. Damage was most severe on the Bandelier National Monument and the adjacent Los Alamos Withdrawal Area, where an estimated 6,000 trees were killed in 1955. On the Apache National Forest, 5 million board-feet of bug-killed timber was salvaged in 1955, and on the Magdalena District, Cibola National Forest, trees are dying from beetle attack throughout the District's ponderosa pine type. Extreme drought in the Southwest for the past several years undoubtedly contributed to the increase of these destructive forest insect pests.

this is especially true on marginal sites where losses are the heaviest.

Black Hills beetle.--A marked decrease was noted in the number of trees killed by the Black Hills beetle. Only two known infestation centers were active in the spring of 1955; one on the Carson National Forest, comprising 76 infested trees; and one on the Navajo Indian Reservation, estimated at 1,104 infested trees. Control measures were carried out in both areas. Post-control examinations of the treated areas revealed a very substantial reduction in 1955 attacks. Although control measures reduced populations in areas where applied, past records show that complete control of the pest is seldom attained in 1 year. Limited tree killing by the beetle is expected in areas controlled in 1955, necessitating maintenance control in 1956. No new reports of Black Hills beetle activity were received during 1955.

Fir and Spruce Bark Beetles

The fir engraver (*Scolytus ventralis*) infestation, active since 1950 in the Sandia Recreational Areas on the Cibola National Forest, may be subsiding. An observational survey around the periphery of several groups of 1954 attacks revealed no new attacks. The District Ranger, in his annual insect-conditions report, states that although tree killing by the beetle continues, there appears to be a reduction in the intensity of the epidemic. This reduction may have been due to rains that alleviated the long drought. However, until an appraisal survey is made in 1956, no definite conclusions can be drawn as to the trend of this outbreak.

The Douglas-fir beetle (*Dendroctonus pseudotsugae*) continues as a serious pest of Douglas-fir stands throughout New Mexico and Arizona. Scattered, as well as group killing, was observed in most Douglas-fir stands. Volume of timber lost to the beetle in 1955 is estimated to be 10 million board-feet or more. From an economic standpoint this loss is not so serious as it might be because of the inaccessibility of most areas suffering heavy damage.

Engelmann spruce beetle (*Dendroctonus engelmanni*) activity of noticeable proportions was limited to the Tres Piedras District of the Carson National Forest. It is estimated that 500 trees were attacked in 1955. The flareup of spruce beetle in this area is attributed to logging activity in adjacent areas. The cutting areas, all on private holdings, provided suitable breeding material for the insect. Upon emergence from windthrown trees, cull logs, and stumps, the beetles attacked neighboring green standing spruce. Natural checks, especially woodpeckers, seem to be holding the outbreak under control.

Defoliating Insects

Spruce budworm (Choristoneura fumiferana) infestations in mixed conifer and spruce-fir type on the Santa Fe, Carson, Cibola, and Lincoln National Forests were treated by aerial application of DDT during June and July 1955. Rate of application was 1 pound per acre. Total acres treated was 441,000, or approximately half of the total acreage (800,000) in need of treatment as determined by the 1954 surveys. Average mortality of the insects from the treatment was approximately 90 percent. Budworm defoliation on the remaining untreated 400,000 acres varied from light to heavy. Several infestations of noticeable size extended their boundaries. Epidemic populations of budworm were recorded for the first time on the Chuska Unit of the Navajo Indian Reservation. Reports from various cooperators indicate that budworm is present to some degree in all conifer and spruce-fir stands in Arizona and New Mexico. To date, tree mortality in epidemic areas is greatest in the understory, but general mortality of mature trees is expected over much of the epidemic area within the next 2 to 3 years if the infestation continues at its present rate of intensity.

The Great Basin tent caterpillar (Malacosoma fragilis) continued to defoliate extensive stands of aspen in northern New Mexico and northern Arizona. Localized areas repeatedly defoliated for the past several years suffered heavy mortality, which may be approaching serious proportions in that these areas are important watersheds. Some improvement in the Taos area of the Carson National Forest is expected in 1956 because of a virus disease that appeared in 1955 and caused considerable mortality of the caterpillars.

Fall webworm (Hyphantria cunea) outbreaks on cottonwood occurred in localized areas throughout the region. A heavy infestation was successfully controlled with DDT in Oak Creek Canyon on the Coconino National Forest during the fall of 1955. A water emulsion of DDT at a rate of 1 pound per acre was applied by the use of a mist blower.

INSECT CONTROL PLANS FOR 1956

As in 1955, the control of spruce budworm epidemics should receive high priority in the 1956 program inasmuch as extensive areas of mixed conifer type on Federal and private lands are still threatened. Maintenance control against the Black Hills beetle should be continued. Suppression of other pine beetle outbreaks will be carried out by salvage logging.

Proposed forest insect-control projects for 1956 as decided upon in conjunction with land-managing agencies and in consultation with the Southwest Pest Control Committee are as follows:

Spruce budworm

Spruce budworm feeding of varying degree is prevalent on 400,000 acres of forested land in Arizona and New Mexico. Treatment is recommended for 58,500 acres. Much of the remaining 340,000 acres is on private land and federally controlled wilderness areas, neither scheduled for control in 1956. Efforts to obtain financial assistance from private land owners for a cooperative control project in areas involving private and Federal ownership have failed. Therefore, control of federally owned lands that are adjacent to untreated private holdings are not contemplated unless economic values threatened are extremely high. Limited areas of high commercial and extensive areas of esthetic values are threatened with epidemic infestations and warrant immediate control action if stand deterioration is to be prevented. Action should be initiated on 58,500 acres of federally-owned land; 30,000 acres on the Kaibab National Forest, 10,000 acres on adjoining forested land on the Grand Canyon National Park, 6,000 acres on Mt. Taylor, Cibola National Forest, and 12,000 acres on the Chuska Unit of the Navajo Indian Reservation.

Black Hills beetle

The Black Hills beetle is a primary pest of and always a potential threat to the ponderosa pine in the Southwest. Quick suppression of incipient outbreaks by direct control has succeeded in keeping the infestations in an endemic status. A serious threat to the mature pine stand on the Chuska Unit of the Navajo Indian Reservation was averted by direct control action during 1955 by the Bureau of Indian Affairs and Navajo Tribe. Ground surveys indicate that 125 trees on the Chuska Unit and 100 trees in the vicinity of the 1954 Tusas Control Project on the Carson National Forest should be treated in 1956 as a mopup procedure.

Great Basin tent caterpillar

Because of the magnitude of the current infestation of tent caterpillar and the relatively low economic values involved, chemical control on a widescale basis is not suggested. Chemical control is deemed practical only in areas heavily used for recreation or where domestic water supplies may be polluted. Control action is proposed on approximately 2,000 acres of roadside strip in the North Rim Area of the Grand

Canyon National Park and Kaibab National Forest. A joint control project is planned between the National Park Service and U. S. Forest Service. Artificial control with DDT is proposed on 1,300 acres on the Navajo Indian Reservation for the prevention of water pollution in areas heavily used by the Navajo Tribe for residential areas during the summer months. Annual maintenance control is mandatory for such areas if yearly protection is desired, since adjacent untreated infestations are constant sources of reinfestation. Preliminary results of the treatment of tent caterpillar on the Santa Fe National Forest with a polyhedrosis virus show promise. Continuation of the test is planned on the Navajo Indian Reservation.

Fall webworm

A small infestation of webworm on cottonwoods occurred in Chaco Wash on the Chaco Canyon National Monument in 1955. A small-scale control project is planned for this area to prevent the spread of this defoliator to parts of the Wash where willows and cottonwoods were planted to assist in erosion control.

Miscellaneous defoliating insects

A variety of defoliating insects annually damage trees and shrubs in the many national parks and monuments in the Southwest. Annual maintenance control is planned by National Park Service where the insect damage directly affects the scenic or public-use values.

1955 CONTROL ACCOMPLISHMENTS BY FOREST-MANAGING AGENCIES

ARIZONA AND NEW MEXICO

<u>Insect</u>	<u>Host</u>	<u>Location of project</u>	<u>Extent of treatment</u>		<u>Control method</u>
			<u>No. acres</u>	<u>No. trees</u>	
Spruce budworm	Douglas-fir, white fir, Engelmann spruce, blue spruce	Santa Fe, Carson, Cibola, Lincoln National Forests	441,000	--	DDT -- aerial spray
Black Hills beetle	Ponderosa pine	Upper Tusas, Carson National Forest	320	76	Ethylene dibromide emulsion treatment of felled and standing trees
		Chuska Unit, Navajo Indian Reservation	650	1,104	
Tent caterpillar	Aspen	North Rim, Grand Canyon National Park, and adjoining Kaibab National Forest	1,500	--	DDT -- mist blower
Walnut caterpillar	Texas black walnut	Walnut Canyon, Carlsbad Caverns National Park	500	1,000	DDT -- mist blower
Chain-spotted geometer	Desertwillow	Walnut Canyon, Carlsbad Caverns National Park	500	200	DDT -- mist blower
Fall webworm	Black walnut, oak, boxelder	Oak Creek Canyon, Coconino National Forest	200	--	DDT -- mist blower
Miscellaneous defoliating insects	Miscellaneous broadleaved species	Other National Parks and Monuments in New Mexico and Arizona	--	--	DDT -- mist blower

INFESTATIONS PROPOSED FOR CONTROL IN 1956

ARIZONA AND NEW MEXICO

<u>Insect</u>	<u>Host</u>	<u>Location of project</u> (see map below)	<u>Extent of infestations</u>		<u>Control method</u>
			<u>No. acres</u>	<u>No. trees</u>	
Spruce budworm	Douglas-fir; spruce	(1) Mt. Taylor, Cibola National Forest	6,000	--	DDT -- aerial spray
		(2) North Rim, Grand Canyon National Park; Kaibab National Forest	40,000	--	DDT -- Aerial spray
		(3) Chuska Unit, Navajo Indian Reservation	12,500	--	DDT -- aerial spray
Black Hills beetle	Ponderosa pine	(4) Chuska Unit, Navajo Indian Reservation	7,872	120	Ethylene dibromide emulsion treatment of felled and standing trees
		(5) Upper Tusas, Carson National Forest	1,000	100	
Tent caterpillar	Aspen	(6) North Rim, Grand Canyon National Park; Kaibab National Forest	2,000	--	DDT -- mist blower
Fall webworm	Cottonwood; willows	(7) Chaco Wash, Chaco National Monument	200	--	DDT -- mist blower
Miscellaneous defoliating insects	Miscellaneous broadleaved species	Other National Parks and Monuments in New Mexico and Arizona	--	--	DDT -- mist blower

FOREST INSECT SURVEY
NEW MEXICO & ARIZONA
1955