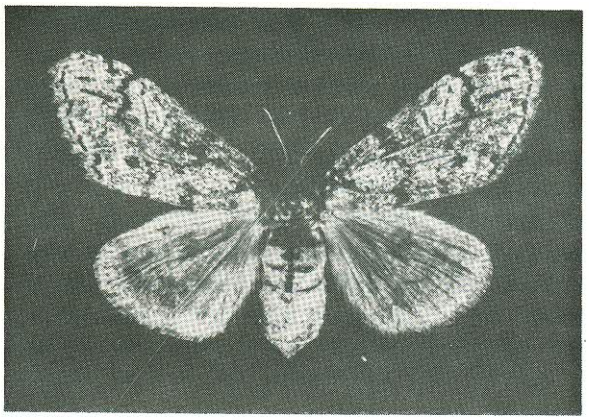
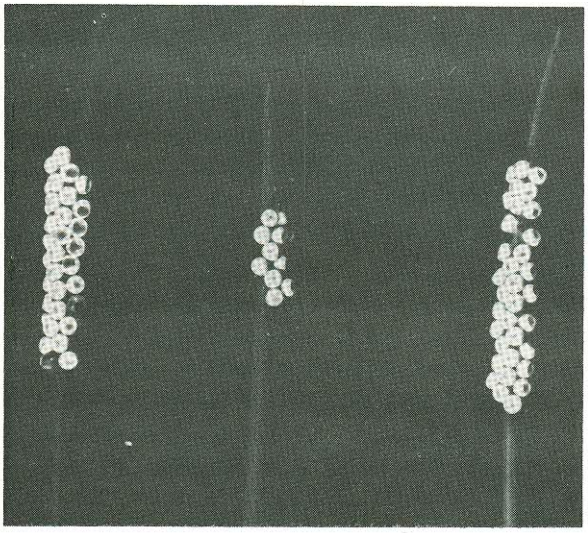


F–513643

An outbreak of an undetermined pine tussock moth occurred in ponderosa pine in the vicinity of Ashland and Ft. Howes, Custer National Forest, Montana.



F–513642

Egg masses of an undetermined tussock moth on needles of ponderosa pine. Custer National Forest, Montana.

CENTRAL ROCKY MOUNTAINS

By AMEL E. LANDGRAF JR., Division of Timber Management
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Conditions in Brief

Black Hills beetle populations through most of the Central Rocky Mountains were reduced to their lowest level since the early 1950's primarily by strong suppression programs of Federal, State, and private land managers, with assistance from beneficial insects and weather.

A potentially serious buildup of Engelmann spruce beetle populations may occur in spruce stands on the San Juan, Grand Mesa-Uncompahgre and Gunnison National Forests, southwestern Colorado, that were exposed to high winds in the winter and spring of 1965. Heavy wind damage occurred in 5 areas. Fortunately, trees in only two of these areas were found heavily infested and many of these can be salvaged. Trees which cannot be salvaged may require chemical treatment.

Trap trees were used to prevent an Engelmann spruce beetle outbreak on the southern end of the Green Horn Mountains, San Isabel National Forest, Colorado. Sixteen hundred infested trees were found on the north end of the Green Horn Mountains. Fortunately, most of these trees can be salvaged before the beetles emerge.

The spruce budworm caused heavy defoliation of 79,000 acres of true firs and Douglas-fir on the San Isabel and San Juan Forests in southern Colorado. The intensity of defoliation is expected to be about the same in 1966.

Although numerous tents of two species of tiger moths occurred throughout the ponderosa and pinyon pine type in Colorado, defoliation was generally light. A new outbreak of pandora moth, the first since 1937–39, was discovered on the Arapaho National Forest.

Status of Insects

Black hills beetle, *Dendroctonus ponderosae* (Hopk.). The serious outbreak of this beetle in the Black Hills of South Dakota and Wyoming was brought under control in 1965. During 1965 the Forest Service; Homestake, Bald Mountain and Deadbroke Mining Companies; Bureau of Land Management; National Park Service; and the State Forest Services of South Dakota and Wyoming and Lawrence County treated 18,700 infested trees.

Land managers were aided in their control effort by a sharp increase in numbers of two beneficial insects, the clerid beetle, *Enoclerus sphegeus* F., and the predaceous fly, *Medetera aldrichii* Wh. Several species of mites

were also observed in abundance on many of the adult beetles. Although their overall effect on the beetle is not fully understood, it is believed they lower the female's egg-laying capacity. One species is believed to be an egg predator, the others are probably free-living forms.

Cold, wet weather in August and September 1964 also took a heavy toll of adult beetles that were migrating from old beetle-killed trees to green trees, and undoubtedly this helped to prevent the outbreak from increasing. A small cooperative project will be needed in 1966 to clean up scattered beetle infestations on private lands.

In the Big Horn Mountains of north central Wyoming, Federal and State land managers were also successful in reducing Black Hills beetle infestations. The Bureau of Land Management, the Forest Service, and the Wyoming State Forest Service treated 9,400 infested trees in 1965. Entomological data collected in the affected area indicates that beetle numbers are on the decline due to natural control factors, primarily beneficial insects.

The intensity of the outbreak on the Medicine Bow National Forest declined slightly in 1965. Prolonged cold weather at the time the beetles were ready to emerge, forced about half of the brood to overwinter. Woodpeckers will find these overwintering brood attractive prey.

In Colorado, the Forest Service, National Park Service, Bureau of Land Management, Colorado State Forest Service, Denver Mountain Parks, and the Mountain Parks Association successfully brought an outbreak along the Front Range under control. Except for a small infestation on private lands southwest of Littleton, control will not be necessary in 1966. Biological evaluations indicate beetle populations will be held in check by beneficial insects.

Over on the western slope the San Juan Forest discovered a small Black Hills beetle outbreak north of Dolores, Colo. An estimated 400 polesized ponderosa pine were killed in 1965. This infestation will be treated in 1966. An infestation on the Uncompahgre Plateau, Grand Mesa-Uncompahgre Forest, was brought under control by treating 680 infested trees.

Engelmann spruce beetle, *Dendroctonus obesus* (Mann.). (*D. engelmanni* Hopk.), maintains a high endemic population level by breeding in windthrown spruce. During years when high winds cause an unusual amount of windthrow, beetle populations increase rapidly. Such a situation occurred in 1965. Severe winds during the winter and spring months blew down hundreds of spruce trees on the San Juan, Grand Mesa-Uncompahgre and Gunnison Forests. Insect survey crews found 5 areas where blowdown was unusually heavy. Fortunately, trees in only two of the areas, headwaters of Mancos River, San Juan Forest and Middle Fork of Cimarron River, Grand Mesa-Uncompahgre Forests, were found to be heavily infested. Some of the infested trees can be salvaged, the remainder will have to be treated.

Foresters and entomologists are even more concerned with areas where blowdown is less intense but occurs over large areas of inaccessible type. The real danger here is of additional blowdown occurring just before the beetles emerge from the present windthrow. Such a situation could trigger a serious spruce beetle outbreak. More intensive surveys and evaluation will be made in 1966 to determine likely trouble spots.

An Engelmann spruce beetle outbreak involving 1,600 trees was discovered in the fall months on the north end of the Green Horn Mountains, San Isabel Forest. Fortunately, most of the infested trees can be salvaged. The remainder may have to be treated in 1966. On the south end of the Green Horn Mountains trap trees were used to prevent an outbreak. These trap trees will be salvaged or burned in 1966.

Mountain pine beetle, *Dendroctonus ponderosae* (Hopk.). (*D. monticolae* Hopk.). A small outbreak was discovered late in 1965 southwest of Lander, Wyo, Shoshone National Forest. The 400 infested trees will be piled and burned during January-March 1966. Elsewhere in northwestern Wyoming, east of

the Continental Divide, populations remained at an endemic level.

Spruce budworm, *Choristoneura fumiferana* (Clem.), infestations persist in southern Colorado on some 79,600 acres of fir type. Heaviest defoliation occurred in the Vallecito Reservoir, Florida River and Little Sand Creek areas, San Juan Forest; eastern slope of the Sangre de Cristo Mountains, San Isabel Forest; and Soap Creek drainage, Gunnison Forest. Although damage was heavy with more than 60 percent of the current foliage destroyed, it was not severe enough to cause top-killing or tree mortality. Defoliation is expected to remain heavy in 1966. There are no plans to suppress infestations in 1966.

Pandora moth, *Coloradia pandora* Blake. A new outbreak was discovered in North Battle Creek, southwest of Granby, Colo., the first in 26 years on the Arapaho Forest. The 1937–39 outbreak covered 100,000 acres before a wilt disease brought it under control. The present infestation appears plagued by disease as numerous dead caterpillars were seen hanging from branches. Since the insect has a 2-year life cycle, damage, if any, will be most noticeable in 1967.

Tiger moths, *Halisidota ingens* Edws. and *H. argentata* Pack. Numerous tents of these two tiger moths were found throughout the ponderosa pine and pinyon pine type in Colorado. The last time these insects were reported in such abundance was 1956. Heaviest feeding of *H. ingens* occurred in the Black Forest northwest of Colorado Springs. *H. argentata* was found to be most abundant on Kannah Creek southwest of Grand Junction. Elsewhere damage by the two species was hardly noticeable.

Great Basin tent caterpillar, *Malacosoma fragile* (Stretch), infestations appear to be on the increase in Colorado. Aspen stands in the Cumbres Pass area, Rio Grande National Forest, plagued by this defoliator for many years, were completely defoliated in 1965. Natural control brought a persistent outbreak in this same area under control in 1960.

Douglas-fir tussock moth, *Hemerocampa pseudotsugata* McD. Although this insect has never been a serious problem in the Central Rocky Mountains, its presence causes concern as it is regarded as the most serious defoliator of Douglas-fir and true firs in the West. This year the insect was found on blue spruce and Douglas-fir, planted as ornamentals, at Monument, Colo.

Douglas-fir beetle, *Dendroctonus pseudotsugae* Hopk. Persistent infestations on Devil Mountain, San Juan Forest and Powderhorn area southwest of Gunnison, Colo, changed very little from that of a year ago. Elsewhere in the Central Rocky Mountains, beetle populations remained endemic.

Oregon pine ips, *Ips pini* (Say). (*I. oregoni* Eichh.). This bark beetle continued at endemic levels. Above average precipitation has kept trees in good growing condition, an unfavorable environment for the beetles which normally attack weakened trees. Populations are expected to remain endemic in 1966.

SOUTHWESTERN STATES [1]

By D. D. LUCHT, Division of Timber Management[2]
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Conditions in Brief

The spruce budworm was the No. 1 enemy of Southwestern forests in 1965. It damaged mixed-conifer stands on 470,000 acres, including 50,000 heavily defoliated in a new outbreak near Taos, N. M. Defoliation on the remaining 420,000 acres of older infestations either declined or remained static. The budworm overshadowed another serious defoliator, the white fir needle miner, a newcomer to the Southwest. Recorded for the first time in 1964, this miner heavily defoliated white fir on about 62,000 acres in northern Arizona in 1965. Two tussock moths, previously unobserved, became important by stripping broadleaf trees in high-use recreation areas of southern New Mexico. Pine tip-moths, previously of little economic concern, heavily damaged planted ponderosa seedlings in north-central Arizona.

[1] Includes all forested lands in Arizona and New Mexico and National Park Service land in southern Colorado and western Texas.

[2] Seed and cone insect information submitted by Dr. H. Grant Kinzer, New Mexico State University, Las Cruces.