United States
Department of
Agriculture

**Forest
Service**

Forest Insect and Disease Conditions in the United States 1980

FOREWORD

This is the 30th annual report of insect and disease conditions in U.S. forests. It was compiled by the Forest Pest Management Staff, State and Private Forestry, Washington Office. It is intended to provide forest land managers with information on the status of major forest insect and disease pests in 1980. A more comprehensive report on distribution and population trends of these pests will be prepared every 5 years.

Detailed information on any of the insects and diseases discussed in the report can be obtained directly from Forest Service Regional and Area Offices.

We appreciate the assistance of all State, Federal, and private cooperators who provided information for this report.

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This publication reports information involving pesticides. It does not contain recommendations for their use, nor does it imply the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

Caution: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture of any product or service to the exclusion of others which may be suitable.

Common names of the insects discussed in this report are approved by the Entomological Society of America (ESA) or are widely accepted and commonly used. The ESA approved common names are indicated in the Insect Index. Scientific names of disease-causing agents are changed as additional studies are made. Recently approved new names are listed with the previously used names in such cases for the information and convenience of the reader.

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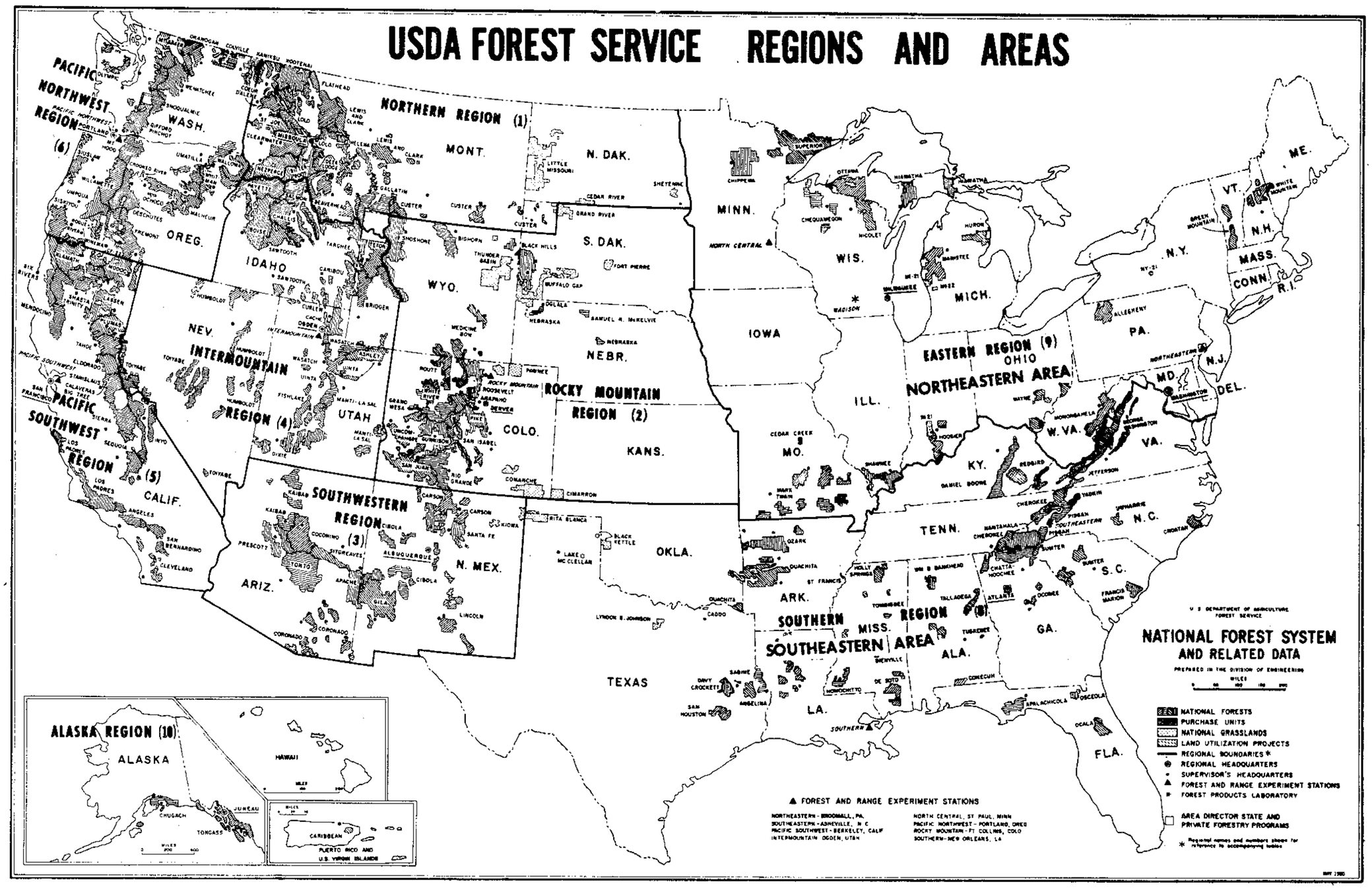

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1980

National Summary

Eastern Conditions

The spruce budworm, gyspy moth, and southern pine beetle were the most damaging forest insects in the Eastern United States in 1980. The spruce budworm defoliated trees on approximately 6.6 million acres in Maine, Wisconsin, Minnesota, and Michigan (fig. 1), about the same area as in 1979. Spruce budworm defoliation trends are summarized in table 1.

After being at a low point in 1979, gypsy moth populations exploded in 1980. The amount of visible defoliation reached the highest level recorded since the insect was introduced from Europe in 1869. A total of 5,071,600 acres were defoliated in 1980 compared with 644,600 acres in 1979 (table 2). Areas with detectable defoliation are mapped in fig. 2.

Southern pine beetle activity in Georgia, Alabama, Mississippi, and South Carolina has decreased compared to last year's tremendously damaging outbreak. A total of 245 counties are now experiencing southern pine beetle activity (fig. 3).

Drought and high summer temperatures caused widespread wilting, leaf fall, and increased tree mortality. Root and stem decay fungi continue to cause major loss to hardwoods. Dutch elm disease intensified somewhat in several Southern States and Maine while remaining about the same or decreasing elsewhere. Fusiform rust, Scleroderris canker, sand pine root disease, and annosus root rot were damaging conifer diseases which received most attention. Pinewood nematode, a potentially damaging pest, was confirmed in eight additional States for a total of thirteen. Little damage has been reported.

Western Conditions

The western spruce budworm and the mountain pine beetle were the most damaging insect pests in Forests of the Western United States this year.

Western spruce budworm defoliation occurred on about 4.08 million acres in 1980 (table 3). Infested areas of Arizona, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington, and Wyoming are shown in fig. 4.

Mountain pine beetle killed lodgepole, ponderosa, and other pines on 4.14 million acres of the Western United States. Areas of infestation are shown in fig. 5. Mountain pine beetle infestation data is summarized in table 4.

Dwarf mistletoes and root pathogens caused the most damage in the West. Foliage diseases were widespread in several areas. Rust diseases were of local significance.

Forest Insect and Disease Conditions by Region

NORTHERN REGION (R-1)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Lodgepole, ponderosa, and other pines	Idaho, Montana, Wyoming	Epidemics exist on the Gallatin, Kootenai, Lolo, Beaverhead, and Flathead National Forests and in Glacier and Yellowstone National Parks. In 1980 beetle infestations covered 1.7 million acres of lodgepole pine type, 131,000 acres of whitebark pine, 16,000 acres of ponderosa pine, and 3,400 acres of western white pine. The trend throughout the Region is an increase in beetle losses in nearly all acres of susceptible host.
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir		Low levels throughout Region.
Spruce beetle *Dendroctonus rufipennis* (Kby)	Englemann & other spruces		Low levels throughout Region.
Pine engraver beetle *Ips pini* (Say)	Pines		Low levels throughout Region.
Western balsam bark beetle *Dryocoetes confusus* Sw	Subalpine fir		Low levels throughout Region. An estimated 2,475 trees killed on Flathead National Forest, 1,325 trees on Beaverhead National Forest, 1,055 trees on Gallatin National Forest.
Western spruce budworm *Choristoneura occidentalis Free.*	Douglas-fir, true firs	Idaho, Montana, Wyoming	For the first time since 1967 less than 2 million acres of budworm caused defoliation were detected; only 976,072 acres of defoliation were mapped in 1980. Small areas of new defoliation occurred on the Clearwater and Idaho Panhandle National Forests. Increases to 25,537, 184,198, and 50,435 acres were recorded on the Custer and Gallatin National Forests and Yellowstone National Park, respectively. Major declines in defoliation were recorded on the remainder of the National Forests in Montana.
A budworm *Argyrotaenia* sp. near *gogana* (Kft.)	Hemlock and other conifers	Idaho, Montana	This insect was first documented as a forest pest in 1978 when it defoliated 40 acres of forest near Wallace, Idaho. The infestation has since spread onto the Kootenai National Forest. In 1980 defoliation occurred on more than 11,000 acres.
Douglas-fir tussock moth *Orgyia pseudotsugata* McD.	Douglas-fir, true fir, spruce		Remained very low in 1980.
Forest tent caterpillar *Malacosoma disstria* (Hub.)	Aspen	North Dakota	The infestation that started in 1976 continued to decline in 1980. Only a few scattered patches of defoliation were evident.
Larch casebearer *Coleophora laricella* Hbn.	Larch	Idaho, Montana	Defoliation declined substantially with 4,899 acres detected on the Panhandle National Forests compared to 19,424 in 1979 and with 50 acres observed on the Clearwater National Forest in 1980 compared to 5,125 acres in 1979. Visible defoliation was noted for the first time in three small areas near Missoula, Montana.

[1] Includes forests in Montana, northern Idaho, North Dakota, northwestern South Dakota, and National Park Service lands in northwestern Wyoming.

NORTHERN REGION (R-1)

Insect	Host	Location	Remarks
Cankerworms *Paleacrita vernata* (Peck) *Alsophila pometaria* (Harr.)	Siberian elm	North Dakota	Shelterbelts continue to be defoliated by these insects, resulting in branch dieback and predisposing the belts to other mortality agents.
A needleminer *Coleotechnites* sp.	Ponderosa pine	Montana	Light defoliation only on University of Montana campus in Missoula.
Cone and seed insects			Better than normal cone production was observed in many of the seed production areas surveyed. Greatest cone injury (50-100 percent) occurred to Douglas-fir and western larch in areas infested with western spruce budworm. *Dioryctria* spp. were very damaging to ponderosa pine cones in some areas. *Conophthorous monticolae* Hopk. caused serious losses to white pine cone production in northern Idaho.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoe			
Arceuthobium americanum Nutt. ex Engelm.	Lodgepole pine	Montana, Idaho	More than 28 million ft^3 of lodgepole pine, Douglas-fir, and western larch growth is lost annually on Montana and northern Idaho National Forests. The effects on State or privately owned forests are probably similar but largely unmeasured.
Arceuthobium douglasii Engelm.	Douglas-fir		
Arceuthobium laricis (Piper) St. John	Western larch		
White pine blister rust			
Cronartium ribicola Fisch.	Western white pine	Idaho	Thousands of acres of National Forest land in northern Idaho suffer significant loss.
Root Disease			
Laminated root rot			
Phellinus weirii (Murr.) Gilbn.	Douglas-fir, grand fir	Idaho, Montana	Aerial surveys of four National Forests in northern Idaho and northwestern Montana showed that almost 60,000 acres of commercial forest land was occupied by root disease centers. This estimate excluded those centers not visible from the air. The Coeur d'Alene National Forest reportedly had about 5 percent commercial forest land occupied by root disease centers. Incidence on other National Forest System lands was 0.5 - 1.2 percent. Laminated root rot is one of the Region's major root disease problems. Shoestring root rot is also widespread both alone or in association with black-stain root disease. Black-stain may predispose trees to shoestring root rot. Annosus root rot, and brown cubical butt rot are widespread; however, their importance and distribution are undetermined.
Shoestring root rot			
Armillariella mellea (Vahl. ex Fr.) Karst.	Douglas-fir		
Black-stain root disease			
Verticicladiella wageneriii Kend.	Douglas-fir, Lodgepole pine		
Annosus root rot			
Heterobasidion annosum (Fr.) Bref.	Douglas-fir, and other conifers		
Cubical butt rot			
Phaeolus schweinitzii (Fr.) Pat.	Douglas-fir, and other conifers		
Foliage Disease			
Larch needle cast			
Hypodermella laricis Tub.	Western larch		Trees of all ages were affected. Disease incidence was particularly widespread in northern Idaho and northwest Montana due to wet spring weather. Disease impact is presently undetermined.
Vascular Wilts			
Dutch elm disease			
Ceratocystis ulmi (Buism.) C. Mor.	Elm species	Montana, North Dakota	An agressive sanitation program in Billings, Montana, has reduced elm mortality from 987 trees in 1979 to 220 in 1980. The disease is widespread in southeast North Dakota. Dutch elm disease incidence in woodlands in the eastern part of the State was estimated at 0.1 percent.
Nursery Diseases			
Botrytis cinera Pers. ex. Fr.	Engelmann spruce	Idaho	Extensive needle and twig blight damage reported in Coeur d'Alene Nursery on 2-0 Englemann spruce.
Phoma sp.	Western larch		Grey mold caused by *Botrytis cinera* interfered with western larch containerized seedling production seriously restricting winter production at the Coeur d'Alene Nursery.

ROCKY MOUNTAIN REGION (R-2)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Lodgepole, ponderosa, and other pines	Colorado, South Dakota, Wyoming	The mountain pine beetle continues to be destructive throughout the Front Range of Colorado and the Black Hills of South Dakota and Wyoming. Some new losses have occurred on Casper Mountain, south of Casper, Wyoming. While populations in the Black Hills are expected to remain high, the decline in population along the Colorado Front Range should continue.
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir	Colorado	Douglas-fir beetle populations occur in small scattered pockets throughout the Region. The most significant tree killing by this insect occurred near Vallecito Reservoir on the San Juan National Forest and on a few steep slopes of Ute Mountain west of Cortez.
Spruce beetle *Dendroctonus rufipennis* (Kirby)	Englemann & other spruces		Endemic throughout Region. Some tree killing occurred on Rabbit Ears Mountain on the Routt National Forest.
Pine engraver beetles *Ips pini* (Say) and *Ips calligraphus* (G)	Pines	South Dakota	These beetles are becoming a more serious pest in the Black Hills, particularly around Rapid City.
Western spruce budworm *Choristoneura occidentalis* Free.	Douglas-fir, true firs	Colorado	Defoliation was detected on 1,052,000 acres in Colorado. This is a slight increase over that reported in 1979.
Jack pine budworm *Choristoneura pinus* Free.	Jack pine	Nebraska	Moderate to high budworm levels occurred on 2,400 acres of scattered jack pine stands on the Nebraska National Forest. A pilot suppression project using *Bacillus thuringiensis* Berliner was conducted in June 1980. Preliminary results indicate that aerial spraying of this microbial insecticide caused substantial budworm population reduction, but gave little foliage protection.
Douglas-fir tussock moth *Orgyia pseudotsugata* McD.	Douglas-fir, true firs, spruce	Colorado	This insect continues to be a problem on ornamental trees in several suburban areas in Colorado. No defoliation was detected in forest areas.
Western tent caterpillar *Malacosoma californicum* (Packard)	Aspen	Colorado	Severe defoliation of 18,000 acres of aspen on the San Juan National Forest near Pagosa Springs occurred in 1980. Severe defoliation was 7,500 acres in 1977, 8,000 acres in 1978, and 16,000 acres in 1979.
Ponderosa pine needleminer *Coleotechnites ponderosae* H. & S.	Ponderosa pine	Colorado	Damage by this insect was detected on a large area of the Colorado Front Range, the Uncomphagre Plateau, and in scattered pockets near Vallecito Reservoir in La Plata County. The area of infestation has been increasing the last few years.
Aspen leafminer *Phyllochnistis populiella* Chambers	Aspen	South Dakota	This insect continues to damage aspen in the Black Hills and some trees are now in very poor condition.
Elm leaf beetle *Pyrrhalta luteola* (Muller)	American and Siberian elms		The elm leaf beetle remains a serious nuisance on ornamental elms in many urban areas and shelterbelts in the Region.

[1] Includes National Forests in Colorado, Kansas, Nebraska, South Dakota, and central and eastern Wyoming.

ROCKY MOUNTAIN REGION (R-2)

Insect	Host	Location	Remarks
Pine tip moth (*Rhyacionia* spp.)	Pines	South Dakota	Thick stands of regeneration in the Black Hills have been affected as have shelterbelt and ornamental pines in Souix Falls, Huron, Pierre, Aberdeen, and Yankton.
Englemann spruce weevil *Pissodes strobi* (Peck)	Englemann spruce	Wyoming	This insect was identified on spruce in Sheridan County, Wyoming.

ROCKY MOUNTAIN REGION (R-2)

Pest	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoe *Arceuthobium americanum* Nutt. ex Engelm.	Lodgepole pine	Colorado, Wyoming	Yield reduction of lodgepole pine stands on nine National Forests in Colorado and Wyoming is estimated at 9.6 million ft.^{3}/year.
Ash Heart Rot *Fomes faxinophilus* (Pk.) Sacc.	Green Ash	Great Plains	Common in natural hardwood stands in central and eastern Nebraska where approximately 9 percent of the trees in 19 counties are infected. Disease occurs Statewide in South Dakota but appears most prevalent in southeast South Dakota.
Broom Rust *Chrysomyxa arctostaphyli* Diet.	Englemann spruce	Colorado	In a 79 square mile survey area on 6 national forests, the average disease incidence was 4.2 percent for spruce and 2.3 percent for fir. Rust incidence was lower on seedlings and saplings.
Melampsorella caryophyllacearum Schroet.	White fir Subalpine fir		
Root Diseases			
Shoestring Root Rot *Armillariella mellea* (Vahl. ex Fr.) Karst.	All conifers	Colorado, Wyoming	Appears to be increasing in the subalpine fir type. Surveys near Telluride, Colorado, showed a 21 percent incidence with 10 percent of infected trees attacked by western balsam bark beetle. Three other National Forests had a 7.2 percent incidence with 92 percent of infected trees infested with bark beetles.
Black-stain root disease *Verticicladiella wageneriі* Kend.	Pinyon pine	Colorado, Wyoming	Evaluations to determine impact are scheduled to start in 1981. This disease has been found west of the Continental Divide.
Vascular Wilts			
Dutch elm disease *Ceratocystis ulmi* (Buism.) C. Mor.	Elm species	Colorado	Four of five communities reduced infection rates through active community DED control programs.
Pinewood nematode *Bursaphelenchus lignicolus* Mam. & Kiyo.	White pine Austrian pine Scotch pine	Nebraska, Kansas	First detection report in Nebraska on white pine. Detected on Austrian and Scotch pine in three counties in southeast Kansas. To date there is no evidence of rapid spread or spread to forest areas.

SOUTHWESTERN REGION (R-3)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Ponderosa pine	Arizona, New Mexico	Mountain pine beetle remains at low levels throughout the Region with the most activity occurring in northern Arizona.
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir	New Mexico	Widely scattered activity on Carson National Forest and Navajo Indian Reservation.
Spruce beetle *Dendroctonus rufipennis* (Kirby)	Englemann spruce	Arizona, New Mexico	Small, isolated infestations on Cibola National Forest, Apache-Sitgreaves National Forest, and Fort Apache Reservation.
Pine engraver beetles *Ips* spp.	Pines	Arizona, New Mexico	Only small scattered areas of Ips activity were present in 1980.
Fir engraver beetle *Scolytus ventralis* LeC.	Douglas-fir and true firs	Arizona, New Mexico	Low level of activity throughout much of Region.
Western pine beetle *Dendroctonus brevicomis* Le C.	Ponderosa pine	Arizona, New Mexico	This bark beetle caused a small, widely scattered tree mortality throughout central Arizona and southwestern New Mexico.
Roundheaded pine beetle *Dendroctonus adjunctus* (Blandf.)	Ponderosa pine	New Mexico	Scattered pockets of mortality on Lincoln National Forest and Mescalero-Apache Reservation.
Red turpentine beetle *Dendroctonus valens* LeC.	Ponderosa pine	Arizona	Widely scattered activity on Kaibab National Forest.
Western spruce budworm *Choristoneura occidentalis* Free.	Douglas-fir, true firs, spruce	Arizona, New Mexico	Acres of visible defoliation increased from 131,000 in 1979 to 299,000 in 1980. Areas with heaviest defoliation included the Kaibab National Forest and Grand Canyon National Park in Arizona and the Carson, Santa Fe, and Cibola National Forests in New Mexico.
Western tent caterpillar *Malacosoma californicum* (Pack.)	Aspen	Arizona, New Mexico	Defoliation continued on the Santa Fe National Forest for the fifth consecutive year and was more extensive and intensive than in 1979. Scattered defoliation was also observed on the Carson and Kaibab National Forests and on the Fort Apache Indian Reservation, Arizona.
Pandora moth *Coloradia pandora* Free.	Ponderosa pine	Arizona	Because this insect has a 2-year life cycle, with defoliation occurring every other year, no defoliation was observed in 1980. Defoliation is predicted to be heavy and more extensive than the 1979 defoliation.
Scarab beetles *Phyllophaga* sp.	Pinyon pine	New Mexico	Minor defoliation on Cibola National Forest.
Pinyon needle miner *Coleotechnites eludis* (Hodges & Stevens)	Pinyon pine	Arizona	Scattered defoliation around Antelope Lake, Navajo Indian Reservation.
Fir coneworm *Dioryctria abietivorella* (Grote)	Douglas-fir	New Mexico	Scattered activity.
Pine coneworm *Dioryctria auranticella* (Grote)	Ponderosa pine	Arizona, New Mexico	Scattered low activity in Region.
Ponderosa pine cone beetle *Conophthorus ponderosae* (Hopk)	Ponderosa pine	Arizona, New Mexico	Localized areas of almost complete destruction of cone crops in Arizona, scattered activity on Kaibab National Forest.

[1] Includes forests in Arizona and New Mexico and National Park Service land in western Texas.

SOUTHWESTERN REGION (R-3)

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoe *Arceuthobium vaginatum* subsp. *cryptopodum* (Engelm.) Hawks. and Wiens	Ponderosa pine	New Mexico and Arizona	This pest continued to have the greatest impact on growth and yield of ponderosa pine in the Southwest.
Root Disease			
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	Corkbark fir White fir Douglas-fir	Arizona	Surveys over 1,000 acres of mixed conifer on the Apache-Sitgreaves National Forest revealed a damaging root disease complex.
Shoestring root rot *Armillariella mellea* (Vahl. ex Fr.) Karst.			
Black-stain root disease *Verticicladiella wageneriі* Kend.	Douglas-fir	New Mexico	This is a new host record for New Mexico. Found in the Sacramento Mountains, Lincoln National Forest, and on the Mescalero Apache Indian Reservation.

INTERMOUNTAIN REGION (R-4)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Lodgepole and ponderosa pine	Idaho, Utah, Wyoming	In 1980 the mountain pine beetle killed 4.4 million lodgepole and ponderosa pine in the Intermountain Region. Although the majority of the mortality occurred in southern Idaho and western Wyoming in lodgepole pine, recent epidemics on the Fishlake and Dixie National Forests in Utah have resulted in significant losses in ponderosa pine stands.
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir	Idaho	Mortality continues to decline. Large infestations that were on the Boise and Payette National Forests for several years decreased dramatically in 1980. Since 1978 large groups of Douglas-fir mortality have occurred in Grand Teton National Park. While these infestations have continued, group killing appeared to be smaller.
Pine engraver beetles *Ips* spp.	Pines	Idaho, Utah, Nevada	Mortality centers remained static on the Boise National Forest with an estimated 5,000 trees killed. Scattered group killing continued near New Centerville, Idaho. Activity increased on the Payette, Dixie, and Toiyabe National Forests.
Western pine beetle *Dendroctonus brevicomis* LeC.	Ponderosa pine		Overall activity was at a low level Region-wide in 1980. One infestation on the Escalante Ranger District of the Dixie National Forest was active and working in conjunction with mountain pine beetle and roundheaded pine beetle.
Western spruce budworm *Choristoneura occidentalis* Free.	Douglas-fir, true firs, spruce	Wyoming, Idaho, Utah	Overall defoliation increased to 1.5 million acres in 1980. Increases were observed on the Bridger-Teton, Caribou, Salmon, and Targhee National Forests; decreases occurred on the Boise and Payette National Forests. For the first time in three decades budworm defoliation was observed on the Dixie National Forest.
Douglas-fir tussock moth *Orygia pseudotsugata* McD.	Douglas-fir, true firs, spruce	Idaho	Pheromone trapping of adult male moths showed heavy increases in Owyhee County Idaho; however, no visible defoliation was detected.
Larch casebearer *Coleophora laricella* Hbn.	Larch	Idaho	Several new areas of infestation were detected on the Boise and Payette National Forests.
Ponderosa pine needleminer *Coleotechnites ponderosae* H. & S.	Ponderosa pine	Idaho	Needleminer activity was observed in stands on the Boise, Payette, and Salmon National Forests.

[1] Includes forests in Utah, Nevada, southern Idaho, western Wyoming, and eastern California.

INTERMOUNTAIN REGION (R-4)

Disease	Host	Location	Remarks
Stem and Branch			
Atropellis canker *Atropellis piniphila* (Lohm. and Cash (Weir)	Lodgepole pine	Idaho	This pathogen was previously unknown in southern Idaho. Seventy-five to eighty percent of a 60-year old lodgepole pine stand where infected with from one to six cankers.
Root Disease			
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	Douglas-fir, Ponderosa Pine, White fir, Subalpine fir	Idaho, Utah	This pathogen caused mortality to Douglas-fir and ponderosa pine on the Payette National Forest and to white fir and subalpine fir on the Wasatch National Forest.
Foliage Disease			
Elytroderma needle Disease *Elytroderma deformans* (Weir) Darker	Ponderosa and lodgepole pine	Idaho	Heavy infection of ponderosa pine was reported on the Boise and Payette National Forests with a large percentage of saplings and pole-size trees exhibiting symptoms from early spring through early summer. Lodgepole pine was only occasionally infected.
Larch needle cast *Meria laricis* Vuill.	Western larch	Idaho	Approximately 7,000 acres in central Idaho was discolored throughout the year. The cause of early spring discoloration was not specifically determined. Discoloration of the mid-season flush of needles was caused predominantly by *M. laricis*.

PACIFIC SOUTHWEST REGION (R-5)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Pines	California	Small groups of trees were killed in the Tahoe Basin and in Lassen, Shasta, and Siskiyou Counties.
Pine engraver beetles *Ips* spp.	Pines	California	Very low level of activity in 1980.
Fir engraver *Scolytus ventralis* LeC.	Firs	California	Most populations declined in 1980. Exceptions occurred on the Tahoe and Plumas National Forests.
Western pine beetle *Dendroctonus brevicomis* LeC.			Although infestations have receded in the Sierra Nevada, losses continued on Walker Forest property and on the Eagle Lake District, Lassen County. Activity was also noted North of Burney, Shasta County; and around the Marble Cone Burn, Monterrey County.
Red turpentine beetle *Dendroctonus valens* LeC.	Pines	California	These insects were unusually common in Yosemite Valley and throughout the western slope of the Sierra Nevada. Increasing attacks were noted in Lake County. In Lassen County it is associated with western pine beetle and mountain pine beetle. Activity in Siskiyou County was reported along with western pine beetle.
Jeffrey pine beetle *Dendroctonus jeffreyi* Hopk.	Jeffrey pine	California	Infestation levels were high in the Lassen Volcanic National Park and adjoining areas of the Lassen National Forest. Serious mortality continues in areas of the Tahoe Basin. Other infestations were reported in El Dorado and Alpine Counties; at Willard Creek, Lassen County; and Hunters Ridge, Modoc County.
Flatheaded fir borer *Melanophila drummondi* Kby.	Douglas-fir	California	Douglas-fir mortality continued in cutover areas in Sonoma, Humboldt, and Del Norte Counties and in the town of Happy Camp.
Gypsy moth *Lymantria dispar* (L.)	Hardwoods and ornamentals	California	A total of six adult males were caught in pheromone detection traps in 1980. Two moths were trapped in Orange County and one each in Los Angeles, San Barbara, San Cruz, and Santa Clara Counties.
Fruit tree leafroller *Archips argyrospilus* (Walker)	California black oak and other hardwoods	California	The infestation, first reported in 1974, grew from 12,000 to 25,000 acres. Most damage occurred in the Lake Arrowhead and Forest Falls areas of San Bernardino County.
Pandora moth *Coloradia pandora* Blake	Jeffrey pine	California	Because this insect has a 2-year life cycle, with defoliation occurring every other year, no defoliation was observed in 1980. However data indicates that the infestation has increased to 16,000 acres and that high populations persist.
Lodgepole needleminer *Coleotechnites milleri* (Busck)	Lodgepole pine	California	Populations were high but stable over much of the 100,000 acre infestation in Yosemite National Park. A separate infestation caused some mortality over several thousand acres in Sequoia National Park.

[1] Includes forests in California and Hawaii.

PACIFIC SOUTHWEST REGION (R-5)

Insect	Host	Location	Remarks
Walkingstick *Timema california* Scudder	Douglas-fir	California	Defoliation of 40 acres in the Willits Watershed, Mendocino County. This is the first recorded serious defoliation of conifers by walkingsticks in California.
Gouty pitch midge *Cecidomyia piniinopis* Osten Sacken	Ponderosa pine	California	This insect continues to retard growth in the Shasta Brush Fields and was serious in plantations on the Siskiyou National Forest. The pine needle sheathminer, *Zelleria haimbachi* Busck and pine reproduction weevil *Cylindrocopturus eatoni* Buchanan contributed to growth loss in these areas.
Elm leaf beetle *Pyrrhalta luteola* (Muller)	Elms	California	75 acres of picnic area on the Angeles National Forest were infested.
Grasshoppers various species	Pine	California	440 acres of plantation on the Shasta-Trinity National Forest were seriously damaged; another 2000 acres sustained moderate damage. Approximately 30 acres of seedling planted in the Granite Burn, Stanilaus National Forest were damaged.
Western pine shoot borer *Eucosma sonomana* Kerfutt	Ponderosa pine	California	High populations in plantations near McCloud and Mt. Shasta City.
Eurasian pine aphid *Pineus pini* Koch.	Pine	Hawaii	This, the major forest insect of Hawaii remains confined to Lihue, Kaui, and parts of pine plantations on Maui and Molokai.
Douglas-fir reproduction weevil *Cylindrocopturus furnissi* Buchanan	Douglas-fir	California	Weevil caused seedling mortality in two plantations on the Six Rivers National Forest necessitated some replanting.
Douglas-fir cone moth *Barbara colfaxiana* (Kerfott)	Douglas-fir	California	Serious losses in many locations in the north coastal Region.
Douglas-fir cone midge *Contarinia orgonensis* Foote	Douglas-fir	California	Serious losses in many locations in the north coastal Region.

PACIFIC SOUTHWEST REGION (R-5)

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes *Arceuthobium* spp.	Primarily ponderosa pine, Jeffery pine	California	An estimated 2.2 million acres of commercial forest land is infested by several species of dwarf mistletoe.
White pine blister rust *Cronartium ribicola* Fisch.	Sugar pine	California	Although present for 50 years in the Sierra Nevada, new infection centers were discovered in 1980 in Lake, Glen, Fresno, Tulare, and Kern Counties.
Root Disease			
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	Conifers	California	This pathogen continues to cause root damage in forest stands and is becoming of more concern to managers of recreation sites. Reported on San Bernardino, Cleveland, Los Parres, and Mendocino National Forests.
Phytophthora root rot *Phytopthera lateralis* Tucker & Milb.	Port-Orford-Cedar	California	Root rot was found at seven sites in Delnorte County and on one site in the City of Eureka, Humboldt County.
Laminated root rot *Phellinus weirii* (Murr.) Gilbn.	Douglas-fir	California	This is the first known report of laminated root rot in California forests. Reported in Humboldt County.
Foliage Diseases			
Elytroderma disease *Elytroderma deformans* (Weir) Darker	Ponderosa Pine	California	Above normal rainfall contributed to an increased incidence of needle diseases on the Six Rivers, Lassen, Plumas, and Cleveland National Forests and on the North Coast.
Lophodermium needle cast *Lophodermium pinastri* (Schrad. ex Hook) Chev.			
Red band needle blight *Dothistroma pini* Hulb.	Monterey Pine		
Vascular Wilt			
Dutch elm disease *Ceratocystis ulmi* (Buism.) C. Mor.	Elm species	California	DED did not spread to any new counties. Infected Bay Area counties remained at eight. Since its discovery in 1975, 266 disease infected sites have been found.
Pine wood nematode *Bursaphelenchus lignicolus* Mam. & Kiyo.	Ponderosa, Monterey and shore pines	California	The pinewood nematode was recovered and identified from ponderosa pine in Amador and Shasta Counties, from Monterey pine in Monterey County and from ponderosa, Monterey, and shore pines in Siskiyou County.
Abiotic Disease Air pollution	Pine species	California	Of 27 air pollution (ozone) effects monitoring plots established in 1977 on the Sierra and Sequoia National Forests, 14 showed increased injury, 7 showed decreased injury, and 6 were unchanged from 1977.

PACIFIC NORTHWEST REGION (R-6)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Lodgepole, ponderosa, white and sugar pines.	Oregon, Washington	Losses continue to decline throughout the Region, especially in older areas of the outbreak in northeast Oregon. Losses in Oregon were in excess of 112 million board feet; 76 million of this volume was in lodgepole pine. Greatest losses in Washington were on the Colville National Forest and the North Cascades National Park. Overall regional losses were 112 million board feet compared to 186 million in 1979.
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir	Oregon, Washington	Douglas-fir beetle east of the Cascade Mountains continues to decline. Infested acreage in 1980 was 8,710; this compares with 32,300 acres in 1979. A major portion of this loss occurred on the Umatilla and the Wallowa-Whitman National Forests on areas which were defoliated during the 1972-74 tussock moth outbreak and on western spruce budworm defoliated areas in north central Washington. Acres of west-side Douglas-fir beetle activity decreased slightly, but there was a major increase in volume loss from 1.7 million board feet in 1979 to 2.2 million during 1980. Areas near Mt. St. Helens are being closely monitored for possible Douglas-fir beetle activity.
Pine engraver *Ips pini* (Say)	Pines	Oregon, Washington	Activity of *Ips* increased in 1980, although the size of the infested area is not up to pre-1979 levels. Approximately 32,610 infested acres were mapped in 1980; 26,180 of these acres were in Oregon, and 6,430 were in Washington.
Fir engraver *Scolythus ventralis* LeC.	Douglas-fir	Oregon, Washington	There was a significant decrease in fir engraver activity in Oregon and a slight increase in acreage in Washington. Thirty acres were infested in both Oregon and Washington.
Western pine beetle *Dendroctonus brevicomis* LeC.	Ponderosa pine	Oregon, Washington	The infested area has dropped from 227,000 acres in 1978 to 110,000 in 1979, to 52,000 acres in 1980. All Forests and Indian Reservations east of the Cascades have experienced some losses. Current losses were greatest on the Fremont, Malheur, and Winema National Forests in Oregon and on the Wenatchee National Forest and Yakima Indian Reservation in Washington.
Douglas-fir engraver *Scolytus unispinosus* LeC.	Douglas-fir	Washington	Activity continues to be at a low level in Washington on the Gifford Pinchot and Mt. Baker-Snoqualmie National Forests. No activity was recorded for this beetle in Oregon.
Ambrosia beetles various spp.	Douglas-fir	Washington	These beetles were found at scattered locations in the blast and flood damaged areas around Mt. St. Helens. Attacks were light in 1980 but should increase in 1981.

[1] Includes forest in Oregon and Washington.

PACIFIC NORTHWEST REGION (R-6)

Insect	Host	Location	Remarks
Western spruce budworm *Choristoneura occidentalis* Free.	Douglas-fir, true firs, and spruce	Oregon, Washington	Budworm defoliation continued to decline in 1980. Activity is the greatest on untreated areas of the North Okanogan Valley and in the North Cascades National Park. Treatment of 34,300 acres on the Warm Springs Indian Reservation during 1979 resulted in a major decrease in infested areas in Oregon. New budworm activity centers have been observed on the Umatilla and Wallowa-Whitman National Forests.
Western blackheaded budworm *Acleris gloverana* (Wal.)		Washington	Three infestation centers of approximately 800 acres of light defoliation were located on Mt. Baker-Snoqualmie National Forest six miles north of Index.
Larch casebearer *Coleophora laricella* (Hbn.)	Larch	Oregon, Washington	High populations, which caused heavy defoliation in the Camp Sherman area in the Central Oregon Cascades in 1980, should continue in 1981. Elsewhere in Oregon populations were generally lower than last year. Populations in the Cascade Mountains of Washington showed only local variation from last year. Success of the imported parasite release program in the Blue Mountains of Oregon is becoming evident with reduced numbers of larch casebearers at some of the earliest release sites.
Gypsy moth *Lymantria dispar* (L.)	Hardwoods	Oregon, Washington	In Washington adult moths were trapped in Seattle, Vancouver, on Mercer Island, and in the University of Washington Arboretum. In Oregon male moths were trapped in Tigard, Milwaukie, Happy Valley, and Salem.
European pine shoot moth *Rhyacionia buoliana* (Sch.)	Ornamental trees	Oregon, Washington	A general infestation of ornamentals and nurseries exists in the Puget Sound area. Moths were captured in pheromone traps at a total of 5 sites in Multnomah County, one in Clackamas County, one in Marion County, and two in Lane County, Oregon.
Balsam woolly aphid *Adelges picae* (Ratz)	Firs	Oregon, Washington	The number of infestation centers increased from 16 in 1979 to 89 in 1980, but only 60 acres of heavy defoliation were recorded. Of the 4,740 acres of infestation mapped, all the Oregon area was in the Willamette National Forest and the majority of the Washington area was on the Mt. Baker-Snoqualmie National Forest.
Spruce aphid *Elatobium abietinum* (Walker)	Spruce	Washington	In Washington, the infested area declined 89 percent to 200 acres.
Cone and seed insects various spp.	Douglas-fir	Oregon, Washington	Douglas-fir cone and seed insect impact was generally light and scattered during 1980. The Douglas-fir cone crop was large and extensive. Some low elevation isolated areas supported large populations of the Douglas-fir cone scale midge *Contarinia washingtonensis* Johnson and Douglas-fir cone moth, *Barbara cofaxiana* (Kearfott). Western conifer seed bugs, *Leptoglossus occidentalis* Heidemann, were found, but their impact was light. Cone and seed insect damage is expected to be heavy next season.

PACIFIC NORTHWEST REGION (R-6)

Disease	Host	Location	Remarks
Stem and Branches			
Dwarf mistletoes *Arceuthobium* spp.	Douglas-fir, larch, ponderosa pine, lodgepole pine, white fir, hemlock	Oregon, Washington	Dwarf mistletoes remain among the most serious pathogens throughout the Pacific Northwest, being particularly damaging east of the Cascade crest. Losses are slowly but steadily declining as stands are being managed more intensively.
White pine blister rust *Cronartium ribicola* Fisch.	Western white pine, sugar pine	Oregon, Washington	Most severe losses are occurring along the east side of the Cascades in Washington around Middleport and Metaline Falls in northeast Washington, and along the crest of the Cascades in north Oregon. Availability of resistant planting stock is increasing.
Root Diseases			
Laminated root rot *Phellinus weirii* (Murr.) Gilbn.	Douglas-fir, grand fir, white fir	Oregon, Washington	This root rot causes serious loss both west and east of the Cascade crest. Estimates suggest that approximately 5 percent of the Douglas-fir type is removed from production by this disease.
Black-stain root disease *Verticicladiella wageneriі* Kend.	Western hemlock	Oregon	Incidence is increasing and appears to be most damaging in Coos Bay area when associated with thinning and road building.
Phytophthora root rot *Phytopthera lateralis* Tucker & Milb.	Port-Orford-Cedar	Oregon	This root rot disease continues to damage Port-Orford-Cedar stands in southwest Oregon. Other *Phytophthora* species have been damaging to seedlings in nurseries and seed orchards.
Shoestring root rot *Armillariella mellea* (Vahl. ex Fr.) Karst.	Mixed fir and pine forest type	Oregon Washington	This fungus is especially damaging in mixed fir and pine forests. Severe damage in white fir and ponderosa pine stands has been found, particularly in areas where firs have invaded a former pine site.
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	Western hemlock, fir	Oregon, Washington	Almost universally found in western hemlock stands where losses appear small in stands less than 120 years. In fir stands, disease incidence is higher in stands which have had some form of partial cutting. Annosus root rot may become a serious pest in managed fir stands.
Foliage Disease			
Larch needle cast *Hypodermella laricis* Tub.	Western larch	Washington	Caused premature defoliation in northeast Washington. Almost 100,000 acres of infected trees were mapped. This disease may have increased impact due to concurrent larch case bearer defoliation.
Swiss needle cast *Phaeocryptopus gaumanni* (Rhode) Petr.	Douglas-fir	Oregon, Washington	Dramatic increase in western Washington and northwestern Oregon. Christmas tree plantations were most severely affected. This disease is becoming increasingly common in forest stands.
Nursery			
Sirococcus strobilinus Preuss.	Lodgepole pine	Washington	Lodgepole pine seedlings suffered top dieback, branch killing, and stem cankering at the Wind River Nursery.

SOUTHERN REGION (R-8)[1] AND SOUTHEASTERN AREA

Insect	Host	Location	Remarks
Southern pine beetle *Dendroctonus frontalis* Zimm.	Pine	Southeastern United States	Activity in Georgia, Alabama, Mississippi, and South Carolina has decreased compared to last year's very damaging outbreak. However, populations are still active in these States at a static to decreasing level. Populations in central Georgia have declined most markedly. Beetle activity increased in the Coastal Plain and Piedmont areas of North Carolina and Virginia. Louisiana and Texas had very low levels of activity. The western most area of South Carolina, central Georgia, Alabama, and Mississippi currently have epidemic areas. An estimated volume of 290,522 thousand cubic feet was killed in 1980 by the southern pine beetle; 160,217 thousand cubic feet was salvaged on 146,488 acres.
Introduced pine sawfly *Diprion similis* Hartig	White pine	Southern Appalachians	This insect continues to cause severe defoliation of white pine within its new range in the Southern Appalachians. There are now two separate outbreaks--one covering 1 million acres in Virginia and one covering 3.8 million acres in Tennessee and Virginia.
Cypress looper *Anacamptodes pergracilis* Hulst.	Cypress	Florida	This native insect caused extensive defoliation for the first time on record. Sixty thousand acres were defoliated in the Big Cypress National Preserve.
Webbing coneworm *Dioryctria disclusa* Heinrich	Loblolly pine	Southeastern United States	Severely damaged cone crops in seed orchards from Virginia to Alabama. Damage was especially high in Virginia and North Carolina, where up to 90 percent of the crop was destroyed. A southwide damage survey indicated a cone crop loss valued at nearly $8.5 million.
Coneworms *Dioryctria amatella* Hurst *Dioryctria clarioralis* Walker	Loblolly pine	Southeastern United States	These insects were principally responsible for mid and late season cone mortality in orchards which escaped spring mortality by *D. disclusa*. Many orchards reported their coneworm losses exceeded 50 percent.

[1] Includes forests in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

Disease	Host	Location	Remarks
Stem and Branch			
Fusiform rust *Cronartium quercuum* (Berk.) Miy. ex Shirai f. sp. *fusiforme*	Loblolly and slash pine	Wide corridor from central Louisiana to South Carolina	The most serious disease of loblolly and slash pines. Annual losses are estimated at 194 million cubic feet of growing stock. Annual economic losses are estimated at 110 million dollars. About 3.8 million acres have at least 50 percent of trees with main stem or branch cankers within 12 in. of stem. An estimated 13.8 million acres have at least 10 percent stem or branch cankers within 12 in. of stem.
White pine blister rust *Cronartium ribicola* (Fisch)	Eastern white pine	North Carolina and Virginia	Low throughout known range. A 1980 survey of all Federal land in Virginia showed infection remains low even though ribes eradication had been stopped.
Pitch canker *Fusarium moniliforme* var. *subglutinans* (Wr. & Reink)	Virginia, slash shortleaf, longleaf, eastern, white, and Scotch pine	Florida, Georgia, North Carolina, South Carolina, Tennessee, and Virginia	Seems especially severe in certain seed orchards and in the northern part of Florida. The disease has not intensified much on the Apalachicola National Forest, but has moved into the smaller size classes. Appears to have wider distribution. Found in four of eleven seed orchards in Alabama, Mississippi, Louisiana, and Texas. Greatest damage in two orchards previously damaged by weather (hurricane & tornado). Found in city trees in southcentral part of the State.
Decay, primarily fungi in the Polyporaceae	Hardwoods	Southwide	The most damaging agent to hardwoods. Causing substantial losses and especially severe where hardwoods have been burned or thinned.
Root Disease			
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	All commercial species of southern yellow pine, white pine, and other noncommercial and ornamental species	On hazard sites throughout Southeastern United States	Is a problem in thinned plantations. An estimated 3 percent of loblolly and slash pine were dying or dead as a result of annosus root rot.
Sand pine root disease	Sand pine	Florida	One seed orchard has been destroyed by this disease. About 331,000 acres are infected in Florida with annual losses estimated at about 7 million dollars.
Root rot *Armillariella mella* (Vahl. ex Fr.) Karst. *Armillariella tabescens* (Fr.) Sincer *Phaeolus schweinitzii* (Fr.) Pat. *Phytophthora* spp.	All species	Southwide	Annual losses are estimated at 1 to 2 percent but losses this year were higher due to drought stress on root damaged trees.
Brown spot needle blight *Scirrhia acicola* (Dearn.) Sigg.	Longleaf, eastern white and slash pines	North Carolina, Florida, Georgia, South Carolina, Alabama, and Mississippi	Light damage in most areas with severe losses in localized longleaf stands.

Oak wilt, Ceratocystis fagacearum (Brez) Hunt	Oak	North Carolina, South Carolina, Tennessee, Kentucky, Virginia, Arkansas, Oklahoma, and Texas	Several new infection centers were found throughout the range; the disease remains at endemic levels. Reports continue from urban areas in Texas.
Nursery/Seed Orchard			
Damping-off	Southern yellow pines	Louisana	Resulted in the loss of 800,000-1,000,000 seedlings in two State nurseries. Cause unreported.
Root rot	Southern yellow pines	Alabama	Infection rate varied from 0 to 30 percent depending on location within nursery in each of three State nurseries. Fumigation has reduced the percentage from last summer. Cause undetermined.
Root rot Ganoderma tsugae Murr.	Loblolly pine	Alabama	Continues to cause serious damage in one seed orchard.
Abotic			
Drought	Maple, oak, black gum, yellow poplar, dogwood, pines, cottonwood	Southwide	Caused wilting, leaf fall, and death of thousands of severely stressed trees. Created opportunity for many facultative pathogens (eg. Hypoxylon spp.). In Texas, estimated drought loss in areas regenerated during the winter of 1979-80 was 60 percent of the trees planted on 125,000 acres.
Air pollution	Eastern white pine	North Carolina, South Carolina, Virginia, and Tennessee	Scattered browning of about 10 percent of trees due to ozone.

EASTERN REGION (R-9)[1] and NORTHEASTERN AREA

Insect	Host	Location	Remarks
Spruce budworm Choristoneura fumiferana (Clemens)	Fir and spruce	Maine, Michigan, Minnesota, New Hampshire, Vermont, Wisconsin	In 1980, 6,602,200 acres were defoliated by budworm. This is an overall decrease of 20,000 acres. Michigan and Wisconsin had significantly higher defoliation while Maine had approximately 900,000 fewer acres damaged. In Wisconsin, Sawyer, Price, and Menominee Counties are now infested as are St. Louis and Lake Counties in Minnesota and Putnam and Tippecanoe Counties in Indiana. Only ornamental spruce have been affected in Indiana.
Gypsy moth Lymantria dispar (L.)	Hardwoods	Northeastern United States	A total of 5,071,617 acres had visible defoliation in 1980 compared to 644,642 acres in 1979. The greatest amount of defoliation (2,499,475) took place in New York. Yearly records dating back to 1924, show that defoliation in the Northeast exceeded a million acres seven times. Six of these defoliation highs occurred in the last decade, the seventh was in 1953. Several new infestations were found in Chicago, Illinois. Michigan had male moth captures in 32 of its 63 counties. In Ohio moths were captured outside of the 1980 treatment areas in Ottawa and Montgomery Counties. An infestation is believed to exist in the Akron/Canton area. Moths were trapped in every county of Maryland and in adjacent border areas of West Virginia. Gypsy moth populations are expected to increase in 1981.
Forest tent caterpillar Malacosoma disstria (Hubner)	Hardwoods	Minnesota, Wisconsin, New York, Pennsylvania, Maine, Vermont	Populations increased dramatically in certain areas (Minnesota, Wisconsin, New York, and Pennsylvania) but decreased in others. In southeastern New York populations reached epidemic levels. Large areas of sugarbush have been damaged with subsequent reductions in the quality and quantity of maple products. Almost 2 million acres were defoliated in Minnesota alone, another half million acres were damaged in northwestern Wisconsin.
Saddled prominent Heterocampa guttivitta (Walker)	Hardwoods	New Hampshire Vermont	Approximately 187,000 acres of sugar maple-beech forest were defoliated in New Hampshire in 1980; the greatest damage occurred in the western part of the State. 1980 was the second year of noticeable defoliation in Vermont, where 34,417 acres were attacked.

[1] Includes forests in Connecticut, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, Maine, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

EASTERN REGION (R-9) and NORTHEASTERN Area

Disease	Host	Location	Remarks
Stem and Branch			
Scleroderris canker *Gremmeniella abietina* (Lagerb.) Morlet	Mostly Scotch, jack, and red pines	Wisconsin, Michigan, Minnesota, New York, Vermont, New Hampshire, and Maine	Two strains of the fungus have been identified. The North American strain occurs throughout the infested area. The more damaging European strain has been identified in the northern New England States. European strain incidence remained about the same in 1980 as it was in 1979. Most damage occurred in New York. Recent research reports other strains of this pathogen for which virulence and importance are undetermined.
Dwarf mistletoe *Arceuthobium pusillum* Pk.	Black spruce	Minnesota, Wisconsin	Continues to be a problem in black spruce stands.
White pine blister rust *Cronartium ribicola* Fisch.	White pine	Iowa, Minnesota, Wisconsin, Michigan, Maine, and West Virginia	Continues to be a major pest of white pine.
Root Disease			
Annosus root rot *Heterobasidion annosum* (Fr.) Bref.	Conifers, red and white pines	Michigan, Wisconsin, Minnesota, Illinois, Iowa, Missouri, Maine, and West Virginia	Damage generally light except in a few plantations.
Anthracnose *Gnomonia* spp.	Sycamore, maple, and hickory	Indiana, West Virginia	Generally, climatic conditions this spring were not conducive to infection and disease development.
Shoestring root rot *Armillaria mellea* (Vahl. ex Fr.) Karst.	Conifers and hardwoods particularly, black, white, red, pin, and chestnut oak	Michigan, Minnesota, Wisconsin, Illinois, Iowa, Missouri, and Indiana	General distribution--primarily associated with stressed trees.
Foliage Disease			
Larch needlecast *Mycosphaerella* spp.	European larch	Wisconsin	No tree mortality has been observed. This is the first report of Mycosphaerella needlecast in North America.
Vascular Wilt			
Pinewood nematode *Bursaphelenchus lignicolus* Mam. & Kiyo.	Scotch, Austrian, jack, Virginia, shortleaf, and red pines	New Hampshire, New York, Pennsylvania, Maryland, West Virginia, Ohio, Indiana, Michigan, Minnesota, Iowa, and Missouri	The number of confirmed reports has increased. Thirteen States have confirmed infections--8 more than in 1979. Estimates of loss have not generally been reported.
Dutch elm disease *Ceratocystis ulmi* (Buism.) C. Mor.	*Ulmus* sp.	Throughout Northeastern States	This disease continues to spread and cause scattered mortality. It is particularly severe in Maine, and of much reduced severity in New Jersey, Pennsylvania, and Maryland. Some intensive community control projects in Minnesota and Wisconsin have reduced disease losses by 50 percent over the previous year.

EASTERN REGION (R-9) and NORTHEASTERN Area

Disease	Host	Location	Remarks
Oak wilt *Ceratocystis fagacereum* (Bretz) Hunt	Oaks	Indiana, Iowa, Ohio, Missouri, Minnesota, Michigan, West Virginia, and Wisconsin	Common; generally static; locally serious.

ALASKA REGION (R-10)

Insect	Host	Location	Remarks
Spruce beetle *Dendroctonus rufipennis* (Kby)	White and Sitka spruce	Alaska	Overall beetle populations were similar to 1980 levels, with infestations covering 346,000 acres.
Engraver beetle, *Ips perturbatus* (Eichh.)	White spruce	Alaska	1,760 acres were infested in 1980 compared with 8,700 acres in 1979. The largest infestation is along the Porcupine River in the vicinity of Joe Ward Camp.
Eastern larch beetle *Dendroctons simplex* (LeC.)	Tamarack	Alaska	Infestations have increased slightly in the interior of Alaska from 16,000 acres in 1879 to 20,000 acres in 1980. The largest concentration of beetle activity is scattered along the Susulatana River, Northwest of Medfra. Populations are still declining in the Mt. McKinley area.
Spruce budworms *Choristoneura* spp.	White spruce	Alaska	Damage occurred in many residential and park areas of Anchorage. However, populations were much lower than in previous years. No budworm adults were caught in pheromone traps in other areas of the State.
Western black-headed budworm *Acleris gloverana* (Walsingham)	Hemlock	Alaska	Populations remained at endemic levels throughout Alaska.
Hemlock sawfly *Neodiprion tsugae* Midd.	Hemlock	Alaska	Populations were at endemic levels in 1980.
Saddleback looper *Ectropis crepuscularia* (Denis & Schiff)	Hemlock	Alaska	Larval populations dropped substantially from 1979 levels and caused no visible defoliation in 1980.
Loopers *Melanolophia imitata* (Walker) *Anthelia hyperboria* *Hydriomena irata*	Hemlock	Alaska	All three species remained endemic in 1980; however, larval populations were considerably higher than in 1979.
Large aspen tortrix *Choristoneura conflictana* (Wlkr.)	Aspen	Alaska	Defoliated acreage decreased to 11,600 acres in 1980.
A leaf roller *Epinotia solandriana* L.	Birch	Alaska	Populations greatly increased in 1980 with 146,140 acres of defoliation. Most of this activity is 35 miles northwest of Dillingham.
Willow leafminer *Rhynchaenus rufipes* (LeC.)	Willow	Alaska	Defoliated acreage decreased slightly in 1980 to 2,750 acres.
Blotch miners *Lyonetia* spp.	Cottonwood	Alaska	Except for 1,245 acres near Seward, populations were low for the second consecutive year.
Cottonwood leaf beetle *Chrysomela walshi* Brown	Cottonwood	Alaska	Low populations in 1980.

ALASKA REGION (R-10)

Disease	Host	Location	Remarks
Stem and Branch			
Hemlock dwarf mistletoe *Arceuthobium tsugense* (Rosend.) G.N. Jones	Western hemlock	Alaska	A major cause of volume loss in southeastern Alaska. This parasite occurs from Portland Canal in the south to Haines in the north. Distribution by elevation is from sea level to approximately 1000 feet.
Root Disease			
Shoestring root rot *Armillariella mellea* (Vahl. ex Fr.) Karst.	Western red cedar Alaska yellow-cedar	Alaska	Almost 20,000 acres of cedar mortality was deliniated in southeastern Alaska. About 80 of this was found north of Sumner Straight and involved Alaska yellow-cedar only. Circular areas of mortality were noted and shoestring root rot was found on some dying yellow-cedars. *Ploeosinus* bark beetle galleries were found on some dead trees.
Foliage Disease			
Spruce needle rust *Chrysomyxa ledicola* Lagerh.	White spruce	Alaska	Disease incidence increased dramatically over 1979 with an estimated 250,000 acres infected. In some areas up to 90 percent of current year's needles were infected on all age classes. Three consecutive wet summers have contributed to disease intensification. Noted especially in western Alaska from Seward Peninsula, along Kuskokwim River between Bethel and Stony River.

Table 1.--TREND IN NUMBER OF ACRES OF AERIALLY DETECTED TREE DEFOLIATION CAUSED BY SPRUCE BUDWORM IN THE NORTHEASTERN UNITED STATES

State	Year 1979	1980	Trend
Maine	5,900,000	5,000,000	-900,000
Michigan	258,822	859,500	+600,678
Minnesota	150,000	103,000	- 47,000
New Hampshire	70,000	90,000	+ 20,000
Vermont	101,923	110,715	+ 8,792
Wisconsin	141,300	439,000	+297,700
Total	6,622,045	6,602,215	- 19,830

Table 2.--TREND IN THE NUMBER OF ACRES OF AERIALLY DETECTED TREE DEFOLIATION CAUSED BY THE GYPSY MOTH (*Lymantria dispar*) IN THE NORTHEASTERN UNITED STATES[1]

State	Year 1979	1980	Trend
Connecticut	8,619	372,213	+ 364,733
Delaware	10	0	- 10
Maine	23,180	221,220	+ 198,040
Maryland	0	3	+ 3
Massachusetts	226,260	906,075	+ 680,815
New Hampshire	5,980	183,999	+ 178,019
New Jersey	193,700	411,975	+ 218,275
New York	162,275	2,449,475	+2,287,200
Pennsylvania	8,552	440,500	+ 431,948
Rhode Island	655	43,830	— 43,175
Vermont	15,411	41,327	+ 25,916
Total	644,642	5,071,617	+4,428,114

[1] Information provided by cooperating State agencies and USDA APHIS and Forest Service.

Table 3

Western Spruce Budworm Infestation Summary

Region	No. of Acres Infested 1979	No. of Acres Infested 1980
1	2,271,000	976,072
2	930,000	1,052,000
3	131,000	299,000
4	1,272,700	1,522,000
5	---	---
6	406,660	229,400
Total	5,011,360	4,078,472

Table 4

Mountain Pine Beetle Infestation Summary

Region	No. of Acres Infested	No. of Trees Killed	Volume Killed
1	1,850,000	---	---
2	378,340	442,000	7,081,729 cu. ft.
3	Low level scattered attacks in northern Arizona and New Mexico.		
4	825,780	4,400,000	---
5	Several groups of mortality in Tahoe Basin. Other limited group of killed trees occurred in Lassen, Shasta, and Siskiyou Counties.		
6	1,086,250	---	21,818,000 cu. ft.

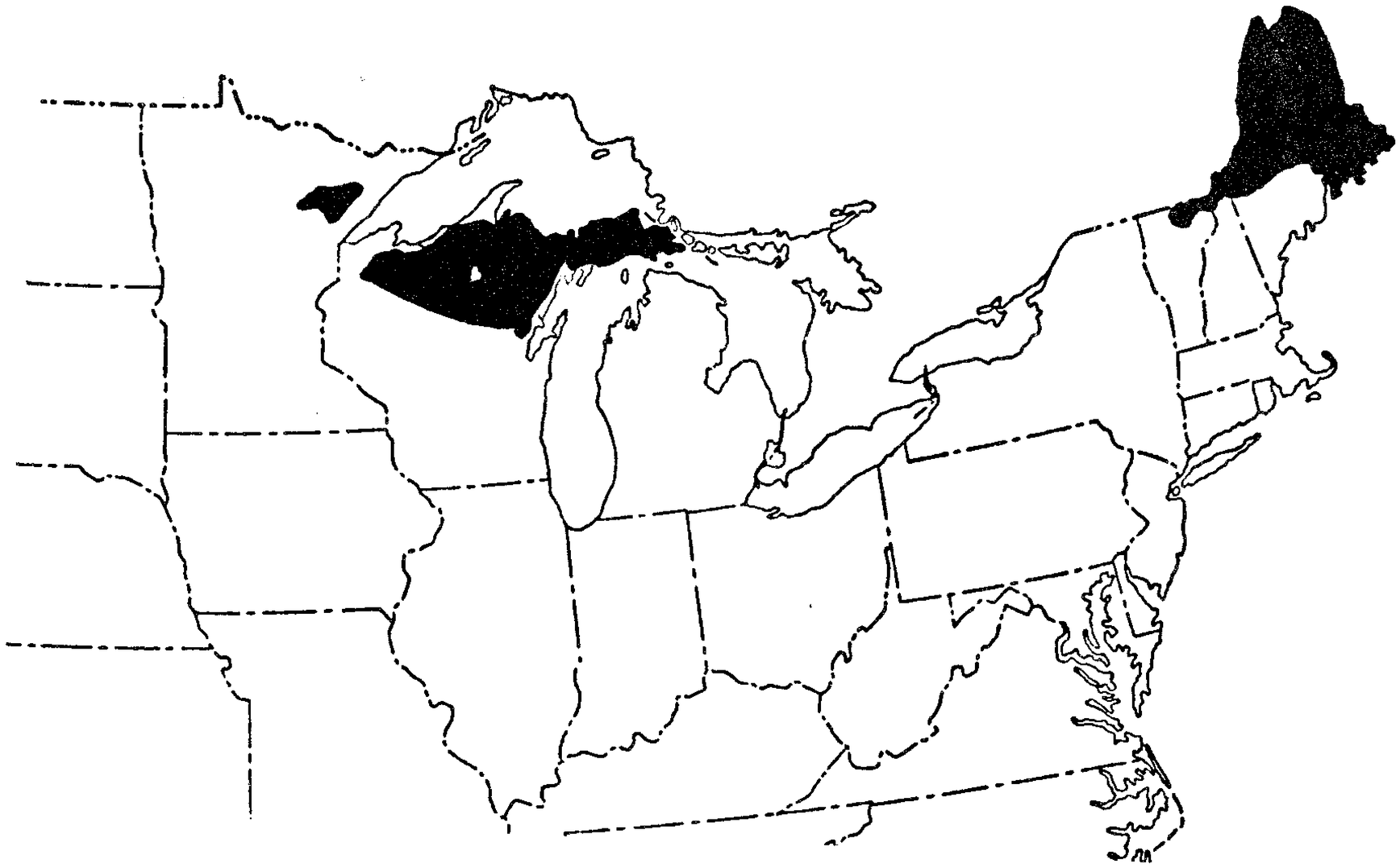


Fig. 1 Spruce Budworm Infested Area, 1980.

Fig. 2 Gypsy Moth Defoliation Areas, 1980.

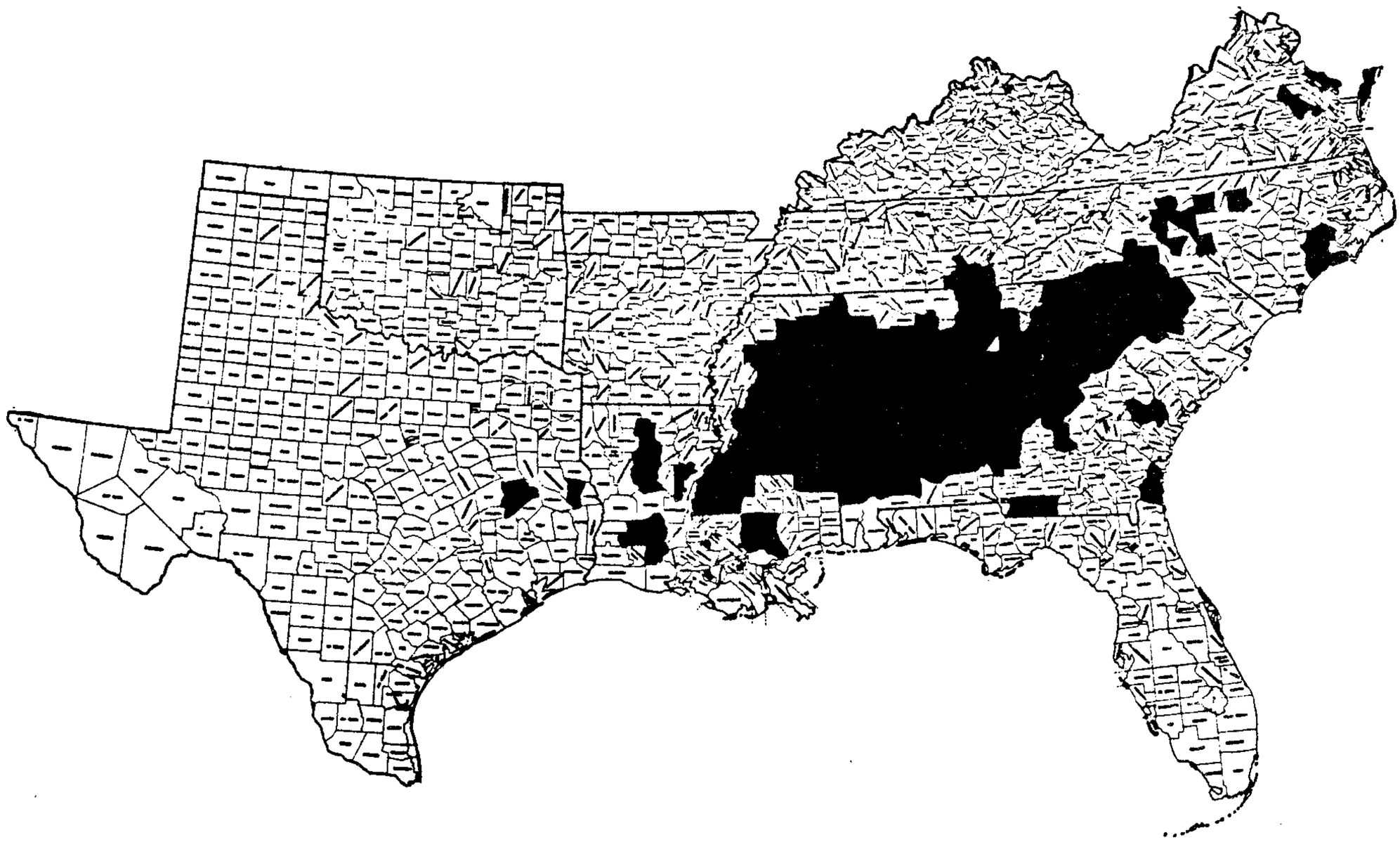


Fig. 3 Southern Pine Beetle Infested Counties In The Southeast, 1980.

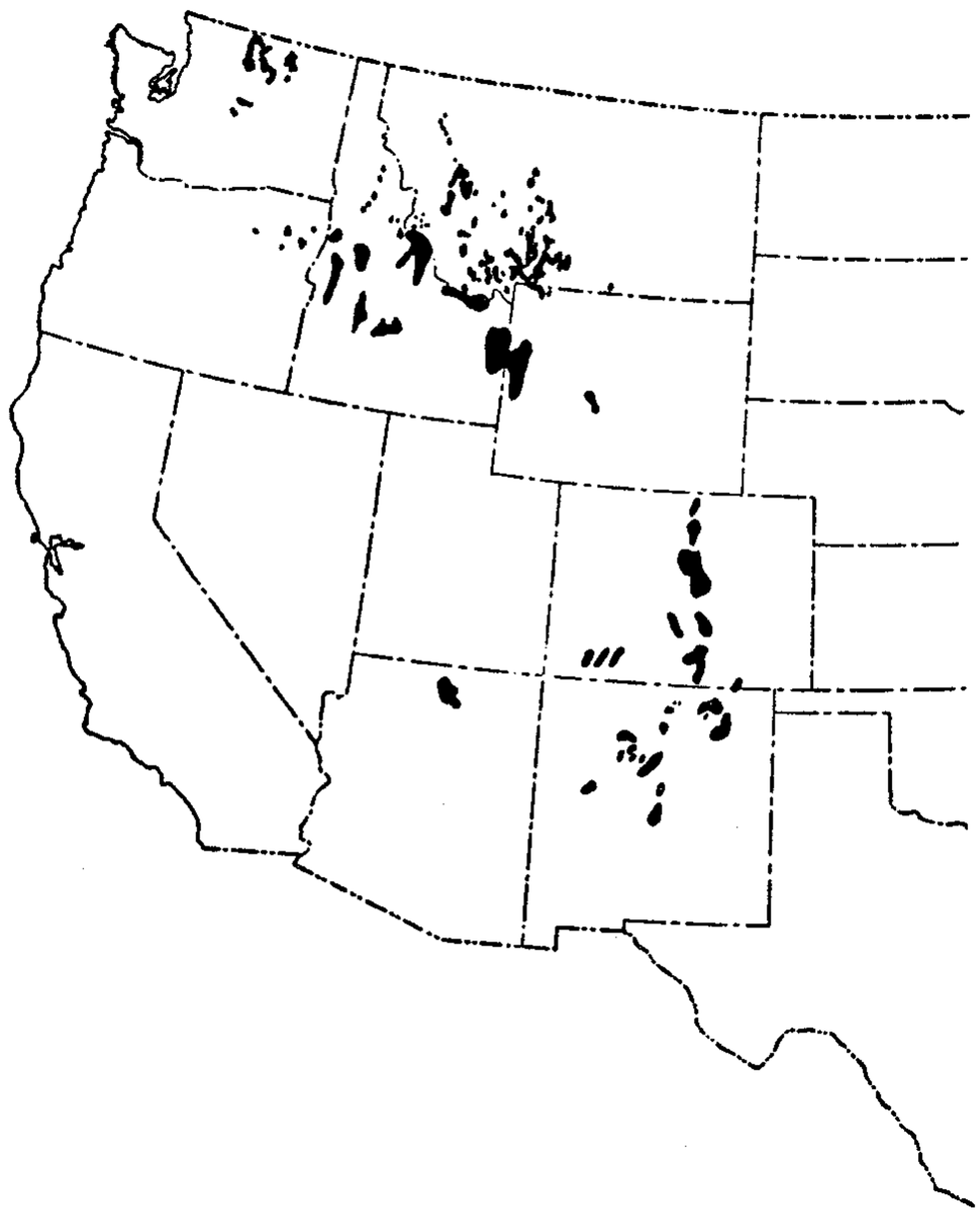
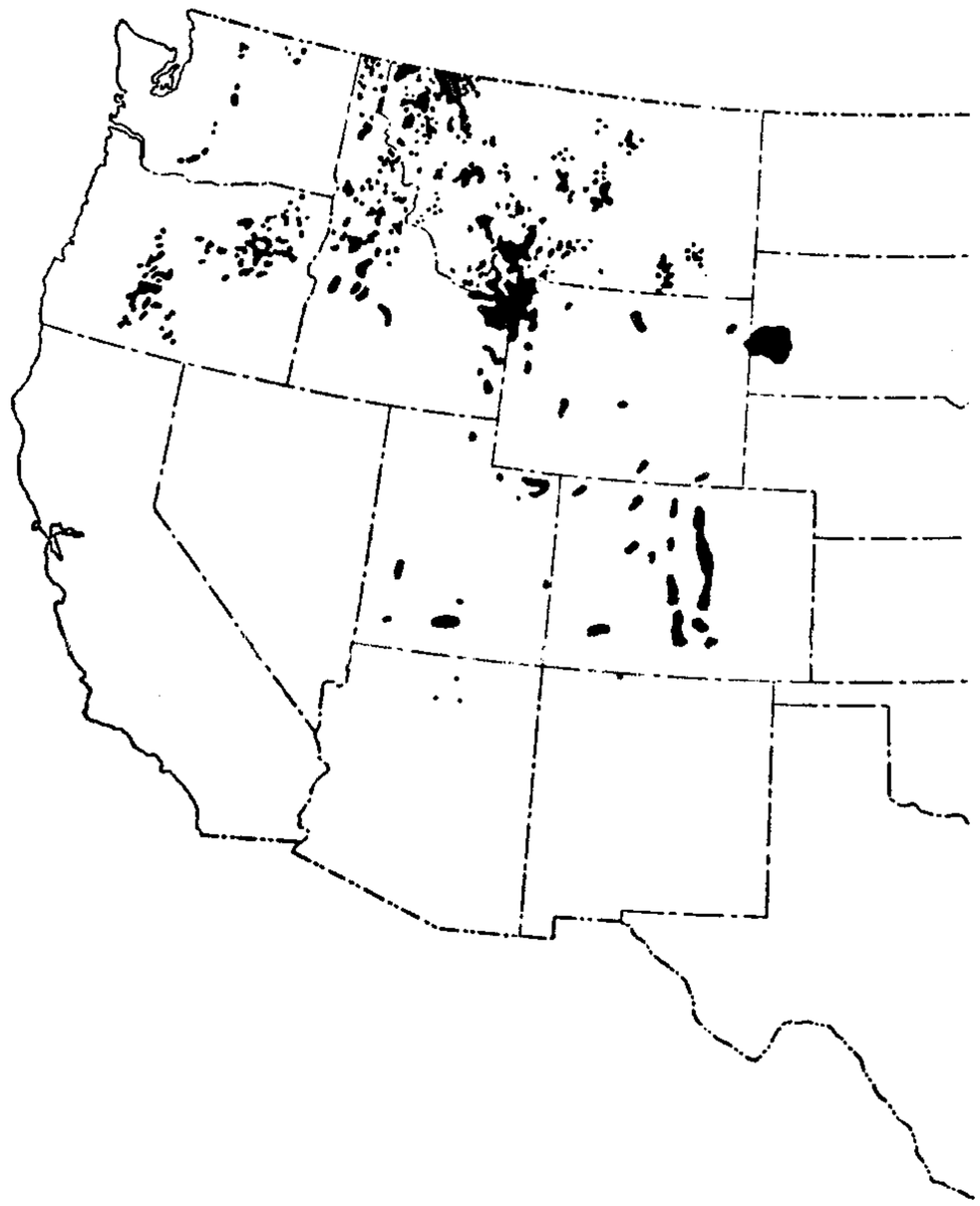


Fig. 4 Western Spruce Budworm Infestation (All hosts), 1980



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*Indicated ESA approved common name

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*Indicated ESA approved common name.

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