Forest Insect and Disease Conditions in the United States 1983
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1983
Contents

Addresses .................................... iv
Introduction ................................. 1

National Summary
   Eastern Conditions ...................... 2
   Western Conditions ..................... 3

Forest Conditions by Region
   Northern Region (Region 1)
      Insects ............................. 4
      Diseases ............................ 7
   Rocky Mountain Region (Region 2)
      Insects ............................. 11
      Diseases ............................ 16
   Southwestern Region (Region 3)
      Insects ............................. 22
      Diseases ............................ 24
   Intermountain Region (Region 4)
      Insects ............................. 26
      Diseases ............................ 28
   Pacific Southwest Region (Region 5)
      Insects ............................. 30
      Diseases ............................ 34
   Pacific Northwest Region (Region 6)
      Insects ............................. 36
      Diseases ............................ 39
   Southern Region (Region 8)
      Insects ............................. 42
      Diseases ............................ 46
   Eastern Region (Region 9) and
      Northeastern Area
      Insects ............................. 51
      Diseases ............................ 54
   Alaska Region (R-10)
      Insects ............................. 56
      Diseases ............................ 58

Conditions by Pest
   Table 1--Gypsy moth defoliation  ... 59
   Table 2--Spruce budworm
      defoliation .......................... 60
   Table 3--Fusiform rust infection ... 60
   Table 4--Western spruce budworm
      defoliation .......................... 61
   Table 5--Root disease losses ...... 61
   Table 6--Dwarf mistletoe losses ... 62

Maps of Pest Activity
   Figure 1--Gypsy moth defoliation ... 63
   Figure 2--Spruce budworm
      defoliation .......................... 63
   Figure 3--Southern pine beetle
      activity .............................. 64
   Figure 4--Littleleaf disease
      distribution .......................... 64
   Figure 5--Western spruce budworm
      defoliation .......................... 65
   Figure 6--Mountain pine beetle
      infestations .......................... 65

Index--Insects ............................ 67
Index--Diseases ........................... 70
Addresses

Addresses of regional Forest Pest Management offices:

Region 1 (R-1)
USDA Forest Service
Federal Building
Missoula, MT 59807

Region 2 (R-2)
USDA Forest Service
P.O. Box 25127
Lakewood, CO 80225

Region 3 (R-3)
USDA Forest Service
Federal Building
517 Gold Avenue, S.W.
Albuquerque, NM 87102

Region 4 (R-4)
USDA Forest Service
Federal Building
324 25th Street
Ogden, UT 84401

Region 5 (R-5)
USDA Forest Service
630 Sansome Street
San Francisco, CA 94111

Region 6 (R-6)
USDA Forest Service
P.O. Box 3623
Portland, OR 97208

Region 7 (R-7)
USDA Forest Service
1720 Peachtree Rd., N.W.
Atlanta, GA 30367

Region 8 (R-8)
USDA Forest Service
1720 Peachtree Rd., N.W.
Atlanta, GA 30367

Region 9 (R-9)
Northeastern Area
USDA Forest Service
370 Reed Road
Broomall, PA 19008

Region 10 (R-10)
USDA Forest Service
2221 E. Northern Lights Boulevard
Suite 104
Anchorage, AK 99504
Introduction

This publication reports the status of insects and diseases on the Nation's forests during 1983. The information is organized by Forest Service Region: Each Region has an insect table and a disease table. Tables and maps with information on some of the major pests follow the regional tables.

Much of the information in this publication is based on special aerial or ground surveys. These surveys record short-term changes in pest activity, and they supplement the information gathered in forest resource inventory surveys.

Those inventory surveys—part of the Forest Service Renewable Resource Inventory Program—show that the unsalvaged growing stock mortality on commercial timberland averages about 3.9 billion cubic feet per year. This mortality figure can be divided into three categories: mortality caused by fire, by insects and diseases, and by other causes. When mortality is separated by cause, insects and diseases are shown to kill 2.4 billion cubic feet of commercial timber each year. In fact, insect and diseases kill more trees each year than fire and all other causes combined.

This is the 33rd annual report published by the U.S. Department of Agriculture, Forest Service, Forest Pest Management, Washington Office. As in past years, Forest Pest Management offices nationwide compiled the information for lands of all ownerships; further information can be obtained from the Forest Pest Management offices listed on page iv.

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

Thomas H. Hofacker, Staff Entomologist
Robert C. Loomis, Staff Pathologist
Susan M. Tucker, Editor

U.S. Department of Agriculture
Forest Service
Forest Pest Management
P.O. Box 2417
Washington, D.C. 20013
Forest resource inventory surveys show that the unsalvaged growing stock mortality from all causes on eastern commercial timberland averages about 2.3 billion cubic feet per year. Insects and diseases account for 1.4 billion cubic feet—about 62 percent—of this total.

In 1983, the gypsy moth defoliated approximately 2.4 million acres (table 1, p. 59, and fig. 1, p. 63). Defoliated acreage was down dramatically from the 8.2 million acres recorded in 1982. The area generally infested with gypsy moth now extends from Maine south into northern Virginia and west into eastern Ohio. In 1983, 28 isolated infestations, remote from the generally infested area, were discovered in 10 States: California, Illinois, Indiana, Minnesota, North Carolina, Ohio, Oregon, Virginia, Washington, and Wisconsin. Nine isolated infestations are still present in Illinois, Oregon, and Washington.

After declining for 2 consecutive years, spruce budworm defoliation again topped the 6-million-acre mark: Defoliation was recorded on 6,488,452 acres (table 2, p. 60, and fig. 2, p. 63). The State of Maine was most severely affected: Spruce and fir mortality totaled over 2 million cords in 1983.

Southern pine beetle activity increased for the second year in a row. Sixty-six counties in eight States reported outbreak levels (fig. 3, p. 64). The National Forests in Texas were especially hard hit.

Fusiform rust, annosus root rot, and littleleaf disease caused considerable damage to southern pine forests. Fusiform rust stem infections occur on at least 10 percent of the pines growing on about 14 million acres (table 3, p. 60). Annosus root rot hazard is greatest on deep, sandy soils with good internal drainage. These soils occur on about 20 percent of the South’s land base. Littleleaf disease commonly occurs on clay soils in the South’s Piedmont region. About 15 million acres of commercial shortleaf pine are affected (fig. 4, p. 64).

In the Northeast, tree decline and mortality were reported more frequently than last year. Drought, coupled with pest problems and perhaps man-caused stress, may be contributing to several of the reported tree decline problems.
Forest resource inventory surveys show that the unsalvaged growing stock mortality from all causes on western commercial timberland averages about 1.6 billion cubic feet per year. Insects and diseases account for 1 billion cubic feet—about 61 percent—of this total.

Western spruce budworm defoliation increased significantly for the second year in a row. About 11 million acres of defoliation were recorded in 1983 (table 4, p. 61, and fig. 5, p. 65). This total represents an increase of over 6 million acres since 1981.

Mountain pine beetle outbreaks extended over 3.5 million acres (fig. 6, p. 65). Colorado, Montana, Oregon, Utah, Washington, and Wyoming were most severely affected.

Root diseases and dwarf mistletoes were the most damaging diseases of western conifers. Root disease losses are shown in table 5 (p. 61). Dwarf mistletoe losses are shown in table 6 (p. 62).

Other important conifer diseases included various foliage diseases, which are numerous and widespread; white pine blister rust, which causes lethal stem and branch cankers and is the most important disease of western white and sugar pines; and stem decay fungi, which continue to cause considerable damage in old-growth conifer stands.
## Forest Conditions by Region

### Northern Region (R-1)

**Status of insects in Montana, northern Idaho, North Dakota, northwestern South Dakota, and National Park Service lands in northwestern Wyoming.**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balsam woolly aphid</td>
<td>Grand fir, subalpine fir</td>
<td>Idaho</td>
<td>This adelgid was recently found in Coeur d'Alene and at numerous locations near Moscow. Mortality is occurring to the more heavily infested subalpine fir.</td>
</tr>
<tr>
<td>Adelges piceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cranberry girdler moth</td>
<td>Douglas-fir, larch</td>
<td>Idaho</td>
<td>This sod webworm has increased slightly in nursery beds at the Coeur d'Alene Nursery.</td>
</tr>
<tr>
<td>Chrysoteuchia topiaria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dendroctonus pseudotsugae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas-fir needle midge</td>
<td>Douglas-fir</td>
<td>Idaho, Montana</td>
<td>Defoliation by this midge is still conspicuous.</td>
</tr>
<tr>
<td>Contarinia pseudotsugae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas-fir tussock moth</td>
<td>Douglas-fir, true firs, spruce</td>
<td>Idaho, Montana</td>
<td>Pheromone trapping of adult male moths showed an increase north of Moscow, Idaho, but decreased or remained static in other areas. In Montana, trap catches were greater than last year. Defoliation of ornamentals occurred in Hayden Lake, Coeur d'Alene, Moscow, Craigmont, Nezperce, and Genesee, Idaho. Defoliation of ornamentals occurred in Polson, Sommers, and Missoula, Mont.</td>
</tr>
<tr>
<td>Orgyia pseudotsugata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall webworm</td>
<td>Apple, chokecherry</td>
<td>North Dakota</td>
<td>The numbers of webs of this insect were abundant in southeast North Dakota this year.</td>
</tr>
<tr>
<td>Hyphantria cunea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fir engraver</td>
<td>Grand fir, subalpine fir</td>
<td>Idaho, Montana</td>
<td>Populations doubled this year south and east of Plummer, Idaho. Populations remained static in Montana.</td>
</tr>
<tr>
<td>Scolytus ventralis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gypsy moth</td>
<td>Hardwoods</td>
<td>Montana</td>
<td>Two male moths were trapped: one moth in Glacier National Park and the other moth on the Flathead National Forest near Swan Lake.</td>
</tr>
<tr>
<td>Lymantria dispar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larch budmoth</td>
<td>Larch</td>
<td>Montana</td>
<td>This insect was found this year for the first time since the 1960's. It caused defoliation on several thousand acres on the Flathead Indian Reservation.</td>
</tr>
<tr>
<td>Zeiraphera improbana</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larch casebearer</td>
<td>Larch</td>
<td>Idaho,</td>
<td>Defoliation has reached its lowest point in several years.</td>
</tr>
<tr>
<td>Coleophora laricella</td>
<td></td>
<td>Montana</td>
<td></td>
</tr>
<tr>
<td>Lodgepole terminal weevil</td>
<td>Lodgepole</td>
<td>Montana</td>
<td>Populations remained static at high levels in many lodgepole pine</td>
</tr>
<tr>
<td>Pissodes terminalis</td>
<td></td>
<td></td>
<td>plantations.</td>
</tr>
<tr>
<td>Mountain pine beetle</td>
<td>Lodgepole</td>
<td>Idaho,</td>
<td>Infestations increased in Idaho on the Nezperce and Bitterroot</td>
</tr>
<tr>
<td>Dendroctonus ponderosae</td>
<td>pine,</td>
<td>Montana,</td>
<td>National Forests. In Montana, beetle populations declined due to host</td>
</tr>
<tr>
<td></td>
<td>ponderosa</td>
<td></td>
<td>depletion in several areas where infestations have run their course.</td>
</tr>
<tr>
<td></td>
<td>pine,</td>
<td>Wyoming</td>
<td>Infestations persist on the Beaverhead, Flathead, Gallatin, Kootenai,</td>
</tr>
<tr>
<td></td>
<td>other</td>
<td></td>
<td>Lewis and Clark, and Lolo National Forests; Glacier and Yellowstone</td>
</tr>
<tr>
<td></td>
<td>pines</td>
<td></td>
<td>National Parks; the Blackfoot, Crow, and Flathead Indian Reservations;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and on Bureau of Land Management lands in the Centennial Mountains.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less extensive infestations occur on the Custer, Deerlodge, and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Helena National Forests and the Fort Belknap and North Cheyenne</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indian Reservations. Most mortality occurs in lodgepole pine. Beetle</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>infestations cover nearly 1.2 million acres of lodgepole pine and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>about 300,000 acres of ponderosa pine, whitebark pine, and western</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>white pine.</td>
</tr>
<tr>
<td>Pine bark aphid</td>
<td>Scotch</td>
<td>Montana</td>
<td>The pine bark aphid is still damaging Christmas tree plantings near</td>
</tr>
<tr>
<td>Pineus sylvestris</td>
<td>pine</td>
<td></td>
<td>Bigfork and Kalispell.</td>
</tr>
<tr>
<td>Pine butterfly</td>
<td>Ponderosa</td>
<td>Idaho,</td>
<td>Populations are still increasing in the Bitterroot Valley south of</td>
</tr>
<tr>
<td>Neophasia menapia</td>
<td>pine,</td>
<td>Montana</td>
<td>Missoula and along the Salmon River in Idaho, but no visible</td>
</tr>
<tr>
<td></td>
<td>lodgepole</td>
<td></td>
<td>defoliation was noticed.</td>
</tr>
<tr>
<td>Pine engraver beetle</td>
<td>Pines</td>
<td>Idaho,</td>
<td>Pine engraver-caused mortality increased markedly this year on the</td>
</tr>
<tr>
<td>Ips pini</td>
<td></td>
<td>Montana</td>
<td>Mica State Forest in Idaho. Activity remained fairly static in</td>
</tr>
<tr>
<td>Pine needle sheathminer</td>
<td>Pines</td>
<td>Montana</td>
<td>Montana.</td>
</tr>
<tr>
<td>Zelleria hainbachii</td>
<td></td>
<td></td>
<td>Pine needle sheathminer increased on pines.</td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>Engelmann spruce, Idaho, Montana</td>
<td></td>
<td>More than 35,000 acres of spruce beetle-attacked trees were detected on the Flathead, Kootenai, and Lolo National Forests; the Flathead Indian Reservation; and the Glacier National Park in Montana. This was a slight decrease from last year. Spruce beetle activity in Idaho decreased markedly.</td>
</tr>
<tr>
<td>Variable oakleaf</td>
<td>Bur oak, aspen, basswood</td>
<td>North Dakota</td>
<td>Variable oakleaf caterpillars were common in natural hardwood stands checked. Defoliation occurred in the Sully's Hill National Game Preserve and along the Sheyenne River between Kindred and Valley City.</td>
</tr>
<tr>
<td>caterpillar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterocampa manteo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western balsam bark</td>
<td>Subalpine fir</td>
<td>Montana,</td>
<td>Infestations occurred mainly on the Flathead and Gallatin National Forests. Other infested areas occurred on the Beaverhead National Forest, the Flathead Indian Reservation, and Glacier and Yellowstone National Parks.</td>
</tr>
<tr>
<td>beetle</td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Dryocoetes confusus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western pine shoot</td>
<td>Ponderosa pine</td>
<td>Idaho,</td>
<td>Pine shoot borer is still causing height growth reduction in plantations in Idaho and Montana. Over 50 percent of the terminals are infested at some locations.</td>
</tr>
<tr>
<td>borer</td>
<td></td>
<td>Montana</td>
<td></td>
</tr>
<tr>
<td>Eucoema monomana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western spruce budworm</td>
<td>Douglas-fir, true firs, spruce</td>
<td>Idaho,</td>
<td>Budworm defoliation increased in north Idaho and Montana. Outbreaks on the Beaverhead, Deerdove, and Gallatin National Forests and Yellowstone National Park increased in intensity. About 2.6 million acres of defoliation occurred this year. Populations will probably continue increasing for several years.</td>
</tr>
<tr>
<td>Choristoneura occidentalis</td>
<td></td>
<td>Montana,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Yellownecked</td>
<td>Hardwoods</td>
<td>North</td>
<td>This insect caused heavy defoliation in southeast North Dakota in late August.</td>
</tr>
<tr>
<td>caterpillar</td>
<td></td>
<td>Dakota</td>
<td></td>
</tr>
<tr>
<td>Dantana ministra</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Northern Region (R-1)


<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atropellis canker</td>
<td>Atropellis piniphila</td>
<td>Idaho, Montana</td>
<td>Severe damage occurs on the Helena National Forest in mature lodgepole pine and on the Flathead Indian Reservation in seedling/sapling lodgepole pine. A pole-sized lodgepole pine stand south of Grangeville, Idaho, has infection levels exceeding 90 percent.</td>
</tr>
<tr>
<td>Comandra blister rust</td>
<td></td>
<td>Idaho, Montana</td>
<td>Comandra rust is common on lodgepole and ponderosa pines in many parts of the Region.</td>
</tr>
<tr>
<td>Dwarf mistletoe blister rust</td>
<td></td>
<td>Montana</td>
<td>This rust fungus superinfects lodgepole pine only where dwarf mistletoe infections occur.</td>
</tr>
<tr>
<td>Dwarf mistletoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arceuthobium americanum</td>
<td>Lodgepole pine</td>
<td>Idaho, Montana</td>
<td>Nearly 47 million cubic feet of lodgepole pine, Douglas-fir, and western larch growth are lost annually on lands of all ownerships in Montana and northern Idaho. Infested area in two States is about 3.1 million acres.</td>
</tr>
<tr>
<td>Arceuthobium douglasii</td>
<td>Douglas-fir</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Arceuthobium laricis</td>
<td>Western larch</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Fire blight</td>
<td></td>
<td>North Dakota</td>
<td>This bacterial disease was quite prevalent throughout the State.</td>
</tr>
<tr>
<td>Erwinia amylovora</td>
<td>Apple, pear, cotoneaster, mountain ash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western gall rust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocronartium harknessii</td>
<td>Ponderosa pine, lodgepole pine, Scotch pine</td>
<td>Idaho, Montana, North Dakota</td>
<td>Occurs frequently on pines, but it is usually not too severe. In Idaho and North Dakota, the rust is causing some degrade to Scotch pine in Christmas tree plantings.</td>
</tr>
<tr>
<td>White pine blister rust</td>
<td></td>
<td>Idaho, northwestern Montana</td>
<td>The rust resistance breeding program continues to improve, with more western white pine seed collected each year from disease-resistant orchards. Risk of rust infection apparently varies with site conditions: In some low-risk areas, naturally occurring white pine can be grown successfully. Techniques for risk-rating individual stands are being refined; management guides written.</td>
</tr>
</tbody>
</table>
### Northern Region (R-1)--continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anomos root rot</td>
<td>Ponderosa pine, western hemlock, subalpine fir</td>
<td>Idaho, Montana</td>
<td>Root diseases are probably the most important long-term disease problems in the Northern Region's forests. Root disease/bark beetle complexes account for significant annual mortality in mixed conifer stands. Losses are especially severe in Douglas-fir and grand fir stands which have a history of logging. Presence of bark beetles and root pathogens, which interact to cause tree mortality, makes recognition and treatment difficult. Phellinus weirii and Armillaria mellea are commonly associated with Douglas-fir beetle on Douglas-fir and fir engraver on grand fir. Black stain root disease of ponderosa pine is associated with western pine beetle attacks. P. weirii and A. mellea are also killing seedlings in planted or naturally regenerated stands centered around old infected stumps from the previous stand.</td>
</tr>
<tr>
<td>Heterobasidion annosum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black stain root disease</td>
<td>Douglas-fir, lodgepole pine, ponderosa pine</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Ceratocystis wageneri</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laminated root rot</td>
<td>Douglas-fir, grand fir, redcedar, other conifers</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Phellinus weirii</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red-brown butt rot</td>
<td>Douglas-fir, other conifers</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Phaeolus schweinitzii</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoestring root rot</td>
<td>Douglas-fir, other conifers</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Armillaria mellea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foliage Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dothistroma needle blight</td>
<td>Ponderosa pine, lodgepole pine, western white pine</td>
<td>Idaho</td>
<td>Incidence was severe on many areas and is still evident in and near the Wilderness Gateway Campground on the Clearwater National Forest. Some ponderosa pine mortality has occurred because of this disease.</td>
</tr>
<tr>
<td>Dothistroma pini</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larch needle blight</td>
<td>Western larch</td>
<td>Idaho, Montana</td>
<td>Incidence of both needle diseases has declined; discoloration occurred only in groups of trees rather than in most larch stands as in years past.</td>
</tr>
<tr>
<td>Hypodermella laricis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meria needle disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meria laricis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lophodermium needle cast</td>
<td>Scotch pine</td>
<td>Idaho, Montana</td>
<td>Incidence of this needle cast was much lower this year. Most areas are showing recovery.</td>
</tr>
<tr>
<td>Lophodermium pinastri</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle cast diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flytroderma deformans</td>
<td>Ponderosa pine</td>
<td>Idaho, Montana</td>
<td>Incidence of these needle casts was widespread, but damage was relatively light.</td>
</tr>
<tr>
<td>Lophodermella concolor</td>
<td>Lodgepole pine</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
<tr>
<td>Lophodermella spp.</td>
<td>Ponderosa pine</td>
<td>North Dakota</td>
<td></td>
</tr>
<tr>
<td>Rhabdocline pseudotsugae</td>
<td>Douglas-fir</td>
<td>Idaho, Montana</td>
<td></td>
</tr>
</tbody>
</table>
### Northern Region (R-1)—continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiss needle cast</td>
<td>Douglas-fir, western</td>
<td>Idaho, Montana</td>
<td>This needle cast has become a severe problem in Christmas tree culture. Concentrated damage was noticed near Coeur d'Alene and the Priest River Experimental Forest in Idaho. The disease had a serious impact on Christmas tree cutters in Montana, especially in the Eureka area in northwest Montana.</td>
</tr>
<tr>
<td><em>Phaeocryptopus gaumannii</em></td>
<td>larch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vascular Wilt</td>
<td>American elm</td>
<td>Montana, North</td>
<td>Dutch elm disease is still prevalent in Billings and Missoula, Mont. The disease is increasing in North Dakota. The Lisbon area is a hot spot, and several new infections occurred on the Sully's Hill National Game Preserve near Devil's Lake.</td>
</tr>
<tr>
<td>Dutch elm disease</td>
<td></td>
<td>Dakota</td>
<td></td>
</tr>
<tr>
<td><em>Ceratocystis ulmi</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery Disease</td>
<td>Chokecherry shot hole</td>
<td>Chokecherry</td>
<td>Shot hole disease on chokecherry grown for windbreak plantings occurred at the Montana State Nursery, Missoula.</td>
</tr>
<tr>
<td><em>Coccomyces hennis</em></td>
<td></td>
<td>Montana</td>
<td></td>
</tr>
<tr>
<td>Dipodia tip blight</td>
<td>Ponderosa pine</td>
<td>Idaho</td>
<td>Severe damage to 1-0 bareroot seedlings occurred in a private nursery near Peck.</td>
</tr>
<tr>
<td><em>Dipodia pinea</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium root disease</td>
<td>Douglas-fir, other</td>
<td>Idaho, Montana</td>
<td>Fusarium root disease was common on both container-grown and bareroot seedlings at the Coeur d'Alene Nursery and a private nursery near Peck, Idaho. The disease caused extensive losses at a private nursery in Kalispell, Mont., and some losses at the Montana State Nursery at Missoula.</td>
</tr>
<tr>
<td><em>Fusarium oxysporum</em></td>
<td>conifers</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Fusarium soloni</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grey mold</td>
<td>Western larch, lodgepole pine</td>
<td>Idaho, Montana</td>
<td>Occurred in container-grown seedlings at the Coeur d'Alene Nursery.</td>
</tr>
<tr>
<td><em>Botrytis cinerea</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meria needle disease</td>
<td>Western larch</td>
<td>Idaho</td>
<td>This fungus caused severe losses in 2-0 bareroot seedlings at the Coeur d'Alene Nursery.</td>
</tr>
<tr>
<td><em>Meria laricis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoma blight</td>
<td>Mugho pine</td>
<td>Idaho</td>
<td>Severe damage occurred at a private nursery near Peck.</td>
</tr>
<tr>
<td><em>Phoma eupryena</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sirococcus tip blight</td>
<td>Ponderosa pine,</td>
<td>Idaho</td>
<td>Sirococcus tip blight continues to cause damage at two private nurseries near Bonners Ferry but was not as severe as last year. The disease was found this year for the first time on container-grown Engelmann spruce at the Coeur d'Alene Nursery.</td>
</tr>
<tr>
<td><em>Sirococcus strobilinum</em></td>
<td>Engelmann spruce</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Northern Region (R-1)--continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western gall rust</td>
<td>Ponderosa pine</td>
<td>Montana</td>
<td>This rust was found in several trees in a seed orchard in Plains. Stock came from an adjacent bareroot nursery, but did not show symptoms at planting.</td>
</tr>
<tr>
<td><em>Endocronartium harknessii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abiotic</td>
<td>Hardwoods</td>
<td>North Dakota</td>
<td>Chemical damage is considered by many to be the major damaging agent in North Dakota shelterbelts.</td>
</tr>
<tr>
<td>Chemical damage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rocky Mountain Region (R-2)

Status of insects in Colorado, Kansas, Nebraska, South Dakota, and central and eastern Wyoming.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A leaf miner</td>
<td>Phyllonorycter sp.</td>
<td>Wyoming</td>
<td>Infestations are found in Converse, Goshen, Natrona, and Uinta Counties.</td>
</tr>
<tr>
<td></td>
<td>&amp; probably tremuloidiella</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American dagger moth</td>
<td>Silver maple</td>
<td>Colorado</td>
<td>Feeding damage causing leaf drop in Denver metro area.</td>
</tr>
<tr>
<td>Acronicta americana</td>
<td>Boxelder</td>
<td>Colorado</td>
<td>Moderate feeding occurred on boxelder along drainages and on ornamentals in Garfield and Jefferson Counties.</td>
</tr>
<tr>
<td>Archips negundanus</td>
<td>Green ash</td>
<td>Wyoming</td>
<td>Population was heavy on some green ash in Powell.</td>
</tr>
<tr>
<td>Ash flower gall mite</td>
<td>Eriophyes fraxiniflora</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ash plant bug</td>
<td>Neoborus amoenumus</td>
<td>South Dakota</td>
<td>Esthetic damage occurred on 80 trees in Rapid City.</td>
</tr>
<tr>
<td>Bronze birch borer</td>
<td>Birch</td>
<td>Colorado,</td>
<td>A serious problem of ornamentals, particularly in the Denver metro area.</td>
</tr>
<tr>
<td>Agrilus anxius</td>
<td></td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Cankerworms</td>
<td>Alsofila pometaria</td>
<td>Kansas</td>
<td>Defoliation occurred in many areas of Kansas and South Dakota.</td>
</tr>
<tr>
<td></td>
<td>Paleacrita vernata</td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Cooley spruce gall aphid</td>
<td>Adelges cooleyi</td>
<td>Colorado</td>
<td>A ubiquitous pest of ornamentals.</td>
</tr>
<tr>
<td></td>
<td>Blue spruce, Engelmann spruce, Douglas-fir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cottonwood budgall mite</td>
<td>Aceria parapopuli</td>
<td>Wyoming</td>
<td>Continues to be a problem at Laramie.</td>
</tr>
<tr>
<td>Cottony maple scale</td>
<td>Pulvinaria innumerabilis</td>
<td>Wyoming</td>
<td>Infestations in maple reported at Torrington; infestations in boxelder in Big Horn County.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Douglas-fir tussock moth</td>
<td>Orgyia pseudotsugata</td>
<td>Blue spruce</td>
<td>Ornamental blue spruce in the metro communities along the Colorado Front Range continue to be defoliated.</td>
</tr>
<tr>
<td>Elm leaf beetle</td>
<td>Pyrrhulita luteola</td>
<td>American elm,</td>
<td>A chronic pest of ornamentals in the metropolitan areas.</td>
</tr>
<tr>
<td></td>
<td>Siberian elm</td>
<td>Colorado,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nebraska,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fall webworm <em>Hyphantria cunea</em></td>
<td>Cottonwood, plum, chokecherry, wild rose</td>
<td>Colorado, Kansas, South Dakota, Wyoming</td>
<td>Fall webworm occurred commonly in cottonwood along drainages, especially in Colorado and South Dakota.</td>
</tr>
<tr>
<td>Forest tent caterpillar <em>Malacosoma disstria</em></td>
<td>Green ash, crab apple</td>
<td>Colorado</td>
<td>Denver ornamentals suffered some defoliation.</td>
</tr>
<tr>
<td>Green ash (lilac) borer <em>Podosesia syringae syringae</em></td>
<td>Green ash</td>
<td>Colorado, South Dakota</td>
<td>Causing major problems in many shelterbelts, especially in younger trees. Mortality, tree form damage, and stem weakening have been reported. Some damage to young green ash in Denver.</td>
</tr>
<tr>
<td>Gypsy moth <em>Lymantria dispar</em></td>
<td>Hardwoods</td>
<td>South Dakota</td>
<td>Egg masses were found in Custer in 1982; male moths were caught in 1983.</td>
</tr>
<tr>
<td>Honeylocust podgall midge <em>Dasineura gleditschiae</em></td>
<td>Honeylocust</td>
<td>Colorado, Wyoming</td>
<td>Caused twig dieback in Denver metro area and in Wheatland.</td>
</tr>
<tr>
<td>Honeysuckle leafrolling aphid <em>Hydaphis tabaricae</em></td>
<td>Honeysuckle</td>
<td>Nebraska, South Dakota</td>
<td>Raising havoc in windbreaks and ornamentals.</td>
</tr>
<tr>
<td>Mountain pine beetle <em>Dendroctonus ponderosae</em></td>
<td>Lodgepole pine, ponderosa pine</td>
<td>Colorado, South Dakota, Wyoming</td>
<td>In lodgepole pine, mountain pine beetle continues to build. The outbreak in north-central Colorado intensified in 1983, and tree losses are estimated to be about 800,000. In Wyoming, some infestation areas on the Shoshone National Forest remained static; elsewhere, however, the trend is still increasing. Casper, Muddy, Shirley, and Ferris Mountains all have expanding beetle outbreaks. The newest infestation area in the Little Snake River is expanding rapidly. In ponderosa pine, mountain pine beetle activity is down, except on the Uncompaghre Plateau in Colorado. The mountain pine beetle, along with roundheaded and western pine beetles, is causing considerable tree loss in southwest Colorado.</td>
</tr>
<tr>
<td>Oak twig girdler <em>Oncideres cingulata</em></td>
<td>Red oak</td>
<td>Nebraska</td>
<td>Causing some branch mortality.</td>
</tr>
<tr>
<td>Oystershell scale <em>Lepidosaphes ulmi</em></td>
<td>Aspen, ash, pinyon pine</td>
<td>Colorado</td>
<td>A chronic pest on ornamentals and on pinyon in Mesa Verde National Park.</td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pine budworm</td>
<td>Ponderosa pine</td>
<td>Colorado</td>
<td>Defoliation damage was common in ponderosa pine along the Front Range and southern Colorado.</td>
</tr>
<tr>
<td><em>Choristoneura lambertiana</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine engraver beetles</td>
<td>Ponderosa pine,</td>
<td>Colorado,</td>
<td><em>Ips</em> populations were prevalent in local areas with fresh slash and trees weakened from other sources.</td>
</tr>
<tr>
<td><em>Ips</em> spp.</td>
<td>lodgepole pine,</td>
<td>Kansas,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pinyon pine</td>
<td>South Dakota, Wyoming</td>
<td></td>
</tr>
<tr>
<td>Pine moths</td>
<td>Scotch pine,</td>
<td>Colorado,</td>
<td>These two species have previously been reported as <em>D. zimmermani</em>. Damage is common in young pines in shelterbelts in all three States. Damage is most severe in central and western Nebraska.</td>
</tr>
<tr>
<td><em>Diorystria ponderosae</em></td>
<td>Austrian pine,</td>
<td>Nebraska,</td>
<td></td>
</tr>
<tr>
<td><em>Diorystria tumiculoella</em></td>
<td>ponderosa pine</td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Pine needleminer</td>
<td>Ponderosa pine</td>
<td>Colorado,</td>
<td>The needleminer infestations are primarily located on the Front Range. Populations appeared to be higher than in 1982. Ponderosa pine near Cheyenne is infested.</td>
</tr>
<tr>
<td><em>Coleotechnites ponderosae</em></td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Pine needle scale</td>
<td>All pines</td>
<td>Colorado,</td>
<td>A chronic pest of ornamentals in the metropolitan areas of Colorado. Ponderosa pines in the Bessey division of the Nebraska National Forest have large populations.</td>
</tr>
<tr>
<td><em>Chionaspis pinifolii</em></td>
<td></td>
<td>Nebraska</td>
<td></td>
</tr>
<tr>
<td>Pine tiger moth</td>
<td>Ponderosa pine,</td>
<td>Colorado</td>
<td>Pine needle sheathminer is a common associate with pine budworm in Colorado. Infestations are light.</td>
</tr>
<tr>
<td><em>Halinidota ingens</em></td>
<td>pinyon pine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine tip moth</td>
<td>Austrian pine,</td>
<td>Colorado,</td>
<td>Scattered; occurring in ponderosa pine and pinyon.</td>
</tr>
<tr>
<td><em>Rhyacionia sp.</em></td>
<td>Mugho pine,</td>
<td>Kansas,</td>
<td>Continues to be a problem on young pine, especially in shelterbelts and ornamentals.</td>
</tr>
<tr>
<td></td>
<td>ponderosa pine,</td>
<td>Nebraska,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scotch pine</td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Pitch mass borers</td>
<td>Pinyon pine</td>
<td>Colorado</td>
<td>A serious problem of ornamentals, especially in Denver area.</td>
</tr>
<tr>
<td><em>Diorystria ponderosae</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Diorystria sp. near</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>okanagamella</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch nodule moth</td>
<td>Ponderosa pine,</td>
<td>Colorado</td>
<td>Frequently found on young ponderosa in Nebraska. Very common on ornamental pinyon in Denver area.</td>
</tr>
<tr>
<td><em>Petrova sp.</em></td>
<td>pinyon pine</td>
<td>Nebraska</td>
<td></td>
</tr>
<tr>
<td>Popular blackmine beetle</td>
<td>Cottonwood</td>
<td>Colorado</td>
<td>Occurs statewide.</td>
</tr>
<tr>
<td><em>Zygogaphora scutellaris</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rocky Mountain Region (R-2)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poplar vagabond aphid</td>
<td>Cottonwood,</td>
<td>Colorado,</td>
<td>Problem continues at Laramie. Observed in many locations.</td>
</tr>
<tr>
<td>Morovilkoja vagabunda</td>
<td>aspen</td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Putnam scale</td>
<td>Cottonwood</td>
<td>Wyoming</td>
<td>Occurs on older cottonwood in Laramie.</td>
</tr>
<tr>
<td>Diaspidiotus ancylos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red turpentine beetle</td>
<td>Ponderosa pine</td>
<td>Colorado,</td>
<td>Populations at low levels.</td>
</tr>
<tr>
<td>Dendroctonus valens</td>
<td></td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>San Jose scale</td>
<td>Apple</td>
<td>Wyoming</td>
<td>Heavy infestations in the Torrington area.</td>
</tr>
<tr>
<td>Quadraspidiotus perniciosum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver-spotted tiger moth</td>
<td>Pinyon pine,</td>
<td>Colorado</td>
<td>An outbreak of 10,000 acres with heavy defoliation was discovered south of Montrose; permanent damage is not expected.</td>
</tr>
<tr>
<td>Halisidota argentinata</td>
<td>juniper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>subalpina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spittlebugs</td>
<td>Utah juniper</td>
<td>Colorado</td>
<td>Spittlebugs were common at Mesa Verde National Park.</td>
</tr>
<tr>
<td>Clastoptera sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>Spruce</td>
<td>Colorado,</td>
<td>Populations of spruce beetle continue, with some increase on the Rio Grande National Forest. Timber sales, in conjunction with trap tree logging and sanitation cutting, are salvaging much of the loss. The Rabbit Ears infestation on the Routt National Forest is down following heavy salvage of the infested trees. Wyoming populations are low, and no new activity was noted in 1983.</td>
</tr>
<tr>
<td>Dendroctonus rufipennis</td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Spruce needle miner</td>
<td>Spruce</td>
<td>South Dakota</td>
<td>Occurs primarily in southeast quarter of South Dakota.</td>
</tr>
<tr>
<td>Taniva albolineana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce spider mites</td>
<td>Spruce</td>
<td>Colorado,</td>
<td>An increasing problem statewide on ornamentals and shelterbelts.</td>
</tr>
<tr>
<td>Oligonychus ununguis</td>
<td></td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td>Uglynest caterpillar</td>
<td>Plum,</td>
<td>South Dakota</td>
<td>Near Sioux Falls, 25 acres were heavily infested; along the Missouri River near Pierre, several plantings infested.</td>
</tr>
<tr>
<td>Archips cerasivorana</td>
<td>chokeberry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable oakleaf caterpillar</td>
<td>Bur oak</td>
<td>South Dakota</td>
<td>Scattered defoliation in South Dakota.</td>
</tr>
<tr>
<td>Heterocampa manteo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western balsam bark beetle</td>
<td>Subalpine fir</td>
<td>Colorado</td>
<td>Scattered loss continues throughout the range of fir in Colorado.</td>
</tr>
<tr>
<td>Dryocoetes confusus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rocky Mountain Region (R-2)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western conifer seed bug</td>
<td>Scotch pine</td>
<td>Nebraska</td>
<td>Populations were very high in a seed orchard in eastern Nebraska.</td>
</tr>
<tr>
<td><em>Leptoglossus occidentalis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western spruce budworm</td>
<td>Douglas-fir,</td>
<td>Colorado,</td>
<td>Western spruce budworm is building momentum after a slight decline in</td>
</tr>
<tr>
<td><em>Choristoneura occidentalis</em></td>
<td>white fir</td>
<td>Wyoming</td>
<td>1982. Moderate defoliation was mapped on 2,750,311 acres. Egg mass</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>surveys indicate there should be moderate to heavy defoliation in the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>same areas in 1994.</td>
</tr>
<tr>
<td>Western tent caterpillar</td>
<td>Aspen,</td>
<td>Colorado</td>
<td>The western tent caterpillar outbreaks on the east side of the San Juan</td>
</tr>
<tr>
<td><em>Malacosoma californicum</em></td>
<td>serviceberry,</td>
<td></td>
<td>National Forest expanded greatly in 1983. The east side of the</td>
</tr>
<tr>
<td></td>
<td>bitterberry</td>
<td></td>
<td>infestation now extends onto the Rio Grande National Forest. The gross</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>acreage is estimated to be 66,000 acres on both National Forests and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>adjacent private lands. On serviceberry and bitterberry, western tent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>caterpillar was observed in Mesa Verde National Park and elsewhere in</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Colorado.</td>
</tr>
<tr>
<td>Whitemarked tussock moth</td>
<td>Hackberry,</td>
<td>Nebraska</td>
<td>Caused extensive defoliation at scattered locations throughout Nebraska.</td>
</tr>
<tr>
<td><em>Orgyia leucostigma</em></td>
<td>silver maple,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>elm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rocky Mountain Region (R-2)

Status of diseases in Colorado, Kansas, Nebraska, South Dakota, and central and eastern Wyoming.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comandra blister rust</td>
<td>Lodgepole pine</td>
<td>Western</td>
<td>Continues to be the most important disease problem on the Wind River Ranger District, Shoshone National Forest. A survey of the commercial lodgepole pine type indicated the rust is a primary cause of mortality in at least 50 percent of the standing dead saplings and poles.</td>
</tr>
<tr>
<td>Cronartium comandrae</td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Crown gall</td>
<td>Cottonwood</td>
<td>Colorado</td>
<td>Some reports this year.</td>
</tr>
<tr>
<td>Agrobacterium tumefaciens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cytospora cankers</td>
<td>Various hardwoods</td>
<td>Colorado</td>
<td>Cankers girdled branches and boles, resulting in considerable dieback and some mortality.</td>
</tr>
<tr>
<td>Cytospora spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf mistletoe blister rust</td>
<td>Lodgepole pine</td>
<td>Colorado</td>
<td>This rust, which is associated with Arceuthobium americanum, was found to be common in two new areas: Taylor Park, Gunnison National Forest; and Fraser Experimental Forest, Arapaho National Forest.</td>
</tr>
<tr>
<td>Peridermium betelii</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf mistletoes</td>
<td>Lodgepole pine</td>
<td>Colorado, Wyoming</td>
<td>Continues to be the most important disease problem in the Region. An estimated 51 percent of the lodgepole pine type is infested. The annual marketable loss is approximately 10 million cubic feet on National Forests alone.</td>
</tr>
<tr>
<td>Arceuthobium americanum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arceuthobium vaginatum subsp. cryptopodum</td>
<td>Ponderosa pine</td>
<td>Colorado</td>
<td>From an extensive roadside survey on three National Forests, an estimated 20 percent of the ponderosa pine type is infested. An evaluation of the roadside survey technique showed a high correlation between dwarf mistletoe intensity along the roadside and conditions 2 chains from the road.</td>
</tr>
<tr>
<td>Fire blight</td>
<td>Apple</td>
<td>Colorado</td>
<td>Common due to wet spring.</td>
</tr>
<tr>
<td>Erwinia amylovora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypoxylon canker</td>
<td>Aspen</td>
<td>Southwestern Colorado</td>
<td>Common on Mancos Ranger District, San Juan National Forest.</td>
</tr>
<tr>
<td>Hypoxylon mammatum</td>
<td></td>
<td>Colorado</td>
<td></td>
</tr>
<tr>
<td>Siberian elm canker</td>
<td>Siberian elm</td>
<td>South Dakota</td>
<td>Of nine shelterbelts (generally 20 years old) surveyed, all were infected; 85 percent of the trees had one or more small cankers.</td>
</tr>
<tr>
<td>Botryodiplodia</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hypodermia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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</tr>
<tr>
<td>Slime flux</td>
<td>Cottonwood, elm, maple, willow</td>
<td>Colorado</td>
<td>Common in the Denver area; some reports elsewhere. Severe infections cause leaves to dry up and drop early.</td>
</tr>
<tr>
<td>Thryonectria canker</td>
<td>Honeylocust</td>
<td>Colorado</td>
<td>This canker, which is killing honeylocust in the Denver area, is the most common disease on privately owned trees.</td>
</tr>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Anosus root rot</td>
<td>Jack pine</td>
<td>Nebraska</td>
<td>Additional infection centers found on the Bessey Ranger District, Nebraska National Forest. The present infection covers about one-quarter acre, which was thinned earlier. No trees are being cut within 30 feet of the infected area and stump surfaces are treated with borax.</td>
</tr>
<tr>
<td>Black stain root disease</td>
<td>Pinyon pine</td>
<td>Western Colorado</td>
<td>The primary root disease in pinyon type west of the Continental Divide. Trenching and silvicultural treatments are being tested in Mesa Verde National Park to limit spread. Collection and isolation of fungi from insect vectors and studies on the longevity of the pathogen within killed trees continue.</td>
</tr>
<tr>
<td>Shoestring root rot</td>
<td>All conifers</td>
<td>Colorado, South Dakota, Wyoming</td>
<td>The most prevalent root disease in the Region. A survey on 363,200 acres of the San Juan National Forest found 24 percent of the spruce-fir type was infected. Mortality of subalpine fir at two Colorado ski areas stimulated interest in the formulation of long-term vegetation management plans. Armillaria mellea and several bark beetles are involved. A survey conducted around Deadwood, S. Dak., in the Black Hills National Forest implicates A. mellea-infected ponderosa pine as foci for mountain pine beetle attacks during endemic beetle cycles. Widespread subalpine fir mortality attributed to western balsam bark beetle and root rot continues throughout the White River National Forest, Colorado.</td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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<tr>
<td>---------------------------------</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Foliage Disease</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Anthracnose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gloeosporium</em> spp.</td>
<td>Sycamore</td>
<td>Colorado</td>
<td>Some reports this year. Considerable defoliation frequent in Denver metropolitan area.</td>
</tr>
<tr>
<td><em>Gnomonia veneta</em></td>
<td>Sycamore</td>
<td>Nebraska</td>
<td>Common throughout Nebraska.</td>
</tr>
<tr>
<td><em>Gnomonia leptostyla</em></td>
<td>Walnut</td>
<td>East-central</td>
<td>Abnormally cool, wet spring weather increased incidence and severity. Over 300 trees in two small plantations in Newton Hills State Park were heavily infected.</td>
</tr>
<tr>
<td><em>Diplodia tip blight</em></td>
<td>Ponderosa pine</td>
<td>South Dakota</td>
<td></td>
</tr>
<tr>
<td><em>Diplodia pinea</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Venturia inaequalis</em></td>
<td>Crabapple</td>
<td>Colorado</td>
<td>Reported for the first time near Steamboat Springs, Colo.</td>
</tr>
<tr>
<td><em>Ash anthracnose</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Gloeosporium</em> aridum</td>
<td>Green ash</td>
<td>Eastern Nebraska</td>
<td>Common.</td>
</tr>
<tr>
<td><em>Fir needle rust</em></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><em>Pucciniastrum</em></td>
<td>White fir, subalpine fir</td>
<td>Colorado</td>
<td>Branches with yellow aecia on needles collected in the fall on the Arapaho and Roosevelt and the Grand Mesa National Forests.</td>
</tr>
<tr>
<td><em>goeppertianum</em></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><em>Ink spot</em></td>
<td></td>
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</tr>
<tr>
<td><em>Ciborinia whetzelli</em></td>
<td>Aspen</td>
<td>Colorado</td>
<td>Widely observed this year. The Crystal River drainage and the Aspen area, White River National Forest, were heavily infected.</td>
</tr>
<tr>
<td><em>Juniper blight</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Phomopsis juniperovora</em></td>
<td>Eastern redcedar, Rocky Mountain juniper</td>
<td>East-central South Dakota</td>
<td>Numerous reports of light infections aggravated by cool, wet spring.</td>
</tr>
<tr>
<td><em>Cercospora sequoiae</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Marssonina blight and leaf spot</em></td>
<td>Aspen, poplars, Austrian pine</td>
<td>Colorado, Nebraska</td>
<td>Very common throughout Colorado due to wet spring. Some premature defoliation. In Nebraska, branch dieback and tree mortality common in windbreaks and urban plantings.</td>
</tr>
<tr>
<td><em>Marssonina populi</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Melampsora rust</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Melampsora medusae</em></td>
<td>Aspen</td>
<td>Colorado</td>
<td>Some reports this year.</td>
</tr>
</tbody>
</table>
Rocky Mountain Region (R-2)—continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle cast</td>
<td>Lodgepole pine</td>
<td>Wyoming</td>
<td>Extensive areas with low-grade infection following two or three seasons of frost damage on the Bighorn National Forest.</td>
</tr>
<tr>
<td>Lophodermium sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powdery mildew</td>
<td>Apple</td>
<td>Colorado</td>
<td>Very common throughout Colorado due to very wet spring.</td>
</tr>
<tr>
<td>Podosphaera leucotricha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shepherd's crook</td>
<td>Cottonwoods, poplars</td>
<td>Colorado</td>
<td>Some reports this year. Spread by wet weather.</td>
</tr>
<tr>
<td>Venturia tremulae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shot hole leaf spot</td>
<td>Plum</td>
<td>Colorado</td>
<td>Some reports this year.</td>
</tr>
<tr>
<td>Coccomyces sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vascular Wilt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutch elm disease</td>
<td>American elm</td>
<td>Nebraska, South Dakota</td>
<td>In South Dakota, confirmed in four new counties: Campbell, Corson, Ziebach, and Dewey. Only five South Dakota counties are still free from confirmed cases of Dutch elm disease. A survey of 51 percent of the communities in the eastern two-thirds of the State indicated losses of 6.6 percent, or 4,786 urban trees. In the survey area, 68,000 susceptible elms out of an original 375,000 elms remain. In Nebraska, Dutch elm disease continues to be a problem.</td>
</tr>
<tr>
<td>Ceratocystis ulmi</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Elm species</td>
<td>Colorado</td>
<td></td>
<td>In 57 of the 122 areas with significant elm populations, 773 cases reported. Excellent sanitation programs are being conducted in 71 areas.</td>
</tr>
<tr>
<td>Verticillium wilt</td>
<td>Sumac, catalpa, silver maple, golden raintree, Russian olive</td>
<td>Colorado, Front Range</td>
<td>Often isolated this year. Continues at low level in Denver area.</td>
</tr>
<tr>
<td>Verticillium sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery Disease</td>
<td>Conifers</td>
<td>Colorado</td>
<td>Evaluation of soil solar heating for control of pathogens and weeds was completed at the Colorado State Forest Service Nursery, Fort Collins. Significant control was achieved with the techniques.</td>
</tr>
<tr>
<td>Damping-off</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pythium spp.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fusarium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium root disease</td>
<td>Lodgepole pine</td>
<td>Nebraska</td>
<td>Isolated from dying 1-0 pine at the Bessey Nursery. The infection was in an area where the nursery bed cannot be fumigated because of permanent irrigation pipes, so infected soil is always present and serves as a source of inoculum to the adjacent seedbeds.</td>
</tr>
<tr>
<td>Fusarium oxysporum</td>
<td></td>
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</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Shot hole</td>
<td>Chokecherry</td>
<td>Nebraska</td>
<td>The disease was not controlled by regular fungicide applications at the Bessey Nursery. The pathogen is probably <em>Coccomyces</em> sp., but has not been confirmed.</td>
</tr>
<tr>
<td>Tip blight</td>
<td>Ponderosa pine</td>
<td>Colorado</td>
<td>Ponderosa pine seedlings growing at the Southern Ute Greenhouse exhibited purplish shoot dieback attributed to <em>Sirococcus</em> sp., but not confirmed.</td>
</tr>
<tr>
<td>Abiotic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air pollution</td>
<td>Ponderosa pine</td>
<td>Colorado Front Range</td>
<td>Examination of permanent plots indicated no ozone injury.</td>
</tr>
<tr>
<td>Aspen mortality</td>
<td>Aspen</td>
<td>Southern Colorado, northern New Mexico</td>
<td>According to recently compiled research and survey results, partial cutting of aspen results in 26 percent mortality of residuals within 9 years due to canker and root disease fungi and windthrow.</td>
</tr>
<tr>
<td>Chemical damage</td>
<td>All species</td>
<td>Eastern South Dakota</td>
<td>Many more instances than usual this year. Over 12 cases known; about 24 suspected. Near Yankton, 40 acres severely damaged from drifting spray.</td>
</tr>
<tr>
<td>Conifer decline</td>
<td>Ponderosa pine</td>
<td>Southwest Colorado</td>
<td>Extensive areas suffering suspected environmental malady involving moisture stress and/or air pollutants. Various insects present in these areas; further investigation planned.</td>
</tr>
<tr>
<td>Hackberry decline</td>
<td>Hackberry</td>
<td>Nebraska</td>
<td>Apparently related to environmental stress. Continues to be a problem in urban areas.</td>
</tr>
<tr>
<td>Jack pine decline</td>
<td>Jack pine</td>
<td>Nebraska</td>
<td>Results from a 5-year study indicate that jack pine is no longer declining on the Nebraska National Forest.</td>
</tr>
<tr>
<td>Leaf scorch</td>
<td>Hardwoods</td>
<td>South Dakota</td>
<td>Due to a wet spring followed by very hot, dry weather from mid-June to late September. Largest single cause of requests for assistance from landowners this year.</td>
</tr>
<tr>
<td>Ponderosa pine mortality</td>
<td>Ponderosa pine</td>
<td>South Dakota</td>
<td>Mortality on an extensive area of the Harney Ranger District, Black Hills National Forest; cause not confirmed.</td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spruce decline</td>
<td>Spruce</td>
<td>Eastern South Dakota</td>
<td>For the past few years, an unknown decline of ornamental spruce has been noted. The decline results in early casting of needles, which begins on a few branches, then eventually spreading over the entire tree. No mortality noted.</td>
</tr>
<tr>
<td>Other</td>
<td>All species</td>
<td>Regionwide</td>
<td>A survey of 54 fee campgrounds, which examined 7,300 trees, was undertaken this year. Data are being analyzed.</td>
</tr>
<tr>
<td>Yellow-bellied sapsucker</td>
<td>Pine, juniper, spruce</td>
<td>South Dakota</td>
<td>Numerous reports throughout South Dakota. Light to heavy damage on individual trees and throughout shelterbelts. In one shelterbelt near Chamberlain, 25 spruce sustained heavy damage.</td>
</tr>
</tbody>
</table>
Southwestern Region (R-3)

Status of insects in Arizona, New Mexico, and Park Service land in western Texas.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas-fir beetle</td>
<td>Douglas-fir</td>
<td>Arizona, New Mexico</td>
<td>Scattered single tree and small group mortality occurred throughout the Region. A few areas of concentrated mortality occurred on the Fort Apache Indian Reservation.</td>
</tr>
<tr>
<td><em>Dendroctonus pseudotsugae</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large aspen tortrix</td>
<td>Aspen</td>
<td>Arizona, New Mexico</td>
<td>Aspen defoliation attributed to this insect occurred primarily on the Carson National Forest.</td>
</tr>
<tr>
<td><em>Choristoneura conflictana</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain pine beetle</td>
<td>Ponderosa pine</td>
<td>Arizona, New Mexico</td>
<td>Small areas of mortality were observed on the Kaibab and Carson National Forests and the Navajo and Jicarilla Apache Indian Reservations. In Arizona, 1,610 acres were infested; 690 acres were infested in New Mexico.</td>
</tr>
<tr>
<td><em>Dendroctonus ponderosae</em></td>
<td></td>
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</tr>
<tr>
<td>Pandora moth</td>
<td>Ponderosa pine</td>
<td>Arizona</td>
<td>Approximately 28,500 acres of defoliation were apparent on the North Kaibab Ranger District, Kaibab National Forest. Intensity of defoliation was less than in previous years. The population is considered in decline.</td>
</tr>
<tr>
<td><em>Coloradia pandora</em></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pine engraver beetles</td>
<td>Pines</td>
<td>Arizona, New Mexico</td>
<td>Ips activity within the Region was generally at a low level. Concentrated tree mortality was limited to a few areas on the Apache-Sitgreaves National Forest and San Carlos Indian Reservation.</td>
</tr>
<tr>
<td><em>Ips</em> spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>Engelmann spruce</td>
<td>Arizona, New Mexico</td>
<td>Spruce beetle continued at epidemic levels on the Fort Apache Indian Reservation and the Pecos and Las Vegas Ranger Districts of the Santa Fe National Forest. On the Fort Apache Indian Reservation, volume losses have thus far exceeded 100 million board feet as a result of this current outbreak.</td>
</tr>
<tr>
<td><em>Dendroctonus rufipennis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>True fir bark beetles</td>
<td>True firs</td>
<td>Arizona, New Mexico</td>
<td>Tree mortality attributed to these insects was widespread throughout the Region. Mortality generally occurred in small groups of 1 to 10 trees in the mixed conifer and spruce-fir forest types.</td>
</tr>
<tr>
<td><em>Dryocoetes confusus</em></td>
<td></td>
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</tr>
<tr>
<td><em>Scolytus</em> spp.</td>
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</tbody>
</table>
Southwestern Region (R-3)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western pine beetle</td>
<td>Ponderosa pine</td>
<td>Arizona,</td>
<td>Widely scattered ponderosa pine mortality was caused by this insect</td>
</tr>
<tr>
<td><em>Dendroctonus brevicomis</em></td>
<td></td>
<td>New Mexico</td>
<td>throughout the Region.</td>
</tr>
<tr>
<td>Western spruce budworm</td>
<td>Douglas-fir,</td>
<td>Arizona,</td>
<td>Defoliation occurred on 371,549 acres in 1983. Defoliation was</td>
</tr>
<tr>
<td><em>Choristoneura occidentalis</em></td>
<td>white fir,</td>
<td>New Mexico</td>
<td>concentrated on the Carson, Santa Fe, Lincoln, Kaibab, and Cibola</td>
</tr>
<tr>
<td></td>
<td>spruce</td>
<td></td>
<td>National Forests. The Lincoln National Forest experienced the greatest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>increase in defoliation. In Arizona, about 20,000 acres were</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>infested; in New Mexico, about 352,000 acres were infested.</td>
</tr>
<tr>
<td>Western tent caterpillar</td>
<td>Aspen</td>
<td>Arizona,</td>
<td>Defoliation caused by this insect was concentrated on the Santa Fe and</td>
</tr>
</tbody>
</table>
## Southwestern Region (R-3)

### Status of diseases in Arizona, New Mexico, and Park Service land in western Texas.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stem and Branch</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dasycypha canker</td>
<td>Ponderosa pine</td>
<td>Central Arizona</td>
<td>A canker-causing fungus, tentatively identified as Dasycypha, caused mortality, top-kill, and branch dieback on pine seedlings and saplings, Promontory Butte.</td>
</tr>
<tr>
<td><strong>Dwarf mistletoes</strong></td>
<td>Ponderosa pine,</td>
<td>Arizona, New Mexico</td>
<td>Dwarf mistletoes continued to have a major impact on growth and yield of conifers in the Southwest.</td>
</tr>
<tr>
<td>Arceuthobium spp.</td>
<td>Douglas-fir,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engelmann spruce</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Limb rust</strong></td>
<td>Ponderosa pine</td>
<td>Arizona</td>
<td>Reported causing branch mortality in two areas on the Fort Apache Indian Reservation.</td>
</tr>
<tr>
<td>Peridermium filamentosum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Root Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annosus root rot</td>
<td>Conifers</td>
<td>Arizona, New Mexico</td>
<td>Found in all timber types but most common in spruce-fir. Like A. mellea, H. annosum causes mortality as part of a pest complex.</td>
</tr>
<tr>
<td>Heterobasidion annosum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shoestring root rot</strong></td>
<td>Conifers, aspen</td>
<td>Arizona, New Mexico</td>
<td>The most common and ubiquitous root disease in the Region. It causes mortality in all timber types, usually as part of a complex that includes dwarf mistletoes and bark beetles. Most common in spruce-fir type. Found causing windthrow and mortality in aspen on the Las Vegas Ranger District, Santa Fe National Forest.</td>
</tr>
<tr>
<td>Armillaria mellea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foliage Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elytroderma disease</td>
<td>Ponderosa pine</td>
<td>Arizona, New Mexico</td>
<td>Increased levels of infection and damage were reported from near Lake Mary, Coconino National Forest, and on the Mount Taylor Ranger District, Cibola National Forest. Incidence of all foliage disease increased this year.</td>
</tr>
<tr>
<td>Elytroderma deformans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Needle cast diseases</strong></td>
<td>Ponderosa pine</td>
<td>New Mexico</td>
<td>Reported from El Rito Ranger District, Carson National Forest.</td>
</tr>
<tr>
<td>Lophodermella spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Southwestern Region (R-3)—continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damping-off</td>
<td>Ponderosa pine</td>
<td>New Mexico</td>
<td>Postemergence damping-off caused significant losses at the Albuquerque Tree Nursery.</td>
</tr>
<tr>
<td>Fusarium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhizoctonia spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sirococcus tip blight</td>
<td>Ponderosa pine</td>
<td>Arizona</td>
<td>Caused mortality and damage to seedlings in a Bureau of Indian Affairs greenhouse, Fort Apache Indian Reservation.</td>
</tr>
<tr>
<td>Sirococcus atrobinus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Intermountain Region (R-4)

Status of insects in southern Idaho, Nevada, Utah, and western Wyoming.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A pyralid moth</td>
<td>Engelmann spruce</td>
<td>Idaho</td>
<td>No activity was noted this year following widespread seedling losses at the Lucky Peak Nursery in 1982.</td>
</tr>
<tr>
<td><em>Dendroctonus pseudotsugae</em></td>
<td></td>
<td>Wyoming</td>
<td></td>
</tr>
<tr>
<td>Douglas-fir tussock moth</td>
<td>Douglas-fir</td>
<td>Idaho</td>
<td>Defoliation occurred on approximately 14,200 acres in the Owyhee Mountains.</td>
</tr>
<tr>
<td><em>Orgyia pseudotsugata</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larch casebearer</td>
<td>Western larch</td>
<td>Idaho</td>
<td>Only limited ground observations.</td>
</tr>
<tr>
<td><em>Coleophora laricella</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Dendroctonus ponderosae</em></td>
<td>ponderosa pine, other pines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine butterfly</td>
<td>Ponderosa pine</td>
<td>Idaho</td>
<td>Moderate to heavy defoliation over 16,280 acres on the Boise and Salmon National Forests and private lands east of Cascade Reservoir.</td>
</tr>
<tr>
<td><em>Neophasia menapia</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine engraver beetle</td>
<td>Pines</td>
<td>Idaho</td>
<td>Fewer than 1,000 trees were killed on the Boise, Payette, and Salmon National Forests. This constitutes a downward trend over 1982 levels.</td>
</tr>
<tr>
<td><em>Ips pini</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine needle sheathminer</td>
<td>Lodgepole pine</td>
<td>Idaho</td>
<td>Over 800 acres of lodgepole pine were defoliated on the Caribou and Targhee National Forests.</td>
</tr>
<tr>
<td><em>Zelleria haimbachii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>Engelmann spruce</td>
<td>Idaho, Utah</td>
<td>Localized pockets continue to cause mortality on the Uinta and Manti-LaSal National Forests. Only limited numbers noted in windthrow on the Payette National Forest.</td>
</tr>
<tr>
<td><em>Dendroctonus rufipennis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar pine tortrix</td>
<td>Pines</td>
<td>Idaho</td>
<td>New foliage of scattered sapling- and pole-sized pines defoliated.</td>
</tr>
<tr>
<td><em>Choristoneura iambertiana</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>---------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Western pine beetle</td>
<td>Ponderosa pine</td>
<td>Idaho, Nevada</td>
<td>Low levels throughout Region.</td>
</tr>
<tr>
<td>Dendroctonus brevicomis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western pine shoot borer</td>
<td>Ponderosa pine</td>
<td>Idaho</td>
<td>Limited number noted throughout southern Idaho.</td>
</tr>
<tr>
<td>Eucosma sonomana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western spruce budworm</td>
<td>Firs, Douglas-fir,</td>
<td>Idaho</td>
<td>Approximately 2.8 million acres were defoliated in 1983. Infestations</td>
</tr>
<tr>
<td>Choristoneura occidentalis</td>
<td>western larch,</td>
<td></td>
<td>expanded on the Bridger-Ietan, Boise, Manti-LaSal, Payette, Sawtooth,</td>
</tr>
<tr>
<td></td>
<td>spruce</td>
<td></td>
<td>Targhee, and Wasatch National Forests.</td>
</tr>
<tr>
<td>Western tussock moth</td>
<td>Willows, Ceanothus</td>
<td>Idaho</td>
<td>Defoliation was insignificant in 1983.</td>
</tr>
</tbody>
</table>
### Intermountain Region (R-4)

Status of diseases in southern Idaho, Nevada, Utah, and western Wyoming.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stem and Branch</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cronartium comandrae</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cytospora canker</td>
<td>Aspen</td>
<td>Idaho</td>
<td>Caused branch mortality to mature aspen in southern Idaho.</td>
</tr>
<tr>
<td><em>Cytospora chrysosperma</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dasyoscapha canker</td>
<td>Ponderosa pine</td>
<td>Idaho</td>
<td>Found infecting snow-damaged pine regeneration on the Boise National Forest.</td>
</tr>
<tr>
<td><em>Dasyoscapha sp.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf mistletoes</td>
<td>Douglas-fir, lodgepole pine,</td>
<td>Idaho, Nevada, Utah, Wyoming</td>
<td>These pests continued to have significant impacts on growth and yield of their host species. Suppression projects removed infected overstory trees from 3,042 acres throughout the Region.</td>
</tr>
<tr>
<td><em>Arceuthobium spp.</em></td>
<td>Jeffrey pine, western larch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>False tinder fungus</td>
<td>Aspen</td>
<td>Idaho, Nevada, Utah, Wyoming</td>
<td>Prevalent on the Sawtooth National Forest. Also detected in most aspen stands throughout the Region.</td>
</tr>
<tr>
<td><em>Phellinus tremulæ</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fir broom rust</td>
<td>Subalpine fir</td>
<td>Idaho, Utah, Wyoming</td>
<td>Scattered incidence throughout host type.</td>
</tr>
<tr>
<td><em>Melampsorella</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>caryophyllacearum</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian paint fungus</td>
<td>Grand fir</td>
<td>Idaho</td>
<td>Static in old-growth stands.</td>
</tr>
<tr>
<td><em>Echinodontium tinctorium</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce broom rust</td>
<td>Engelmann spruce</td>
<td>Idaho, Utah</td>
<td>Scattered incidence throughout host type.</td>
</tr>
<tr>
<td><em>Chrysomyxa arctostaphyli</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cronartium</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>coleosporioides</em></td>
<td>Lodgepole pine, ponderosa pine</td>
<td>Idaho</td>
<td>Static in host type.</td>
</tr>
<tr>
<td>Western gall rust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocronartium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>harknessii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Root Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annoos root rot</td>
<td>Ponderosa pine, Douglas-fir,</td>
<td>Idaho</td>
<td>Detections of <em>H. annosum</em> infections increased throughout southern Idaho.</td>
</tr>
<tr>
<td><em>Heterobasidion annosum</em></td>
<td>spruce, true firs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red-brown butt rot</td>
<td>Douglas-fir</td>
<td>Idaho</td>
<td>Usually found in stands over 120 years old that have windthrow or bark beetle activity.</td>
</tr>
<tr>
<td><em>Phaeolus schweinitzii</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Red ring rot</td>
<td><em>Phellinus pini</em></td>
<td>Idaho, Utah</td>
<td>Along with <em>H. annosum</em>, infected roots and butts of hosts in southwestern Idaho. Found on spruce in southern Utah.</td>
</tr>
<tr>
<td><strong>Foliage Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dothistroma needle blight</td>
<td><em>Dothistroma pini</em></td>
<td>Ponderosa pine</td>
<td>Severe on pine in only known occurrence in Idaho ([confluence of Lightning Creek and Middle Fork, Weiser River).</td>
</tr>
<tr>
<td>Elytroderma disease</td>
<td><em>Elytroderma deformans</em></td>
<td>Ponderosa pine</td>
<td>High levels sustained from 1982 infection levels, especially Mores Creek on the Boise National Forest.</td>
</tr>
<tr>
<td>Fir needle rust</td>
<td><em>Pucciniastrum spp.</em></td>
<td>Firs</td>
<td>Light levels of infection in southwestern Idaho.</td>
</tr>
<tr>
<td>Ink spot</td>
<td><em>Ciborinia whetzelii</em></td>
<td>Aspen</td>
<td>Continued infections on Boise and Targhee National Forests.</td>
</tr>
<tr>
<td>Lodgepole pine needle cast</td>
<td><em>Lophodermella concolor</em></td>
<td>Lodgepole pine</td>
<td>Light levels of infection throughout southern Idaho.</td>
</tr>
<tr>
<td><em>Marssonina blight</em></td>
<td>Marssonina populi</td>
<td>Aspen</td>
<td>Scattered incidence throughout host type.</td>
</tr>
<tr>
<td><em>Meria needle disease</em></td>
<td><em>Meria laricis</em></td>
<td>Western larch</td>
<td>Very low levels of discoloration and defoliation on Boise and Payette National Forests.</td>
</tr>
<tr>
<td>Pine needle rust</td>
<td><em>Colesporium asterum</em></td>
<td>Lodgepole pine</td>
<td>Rust infections found on lodgepole pine regeneration on Targhee National Forest.</td>
</tr>
<tr>
<td>Rhabdocline needle blight</td>
<td><em>Rhabdocline pseudotsuga</em></td>
<td>Douglas-fir</td>
<td>Scattered incidence throughout host type.</td>
</tr>
<tr>
<td>Vascular Wilt</td>
<td><em>Dutch elm disease</em></td>
<td>American elm</td>
<td>Continued infections in Boise, Idaho, and in Utah along the Wasatch Front.</td>
</tr>
<tr>
<td></td>
<td><em>Ceratocystis ulmi</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pacific Southwest Region (R-5)

Status of insects in California, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A mealybug</td>
<td>Hibiscus</td>
<td>Hawaii, island of Oahu</td>
<td>New introduction found in 1983 and is a threat to native Malvaceae.</td>
</tr>
<tr>
<td>Macconellicoccus hirsutus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A western spruce budworm</td>
<td>Douglas-fir</td>
<td>Northern California</td>
<td>The extent of the infestation at Trinity Lake increased threefold to 90,000 acres in 1983. Heavy, moderate, and light defoliation intensities made up 73 percent, 4 percent, and 23 percent of the area, respectively. Egg mass counts were approximately 1:1, new to old, indicating a stabilized population over much of the area.</td>
</tr>
<tr>
<td>Choristoneura carnana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>californica</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black pineleaf scale</td>
<td>Pines</td>
<td>Northern California</td>
<td>About 1,800 acres of ponderosa pine were infested near Burney in Shasta County. Pines on one-half of this area were heavily defoliated, retaining only 1 to 2 years' complement of needles. Western pine beetles caused one small group kill in the most severely damaged stand.</td>
</tr>
<tr>
<td>Nuculaspis californica</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black twig borer</td>
<td>Podocarpus</td>
<td>Hawaii, island of Kauai</td>
<td>Light damage to nursery plantings occurred in Lihue.</td>
</tr>
<tr>
<td>Xylosandrus compactus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California flatheaded borer</td>
<td>Pines</td>
<td>Southern California</td>
<td>Generally low levels.</td>
</tr>
<tr>
<td>Melanophila californica</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese rose beetle</td>
<td>Arboretum trees</td>
<td>Guam</td>
<td>Defoliation noted in an arboretum.</td>
</tr>
<tr>
<td>Adoretus sinicus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas-fir tussock moth</td>
<td>White fir</td>
<td>Northern and central California</td>
<td>No defoliation was detected. Pheromone trap monitoring of the 1983 moth flight indicated that populations should remain at nondamaging levels in 1984 in the Sierra Nevada and Cascade Range.</td>
</tr>
<tr>
<td>Orgyia pseudotsugata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eurasian pine aphid</td>
<td>Pines</td>
<td>Hawaii</td>
<td>The population remains low due to the chamaeyiid predator, Leucopsis obscura Hal., which was released in 1976.</td>
</tr>
<tr>
<td>Pines pini</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fir engraver</td>
<td>Fires</td>
<td>California</td>
<td>Generally low levels throughout the Region.</td>
</tr>
<tr>
<td>Scolytus ventralis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatheaded fir borer</td>
<td>Douglas-fir</td>
<td>Northern California</td>
<td>A downward trend in activity.</td>
</tr>
<tr>
<td>Melanophila drummondi</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Pacific Southwest Region (R-5)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit piercing moth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Othreis fullonia</em></td>
<td>Guava</td>
<td>Guam</td>
<td>Severe damage to guava fruits on trees in the Plant Industry Division's</td>
</tr>
<tr>
<td>Fruittree leafroller</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Archips argyrospilus</em></td>
<td>California black oak,</td>
<td>Southern</td>
<td>Defoliation was observed over about 14,500 acres in areas between</td>
</tr>
<tr>
<td></td>
<td>other hardwoods</td>
<td>California</td>
<td>Sugarpine Mountain-Silverwood Lake and Running Springs, San Bernardino</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>National Forest. In 1982, only 2,000 acres were reported defoliated.</td>
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<tr>
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<td></td>
<td>More than 90 percent defoliation was observed on scattered individual</td>
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<td></td>
<td>trees and in localized areas covering an estimated 2,000 acres. Egg</td>
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<td></td>
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<td></td>
<td>mass counts indicated that 1984 defoliation levels should be of the</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>same or somewhat higher than 1983 levels. About 2,500 acres of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>defoliation was also observed in four other locations in the southern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sierra Nevada and San Gabriel Mountains.</td>
</tr>
<tr>
<td>Grasshoppers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Melanoplus</em> spp.</td>
<td>Ponderosa pine</td>
<td>Northern</td>
<td>On the Stanislaus National Forest at McCormick Meadows, grasshoppers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>California</td>
<td>ruined 140 acres of new plantations. Abundant populations were present</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>on 1,500 acres in the Granite Burn.</td>
</tr>
<tr>
<td>Gypsy moth</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>Lymantria dispar</em></td>
<td>Hardwoods, ornamentals</td>
<td>California</td>
<td>In 1982, 104 male gypsy moths were caught in 14 counties; in 1983, 173</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>male gypsy moths were caught in 16 counties. About 70 percent of the</td>
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<td></td>
<td>1983 captures were made at three locations: San Diego (San Diego</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>County), San Jose (Santa Clara County), and Danville (Contra Costa</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>County).</td>
</tr>
<tr>
<td>Jeffrey pine beetle</td>
<td>Jeffrey pine</td>
<td>California</td>
<td>Localized outbreaks occurred at Big Bear Lake, Truckee, Markleville,</td>
</tr>
<tr>
<td><em>Dendroctonus jeffreyi</em></td>
<td></td>
<td></td>
<td>Lake Tahoe Basin, and north of Lassen Volcanic National Park. Collectiv-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ily, these areas totaled about 2,500 acres.</td>
</tr>
<tr>
<td>Jeffrey pine needleminer</td>
<td>Jeffrey pine</td>
<td>Southern</td>
<td>Defoliation in the San Bernardino Mountains continued at about the same</td>
</tr>
<tr>
<td><em>Coleotechnites</em> sp.</td>
<td></td>
<td>California</td>
<td>levels as in 1981 and 1982: approximately 2,000 to 3,000 acres.</td>
</tr>
<tr>
<td>Lodgepole needleminer</td>
<td>Lodgepole pine</td>
<td>Yosemite</td>
<td>Observations of population levels indicate that the current outbreak,</td>
</tr>
<tr>
<td><em>Coleotechnites milleri</em></td>
<td></td>
<td>National Park</td>
<td>which began in 1973, may be waning and will not cause visible defoliation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>by 1985. Defoliation was evident on 59,740 acres of host type.</td>
</tr>
</tbody>
</table>
### Pacific Southwest Region (R-5)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melon fly</td>
<td>Citrus</td>
<td>Northern Mariana Islands</td>
<td>Population increasing slowly following reintroduction on Rota.</td>
</tr>
<tr>
<td>Dacus cucurbitae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modoc budworm</td>
<td>White fir</td>
<td>Northeastern California</td>
<td>For the first time in many years, light feeding on current year's needles and some bud injury were observed in the northern Warner Mountains.</td>
</tr>
<tr>
<td>Choristoneura viridis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain pine beetle</td>
<td>Sugar pine, ponderosa pine, lodgepole pine</td>
<td>Northern and central California</td>
<td>An increase in lodgepole pine mortality became apparent by mid-summer over some 10,000 acres in Yosemite National Park, several hundred acres in Lake Tahoe Basin, at Trout Creek north of Truckee, and in Donner Memorial Park.</td>
</tr>
<tr>
<td>Dendroctonus ponderosae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pandora moth</td>
<td>Jeffrey pine</td>
<td>Southern California</td>
<td>First reported in 1979 and eventually covering 16,000 acres in 1981, the outbreak on the Mammoth Ranger District, Inyo National Forest, subsided in 1983. Close monitoring documented the natural factors, principally a virus-caused disease, that caused the population collapse.</td>
</tr>
<tr>
<td>Colorado pandora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine engraver beetles</td>
<td>Pines</td>
<td>California</td>
<td>Pine engraver activity increased in 1983. Damage was widespread and highly visible from Nevada County south through the Sierra Nevada and in the mountains of southern California. Most of the reported activity was associated with untreated slash and storm or fire damage.</td>
</tr>
<tr>
<td>Ips spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine needle sheathminer</td>
<td>Ponderosa pine</td>
<td>Northern California</td>
<td>Defoliation was observed at numerous locations in plantation and natural stands of pine. In the aggregate, defoliation probably totaled 1,000 to 2,000 acres. After 3 years of defoliation, some plantation ponderosa pines remained undamaged, while other pines had serious top damage and were liable to develop poor form.</td>
</tr>
<tr>
<td>Zeelera haimbachi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poinciana looper</td>
<td>Flame tree</td>
<td>Northern Mariana Islands, Guam</td>
<td>Activity continues at high levels on Rota. First reported in Guam in 1974, when it was seen defoliating a royal poinciana, or flame tree. It has since become an islandwide pest, leaving few trees untouched. The forest nursery has stopped propagating flame tree seedlings until effective chemical and/or biological controls have been established.</td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------</td>
<td>----------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Red turpentine beetle</td>
<td>Pines</td>
<td>California</td>
<td>Generally low levels throughout the Region. The exception was in stands</td>
</tr>
<tr>
<td><em>Dendroctonus valens</em></td>
<td></td>
<td></td>
<td>underburned for fuels reduction. Here, activity was elevated, but little tree</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>mortality was observed.</td>
</tr>
<tr>
<td>Spiraling whitefly</td>
<td>Ornamentals,</td>
<td>Hawaii,</td>
<td>Populations in Hawaii remain in check since the release of several</td>
</tr>
<tr>
<td><em>Aleurodicus dispersus</em></td>
<td>shade, and</td>
<td>Northern</td>
<td>biological control agents, notably <em>Nephaspis</em></td>
</tr>
<tr>
<td></td>
<td>fruit trees;</td>
<td>Mariana</td>
<td><em>amincola</em> Wingo and <em>Encarsia</em> spp.</td>
</tr>
<tr>
<td></td>
<td>native and</td>
<td>Islands,</td>
<td>Occasional outbreaks occur; however, they are short lived. Introduced</td>
</tr>
<tr>
<td></td>
<td>exotic forest</td>
<td>Guam</td>
<td>to Saipan in 1983. Populations increasing throughout the islands. In Guam,</td>
</tr>
<tr>
<td></td>
<td>trees</td>
<td></td>
<td>prompt introduction of natural enemies has helped check spread.</td>
</tr>
<tr>
<td>Tangan tangan mealybug</td>
<td>Tangan</td>
<td>Northern</td>
<td>Population remains at endemic level on Saipan and Tinian. No major</td>
</tr>
<tr>
<td><em>Nipaecoccus vastator</em></td>
<td>tangan</td>
<td>Mariana</td>
<td>outbreaks in 1983 on Guam.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Islands,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guam</td>
<td></td>
</tr>
<tr>
<td>Tent caterpillar</td>
<td>Bitterbrush</td>
<td>Eastern</td>
<td>Defoliation occurred over two grazing allotments (1,500 acres) on the</td>
</tr>
<tr>
<td><em>Malacosoma sp.</em></td>
<td></td>
<td>California</td>
<td>Inyo National Forest, and egg mass counts indicate populations will</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>remain high or increase in 1984.</td>
</tr>
<tr>
<td>Western pine beetle</td>
<td>Ponderosa</td>
<td>California</td>
<td>Generally low levels throughout the Region.</td>
</tr>
<tr>
<td><em>Dendroctonus brevicomis</em></td>
<td>pine,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coulter pine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Pacific Southwest Region (R-5)

**Status of diseases in California, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands.**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diplodia tip blight</td>
<td>Pines</td>
<td>Hawaii, island of Molokai</td>
<td>Despite improved growing conditions, dieback continued on 290 acres.</td>
</tr>
<tr>
<td><em>Diplodia pinea</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf mistletoes</td>
<td>Ponderosa pine, Jeffrey pine, true firs, other conifers</td>
<td>California</td>
<td>Dwarf mistletoes infected conifers on some 2.2 million acres of commercial forest land in California.</td>
</tr>
<tr>
<td><em>Arceuthobium spp.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butt rot</td>
<td>Ironwood</td>
<td>Hawaii</td>
<td>A newly discovered butt rot that apparently has existed for many years in Hawaii. Disease is found mainly at low elevations, and incidence is low.</td>
</tr>
<tr>
<td><em>Phellinus sp.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>True mistletoes</td>
<td>Hardwoods, white fir</td>
<td>Southern California</td>
<td>Widespread infection of hardwoods in high-use recreation areas.</td>
</tr>
<tr>
<td><em>Phoradendron spp.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White pine blister rust</td>
<td>Sugar pine</td>
<td>Northern and central California</td>
<td>New infections were found on the Sequoia and Sierra National Forests as the disease spread and intensified in the southern Sierra Nevada.</td>
</tr>
<tr>
<td><em>Cronartium ribicola</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anosus root rot</td>
<td>Conifers</td>
<td>California</td>
<td>One of the principal root diseases in California; affected true firs on some 500,000 acres in northern California.</td>
</tr>
<tr>
<td><em>Heterobasidion annosum</em></td>
<td></td>
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</tr>
<tr>
<td>Black stain root disease</td>
<td>Douglas-fir, pines</td>
<td>Northern and central California</td>
<td>New reports of the disease continued to expand its known range in the Coast Range and in the Sierra Nevada. Numerous disease centers were reported on 2,000 acres of pinyon pine near Chimney Peak, Tulare County.</td>
</tr>
<tr>
<td><em>Ceratocystis wageneri</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flame tree root disease</td>
<td>Flame tree</td>
<td>Northern Mariana Islands</td>
<td>Caused mortality on Rota in localized areas. Less host-specific and more scattered on Saipan.</td>
</tr>
<tr>
<td><em>Phellinus noxius</em></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Laminated root rot</td>
<td>Douglas-fir</td>
<td>Northern California</td>
<td>The disease was found in a 5-acre stand near Willow Creek, Humboldt County.</td>
</tr>
<tr>
<td><em>Phellinus weirii</em></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Phytophthora root rot</td>
<td>Port-Orford-cedar</td>
<td>Northern California</td>
<td>Several new infection centers were found in the Smith River watershed.</td>
</tr>
<tr>
<td><em>Phytophthora lateralis</em></td>
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</tbody>
</table>
Pacific Southwest Region (R-5)--continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foliage Disease</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Acacia rust</td>
<td>Koa, koaia</td>
<td>Hawaii</td>
<td>Widespread on most islands, but losses are minimal.</td>
</tr>
<tr>
<td><em>Uromyces digitatus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acacia rust</td>
<td>Koa</td>
<td>Hawaii</td>
<td>Widespread; reduced growth of young koa.</td>
</tr>
<tr>
<td><em>Uromyces koeae</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elftroderma disease</td>
<td>Ponderosa pine, Jeffrey pine</td>
<td>Northern and central California</td>
<td>An increase in disease was reported from the San Bernardino National Forest in southern California.</td>
</tr>
<tr>
<td><em>Elftroderma deformans</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White fir needle cast</td>
<td>White fir</td>
<td>Northern and central California</td>
<td>These similar needle cast fungi caused an increased amount of defoliation throughout the Sierra Nevada.</td>
</tr>
<tr>
<td><em>Lirula abietis-concoloris</em></td>
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<tr>
<td><em>Virgella robusta</em></td>
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</tr>
<tr>
<td><strong>Vascular Wilt</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutch elm disease</td>
<td>Elms</td>
<td>Central California</td>
<td>Disease still confined to eight counties; one new diseased tree was found in Alameda County, which had been free of disease since 1979. Incidence of new infections remained at continuous low levels.</td>
</tr>
<tr>
<td><em>Ceratocystis ulmi</em></td>
<td></td>
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</tr>
<tr>
<td><strong>Nursery Disease</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><em>Fusarium oxysporum</em></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Phoma blight</td>
<td>Douglas-fir, red fir, white fir</td>
<td>Northern California</td>
<td>At the Humboldt Nursery, needle blight caused a 23 percent loss of Douglas-fir, and a tip blight and canker problem caused a 75 percent loss of 1-0 red fir and a 15 percent loss of 1-0 white fir.</td>
</tr>
<tr>
<td><em>Phoma sp.</em></td>
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<tr>
<td><strong>Abiotic</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Air pollution</td>
<td>Ponderosa pine, Jeffrey pine</td>
<td>Central and southern California</td>
<td>Slight-to-moderate ozone injury was reported as far north as the Tahoe National Forest in the central Sierra Nevada.</td>
</tr>
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</tbody>
</table>
Pacific Northwest Region (R-6)

Status of insects in Oregon and Washington.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas-fir beetle</td>
<td>Douglas-fir,</td>
<td>Oregon,</td>
<td>East of the Cascade Range, Douglas-fir beetle damage was up slightly. Current damage levels are still far below what they were in the 1970's. The greatest damage in 1983 was in the Snake River area on the Wallowa-Whitman National Forest. Losses in Douglas-fir were 15,110 acres (443,460 thousand cubic feet) east of the Cascades and 2,110 acres (126,430 thousand cubic feet) west of the Cascades.</td>
</tr>
<tr>
<td><em>Dendroctonus pseudotsugae</em></td>
<td>true firs</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Douglas-fir tussock moth</td>
<td>Douglas-fir,</td>
<td>Oregon,</td>
<td>In 1982 and early 1983, Douglas-fir tussock moth populations continued to increase throughout northeast and north-central Washington. Light to heavy defoliation was found on 17,090 acres of Douglas-fir in Ferry, Stevina, and Okanogan Counties, Wash. Most damage was on State and private lands in the upper Sandpoint and upper Curlew River drainages in Ferry County. In Oregon, 10 acres of light defoliation appeared north of La Grande on private lands adjacent to the Wallowa-Whitman National Forest. By moth flight in the fall of 1983, population collapse was evident. The capture rates of male tussock moth indicate a general decline in the tussock moth population throughout eastern Washington and Oregon. Fall egg mass surveys in north-central Washington also confirmed population collapse. Population collapse has also occurred in the small Oregon outbreak.</td>
</tr>
<tr>
<td><em>Orgyia pseudotsugata</em></td>
<td>true firs</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Fir engraver</td>
<td>True firs</td>
<td>Oregon,</td>
<td>A substantial increase in fir engraver activity was noted in the true fir stands on the Fremont, Rogue River, and Winema National Forests in Oregon. Losses remain static in Washington. Most of the fir engraver damage occurred on sites infected with either laminated root rot (<em>Phellinus weirii</em>), shoestring root rot (<em>Armillaria mellea</em>), or annosus root rot (<em>Fomes annosus</em>), which weaken true firs, making them susceptible to beetle attacks. Losses occurred on 23,490 acres (1,217,810 thousand cubic feet).</td>
</tr>
<tr>
<td><em>Scolytus ventralis</em></td>
<td></td>
<td>Washington</td>
<td></td>
</tr>
</tbody>
</table>
### Pacific Northwest Region (R-6)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain pine beetle</td>
<td>Lodgepole pine, ponderosa pine, western white pine, other pines</td>
<td>Oregon, Washington</td>
<td>Losses continued about the same in Washington, but intensified in Oregon. From 1982 to 1983, lodgepole pine losses increased fourfold on the Deschutes National Forest. Losses in lodgepole pine stands on the Fremont and Winema National Forests increased 100 percent. Losses on the Wallowa-Whitman, Malheur, and Umatilla National Forests continue to decrease, primarily because most suitable host trees have already been killed. The 1983 mountain pine beetle losses include 1,092,000 acres (57,483,760 thousand cubic feet) of lodgepole pine, 131,600 acres (3,779,770 thousand cubic feet) of ponderosa pine, 47,300 acres (1,461,750 thousand cubic feet) of western white pine, and about 5,000 acres of various other pines. Intense losses are expected to continue in south-central Oregon and decrease in the rest of the Region.</td>
</tr>
<tr>
<td>Pine engraver beetles</td>
<td>Ponderosa pine</td>
<td>Oregon, Washington</td>
<td>Activity of the pine engraver, or Ips, continues at a low level. Again, most of the activity was on the Fremont National Forest. Increases were seen on the Colville Indian Reservation and the Umatilla National Forest. Acres infested in 1983 totaled 6,730.</td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>Engelmann spruce</td>
<td>Washington</td>
<td>Spruce beetle activity in Engelmann spruce stands in northeast Washington was very low this year. Losses include 1,350 acres (30,000 thousand cubic feet).</td>
</tr>
</tbody>
</table>
Pacific Northwest Region (R-6)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western pine beetle</td>
<td><em>Dendroctonus brevicomis</em></td>
<td>Ponderosa pine</td>
<td>Oregon, Washington&lt;br&gt;Tree mortality continued low in Washington but increased about 350 percent in Oregon. Greatest increases occurred on the Deschutes, Winema, and Ochoco National Forests. Some activity has occurred again on all forests and Indian Reservations within the host range. Losses in 1983 were 908,070 thousand cubic feet.</td>
</tr>
<tr>
<td>Western spruce budworm</td>
<td><em>Choristoneura occidentalis</em></td>
<td>Douglas-fir, true firs, western larch, Engelmann spruce</td>
<td>Oregon, Washington&lt;br&gt;In the Pacific Northwest Region, the area of visible defoliation caused by western spruce budworm increased from 1,540,000 acres in 1982 to 2,477,000 acres in 1983. Budworm defoliation was detected on the Mount Hood National Forest in areas not seen since 1952. Budworm defoliation was observed from the ground on the Deschutes National Forest southwest of Bend. Budworm continues to increase on the Malheur, Wallowa-Whitman, Ochoco, and Umatilla National Forests and intermingled State and private lands. In Washington, the size of the budworm infestation on the Okanogan National Forest and adjacent State and private lands increased in 1983. Results of the fall 1983 egg mass survey indicate a building population in newly defoliated areas and continued defoliation in areas defoliated prior to 1983.</td>
</tr>
</tbody>
</table>
## Pacific Northwest Region (R-6)

### Status of diseases in Oregon and Washington

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td>Most species</td>
<td>Oregon, Washington</td>
<td>Dwarf mistletoes are all too common pathogens in most of the Pacific Northwest. However, as stand management intensifies, losses due to dwarf mistletoes are declining. Dwarf mistletoes caused an estimated loss of 132.7 million cubic feet of timber in Oregon and Washington in 1983. A model for estimating present volume and projected reductions in yield, along with economic analysis, has been developed for dwarf mistletoe-infected central Oregon lodgepole pine stands. Programs are being written for popular handheld programmable calculators.</td>
</tr>
<tr>
<td>Dwarf mistletoes</td>
<td><em>Arceuthobium</em> spp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White pine blister rust</td>
<td>Western white pine,</td>
<td>Oregon, Washington</td>
<td>White pine blister rust continues to be the most important disease of western white and sugar pines. Annual losses to white pine blister rust in western Oregon are estimated to be 15 million cubic feet. Gains are being made through identification of resistant trees and ratings of sites for infection hazard. Hazard rating programs developed for popular handheld programmable calculators predict the blister rust infection hazard and disease losses for specific sites. Excellent progress was made in 1983 in training people how to use these programs.</td>
</tr>
<tr>
<td><em>Cronartium ribicola</em></td>
<td>sugar pine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stem decay</td>
<td>All species</td>
<td>Oregon, Washington</td>
<td>Stem decay fungi still consume enormous volumes of wood. Although the majority of losses occur in old-growth stands, significant losses are occurring in younger stands as wounding of residual trees during stand entries both activates dormant infections and creates excellent infection courts. Programs for handheld calculators have been developed to estimate percentages of infection and decay in white and grand fir understories, two of the most defective species in the Region.</td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anosus root rot</td>
<td>True firs,</td>
<td>Oregon,</td>
<td>Anosus root rot is responsible for extensive losses in many partially cut white fir stands in southern and eastern Oregon. Most loss is due to outright tree mortality. Losses in hemlock stands can be minimized by wound prevention and rotations of 120 years or less.</td>
</tr>
<tr>
<td>Heterobasidion annosum</td>
<td>western hemlock</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Black stain root disease</td>
<td>Douglas-fir</td>
<td>Oregon,</td>
<td>Numerous new findings of black stain root disease have been made in second-growth Douglas-fir stands. In southwestern Oregon, where this is by far the most commonly encountered disease in Douglas-fir plantations, it appears to be especially damaging where stand/soil disturbances have occurred, especially in roadside Douglas-firs cut back by mechanical choppers. Losses are also greater on tractor trailer-logged versus cable-logged sites due to soil compaction.</td>
</tr>
<tr>
<td>Ceratocystis wageneri</td>
<td></td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Laminated root rot</td>
<td>Douglas-fir,</td>
<td>Oregon,</td>
<td>Laminated root rot has removed about 5 percent of the Douglas-fir type west of the Cascades from full production. The acreage of infestation may be closer to 10 percent. Damage is also severe in some grand and white fir stands.</td>
</tr>
<tr>
<td>Phellinus weirii</td>
<td>true firs</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>Phytophthora root rot</td>
<td>Port-Orford-</td>
<td>Oregon</td>
<td>Phytophthora root rot continues to cause widespread mortality of Port-Orford-cedar in southwestern Oregon.</td>
</tr>
<tr>
<td>Phytophthora lateralis</td>
<td>cedar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoestring root rot</td>
<td>Conifers</td>
<td>Oregon,</td>
<td>Shoestring root rot continues to appear throughout the Region. The most serious losses to this disease occur east of the Cascades. Serious losses west of the Cascades are usually confined to stressed stands, such as off-site plantings. Direct control through stump and root removal is being practiced in severely infected eastern Washington stands.</td>
</tr>
<tr>
<td>Armillaria mellea</td>
<td></td>
<td>Washington</td>
<td></td>
</tr>
</tbody>
</table>
### Pacific Northwest Region (R-6)--continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foliage Disease</td>
<td></td>
<td></td>
<td>The incidence of several foliage diseases increased substantially in 1983 compared to 1982. Hundreds of thousands of acres of ponderosa and lodgepole pines east of the Cascades were affected by dothistroma needle blight. Elytroderma disease increased dramatically over most of the ponderosa pine range. Douglas-fir in central Oregon was subject to needle casting by rhabdocline needle blight.</td>
</tr>
<tr>
<td>Elytroderma disease</td>
<td>Ponderosa pine,</td>
<td>Oregon,</td>
<td></td>
</tr>
<tr>
<td><em>Elytroderma deformans</em></td>
<td>lodgepole pine,</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td><em>Dothistroma pini</em></td>
<td>Douglas-fir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhabdocline needle blight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Rhabdocline pseudotsugae</em></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Southern Region (R-8)

Status of insects in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A pine needle midge <strong>Contarinia n. sp.</strong></td>
<td>Loblolly pine</td>
<td>Louisiana</td>
<td>Populations generally were at low levels; however, in one seed orchard, needle drop and defoliation of 84 percent of the ramets occurred.</td>
</tr>
<tr>
<td>Bagworm <strong>Thyridopteryx ephemeræformis formis</strong></td>
<td>Eastern white pine</td>
<td>North Carolina</td>
<td>Moderate defoliation of white pine in the Piedmont.</td>
</tr>
<tr>
<td>Balsam woolly aphid <strong>Adelges piceae</strong></td>
<td>Fraser fir</td>
<td>North Carolina, Tennessee</td>
<td>Continues to cause significant mortality throughout the range of Fraser fir in the southern Appalachians except on Mt. Rogers, Va.</td>
</tr>
<tr>
<td>Blackheaded pine sawfly <strong>Neodiprion excitans</strong></td>
<td>Loblolly pine, shortleaf pine</td>
<td>Florida, Louisiana, Texas</td>
<td>Moderate defoliation in Rapides Parish, La., and on 1,200 acres of the Sam Houston National Forest, Tex. Scattered light to moderate defoliation in Marion County, Fla.</td>
</tr>
<tr>
<td>Black turpentine beetle <strong>Dendroctonus terebrans</strong></td>
<td>Southern pines</td>
<td>Mississippi, North Carolina, Virginia</td>
<td>Scattered losses occurred over a 1,500-acre area on the Bienville National Forest, Miss. Moderate activity in North Carolina and Virginia limited to drought-stressed areas.</td>
</tr>
<tr>
<td>Coneworms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dioctria amatella</strong></td>
<td>Loblolly pine, slash pine</td>
<td>Southwide</td>
<td>Some seed orchard losses but generally less than 10 percent of the cones were damaged. Some orchards reported moderate to high trap catches of Dioctria merkeli, but damage was low.</td>
</tr>
<tr>
<td><strong>Dioctria clarioralis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dioctria merkeli</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern tent caterpillar <strong>Malacosoma americanum</strong></td>
<td>Various hardwoods, especially black cherry</td>
<td>Alabama, Arkansas, Virginia</td>
<td>High population levels and widespread defoliation occurred in Alabama and Arkansas. In Virginia, populations are declining.</td>
</tr>
<tr>
<td>Elm leaf beetle <strong>Pyrhalta luteola</strong></td>
<td>Elm</td>
<td>Mississippi, Oklahoma</td>
<td>Moderate defoliation reported in Claibourne County, Miss. Problems in urban areas throughout Oklahoma.</td>
</tr>
</tbody>
</table>

42
<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall webworm</td>
<td>Various hardwoods</td>
<td>Alabama, Arkansas, Oklahoma,</td>
<td>Populations continued to be higher than normal. Widespread infestations caused severe</td>
</tr>
<tr>
<td><em>Hyphantria cunea</em></td>
<td></td>
<td>North Carolina, Virginia</td>
<td>defoliation in late summer throughout eastern and central Oklahoma. Moderate to heavy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>defoliation occurred in Arkansas, Alabama, North Carolina, and Virginia.</td>
</tr>
<tr>
<td>Forest tent caterpillar</td>
<td>Various hardwoods</td>
<td>Alabama, Louisiana, South</td>
<td>Moderate to heavy defoliation with over 450,000 acres affected in Louisiana. Although</td>
</tr>
<tr>
<td><em>Malacosoma disstria</em></td>
<td></td>
<td>Carolina</td>
<td>usually considered a forest pest, high populations expanded into coastal plain urban areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>in South Carolina.</td>
</tr>
<tr>
<td>Fruittree leafroller</td>
<td>Bald cypress</td>
<td>Louisiana</td>
<td>Extensive defoliation over 60,000 acres in the Atchafalaya Basin.</td>
</tr>
<tr>
<td><em>Archips argyrospilus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gypsy moth</td>
<td>Various hardwoods</td>
<td>North Carolina, South Carolina,</td>
<td>The northern tier of counties in Virginia are now considered to be generally infested.</td>
</tr>
<tr>
<td><em>Lymantria dispar</em></td>
<td></td>
<td>Virginia</td>
<td>Eradication projects have been conducted against isolated infestations in all three States.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduced pine sawfly</td>
<td>Eastern white pine</td>
<td>North Carolina, Tennessee,</td>
<td>Populations remain at low levels except in North Carolina, where populations are increasing.</td>
</tr>
<tr>
<td><em>Diprion similis</em></td>
<td></td>
<td>Virginia</td>
<td></td>
</tr>
<tr>
<td>Lobolly pine sawfly</td>
<td>Southern pines</td>
<td>Arkansas, Louisiana</td>
<td>Scattered light defoliation in Louisiana. Heavy damage reported in Dallas, Calhoun, and</td>
</tr>
<tr>
<td><em>Neodiprion taedae</em></td>
<td></td>
<td></td>
<td>Independence Counties, Ark.</td>
</tr>
<tr>
<td><em>linearis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locust leafminer</td>
<td>Black locust</td>
<td>North Carolina, Tennessee,</td>
<td>Scattered to moderate defoliation.</td>
</tr>
<tr>
<td><em>Odontota dorsalis</em></td>
<td></td>
<td>Virginia</td>
<td></td>
</tr>
<tr>
<td>Looper complex:</td>
<td>Oaks</td>
<td>Virginia</td>
<td>Mortality continued to occur due to past defoliation (1981 and 1982) and severe drought.</td>
</tr>
<tr>
<td>Linden looper</td>
<td></td>
<td></td>
<td>Spring insect populations were low. Fall cankerworm populations increased in several areas.</td>
</tr>
<tr>
<td><em>Eriocrania tiliaria</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern oak looper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Phigalia tinea</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall cankerworm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Alsophila pomatia</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nantucket pine tip moth</td>
<td>Lobolly pine,</td>
<td>Alabama, Arkansas, Louisiana,</td>
<td>High populations throughout Arkansas, particularly on shortleaf pine. Virginia pine in</td>
</tr>
<tr>
<td><em>Rhyacionia frustrana</em></td>
<td>shortleaf pine</td>
<td>Mississippi, Texas</td>
<td>Christmas tree plantations has been damaged.</td>
</tr>
<tr>
<td>Pitch pine tip moth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Rhyacionia rigidana</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pine engraver beetles <em>Lps</em> app.</td>
<td>Southern pines</td>
<td>Alabama, Arkansas, Louisiana, Mississippi, North Carolina, Texas, Virginia</td>
<td>A large population buildup occurred in storm-damaged timber on the Ouachita, Sam Houston, and Kisatchie National Forests. Little damage occurred to adjacent standing timber. Some populations have been intermixed with southern pine beetle. Moderate levels of activity were observed in drought-stressed regions of North Carolina and Virginia.</td>
</tr>
<tr>
<td>Pine webworm <em>Tetralophra robustella</em></td>
<td>Southern pines</td>
<td>Arkansas</td>
<td>Scattered severe defoliation in regeneration areas.</td>
</tr>
<tr>
<td>Redheaded pine sawfly <em>Neodiprion lecontei</em></td>
<td>Southern pines</td>
<td>Arkansas, Florida</td>
<td>Several small infestations in Drew County, Ark. On Ocala National Forest in Florida, high tree mortality in some areas due to repeated defoliation.</td>
</tr>
<tr>
<td>Reproduction weevils <em>Hyllobius pales</em> <em>Pachylobius picivorus</em></td>
<td>Southern pines</td>
<td>Oklahoma</td>
<td>Scattered losses occurred in regeneration areas.</td>
</tr>
<tr>
<td>Scales <em>Toxeyella</em> sp., <em>Pseudophilipppia quaintancii</em></td>
<td>Southern pines</td>
<td>Louisiana, Texas</td>
<td>Several orchards have experienced outbreaks of scale complexes. No reductions in flower set have been documented.</td>
</tr>
<tr>
<td>Seedbugs <em>Leptoglossus corculus</em> <em>Tetra bipunctata</em></td>
<td>Southern pines</td>
<td>North Carolina</td>
<td>Populations building in many untreated orchards. High populations in untreated blocks at the Forest Service Beech Creek Seed Orchard caused extensive damage.</td>
</tr>
<tr>
<td>Slash pine thrips <em>Gnaphothrips fuscus</em></td>
<td>Slash pine</td>
<td>Gulf Coast</td>
<td>Flower mortality variable between orchards.</td>
</tr>
<tr>
<td>Southern pine beetle <em>Dendroctonus frontalis</em></td>
<td>Southern pines</td>
<td>Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, Virginia</td>
<td>Sixty-six counties in eight States reported outbreak conditions. The Chattahoochee-Oconee National Forest in Georgia; the Francis Marion National Forest in South Carolina; the Ouachita in Arkansas; and the National Forests in Mississippi and Texas all had outbreak levels of southern pine beetle.</td>
</tr>
</tbody>
</table>
Southern Region (R-8)--continued

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas leafcutting ant</td>
<td>Atta texana</td>
<td>Southern pines</td>
<td>Louisiana, Texas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>shortleaf pine, pitch pine</td>
<td></td>
</tr>
<tr>
<td>Walnut caterpillar</td>
<td>Dactana integerrima</td>
<td>Water hickory, sweet pecan,</td>
<td>Mississippi, Oklahoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>black walnut, pecan</td>
<td></td>
</tr>
<tr>
<td>Webbing coneworm</td>
<td>Dioryctria disclusa</td>
<td>Loblolly pine</td>
<td>Alabama, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Virginia</td>
</tr>
<tr>
<td>Whitemarked tussock moth</td>
<td>Orgyia leucostigma</td>
<td>Live oak, water oak, laurel oak,</td>
<td>South Carolina</td>
</tr>
<tr>
<td></td>
<td></td>
<td>various ornamentals</td>
<td></td>
</tr>
<tr>
<td>White pine aphid</td>
<td>Cinara strobi</td>
<td>Eastern white pine</td>
<td>North Carolina, Virginia</td>
</tr>
<tr>
<td>White pine cone beetle</td>
<td>Conophthorus coniferis</td>
<td>Eastern white pine</td>
<td>North Carolina</td>
</tr>
</tbody>
</table>
Southern Region (R-8)

Status of diseases in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chestnut blight</td>
<td>Endothia parasitica</td>
<td>American chestnuts and hybrids</td>
<td>Throughout host range. Hypovirulence being tested in several areas. Virginia is attempting to hold valuable stock with inoculations of hypovirulent strains.</td>
</tr>
<tr>
<td>Diplobia tip blight</td>
<td>Diplodia sp.</td>
<td>Austrian pine</td>
<td>Okahoma. Common in urban areas in the central portion of the State; common in shelterbelts in rural areas.</td>
</tr>
<tr>
<td>Fusiform rust</td>
<td>Cronartium guercuum</td>
<td>Slash pine, loblolly pine</td>
<td>Throughout host range. Continues to be the most severe and economically significant disease of pine in the South.</td>
</tr>
<tr>
<td>Hypoxylon canker</td>
<td>Hypoxylon atropunctatum</td>
<td>Red oaks</td>
<td>Southwide. Common on stressed or weakened trees in urban and forest environments.</td>
</tr>
<tr>
<td>Pitch canker</td>
<td>Fusarium moniliforme var. subglutinana</td>
<td>Slash pine, loblolly pine, longleaf pine, shortleaf pine, Virginia pine</td>
<td>Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, Texas. Seed orchards continue to sustain sporadic damage, which in most cases follows clonal lines. The most severe cases were on Virginia pine in Alabama, longleaf pine in Louisiana, and loblolly pine in North Carolina.</td>
</tr>
<tr>
<td>Stem decay</td>
<td>Basidiomycetes</td>
<td>All species, especially hardwoods</td>
<td>Southwide. Will continue to be a problem in stands with severe fire history.</td>
</tr>
<tr>
<td>White pine blister rust</td>
<td>Cronartium ribicola</td>
<td>Eastern white pine</td>
<td>North Carolina, Virginia. Sanitation inspections continue on proposed planting sites.</td>
</tr>
<tr>
<td>White pine decline</td>
<td>Verticicldiella procera</td>
<td>Eastern white pine</td>
<td>Kentucky, North Carolina, Tennessee, Virginia. Frequent occurrence in urban plantings under stress. Also a common problem in seed orchards with root injury.</td>
</tr>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anosus root rot</td>
<td>Heterobasidion annosum</td>
<td>Southern pines</td>
<td>Southwide. Still the most serious root rot problem in the South, damaging thinned stands and shade trees. A major problem in a white pine and loblolly pine seed orchard. Major areas of infection have been identified in Alabama and Texas.</td>
</tr>
<tr>
<td>Ganoderma root rot</td>
<td>Ganoderma tsugae</td>
<td>Loblolly pine, oaks</td>
<td>Alabama, Mississippi, Louisiana. Continued to be active on &quot;droughty&quot; sites.</td>
</tr>
<tr>
<td></td>
<td>Ganoderma lucidum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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</tr>
<tr>
<td>Littleleaf disease</td>
<td>Shortleaf pine, loblolly pine</td>
<td>Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee</td>
<td>Continued common occurrence on heavy soils in stands of shortleaf pine in the Piedmont. May predispose trees to southern pine beetle attack.</td>
</tr>
<tr>
<td><strong>Phytophthora cinnamomi</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root rot complex</td>
<td>Sand pine</td>
<td>Florida</td>
<td>New host report.</td>
</tr>
<tr>
<td><strong>Fusarium solani</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fusarium moniliiforme</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root rots</td>
<td>Hardwoods</td>
<td>Southwide</td>
<td>Common in forest stands, especially on stressed or shallow-rooted trees.</td>
</tr>
<tr>
<td><strong>Armillaria mellea</strong></td>
<td>Pine</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Armillaria tabescens</strong></td>
<td>Conifer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Phaeolus schweinitzii</strong></td>
<td>Conifer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Phytophthora sp.</strong></td>
<td>Conifer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foliage Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown spot</td>
<td>Longleaf pine, slash pine</td>
<td>Alabama, Louisiana, Mississippi, Texas</td>
<td>Light damage in many areas.</td>
</tr>
<tr>
<td><strong>Scirrhia acicola</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dothistroma needle blight</td>
<td>Austrian pine</td>
<td>Oklahoma</td>
<td>Common in urban areas and shelterbelts. Less severe than last year.</td>
</tr>
<tr>
<td><strong>Dothistroma sp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaf spots</td>
<td>Live oak, red maple</td>
<td>Florida</td>
<td>New host reports.</td>
</tr>
<tr>
<td><strong>Sporodesmium spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melampsora rust</td>
<td>Poplars</td>
<td>Throughout host range</td>
<td>Caused premature defoliation in small areas.</td>
</tr>
<tr>
<td><strong>Melampsora medusae</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak leaf blister</td>
<td>Oaks</td>
<td>Throughout host range</td>
<td>Scattered throughout range but not severe. Most noticeable in urban plantings.</td>
</tr>
<tr>
<td><strong>Taphrina caerulescens</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine needle casts</td>
<td>Pines</td>
<td>Southwide</td>
<td>Widespread due to a wet spring. Locally severe, causing partial defoliation of affected trees. Greatest impact on visual quality in parks and Christmas tree plantations.</td>
</tr>
<tr>
<td><strong>Lophodermium spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ploicoderma sp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine needle rusts</td>
<td>Hard pines</td>
<td>Southwide</td>
<td>Slight damage.</td>
</tr>
<tr>
<td><strong>Coleosporium spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sycamore anthracnose</td>
<td>American sycamore</td>
<td>Throughout host range</td>
<td>Widespread due to wet spring. Serious defoliation reported along the Mississippi River.</td>
</tr>
<tr>
<td><strong>Gnomonia veneta</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walnut anthracnose</td>
<td>Black walnut</td>
<td>Throughout host range</td>
<td>Widespread due to wet spring.</td>
</tr>
<tr>
<td><strong>Gnomonia leptostyla</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vascular Wilt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutch elm disease</td>
<td>Elms</td>
<td>Throughout host range</td>
<td>Scattered single tree reports. Common along drainages in eastern and central Oklahoma. The first reported incidence in Louisiana: Seven parishes in northern Louisiana reported infections. Infections were also reported in North Carolina.</td>
</tr>
<tr>
<td>Ceratocystis ulmi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elm phloem necrosis</td>
<td>Winged elm</td>
<td>Alabama</td>
<td>Continues to kill scattered single trees or groups of trees in urban setting.</td>
</tr>
<tr>
<td>(elm yellows)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nectria Haematococca</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. pseudobileticola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycoplasmalike organisms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mimosa wilt</td>
<td>Mimosa</td>
<td>Throughout host range</td>
<td>Continues to be a major cause of mortality in ornamental plantings.</td>
</tr>
<tr>
<td>Fusarium oxysporum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. sp. perniciosum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak wilt</td>
<td>Oak</td>
<td>Arkansas, North Carolina, Oklahoma, Tennessee, Texas, Virginia</td>
<td>Remains at endemic levels in Arkansas and Oklahoma but is epidemic in central Texas, where 26 counties are affected. Live oaks and Texas red oak are the primary hosts in Texas.</td>
</tr>
<tr>
<td>Ceratocystis fagacearum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinewood nematode</td>
<td>Many pine species, red cedar</td>
<td>Southwide</td>
<td>Concern among seed orchard managers in Tennessee, Florida, and North Carolina. Only minor problems have been reported elsewhere.</td>
</tr>
<tr>
<td>Bursaphelenchus xylophilus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verticillium albo-atrum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery/Seed Orchard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown spot</td>
<td>Longleaf pine</td>
<td>Georgia</td>
<td>Areas of moderate needle spotting following top pruning.</td>
</tr>
<tr>
<td>Scirrhia acicola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charcoal root rot</td>
<td>Loblolly pine</td>
<td>Georgia</td>
<td>Seedbeds had damaged seedlings along bed edges where pines had grown for 2 consecutive years without fumigation.</td>
</tr>
<tr>
<td>Macrophomina phaseolina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclindrocladium root rot</td>
<td>Eastern white pine</td>
<td>North Carolina, South Carolina</td>
<td>Scattered mortality in 2-0 seedbeds.</td>
</tr>
<tr>
<td>Cylindrocladium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damping-off</td>
<td>Many species</td>
<td>Southwide</td>
<td>Chronic losses.</td>
</tr>
<tr>
<td>Phytophthora spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhizoctonia spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
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</tr>
<tr>
<td>Extreme weather</td>
<td>Loblolly pine, eastern white</td>
<td>Kentucky, Tennessee, Virginia</td>
<td>In Virginia, 8,000,000 loblolly seedlings lost to hail; in Kentucky, 200,000 white pine and 50,000 alder seedlings lost to sun scald; in Tennessee, 250,000 seedlings lost.</td>
</tr>
<tr>
<td>Fusarium root disease</td>
<td>Loblolly pine</td>
<td>Arkansas, Louisiana, Texas</td>
<td>Highest incidence on poorly drained sites or where chemical injury to roots has occurred.</td>
</tr>
<tr>
<td>Fusarium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusiform rust</td>
<td>Slash pine, loblolly pine,</td>
<td>Southwide</td>
<td>Found especially in Gulf and South Atlantic Coast regions. Spray programs generally effective, although specific fungicides differed in overall efficacy.</td>
</tr>
<tr>
<td>Cronartium quercuum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. sp. fusiforme</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of dormancy</td>
<td>Loblolly pine</td>
<td>Mississippi</td>
<td>About 441,000 seedlings discarded due to poor quality caused by lifting prior to physiological dormancy.</td>
</tr>
<tr>
<td>Phomopsis blight</td>
<td>Eastern red cedar</td>
<td>Florida, South Carolina</td>
<td>In Florida, 700,000 seedlings lost.</td>
</tr>
<tr>
<td>Phomopsis juniperovora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phytophthora root rot</td>
<td>Black walnut</td>
<td>Kentucky, South Carolina, Tennessee</td>
<td>In Kentucky, 25,000 seedlings lost. Control prevented losses in Tennessee.</td>
</tr>
<tr>
<td>Phytophthora spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium moniliforme var.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>subglutinans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pythium root rot</td>
<td>Dogwood</td>
<td>Florida</td>
<td>38,000 seedlings lost.</td>
</tr>
<tr>
<td>Pythium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhizoctonia needle blight</td>
<td>Longleaf pine</td>
<td>Florida, Georgia, North Carolina,</td>
<td>In one Florida nursery, 750,000 seedlings lost.</td>
</tr>
<tr>
<td>Rhizoctonia solani</td>
<td></td>
<td>South Carolina</td>
<td></td>
</tr>
<tr>
<td>and other species</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root decline</td>
<td>Loblolly pine, slash pine,</td>
<td>Alabama</td>
<td>Found in seed orchards. Ultimate effect of this root disease remains unclear. Also a problem in urban plantings.</td>
</tr>
<tr>
<td>Verticicladiella procera</td>
<td>shortleaf pine, Virginia</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pine, Eastern white pine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tip blights</td>
<td>Slash pine, loblolly pine,</td>
<td>Louisiana, South Carolina, Texas</td>
<td>Scattered low-level infection in Texas and Louisiana. In South Carolina, 10,000 to 50,000 seedlings culled.</td>
</tr>
<tr>
<td>Phomopsis spp.</td>
<td>longleaf pine, sand pine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fusarium spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>---------</td>
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</tr>
<tr>
<td>Walnut anthracnose</td>
<td>Black walnut</td>
<td>South Carolina</td>
<td>Moderate defoliation in later part of growing season.</td>
</tr>
<tr>
<td>Gnomonia leptostyla</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abiotic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold damage</td>
<td>Hardwoods</td>
<td>North Carolina</td>
<td>Damage caused by late spring freeze.</td>
</tr>
<tr>
<td>Drought-related tree mortality and decline</td>
<td>Oaks, other hardwoods, pines</td>
<td>Southwide</td>
<td>Trees stressed by the droughts of 1981 continued to dieback and die. In oaks, drought-caused decline was followed by attacks by insects and a variety of disease-causing organisms.</td>
</tr>
<tr>
<td>Needle cast</td>
<td>Eastern white pine</td>
<td>Virginia</td>
<td>Defoliation caused by stress in white pine Christmas tree plantations.</td>
</tr>
<tr>
<td>Winter kill</td>
<td>Loblolly pine, shortleaf pine</td>
<td>Florida, North Carolina, Tennessee, Virginia</td>
<td>Trees affected in urban plantings, seed orchards, and forest stands.</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction damage</td>
<td>All species</td>
<td>Southwide</td>
<td>Urban foresters continue to report severe, localized damage.</td>
</tr>
<tr>
<td>Hurricane damage</td>
<td>All species</td>
<td>Texas</td>
<td>Extensive area of blowdown between Houston and Huntsville caused by Hurricane Alicia.</td>
</tr>
<tr>
<td>Mice</td>
<td>Eastern white pine</td>
<td>Virginia</td>
<td>High populations reported in white pine seed orchard.</td>
</tr>
<tr>
<td>Tornado damage</td>
<td>All species</td>
<td>Arkansas, Louisiana, Texas</td>
<td>Severe damage in three parishes in central Louisiana. In separate storms, severe damage north of Houston occurred.</td>
</tr>
</tbody>
</table>
Eastern Region (R-9) and Northeastern Area


<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruce spanworm, <em>Operophtera bruceata</em></td>
<td>Sugar maple, poplar, American beech</td>
<td>Maine, New Hampshire, Vermont</td>
<td>In New Hampshire, light to moderate defoliation occurred on 18,600 acres. About 697 acres of defoliation occurred on the White Mountain National Forest. Vermont had light to moderate defoliation on over 20,000 acres. Populations are expected to increase. Maine had about 338,000 acres of defoliation.</td>
</tr>
<tr>
<td>Cherry scallop shell moth, <em>Hydria prunivora</em></td>
<td>Black cherry</td>
<td>Michigan, New York, Pennsylvania, West Virginia</td>
<td>About 80,000 acres in Pennsylvania had moderate to heavy defoliation, which resulted in losses of $20 per acre. Populations are continuing to increase. In Michigan, heavy defoliation occurred on 7,820 acres; in West Virginia, populations are increasing in the mountainous areas. In New York, moderate to heavy defoliation occurred on 3,475 acres.</td>
</tr>
<tr>
<td>Fall webworm, <em>Hyphantria cunea</em></td>
<td>Hardwoods</td>
<td>Indiana, Iowa, Maine, Missouri, Pennsylvania, Rhode Island, West Virginia</td>
<td>Pennsylvania and Indiana had roadside and yard trees with two or more webs per tree statewide. Populations are expected to decline in Iowa and to continue at low levels in Maine and Rhode Island. In Missouri, populations were low; damage scattered. The northern panhandle of West Virginia was heavily infested.</td>
</tr>
<tr>
<td>Forest tent caterpillar, <em>Malacosoma disstria</em></td>
<td>Hardwoods</td>
<td>Maine, Maryland, Massachusetts, Michigan, Minnesota, New York, Vermont, Wisconsin</td>
<td>Minnesota had about 168,000 acres of heavy defoliation and 70,000 acres of lighter defoliation. Some stands have now been defoliated for 6 consecutive years and have up to 50 percent mortality. In Michigan, populations collapsed; in Vermont, about 180 acres were defoliated, down from 321,693 acres in 1982. Maine had about 348,000 acres defoliated; Massachusetts had about 135 acres defoliated; populations are growing. In Maryland, the forest tent caterpillar together with the half-wing geometer and fall cankerworm caused some mortality in Allegany County. In New York, light to moderate defoliation occurred on 25,520 acres; 3,500 acres had tree mortality. In Wisconsin, defoliation on nearly 300,000 acres resulted in 16,000 cords of aspen mortality.</td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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<td>------------------------</td>
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</tr>
<tr>
<td>Gypsy moth</td>
<td>Oaks, other</td>
<td>Connecticut, Delaware, Indiana,</td>
<td>The total acreage for the areas of moderate to heavy defoliation decreased again this year: 2.4 million acres were defoliated in 1983 compared to 8.2 million acres in 1982. Male moths have been trapped areawide. Eradication of three spot infestations was attempted in Indiana. Several spot infestations have occurred in Wisconsin, two of these infestations have apparently been eradicated. About 450 acres were treated in Minnesota to eradicate spot infestations.</td>
</tr>
<tr>
<td>Lymantria dispar</td>
<td>hardwoods</td>
<td>Maine, Maryland, Massachusetts,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia, Wisconsin</td>
<td></td>
</tr>
<tr>
<td>Half-wing geomter</td>
<td>Oak</td>
<td>Pennsylvania, West Virginia</td>
<td>Pennsylvania had about 27,000 acres of moderate to heavy defoliation mixed with gypsy moth defoliation. Populations have peaked and are expected to decline. In West Virginia, about 35,000 acres were defoliated as part of a &quot;looper complex,&quot; which includes the linden looper, fall cankerworm, oak leaf rollers, oak leaf tiers, and forest tent caterpillar. Average mortality is 20 percent in areas where defoliation has occurred for 2 consecutive years.</td>
</tr>
<tr>
<td>Phigalia titea</td>
<td></td>
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</tr>
<tr>
<td>Jack pine budworm</td>
<td>Jack pine</td>
<td>Michigan, Minnesota, Wisconsin</td>
<td>An undetermined amount of growth loss resulted from 155,500 acres of defoliation in 4 Wisconsin counties. Populations are expected to increase. Light to moderate defoliation occurred on 2,900 acres in Minnesota. In Michigan, close to 600,000 acres were defoliated statewide. An estimated 1.29 million cords will die if not harvested within 2 years.</td>
</tr>
<tr>
<td>Choristoneura pinus</td>
<td></td>
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</tr>
<tr>
<td>Linden looper</td>
<td>Oaks, maples,</td>
<td>Indiana, Pennsylvania</td>
<td>Pennsylvania had more than 10,000 acres of light to moderate defoliation and declining populations. In Indiana, defoliation in previous years by the linden looper together with the half-wing geomter resulted in mortality of over 2,700 trees, or 100,000 to 250,000 board feet. Approximately 22,000 board feet were salvaged. Populations are expected to remain at low levels through 1984.</td>
</tr>
<tr>
<td>Erannis tiliaria</td>
<td>hickories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spruce budworm</td>
<td>Balsam fir, white spruce</td>
<td>Maine, Michigan, Minnesota, New Hampshire, Vermont, Wisconsin</td>
<td>Light to severe defoliation occurred over 20,000 acres in Wisconsin. About 138,700 acres were defoliated in Minnesota; mortality incurred from previous years' defoliation totaled 493,800 cords of fir and 8,000 cords of spruce. In Michigan, defoliation occurred on about 145,952 acres. New Hampshire had about 5,800 acres of defoliation; mortality from previous defoliation is being salvaged. Maine had about 4.0 million acres of moderate to heavy defoliation and 2.0 million acres of light defoliation. Over 300,000 acres had more than 50 percent fir mortality. Defoliation is expected to decrease to 3.0 million acres in 1984. In addition, 35,000 acres of Passamaquoddy and Penobscot Indian lands were defoliated. In Vermont, more than 178,000 acres were defoliated.</td>
</tr>
</tbody>
</table>
### Eastern Region (R-9) and Northeastern Area


<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Beech bark disease</td>
<td>Cryptococcus fagisuga; Nectria coccinea var. faginata</td>
<td>American beech; New York, Pennsylvania, Vermont, West Virginia</td>
<td>Status in Pennsylvania since 1982 has remained static; losses are expected to increase. Mortality in West Virginia occurred on 18,000 acres where in addition to N. coccinea var. faginata, N. gallicana is apparently killing beech. Beech scale is present on 125,000 acres. In Vermont and New York, about 90,945 acres have 30 to 100 percent mortality.</td>
</tr>
<tr>
<td>Root Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoestring root rot</td>
<td>Armillaria mellea</td>
<td>Red pine; Michigan, Ohio</td>
<td>About 20 to 30 percent of trees 40 to 50 years old in plantations in southern and southeastern Ohio were killed. Continued mortality is expected to occur. Plantations are being preemptively salvaged, and planting and thinning practices are being reviewed.</td>
</tr>
<tr>
<td>Vascular Wilt</td>
<td></td>
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</tr>
<tr>
<td>Dutch elm disease</td>
<td>Ceratocystis ulmi</td>
<td>Elm; Areaswide</td>
<td>Fence row, other wild, and ornamental elms are still being killed. Properly applied Dutch elm disease control programs in urban areas have succeeded in reducing annual elm mortality to less than 5 percent.</td>
</tr>
<tr>
<td>Oak wilt</td>
<td>Ceratocystis fagacearum</td>
<td>Oak; Indiana, Iowa, Michigan, Minnesota, Missouri, West Virginia, Wisconsin</td>
<td>Scattered, wilted trees in infected counties throughout the reporting States.</td>
</tr>
<tr>
<td>Abiotic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drought</td>
<td>All trees</td>
<td>Areaswide</td>
<td>One of the worst droughts in 50 years occurred in 1983. Some areas had up to 6 inches less moisture than normal. Drought probably contributes to many decline symptoms.</td>
</tr>
</tbody>
</table>
### Eastern Region (R-9) and Northeastern Area--continued

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash decline</td>
<td>Ash</td>
<td>Indiana, Iowa, Ohio, Pennsylvania, Vermont, West Virginia</td>
<td>In Pennsylvania, 367 acres in Sullivan County had 31 to 60 percent branch dieback. Damage in Indiana is most severe in the northeastern counties. Symptoms in West Virginia suggest this problem may now be occurring there. <em>Fusicoccum</em> sp. was commonly isolated from affected branches.</td>
</tr>
<tr>
<td>Larch decline</td>
<td>Larch</td>
<td>Maine, New York, Vermont</td>
<td>Decline symptoms appeared on about 3,500 acres in Vermont. Mortality associated with eastern larch beetle (<em>Dendroctonus simplex</em>) and <em>Armillaria mellea</em>.</td>
</tr>
<tr>
<td>Maple decline</td>
<td>Maple</td>
<td>Maine, Michigan, Vermont</td>
<td>Symptoms appear primarily on roadside and ornamental trees.</td>
</tr>
<tr>
<td>Red spruce decline</td>
<td>Red spruce</td>
<td>New York, Vermont</td>
<td>Decline was more evident at upper elevations than in the past. In New York, decline representing 102,540 cords occurred on 37,320 acres. Approximately 53,775 acres had mortality associated with the eastern spruce bark beetle (<em>Dendroctonus obsesus</em>).</td>
</tr>
</tbody>
</table>
Alaska Region (R-10)

Status of insects in Alaska.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A cottonwood leaf beetle</td>
<td>Black cottonwood</td>
<td>Southeast</td>
<td>Light defoliation reported in the Mendenhall Valley near Juneau.</td>
</tr>
<tr>
<td>Chrysomela walshi</td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Ambrosia beetle</td>
<td>Sitka spruce,</td>
<td>Southeast</td>
<td>For the third consecutive year, the striped ambrosia beetle caused substantial problems in parts of south-east Alaska--specifically the sort yards of Craig and Thorne Bay and the Yakutat area.</td>
</tr>
<tr>
<td>Trypodendron lineatum</td>
<td>western hemlock</td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>A spruce budworm</td>
<td>White spruce,</td>
<td>South-central</td>
<td>Budworm populations increased between Cooper Center and Chitina, where 2,000 acres of defoliated white spruce were detected in 1983. Likewise, C. orae activity increased throughout the Kenai Peninsula, but populations are moderate to low in these areas. Scattered patches, totaling 800 acres, of defoliated Sitka spruce were observed throughout the northern part of the Tongass National Forest in 1983.</td>
</tr>
<tr>
<td>Choristoneura orae</td>
<td>Sitka spruce</td>
<td>and southeast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Eastern larch beetle</td>
<td>Tamarack</td>
<td>Interior</td>
<td>Populations at endemic levels throughout interior Alaska; only 100 acres of infested larch were detected in 1983.</td>
</tr>
<tr>
<td>Dendroctonus simplex</td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Engraver beetle</td>
<td>White spruce</td>
<td>Interior</td>
<td>Populations at endemic levels; 100 acres infested in 1983.</td>
</tr>
<tr>
<td>Ips perturbatus</td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Greenstriped forest looper</td>
<td>Western hemlock</td>
<td>Southeast</td>
<td>Populations at endemic levels throughout southeast Alaska.</td>
</tr>
<tr>
<td>Melanophila imitata</td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Hemlock sawfly</td>
<td>Western hemlock</td>
<td>Southeast</td>
<td>Populations of the hemlock sawfly increased dramatically and defoliated over 61,000 acres throughout southeast Alaska. Information from larval surveys also reflected the higher sawfly populations. Larvae were found on 56 of 74 plots, and the numbers increased fourfold over 1982 levels.</td>
</tr>
<tr>
<td>Neodiprion tsugae</td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Large aspen tortrix</td>
<td>Quaking aspen</td>
<td>South-central</td>
<td>In the Pt, McKenzie area north of Anchorage, 7,000 acres of defoliated aspen were detected. In interior Alaska near Big Delta, 23,500 acres of defoliated aspen were observed. Tortrix populations are increasing.</td>
</tr>
<tr>
<td>Choristoneura conflictana</td>
<td></td>
<td>and interior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alaska</td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Host</td>
<td>Location</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spearmarked black moth</td>
<td>Paper birch</td>
<td>Interior Alaska</td>
<td>After almost 10 years of endemic levels, black moth populations dramatically increased in 1983 around the Fairbanks area, where 87,500 acres of defoliated birch were aerially detected. Outbreaks build up rapidly and generally last for 3 to 4 years.</td>
</tr>
<tr>
<td>Rheumaptera hastata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce beetle</td>
<td>White spruce,</td>
<td>South-central and southeast Alaska</td>
<td>Infestations covered 328,000 acres in 1983, a 30-percent decrease over 1982 levels. White spruce mortality is occurring on 39,000 acres of the Chugach National Forest. Spruce beetle populations have declined in the southeast; currently the only active infestation is in Glacier Bay National Park, where 6,000 acres of Sitka spruce have been infested.</td>
</tr>
<tr>
<td>Dendroctonus rufipennis</td>
<td>Sitka spruce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce needle aphid</td>
<td>Sitka spruce</td>
<td>Southeast Alaska</td>
<td>Spruce aphid populations were at endemic levels throughout most of southeast Alaska; in the Icy Bay area, however, 2,000 acres of defoliated spruce were detected.</td>
</tr>
<tr>
<td>Flabobium abietinum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western blackheaded budworm</td>
<td>Western hemlock</td>
<td>Prince William Sound and southeast Alaska</td>
<td>Western hemlock defoliation was detected on 16,700 acres near Cordova and Valdez in Prince William Sound—an increase of 15,000 acres over 1982 levels. In southeast Alaska, blackheaded budworm populations were at endemic levels.</td>
</tr>
<tr>
<td>Acleris gloverana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willow defoliation</td>
<td>Willow</td>
<td>South-central and interior Alaska</td>
<td>Aerial surveys detected 12,000 acres of defoliated willow northwest of Dillingham. The causal agent has been tentatively identified as the birch leafroller, Epinotia solandriana.</td>
</tr>
</tbody>
</table>
Alaska Region (R-10)

Status of diseases in Alaska.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Host</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem and Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemlock dwarf mistletoe</td>
<td>Western hemlock</td>
<td>Southeast Alaska</td>
<td>Remains the most damaging tree disease in old-growth western hemlock in southeast Alaska. A high proportion of the old-growth hemlock stands between Haines and Portland Canal are infected.</td>
</tr>
<tr>
<td>Echinodontium tinctorium</td>
<td>Sitka spruce</td>
<td>South-central Alaska</td>
<td>Two conks of Echinodontium were collected near Steward. This is the second confirmed collection of this fungus in Alaska.</td>
</tr>
<tr>
<td>Spruce broom rust</td>
<td>Sitka spruce</td>
<td>Southeast Alaska</td>
<td>Noted throughout the Sitka spruce stands at Glacier Bay National Park.</td>
</tr>
<tr>
<td>Foliage Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspen leaf spots</td>
<td>Quaking aspen</td>
<td>Kenai Peninsula</td>
<td>For the second consecutive year, leaf spotting of aspen was apparent on 6,300 acres of mixed stands near Sterling and Soldotna on the Kenai Peninsula, a 22 percent increase over 1982 levels.</td>
</tr>
<tr>
<td>Marasonina sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Septoria sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemlock-blueberry rust</td>
<td>Western hemlock</td>
<td>Southeast Alaska</td>
<td>Hemlock-blueberry rust was found lightly infecting western hemlock on Prince of Wales Island and up the Taku River.</td>
</tr>
<tr>
<td>Pucciniastrum vaccini</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce needle cast</td>
<td>White spruce, Sitka spruce</td>
<td>Prince William Sound, south-central Alaska</td>
<td>Spruce needle cast was very apparent north of Icy Bay and throughout the Kenai Peninsula.</td>
</tr>
<tr>
<td>Lophodermium piceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce needle rust</td>
<td>White spruce</td>
<td>Interior Alaska</td>
<td>Disease incidence on white spruce decreased from 11,000 acres in 1982 to 1,400 acres in 1983. Up to 90 percent of the current year's needles on all age classes of white spruce were infected.</td>
</tr>
<tr>
<td>Chrysomyxa ledecola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abiotic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter kill</td>
<td>White spruce</td>
<td>Interior Alaska</td>
<td>Aerial surveys detected 4,670 acres of defoliated white spruce near Circle. A ground check did not find any biotic agents responsible for the damage. Winter drying was thought to be the causal agent.</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cedar mortality</td>
<td>Yellow cedar</td>
<td>Southeast Alaska</td>
<td>To date, approximately 25,000 acres of scattered cedar mortality have been found in southeast Alaska. The cause of the dieback has yet to be determined.</td>
</tr>
</tbody>
</table>
## Table 1--Aerially detected defoliation caused by the gypsy moth in the Northeastern United States

<table>
<thead>
<tr>
<th>State</th>
<th>Year</th>
<th>Trend in 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1982</td>
<td>1983</td>
</tr>
<tr>
<td>Acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>803,802</td>
<td>153,239</td>
</tr>
<tr>
<td>Delaware</td>
<td>1,265</td>
<td>2,992</td>
</tr>
<tr>
<td>Maine</td>
<td>574,537</td>
<td>16,285</td>
</tr>
<tr>
<td>Maryland</td>
<td>9,162</td>
<td>15,870</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1,383,265</td>
<td>148,133</td>
</tr>
<tr>
<td>Michigan</td>
<td>92</td>
<td>457</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>878,273</td>
<td>560</td>
</tr>
<tr>
<td>New Jersey</td>
<td>675,985</td>
<td>340,285</td>
</tr>
<tr>
<td>New York</td>
<td>825,629</td>
<td>290,843</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2,351,317</td>
<td>1,360,824</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>658,000</td>
<td>53,880</td>
</tr>
<tr>
<td>Vermont</td>
<td>9,864</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>8,171,191</td>
<td>2,383,368</td>
</tr>
</tbody>
</table>
### Table 2--Aerially detected defoliation caused by the spruce budworm in the Northeastern United States

<table>
<thead>
<tr>
<th>State</th>
<th>Year 1982</th>
<th>Year 1983</th>
<th>Trend in 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>3,852,293</td>
<td>6,000,000</td>
<td>+ 2,147,707</td>
</tr>
<tr>
<td>Michigan</td>
<td>129,140</td>
<td>145,952</td>
<td>+ 16,812</td>
</tr>
<tr>
<td>Minnesota</td>
<td>126,700</td>
<td>138,700</td>
<td>+ 12,000</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>39,000</td>
<td>5,800</td>
<td>- 33,200</td>
</tr>
<tr>
<td>Vermont</td>
<td>147,948</td>
<td>178,000</td>
<td>+ 30,052</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>0</td>
<td>20,000</td>
<td>+ 20,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,295,081</td>
<td>6,488,452</td>
<td>+ 2,193,371</td>
</tr>
</tbody>
</table>

### Table 3--Slash and loblolly pine stands in the South with at least 10 percent of the trees infected with fusiform rust, 1983

<table>
<thead>
<tr>
<th>State</th>
<th>National Forest</th>
<th>Other Federal</th>
<th>State</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>61,900</td>
<td>20,100</td>
<td>20,100</td>
<td>1,938,900</td>
</tr>
<tr>
<td>Arkansas</td>
<td>6,500</td>
<td>1,200</td>
<td>800</td>
<td>50,400</td>
</tr>
<tr>
<td>Florida</td>
<td>47,000</td>
<td>28,400</td>
<td>22,500</td>
<td>1,020,200</td>
</tr>
<tr>
<td>Georgia</td>
<td>78,500</td>
<td>71,600</td>
<td>14,800</td>
<td>3,871,700</td>
</tr>
<tr>
<td>Louisiana</td>
<td>61,300</td>
<td>15,700</td>
<td>31,400</td>
<td>1,461,700</td>
</tr>
<tr>
<td>Mississippi</td>
<td>86,500</td>
<td>6,700</td>
<td>6,800</td>
<td>1,585,200</td>
</tr>
<tr>
<td>North Carolina</td>
<td>28,700</td>
<td>9,600</td>
<td>9,700</td>
<td>1,296,300</td>
</tr>
<tr>
<td>South Carolina</td>
<td>73,081</td>
<td>45,819</td>
<td>14,699</td>
<td>1,362,877</td>
</tr>
<tr>
<td>Texas</td>
<td>36,500</td>
<td>1,300</td>
<td>1,400</td>
<td>461,800</td>
</tr>
<tr>
<td>Virginia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>479,981</td>
<td>200,419</td>
<td>122,199</td>
<td>13,055,077</td>
</tr>
</tbody>
</table>
Table 4--Aerially detected defoliation caused by the western spruce budworm in the Western United States

<table>
<thead>
<tr>
<th>Region</th>
<th>1982</th>
<th>1983</th>
<th>Trend in 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region 1</td>
<td>2,256,311</td>
<td>2,600,000</td>
<td>+ 343,689</td>
</tr>
<tr>
<td>Region 2</td>
<td>2,003,181</td>
<td>2,750,311</td>
<td>+ 747,130</td>
</tr>
<tr>
<td>Region 3</td>
<td>368,485</td>
<td>371,549</td>
<td>+ 3,064</td>
</tr>
<tr>
<td>Region 4</td>
<td>2,513,200</td>
<td>2,800,000</td>
<td>+ 286,800</td>
</tr>
<tr>
<td>Region 5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Region 6</td>
<td>1,540,000</td>
<td>2,477,000</td>
<td>+ 937,000</td>
</tr>
<tr>
<td>Total</td>
<td>8,681,177</td>
<td>10,998,860</td>
<td>+ 2,317,683</td>
</tr>
</tbody>
</table>

Table 5--Estimated average annual root disease-caused mortality on all lands in the Western United States

<table>
<thead>
<tr>
<th>Region</th>
<th>National Forest</th>
<th>Other Federal</th>
<th>State and private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thousand cubic feet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region 1</td>
<td>54,400</td>
<td>8,200</td>
<td>18,100</td>
<td>80,700</td>
</tr>
<tr>
<td>Region 2</td>
<td>127 *</td>
<td>-- **</td>
<td>--</td>
<td>127</td>
</tr>
<tr>
<td>Region 3</td>
<td>2,900</td>
<td>960</td>
<td>890</td>
<td>4,750</td>
</tr>
<tr>
<td>Region 4</td>
<td>1,400</td>
<td>75</td>
<td>140</td>
<td>1,615</td>
</tr>
<tr>
<td>Region 5</td>
<td>12,282</td>
<td>396</td>
<td>6,695</td>
<td>19,373</td>
</tr>
<tr>
<td>Region 6</td>
<td>51,453</td>
<td>14,916</td>
<td>65,562</td>
<td>131,931</td>
</tr>
<tr>
<td>Total</td>
<td>122,562</td>
<td>24,547</td>
<td>91,387</td>
<td>238,496</td>
</tr>
</tbody>
</table>

* A partial estimate for one forest type only.
** Insufficient data available to make an estimate.
<table>
<thead>
<tr>
<th>Region 1</th>
<th>State</th>
<th>Area infested</th>
<th>Annual loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Montana</td>
<td>2,416</td>
<td>33,250</td>
</tr>
<tr>
<td></td>
<td>Northern Idaho</td>
<td>713</td>
<td>13,420</td>
</tr>
<tr>
<td>Region 2 *</td>
<td>Colorado</td>
<td>638</td>
<td>5,490</td>
</tr>
<tr>
<td></td>
<td>Eastern Wyoming</td>
<td>361</td>
<td>4,960</td>
</tr>
<tr>
<td>Region 3 *</td>
<td>Arizona</td>
<td>982</td>
<td>8,140</td>
</tr>
<tr>
<td></td>
<td>New Mexico</td>
<td>1,793</td>
<td>16,570</td>
</tr>
<tr>
<td>Region 4</td>
<td>Southern Idaho</td>
<td>2,511</td>
<td>28,860</td>
</tr>
<tr>
<td></td>
<td>Utah</td>
<td>461</td>
<td>4,750</td>
</tr>
<tr>
<td></td>
<td>Nevada</td>
<td>62</td>
<td>580</td>
</tr>
<tr>
<td></td>
<td>Western Wyoming</td>
<td>276</td>
<td>3,290</td>
</tr>
<tr>
<td>Region 5</td>
<td>California</td>
<td>2,200</td>
<td>120,000</td>
</tr>
<tr>
<td>Region 6</td>
<td>Oregon</td>
<td>4,885</td>
<td>76,560</td>
</tr>
<tr>
<td></td>
<td>Washington</td>
<td>3,575</td>
<td>55,440</td>
</tr>
<tr>
<td>Region 9</td>
<td>Michigan</td>
<td>74</td>
<td>3,740</td>
</tr>
<tr>
<td></td>
<td>Minnesota</td>
<td>155</td>
<td>6,740</td>
</tr>
<tr>
<td></td>
<td>Wisconsin</td>
<td>54</td>
<td>670</td>
</tr>
<tr>
<td>Region 10</td>
<td>Alaska</td>
<td>1,500</td>
<td>11,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>22,656</td>
<td>393,460</td>
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* National Forest System lands only.
Maps of Pest Activity

Figure 1--Gypsy moth defoliation, 1983

Figure 2--Spruce budworm defoliation, 1983
Figure 3--Counties with outbreak levels of southern pine beetle, 1983

Figure 4--Known distribution of littleleaf disease, 1983
Figure 5--Western spruce budworm defoliation, 1983

Figure 6--Mountain pine beetle infestations, 1983
Index—Insects

Aceria parapopulii, 11
Acleris gloverana (Walsh.), 57
Acronicta americana (Harris), 11
Adelges cooleyi (Gillette), 11
Adelges piceae (Ratz.), 4, 42
Adoretus sinicus Burmeister, 30
Agrilus anxius Gory, 11
Aleuridius dispersus Russell, 33
Alsophila pometaria (Harris), 11, 43
ambrosia beetle, 56
American dagger moth, 11
Archips argyrospilus (Walker), 31, 43
Archips cerasivorana (Fitch), 14
Archips negundanus (Dyar), 11
ash flower gall mite, 11
ash plant bug, 11
Atta texana (Buckley), 45
dagworm, 42
balsam woolly aphid, 4, 42
blackheaded pine sawfly, 42
black pine leaf scale, 30
black turpentine beetle, 42
black twig borer, 30
bronce birch borer, 11
bruce spanworm, 51
California flatheaded borer, 30
cankerworms, 11
cherry scallop shell moth, 51
Chinese rose beetle, 30
Phytonapsis pinifolliae (Fitch), 13
Choristoneura carinana californica
Powell, 30
Choristoneura conflictana (Walker), 22
Choristoneura funiculana (Clemens), 2, 53
60, 63
Choristoneura lambertiana (Busck), 13, 26
Choristoneura occidentalis Free., 3, 6
15, 23, 27, 38, 61, 65
Choristoneura orae Free., 56
Choristoneura pinus Free., 52
Choristoneura viridis Free., 32, 37
Chrysodes melissae Brown, 56
Chrysoteuchia topiaria (Zeller), 4
Chropidea strobi (Fitch), 45
Clastoptera sp., 14
Coleophora laricella (Hbn.), 5, 26
Coleotechnes milleri (Busck), 31
Coleotechnes ponderosae Hodges & Stevens, 13
Coleotechnes sp., 31
Coloradia pandora Blake, 22, 32
corne worms, 42
Conopophorus coniperda (Schwarz), 45
Contarinia n. sp., 42
Contarinia pseudotsugae Condrasheff, 4
cocle spruce gall aphid, 11
cottonwood bud gall mite, 11
cottonwood leaf beetle, 56
cottony maple scale, 11
cranberry girdler moth, 4
Dacus curcurbitae Coquillett, 32
Dasineura gleditschiae (O. S.), 12
Datana integerrima G. & R., 45
Datana ministra (Drury), 6
Dendroctonus brevicomis
LeConte, 23, 27, 38
Dendroctonus frontalis Zimm., 2, 44, 64
Dendroctonus jeffreyi Hopk., 31
Dendroctonus ponderosae Hopk., 3, 5
12, 22, 26, 32, 37, 65
Dendroctonus pseudotsugae
Hopk., 4, 11, 22, 26, 36
Dendroctonus rufipennis
(Kirby), 6, 14, 22, 26, 37, 57
Dendroctonus simplex LeConte, 56
Dendroctonus terebrans (Olivier), 42
Dendroctonus valens LeConte, 14, 33
Diaspidiotus acylus (Putnam), 14
Dioryctria amatella (Hulst), 42
Dioryctria claroralis (Walker), 42
Dioryctria disclusa (Heinrich), 45
Dioryctria merkelii Mutuura &
Monroe, 42
Dioryctria ponderosae Dyar, 13
Dioryctria sp. near okanaganella, 13
Dioryctria tucinella Mutuura,
Monroe, & Ross, 13
Diprion similis Hartig, 43
Douglas-fir beetle, 4, 11, 22, 26, 36
Douglas-fir needle midge, 4
Douglas-fir tussock moth, 4, 11,
26, 30, 36
Dryocoetes confusus Swaine, 6, 14, 22
eastern larch beetle, 56
eastern oak looper, 43
eastern tent caterpillar, 42
Elatobium abietinum (Walker), 57
elm leaf beetle, 11, 42
gardener beetle, 56
Erannis tiliae (Harris), 43, 52
Eriophyes fraxiniflora, 11
Euscosma sonomana Kearfoot, 6, 27
Eucosma spp., 44
Eurasian pine aphid, 30
fall cankerworm, 43
fall webworm, 4, 12, 43, 51
fir engraver, 4, 30, 36
flattened fir borer, 30
forest tent caterpillar, 12, 43, 51
fruit piercing moth, 31
fruittree leafroller, 31, 43
Gnaphothrips fuscus (Morgan), 44
grasshoppers, 31
green ash (lilac) borer, 12
greenstriped forest looper, 56
gypsy moth, 2, 4, 12, 31, 43, 52, 59, 63
half-wing geometrid, 52
Halasisota argentina
subalpine French, 14
Halasisota ingens Hy. Edwards, 13,
hemlock sawfly, 56
Heterocampa manteo (Dbldy.), 6, 14
Hemocerus podalid midge, 12
honesuckle leaffolding aphid, 12
Hyadaphis tataricae, 12
Hydria prunivora (Ferguson), 51
Hylobius pales (Herbst), 44
Hyphantria cunea (Drury), 4, 12, 43, 51
Introduced pine sawfly, 43
Ips perturbatus (Eichhoff), 56
Ips pini (Say), 5, 26
Ips spp., 13, 22, 32, 37, 44
Jack pine budworm, 52
Jeffrey pine beetle, 31
Jeffrey pine needleminer, 31
larch budmoth, 4
larch casebearer, 5, 26
large aspen tortrix, 22
leaf miner, 11
Lepidosaphes ulmi (L.), 12
Leptoglossus occidentalis Heidemann, 15
Leptoglossus corculus (Say), 44
Tinden looper, 43, 52
lobolly pine sawfly, 43
locust leafminer, 43
lodgepole needleminer, 31
lodgepole terminal weevil, 5
looper complex, 43
Lymantriia dispar (L.), 2, 4, 12, 31,
43, 52, 59, 63
Maconellicoccus hirsutus (Green), 30
Malacosoma americanum (F.), 42
Malacosoma californicum (Packard), 15, 23
Malacosoma disstria Hubner, 12, 43, 51
Malacosoma sp., 33
mealbug, 30
Melanophila imitata (Walker), 56
Melanophila californica Van Dyke, 30
Melanophila drummondii (Kirby), 30
Melanoplus spp., 31
melon fly, 32
Modoc budworm, 32, 37
Mordvilkoja vagabunda (Walsh), 14
mountain pine beetle, 3, 5, 12, 22,
26, 32, 37, 65
Nantucket pine tip moth, 43
Neoborus amoennis, 11
Neodiprion exciitans Rohwer, 42
Neodiprion tecontei (Fitch), 44
Neodiprion pratti (Dyar), 45
Neodiprion tsugae Middleton, 56
Neodiprion taedae linearis Ross, 43
Neophasia menapia (Felder & Felder),
5, 26
Nipaecoccus vastator (Maskell), 33
Nuculaspis californica (Coleman), 30
oak twig girdler, 12
Odontata dorsalis (Thunberg), 43
Oligonychus ununguis (Jacobi), 14
Oncideres cingulata (Say), 12
Operophtera bruceata (Hulst), 51
Orgyia leucostigma (J. E. Smith),
15, 45
Orgyia pseudotsugata (McD.), 4, 11,
26, 30, 36
Orgyia vetusta gulosy Hy. Edwards, 27
Orthreis fullonia C. & R., 31
oystershell scale, 12
Pachylobius picivorus (Germar), 44
Paleacrita vernata (Peck), 11
pandora moth, 22, 32
Pericyma cruegeri (Butler), 32
Petrova sp., 13
Phigalia titea (Cram.), 43, 52
Phyllonorycter sp. probably
tremuloidiella (Braun), 11
pine bark aphid, 5
pine budworm, 13
pine butterfly, 5, 26
pine cone borers, 44
pine engraver beetles, 5, 13, 22, 26,
32, 37, 44
pine moths, 13
pine needle midge, 42
pine needleminer, 13
pine needle scale, 13
pine needle sheathminer, 5, 13, 26, 32
pine tiger moth, 13
Pineus pini MacQuart, 30
Pineus sylvestris Annand, 5
pine webworm, 44
Pissodes terminalis Hopping, 5
pitch mass borers, 13
pitch nodule moth, 13
pitch pine tip moth, 43
Podosesia syringae syringae (Harris), 12
poinciana looper, 32
poplar vagabond aphid, 14
popular blackmine beetle, 13
Pseudophilippia quaintanci
Cockerell, 44
Pulvinaria innumerabilis (Rathvnon), 11
Putnam scale, 14
pyralid moth, 26
Pyrrhalta luteola (Muller), 11, 42
Quadraspisidius perniciosus
(Comstock), 14
redheaded pine sawfly, 44
red turpentine beetle, 14, 33
reproduction weevils, 44
Rheumaptera hastata (L.), 57
Rhyacionia frustrana (Comstock), 43
Rhyacionia rigidana (Fem.), 43
Rhyacionia sp., 13
San Jose scale, 14
scales, 44
Scolytus spp., 22
Scolytus ventralis LeConte, 4, 30, 36
seedbugs, 44
silver-spotted tiger moth, 14
slash pine thrips, 44
southern pine beetle, 2, 44, 64
spearmarked black moth, 57
spiraling whitefly, 33
spittlebugs, 14
spruce beetle, 6, 14, 22, 26, 37, 57
spruce budworm, 2, 53, 60, 63
spruce needle aphid, 57
spruce needle miner, 14
spruce spider mites, 14
sugar pine tortrix, 26
tangan tangan mealybug, 33
Tania albolineana (Kearfoot), 14
tent caterpillar, 33
Tetralopia robustella Zeller, 44
Tetura bipunctata (H.-S.), 44
Texas leafcutting ant, 45
Thyridopteryx ephemeraeformis formis
(Haworth), 42
Toumeyella sp., 44
tree fir bark beetles, 22
Trypodendron lineatum (Olivier), 56
uglynest caterpillar, 14
variable oakleaf caterpillar, 6, 14
Virginia pine sawfly, 45
walnut caterpillar, 45
webbing coneworm, 45
western balsam bark beetle, 6, 14
western blackheaded budworm, 57
western conifer seed bug, 15
western pine beetle, 23, 27, 33, 38
western pine shoot borer, 6, 27
western spruce budworm, 3, 6, 15,
23, 27, 38, 61, 65
western tent caterpillar, 15, 23
western tussock moth, 27
whitemarked tussock moth, 15, 45
white pine aphid, 45
white pine cone beetle, 45
willow defoliation, 57
Xylosandrus compactus (Eichhoff), 30
yellownecked caterpillar, 6
Zeiraphera improbana (Walker), 4
Zelleria haimbachi Busck, 5, 13, 26, 32
Zeugophora scutellaris Saffr., 13
Index—Diseases

abiotic, 10, 20, 35, 50, 54, 58
acacia rust, 35
Agrobacterium tumefaciens (E. F. Smith & Town) Conn., 16
air pollution, 20, 35
annonus root rot, 2, 8, 17, 24, 28, 34, 40, 46
anthracnose, 18
ash anthracnose, 18
apple scab, 18
Arceuthobium americanum
  Nutt. ex Engelm., 7, 16
Arceuthobium douglasii Engelm., 7
Arceuthobium Tarici
  (Piper) St. John, 7
Arceuthobium spp., 3, 24, 28, 34, 39, 62
Arceuthobium tsugense
  (Rosend.) G. N. Jones, 58
Arceuthobium vaginatum (Willd.) Presl.
  subsp. cryptopodium (Engelm.)
  Hawks. & Wiens, 16
Armillaria mellea Vahl.: Fr., 8, 17, 24, 29, 40, 47, 54
Armillariella tabescens (Scop.: Fr.)
  Dennis, Orton, & Hora, 47
ash decline, 55
aspen leaf spots, 58
aspen mortality, 20
atropellis canker, 7
Atropellis piniphila
  (Weir) Lohm. & Cash, 7
Basidiomycetes, 46
beech bark disease, 54
black stain root disease, 8, 17, 34, 40
Botryodiplodia hypodermia (Sacc.) Petr.
  & Syd., 16
Botrytis cinerea Pers.: Fr., 9
brown spot, 47, 48
Bursaphelenchus xylophilus
  (Steiner & Buhrer) Nickle, 48
butt rot, 34
cedar mortality, 58
Ceratocystis fagacearum
  (Bretz) Hunt, 48, 54
Ceratocystis ulmi (Buism.)
  C. Mor., 9, 19, 29, 35, 48, 54
Ceratocystis wageneri
  Gooch & Cobb, 8, 17, 34, 40
Cercospora sequoiae Ell. & Er., 18
charcoal root rot, 48
chemical damage, 10, 20
chestnut blight, 46
chokecherry shot hole, 9
Chrysomyxa arctostaphyli Diet., 28, 58
Chrysomyxa Tedicola Lagerh., 58
Ctbirinia whitetelli (Seaver)
  Seaver, 18, 29
Coccomyces hibernis Higgins, 9
Coccomyces sp., 19
cold damage, 50
Colesporium asterum (Diet.) Syd., 29
Colesporium spp., 47
comandra blister rust, 7, 16, 28
conifer decline, 20
construction damage, 50
Corynobaeterium sp., 17
Cronartium coleosporioides
  (Diet. & Holw.) Arth., 28
Cronartium comandrae Pk., 7, 16, 28
Cronartium quercuum (Berk.) Miy. ex
  Shirai F. sp. fusiforme Burds. & Snow, 2, 46, 49, 60
Cronartium ribicola Fisch., 7, 34, 39, 46
crown gall, 16
Cryptococcus fagisuga Lund.; Nectria
coccinea Pers.: Fr. var. faginata
  Loh., Wats. & Ay., 54
cylindrocladium root rot, 48
Cylindrocladium spp., 48
cytopora canker, 16, 28
Cytopora chrysosperma (Pers.) F., 28
Cytopora spp., 16
damping-off, 19, 25, 48
dasyscypha cankers, 24, 28
Dasyscypha sp., 24, 28
Diplodia pinea (Desm.)
  Kickx., 9, 18, 34
Diplodia sp., 46
diplodia tip blight, 9, 18, 34, 46
dothistroma needle blight, 8, 29, 41, 47
Dothistroma pini Hulb., 8, 29, 41
Dothistroma sp., 47
drought, 50, 54
Dutch elm disease, 9, 19, 29, 35, 48, 54
dwarf mistletoes, 3, 7, 16, 24, 28, 34, 39, 62
dwarf mistletoe blister rust, 7, 16
Echinodontium tinctorium (Ell. & Ev.)
  Ell. & Ev., 28, 58
elm phloem necrosis, 48
elm yellows, 48
Elytroderma deformans (Weir) Dark., 8, 24, 29, 35, 41
eytoderma disease, 24, 29, 35, 41
Endocronartium harknessii (J. P. Moore) Y. Hfrat., 7, 10, 28
Endothia parasitica (Murr.) P. J. & H. W. And., 46
Erwinia amylovora (Burr.) Winsl., 7, 16
Erwinia sp., 17
extreme weather, 49
false tinder fungus, 28
fi broom rust, 28
fi r needle rust, 18, 29
fi re blight, 7, 16
flame tree root disease, 34
foliage disease, 8, 18, 24, 29, 35, 41, 47, 58
Fusarium moniliforme Sheld., 47
Fusarium moniliforme Sheld. emend. Snyd. & Hans. var. subglutinans Wollenw. & Reink., 45, 49
Fusarium oxysporum (Schl.) emend. Snyd. & Hans., 9, 19, 35
Fusarium oxysporum f. sp. perniciosum, 48
fusarium root disease, 9, 19, 35, 49
Fusarium soloni (Mart.) Sacc., 9, 47
Fusarium spp., 19, 25, 48, 49
fusiform rust, 2, 46, 49, 60
Ganoderma lucidum (Leys. ex Fr.) Karst., 46
ganoderma root rot, 46
Ganoderma tsugae Murr., 46
Gloeosporium aridum Ell. & Holw., 18
Gloeosporium spp., 18
Gnomonia leptostyla (Fr.) Ces. & de Not., 18, 47, 50
Gnomonia veneta (Sacc. & Speg.) Kleb., 18, 47
grey mold, 9
hackberry decline, 20
hazard trees, 21
hemlock-blueberry rust, 58
hemlock dwarf mistletoe, 58
Heterobasidion annosum (Fr.) Bref., 2, 8, 17, 24, 26, 34, 40, 46
hurricane damage, 50
Hypodermella laricis Tub., 8
Hypoxyron atropunctatum (Schw. ex Fr.) Cke., 46
hypoxyolon canker, 16, 46
Hypoxyron mammatum (Wahl.) Mill., 16
Indian paint fungus, 28, 58
ink spot, 18, 29
jack pine decline, 20
juniper blight, 18
lack of dormancy, 49
laminated root rot, 8, 34, 40
larch decline, 55
larch needle blight, 8
leaf scorch, 20
leaf spots, 47
limb rust, 24
Lirula abietis-concoloris (Mayr ex Dearn.) Dark., 35
littleleaf disease, 2, 47, 64
lodgepole pine needle cast, 29
Lophodermella concolor (Dearn.) Dark., 8, 29
Lophodermella spp., 8, 24
Lophodermium piceae (Fckl.) Noehn., 58
Lophodermium pinastri (Schrad. ex Hook.) Chev., 8
lophodermium needle cast, 8
Lophodermium sp., 19, 47
Macrophomina phaseolina (Maub.) Ashby, 48
maple decline, 55
marssonina blight, 18, 29
Marssonina populii (Lib.) Magn., 18, 29
Marssonina sp., 58
Melampsora medusae Thum., 18, 47
melampsora rust, 18, 47
Melampsorella caryophyllacearum (Schroet., 28
Meria laricis Vuill., 8, 9, 29
meria needle disease, 8, 9, 29
mice, 50
mimosa wilt, 48
mycoplasmalike organisms, 48
needle cast disease, 8, 19, 24, 50
nursery disease, 9, 19, 25, 35
nursery/seed orchard, 48
oak leaf blister, 47
oak wilt, 48, 54
other, 21, 50, 55, 58
Peridermium bethelii Hedgc. & Long., 7, 16
Peridermium filamentosum Peck, 24
PhaeoCryptopus gaumannii (Rhode) Petrak., 9
Phaeolus schweinitzii (Fr.) Pat., 8, 28
Phellinus noxius (Corner) G. Conn., 34
Phellinus pinii (Thore: Fr.) Pilat., 29
Phellinus sp., 34
Phellinus tremula (Bond.) Bond. & Borriss, 28
Phellinus weirii (Murr.) Gilbertson, 8, 34, 40
Phoma blight, 9, 35
Phoma euphyrena Sacc., 9
Phoma sp., 35
Phomopsis blight, 49
Phomopsis juniperova Hahn, 18, 49
Phomopsis spp., 49
Phoradendron spp., 34
Phytophthora cinnamomi Rands, 2, 47, 64
Phytophthora lateralis Tuck. & J. A. Mitb., 34, 40
Phytophthora root rot, 34, 40, 49
Phytophthora sp., 47
Phytophthora spp., 48, 49
Pine needle cast, 47
Pine needle rusts, 29, 47
Pinewood nematode, 48
Pitch canker, 46, 49
Ploicoderma sp., 47
Podosphaera leucotricha (E. & E.) Salam., 19
Ponderosa pine mortality, 20
Powdery mildew, 19
Pucciniastrum goeppertianum (Kuhn) Kleb., 18
Pucciniastrum spp., 29
Pucciniastrum vaccinii (Wint.) Jorst., 58
Pythium root rots, 49
Pythium spp., 19, 48, 49
Red-brown butt rot, 8, 28
Red ring rot, 29
Red spruce decline, 55
Rhabdocline needle blight, 29, 41
Rhabdocline pseudotsugae Syd., 8, 29, 41
Rhizoctonia needle blight, 49
Rhizoctonia solani Kuehn, 49
Rhizoctonia spp., 25, 48
Root decline, 49
Root disease, 3, 8, 17, 24, 28, 34, 40, 46, 54, 61
Root rot complex, 47
Root rots, 47
Scirrhia acicola (Dearn.) Sigg., 47, 48
Septoria sp., 58
Shepherd's crook, 19
Shoestring root rot, 8, 17, 24, 29, 40, 47, 54
Shot hole, 20
Shot hole leaf spot, 19
Siberian elm canker, 16
Siroccoccus strobilinus Preuss., 9, 25
Siroccoccus tupid blight, 9, 25
Slime flux, 17
Sporodesmium spp., 47
Spruce broom rust, 28, 58
Spruce decline, 21
Spruce needle cast, 58
Spruce needle rust, 58
Sphyrapicus varius, 21
Stem and branch, 7, 16, 24, 28, 34, 39, 46, 54, 58
Stem decay, 39, 46
Stalactiform rust, 23
Swiss needle cast, 9
Sycamore anthracnose, 47
Taphrina caerulescens(Mont. & Desm.) Tul., 47
Thyronecctria austro-americana (Speg.) Seeler, 17
Thyronecctria canker, 17
tip blight, 20, 49
Tornado damage, 50
True mistletoes, 34
Uromyces digitatus Wint., 35
Uromyces koae Arth., 35
Vascular wilt, 9, 19, 29, 35, 48, 54
Venturia inaequalis (Cke.) Wint. ap. Thum., 8
Venturia tremulae Aderh., 19
Verticilladiella procera Kend., 46, 49
Verticillum albo-atrum Reinke & Berth., 48
Verticillum sp., 19
Verticillium wilt, 19, 48
Virgella robusta (Tub.) Darker, 35
Walnut anthracnose, 47, 50
Western gall rust, 7, 10, 28
White fir needle cast, 35
White pine blister rust, 7, 34, 39, 46
White pine decline, 46
Winter kill, 50, 58
Yellow-bellied sapsucker, 21