FOREST PEST CONDITIONS IN CALIFORNIA–1984

A PUBLICATION OF
THE CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL

THE CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL was founded in 1951. Its membership is open to public and private forest managers, foresters, silviculturists, entomologists, pathologists, zoologists, and others interested in the protection of forests from damage caused by animals, insects, diseases, and weeds. Its objective is to establish, maintain, and improve communication among individuals -- managers, administrators, and researchers -- who are concerned with these problems. This objective is accomplished by four actions:

1. Coordination of detection, reporting, and compilation of pest damage information.

2. Evaluation of pest conditions.

3. Pest control recommendations made to forest managing agencies and landowners.

4. Review of policy, legal, and research aspects of forest pest control, and submission of recommendations thereon to appropriate authorities.

The California Board of Forestry recognizes the Council as an advisory body in forest pest protection. The Council is a participating member in the Western Forest Pest Committee of the Western Forestry and Conservation Association.

This report, **FOREST PEST CONDITIONS IN CALIFORNIA - 1984**, is compiled for public and private forest land managers to keep them informed of pest conditions on forested land in California, and as an historical record of pest trends and occurrences. The report is based largely on information provided by the Statewide Cooperative Forest Pest Detection Survey, and from information generated by Forest Pest Management, Pacific Southwest Region, Forest Service, while making formal detection surveys and biological evaluations.

The report was prepared by the Forest Service in cooperation with other member organizations of the Council. It was duplicated and distributed by the California Department of Forestry.

COVER PHOTO: Dwarf mistletoes shorten the lives of pines in campgrounds, reducing the recreational value of the stand. This Jeffrey pine at McGill Campground on the Los Padres National Forest (Ventura County) is severely infested with mistletoe; its lower crown is filled with brooms, which are massive proliferations of branches caused by the parasite. The longevity of trees like this can be increased by broom pruning, or removing only mistletoe brooms. Broom pruning does not eliminate dwarf mistletoe, but helps trees survive longer than they would without treatment.

Sacramento January 1985

HIGHLIGHTS OF PEST CONDITIONS - 1984

STATUS OF INSECTS. Native defoliators -- most notably western spruce budworm, Modoc budworm, fruittree leafroller, tent caterpillar, and needleminers -- were abundant in 1984. Field observations indicated that the Douglas-fir tussock moth could go to outbreak in the next year or two.

Gypsy moth populations waned in the East and the number of discoveries in California dropped considerably; however, a breeding population in Lane County, Oregon raised fears that this introduced urban tree and forest defoliator may yet become established in California. Locally, regeneration pests, such as grasshoppers and needle sheathminers, caused concern to resource managers. A dry spring raised fears of increased attacks by bark and engraver beetles, but damage was relatively slight.

STATUS OF DISEASES. Root diseases and dwarf mistletoes were the major causes of growth loss and mortality in California's commercial and recreational forests. Root diseases annually destroy over 19 million cubic feet of timber, while dwarf mistletoes are associated with the deaths of some 312,500 conifers each year. Annosus and Armillaria root diseases became a serious concern in the southern Sierra Nevada on the Kern Plateau and in the Greenhorn Mountains. To combat losses to dwarf mistletoes in recreation sites, the Forest Service financed mistletoe suppression projects at campgrounds on the Angeles and San Bernardino National Forests, near South Lake Tahoe, and at Cedar Grove in Kings Canyon National Park.

Leaf spots of madrone were reported from northern California, and true fir needle casts were common on white fir throughout the Sierra Nevada. A survey of ozone injury plots on the Sequoia National Forest revealed that symptoms were more severe on most plots in 1984 than in 1977 when the survey began. White pine blister rust was reported at new locations in Yuba County and Yosemite National Park. At the Humboldt Nursery, Phoma blight of Douglas-fir and red fir seedlings occurred at lower levels than in 1982 or 1983. Field tests showed that redwood mulch and a shade cover reduced the incidence of disease.

STATUS OF ANIMAL PESTS. Deer browsing damage was widespread in conifer plantations, with the greatest damage occurring in Humboldt and Mendocino Counties. Pocket gophers damaged 20,000 acres of pine and true fir plantations, and several thousand acres of Douglas-fir and redwood plantations. Porcupines damaged plantations and natural stands of pines across northern California and southward through the Sierra Nevada.

STATUS OF WEEDS. A preliminary survey of forest land managers revealed that nearly one-third of the conifer plantations on 2.1 million acres of California forest land were understocked because of competition from weeds, and almost one-fifth required replanting.

STATUS AND CONTROL OF INSECTS

WESTERN SPRUCE BUDWORM, Choristoneura carnana californica. The infestation in Trinity and Shasta Counties increased from 93,000 acres in 1983 to 130,000 acres in 1984, with 21% slight defoliation, 17% moderate defoliation, and 61% severe defoliation. Egg mass counts were 11 per square meter of foliage -- up somewhat from 1983, but well below 1982. Egg mass ratios indicated an insect population that had stabilized in the outbreak phase over most of the infested area. New or intensified infestations occurred in the upper drainage of Clear Creek, Fools Gulch, Deadwood Gulch, west of Trinity Dam, and north of Trinity River Campground. Parasites and predators were abundant. Watershed, recreational, and wildlife values were not affected, but the public became aware of defoliation-caused changes in the forest. Moderate damage to white firs was apparent for the first time in the vicinity of Blue Mountain. Heavy defoliation appeared in white fir along the ridge south of the South Fork of Stacey Creek. The California Department of Forestry was designated the lead agency in planning a control project in cooperation with the Forest Service, Bureau of land Management, and private landowners.

MODOC BUDWORM, Choristoneura retiniana. The Modoc budworm caused slight to moderate defoliation of white fir in the Warner Mountains and the Manzanita area of Modoc County. In some stands, all of the current year's foliage and many of the buds were damaged. Defoliation occurred at Lily Lake, Mill Creek, Davis Creek, Halls Meadow, south from Deep Creek to Soup Springs, Mahogany Ridge, and Manzanita Mountain. Defoliated areas will be monitored closely in 1985.

BLACK PINELEAF SCALE, Nuculaspis californica. Ponderosa pine on 1800 acres along the Black Ranch Road near Burney (Shasta County) remained infested in the spring of 1984. Private holdings within the area were aerially sprayed with orthene in July, and a portion of the private and Federal lands have been logged. Fall sampling and observations indicated that the outbreak had collapsed on Federal lands (0.02 live scale per inch on 1984 needles, compared to 0.6 live scale per inch on 1983 needles).

FRUITTREE LEAFROLLER, Archips argyrospilus. The fruittree leafroller continued to defoliate California black oak on the Arrowhead Ranger District, San Bernardino National Forest (San Bernardino County). Slight-to-moderate defoliation was observed over about 20,000 acres, an increase of 5,000 acres over 1983. Most of the area between Silverwood Lake and Running Springs that showed defoliation in 1983 was defoliated again in 1984; in addition, leafroller activity was noted at Hook Creek and Rouse Meadow. Severe defoliation was observed along Highway 138 below Camp Seeley, and scattered individual trees suffered 80% or more defoliation. In general, however, defoliation intensity was greatly reduced compared to 1983. Several nights of sub-freezing temperatures

coincided with egg hatch, bud break, and the onset of leaf expansion, and may have caused direct or indirect larval mortality. Defoliation of black oak was also reported over about 100 acres near Camp Nelson, Tule River District, Sequoia National Forest (Tulare County).

TENT CATERPILLAR, Malacosoma sp. Reports of tent caterpillar activity in northern and eastern California were more common than in 1983. The presence of tents and various levels of defoliation to range plants -- including antelope bitterbrush, mountain mahogany, a Ceanothus species, and desert peach -- were noted in many parts of Siskiyou, Modoc, Lassen, Plumas, Nevada, Mono, Inyo, and Tulare Counties. Severe defoliation and some bitterbrush mortality (as a result of 2-to-3 years of defoliation) was reported over 20,000-25,000 acres on the Devils Garden and Big Valley Districts, Modoc National Forest. Severe defoliation occurred also over about 1,000 acres on the Mammoth Ranger District near Hot Creek (Mono County). In addition, tent caterpillars were reported on black oak in Humboldt County near Oak Grove Camp (on approximately 1,000 acres) and in the Showers Mountain-Pilot Ridge area (about 1,000 acres).

DOUGLAS-FIR TUSSOCK MOTH, Orgyia pseudotsugata. Results of larval and pheromone trap surveys indicated that tussock moth populations were increasing, and had the potential to cause noticeable defoliation in 1985 or 1986. The 1984 pheromone detection survey had the highest average trap catches since the survey began in 1979. At present, an average of 20 or more moths per trap (n=5) is considered adequate to warrant a follow-up field evaluation near a plot. In 1984, 42 plots, or 38% of all plots, averaged 20 or more moths per trap; of those, 11 averaged 40 or more per trap. These plots ranged from Burney Mountain (Shasta County) and Fredonyer Peak (Lassen County) in the north, to Mountain Home Demonstration State Forest (Tulare County) in the southern Sierra.

Most of the plots with large trap catches were located on the Tahoe National Forest (Foresthill Ranger District), the Eldorado National Forest (Placerville and Amador Districts), and the Stanislaus National Forest (Calaveras, Mi-Wok, and Summit Districts). Specific locations included Secret House-Mumford Bar (Placer County); Iron Mountain Ridge, Baltic Ridge, Plummer Ridge, and Armstrong Lookout (El Dorado County); Summit Level Ridge (Calaveras County); and Thunder Hill, Strawberry Peak, Hull Meadow, and Dodge Ridge (Tuolumne County). Very slight defoliation (not visible from the air) was observed at these sites and elsewhere throughout the Sierra Nevada. Tussock moth populations will be monitored closely in 1985. A cooperative Federal, State, and private effort was initiated to evaluate potential actions should populations continue to increase.

GRASSHOPPERS. Large populations of several species of grasshoppers were present in northern California during 1984. The cosmopolitan species Melanoplus devastator was abundant throughout the area. The clear-winged grasshopper, Camnula pellucida, the California camel cricket, Centophilus californianus, and the native spur-throated and band-winged grasshoppers were locally important. Mild weather during the spring may

have increased grasshopper survival. The California camel cricket consumed the current year's foliage on sugar pine seedlings and saplings at Hidden Springs in Sequoia National Park (Tulare County). New foliage on all species of conifers, oaks, and brush was damaged by grasshoppers in the American Hill area (Placer County). Grasshoppers defoliated 3-year-old ponderosa pine seedlings and caused some mortality in plantations on the Stanislaus National Forest (Tuolumne County), and the Six Rivers National Forest (Trinity County).

GYPSY MOTH, Lymantria dispar. During 1984 25 male gypsy moth adults were trapped in nine Counties, and egg masses or pupal cases were found on two properties. This compares with 176 male moths trapped in 15 Counties during 1983. The California Department of Food and Agriculture treated five locations to eradicate gypsy moth: Oakland and Livermore (Alameda County); Danville (Contra Costa County); San Jose (Santa Clara County); and San Diego (San Diego County). This was considerably less than the ten sites treated in 1983. There was speculation that the lower number of introductions in 1984 may have been related to a reduction in the number of acres defoliated in the eastern United States in recent years.

A recently discovered breeding population of gypsy moth in Lane County, Oregon, only 180 miles from the California border, raised apprehension over the increased possibility of accidental introductions into California. There are currently State and Federal quarantines against the movement of certain goods from Lane County into California, as well as an internal quarantine by the State of Oregon. An eradication effort using Bacillus thuringiensis was expected to last at least three years.

JEFFREY PINE NEEDLEMINER, Coleotechnites sp. The long-standing needleminer infestation of Jeffrey pine in San Bernardino County continued in 1984. About 2,000 to 3,000 acres have been defoliated in the Big Bear City-Lake Irwin and Snow Valley areas for several years.

The first recorded outbreak of needleminer defoliation of Jeffrey pine in northern California began at Portola (Plumas County) in 1984. About 5,200 acres of damage next to the town of Portola were evaluated in July. At the same time, a small spot of needleminer feeding (12 Jeffrey pines) was reported about four miles north of Susanville at Susanville Peak (Lassen County).

LODGEPOLE PINE NEEDLEMINER, Coleotechnites milleri. The latest outbreak of the lodgepole pine needleminer appeared to be ending after persisting for more than a decade in Yosemite National Park. Needleminer activity continued on about 10,000 acres, down from 60,000 acres in 1983.

PINE NEEDLE SHEATHMINER, Zelleria haimbachi. Defoliation by the pine needle sheathminer was reported from several areas of the State: Hackamore (Modoc County), Hat Creek (Shasta County), Susanville Peak (Lassen County), Trinity Lake (Trinity County), and Badger Hill (El Dorado

County). Most reports were from pine plantations where land managers made large investments to raise trees.

An infestation in a knobcone X Monterey pine progeny test plantation at Tanbark Flats (Los Angeles County) was treated by implanting acephate insecticide in the tree boles. Treated trees lost significantly less foliage than untreated trees, although both groups retained adequate foliage. The pine needle sheathminer population apparently declined from natural causes. The differences might have been more striking if treatment had been done at the height of the outbreak.

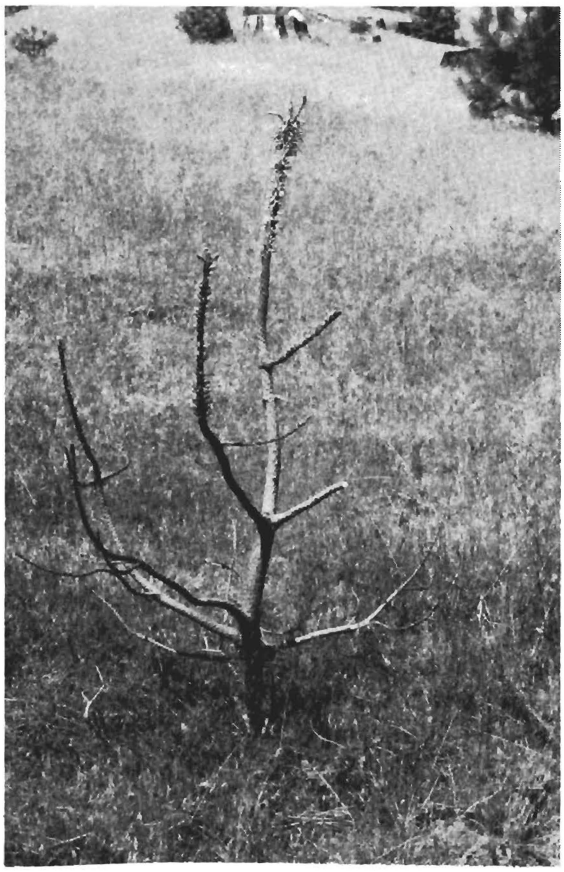
MOUNTAIN PINE BEETLE, Dendroctonus ponderosae. The mountain pine beetle was detected killing ponderosa pines in campgrounds in the South Warner Mountains (Modoc County). Elsewhere, this beetle was identified killing primarily lodgepole pine at Parks Creek (Siskiyou County), Donner Memorial State Park (Nevada County), Granite Creek (Madera County), Huntington Lake (Fresno County), and Yosemite National Park. Some large sugar pines were killed at Nevada Point Ridge (El Dorado County).

In Yosemite National Park, current beetle kill occurred in lodgepole pine stands from Highway 120 north to Delaney Creek; some 30 trees were killed in the employee housing area at Tuolumne Meadows. Another 50,000 acres of weakened lodgepole pine remained susceptible to beetle attack. At Donner Memorial State Park, 300 infested trees were treated during the winter of 1983-84. An additional 86 trees were identified for treatment during the winter of 1984-85.

WESTERN PINE BEETLE, Dendroctonus brevicomis. A few Coulter pines were killed by the western pine beetle in Will Valley (San Diego County). In northern California, the western pine beetle killed ponderosa pines at Calaveras Big Trees State Park (Calaveras County), Caldor and Nevada Point Ridge (El Dorado County), and Foresthill (Placer County). At Nevada Point, a large volume of infested timber was scheduled for removal by salvage logging in the fall of 1984.

JEFFREY PINE BEETLE, Dendroctonus jeffreyi. Post-treatment evaluation of the 165-acre Jeffrey pine beetle suppression project near South Lake Tahoe (Tahoe Historic Estates, Kiva Picnic Area, and Fallen Leaf Campground), identified 41 Jeffrey pine attacked in 1984, compared to 145 Jeffrey pine killed in 1983 and 330 killed in 1982, the year the project began. Some additional Jeffrey pine and white fir mortality was observed in the Estates area in 1983 and 1984, but was primarily attributable to changes in drainage caused by construction of infiltration trenches adjacent to newly-paved roads. Jeffrey pine beetle-related mortality continued elsewhere near South Lake Tahoe and Meyers, including Camp Richardson, Pope Beach, and south of Camp Richardson between Highway 89 and Tahoe Mountain. Silvicultural treatments designed to mitigate conditions predisposing Jeffrey pine to bark beetle attack were scheduled for 1985.

FLATHEADED FIR BORER, Melanophila drummondi. The flatheaded fir borer was involved in killing Douglas-firs at Bothe-Napa State Park (Napa County). Dying Douglas-firs were noted in other areas also, including Brushy Ridge and other low elevation areas of Sonoma County and in Santa Cruz County. It was suspected that a species of Scolytus was also involved. Mortality was blamed on severe site and drought conditions, which also caused damage to redwood in Santa Cruz County.



GRASSHOPPERS. These pests defoliated and sometimes killed ponderosa pines in plantations on the Granite burn, Groveland Ranger District, Stanislaus National Forest (Tuolumne County). **Left**, isolated seven-year-old sapling completely defoliated by grasshoppers; **right**, closeup of a three-year-old pine showing a grasshopper feeding on its needles.

TABLE I. INSECTS OF LESSER IMPORTANCE IN CALIFORNIA FORESTS - 1984

INSECTS Scientific Name	Common Name	HOSTS Names	WHERE EXAMINED OR REPORTED County	Remarks
Acantholyda sp.	Webspinning sawfly	PP	Plumas	
Altica ambiens	Alder flea beetle	AL	El Dorado	
Carulaspis juniperi	Juniper scale	GS,IC, PC	Siskiyou	Landscape trees
Cecidomyia piniinopis	Gouty pitch (resin) midge	JP,PP	Nevada, Plumas	
Cinara sp.	Aphids	SP	Butte	Chico Tree Improvement Center
Contarinia pseudotsugae	Douglas-fir needle midge	DF	Butte, Nevada, Siskiyou, Tehama, Trinity	Plantation and natural stands
Cylindrocopturus furnissi	Douglas-fir reproduction weevil	DF	Lake	30-year-old understory trees
Halisidota argentata	Silver-spotted tiger moth	PP,DF	Colusa, Trinity	Interesting host record
Helops sp.	Darkling ground beetle	PP	Placer	Staminate flowers
Hyphantria cunea	Fall webworm	AL,MA, WA	Amador, Calaveras, Mariposa	
Leucoma salicis	Satin moth	AS,CW	Modoc	Spot
Matsucoccus acalyptus	Pinyon needle scale	PN	Kern	Landscape tree
Neodiprion sp.	Pine sawfly	LP,PP	Madera, Mendocino, Shasta	Understory; roadside

TABLE I (Cont.)

INSECTS Scientific Name	Common Name	HOSTS Names	WHERE EXAMINED OR REPORTED County	Remarks
Neodiprion sp.	White fir sawfly	WF	Plumas	Natural and thinned stands
Nuculaspis californica	Black pineleaf scale	SC	Plumas	Landscape tree
Phryganidia californica	California oakworm	BO	San Bernardino	Lake Arrowhead
Platypedia sp.	Cicada	DF,TO	Trinity, Yuba	Plantation seedlings
Polyphylla decemlineata	Tenlined June beetle	DF,IC, PP	Modoc, Siskiyou	Campground, plantation
Scythropus sp.		PP	El Dorado, Nevada	Progeny test

HOST ABBREVIATIONS

AL = Alder
AS = Aspen
BO = Black oak
CW = Cottonwood
DF = Douglas-fir
GS = Giant sequoia
IC = Incense-cedar
JP = Jeffrey pine
MA = Madrone
PC = Port-Orford-cedar
PN = Pinyon pine
PP = Ponderosa pine
SC = Scots pine
SP = Sugar Pine
TO = Tanoak
WA = Walnut
WF = White fir

STATUS AND CONTROL OF DISEASES

ABIOTIC DISEASES. Diseases caused by abiotic or non-living agents were generally few in 1984. One exception was a widespread dieback of manzanita, chinkapin, and whitethorn near Big Bear Lake in San Bernardino County; weather was suspected as the primary cause. Manzanita dieback associated with moisture stress was common also along the entire front range of the Sierra Nevada. A top dieback of sawtimber-size tanoaks at Challenge Experimental Forest in Yuba County was probably caused by exposure to climatic extremes.

AIR POLLUTION. The Forest Service evaluated 28 sites on the Sequoia National Forest for ozone injury to ponderosa and Jeffrey pines. Each ten-tree plot was first rated for symptoms in 1977. During this 7-year period, 25 plots showed increases in the amount of needle mottling; no change occurred at the other three plots.

In 1984, three ponderosa pines died on two plots. Prior to death, each tree retained only one year's needles with chlorotic mottle. No other diseases were found affecting the trees; two were colonized by secondary roundheaded borers, and one was successfully attacked by the western pine beetle. These trees were the first with severe ozone symptoms to die on the Sequoia National Forest plots.

CANKER DISEASES. Limb and stem cankers caused by either a Fusicoccum sp. or a Hendersonula sp. were common on Pacific madrone at Challenge Experimental Forest in Yuba County. In combination with several leaf spot diseases, the cankers caused extensive dieback of madrones in many parts of northern California.

Cenangium canker was reported on Jeffrey pine in Siskiyou County, and a Cytospora sp., associated with a Melampsora sp. leaf rust, killed branches of willow near June Lake in Mono County.

DWARF MISTLETOES, Arceuthobium spp. State-wide, dwarf mistletoe infects conifers on 2.2 million acres of commercial forest land, and is annually associated with the deaths of some 312,500 pines, firs, and Douglas-fir.

The Forest Service financed dwarf mistletoe suppression projects in several campgrounds in 1984. Pruning and tree removal were completed at Cedar Grove in Kings Canyon National Park (Fresno County), at Table Mountain Campground on the Angeles National Forest (Los Angeles County), and at San Gorgonio and Heart Bar Campgrounds on the San Bernardino National Forest (San Bernardino County). A multi-year project of tree removal, branch pruning, and broom pruning was begun at Nevada Beach Campground near South Lake Tahoe.

FOLIAGE DISEASES. In 1984, one-third of all disease reports involved a leaf or needle disease. As in several years past, leaf spots of madrone were reported most frequently: the causal fungi included Rhytisma arbuti, Cryptostictus arbuti, and a Phyllosticta sp.

The true fir needle casts, caused by Lirula abietis-concoloris and Virgella robusta, were present on white fir throughout the Sierra Nevada, although they were not reported as commonly as in past years. Phoma dura was found on white fir in Shasta County, and a Rhabdocline sp. was reported on Douglas-fir in Del Norte County.

NURSERY DISEASES. At the Humboldt Nursery (Humboldt County), Phoma blight of Douglas-fir and red fir seedlings, caused by Phoma eupyrena, occurred at lower levels than in 1982 or 1983. In a field test at Humboldt Nursery, redwood mulch and a shade cover limited rain splash and soil collar formation, and reduced the incidence of Phoma blight.

A top blight of 1-0 Douglas-fir caused some damage at the Humboldt Nursery. Several fungi (predominantly Fusarium oxysporum) were isolated from affected stems; these fungi were similar to those associated with diseased seedlings in Oregon and Washington nurseries.

Hypocotyl rot caused by Fusarium oxysporum was active in unshaded beds of sugar pine at the Placerville Nursery (El Dorado County), but caused less than three percent loss at the Magalia Nursery (Butte County). Reduced losses at Magalia may have been due to fall fumigation, dry spring weather that allowed early sowing, and shading of beds.

Fungicide evaluation trials for control of Sirococcus tip blight, caused by Sirococcus strobilinus, were conducted at the Humboldt Nursery. Both Tilt 3.6 EC® and Bayleton 50 WP® applied at 8-week intervals were as effective as the current treatment of Bravo W-75® applied at 4-week intervals.

Relatively minor diseases included Phomopsis canker, caused by Phomopsis occulta, on Douglas-fir and western hemlock at the Humboldt Nursery; Botrytis blight, caused by Botrytis cinerea, on Douglas-fir at the Humboldt Nursery; and charcoal root disease, caused by Macrophomina phaseoli, on true fir at the Placerville Nursery.

ROOT DISEASES. Root diseases were an important cause of tree mortality in California's commercial forests. Estimates indicate they annually cause the deaths of conifers containing about 19,600,000 cubic feet on lands of all ownerships.

All commercial conifers in California are attacked by one or more root diseases. The most common and destructive are annosus root disease (caused by Heterobasidion annosum); Armillaria root rot (caused by Armillaria mellea); and black stain root disease (caused by Ceratocystis wageneri). Other root diseases are responsible for small amounts of volume loss State-wide, and may be of local importance.

National Forest managers have become aware of severe annosus and Armillaria root disease problems in the southern Sierra Nevada on the Kern Plateau and in the Greenhorn Mountains (Tulare and Kern Counties). Rates of stump infection by Heterobasidion annosum averaged 60 percent in six random surveys on the Cannell Meadow Ranger District, Sequoia National Forest (Tulare County).

RUSTS. Western gall rust, caused by Endocronartium harknessii, was reported on pole-size Jeffrey and knobcone pine on the Big Valley Ranger District, Modoc National Forest (Siskiyou County). Limb rust, caused by Cronartium coleosporioides, was reported on Jeffrey pine in the Prairie Fork Recreation Area, Valyermo Ranger District, Angeles National Forest, (Los Angeles County).

White pine blister rust, caused by Cronartium ribicola, was reported on sugar pine at Challenge Experimental Forest (Yuba County) and in Hodgdon Meadow, Yosemite National Park (Tuolumne County).

Willow rust caused by a Melampsora sp. was found on willows over about 3,000 acres in the June Lake Loop, Mono Lake Ranger District, Inyo National Forest (Mono County).

WESTERN SPRUCE BUDWORM, Choristoneura carnana californica. An understory Douglas-fir on the Weaverville Ranger District of the Shasta-Trinity National Forest (Trinity County) shows the effects of repeated defoliation. Note that, despite the sparseness of foliage, the tree has set new buds. However, if defoliation continues, the tree's ability to recover will inevitably decline.

TABLE II. FOREST DISEASES REPORTED - 1984

AGENT	HOST	COUNTY
ABIOTIC INJURIES:		
Herbicide	JP	San Bernardino
Moisture Stress	MP	Tulare
Salt	WF	Mono
Weather	BM	Trinity
Unknown	Ck,Mz,Wt	San Bernardino
	IC	El Dorado
	Ta	Yuba
CANKER DISEASES:		
Cenangium ferruginosum	JP	Siskiyou
Cytospora sp.	Wi	Mono
Fusicoccum sp.	Ma	Yuba
	GS	Placer
Hendersonula sp.	Ma	Yuba
Seridium cardinale	AC	Shasta
	Cy	Mendocino
DECAYS:		
Inonotus dryophilus	LO	Tulare
Poria albipellucida	Rw	Marin
Poria sequoiae	Rw	Marin
Stereum hirsutum	Ta	Yuba
FOLIAGE DISEASES:		
Cryptostictus arbuti	Md	Humboldt
Lirula abietis-concoloris	WF	Tuolumne

TABLE II (Cont.)

AGENT	HOST	COUNTY
FOLIAGE DISEASES (Cont.):		
Lophodermium sp.	WF	Humboldt
Lophodermium juniperinum	Ju	Mendocino (2)
Mycosphaerella arbuticola	Md	Del Norte
Phoma dura	WF	Shasta
Phyllosticta sp.	Md	Butte
	Md	Yuba
Pseudomonas lauracearum	CL	Humboldt
Rhabdocline sp.	DF	Del Norte
Rhytisma arbuti	Md	Shasta
	Md	Trinity (2)
	Md	Yuba (2)
Scirrhia pini	PP	Del Norte
Virgella robusta	WF	Tuolumne
Virus (unidentified)	Hb	Plumas
Unknown	PP	Mendocino
	JP	Ventura
	QA	Mono
NURSERY DISEASES:		
Botrytis cinerea	DF	Humboldt
Fusarium oxysporum	CP	Santa Cruz
	DF	Humboldt
	SP	El Dorado
	SP	Butte
Macrophomina phaseoli	RF,WF	El Dorado
Phoma eupyrena	DF,RF	Humboldt
Phomopsis occulta	DF,WH	Humboldt

TABLE II (Cont.)

AGENT	HOST	COUNTY
NURSERY DISEASES (Cont.):		
Phyllosticta sp.	PP	Butte
Unknown	SS	Humboldt
PARASITIC PLANTS:		
Arceuthobium campylopodum	DP,JP	Tulare
ROOT DISEASES:		
Armillaria mellea	DF	Humboldt
	DF,WF	Humboldt
	DF,WF	Siskiyou
Ceratocystis wageneri	DF	Del Norte
	DF	Humboldt (3)
	DF	Mendocino
	DF	Siskiyou
	DF	Trinity
Heterobasidion annosum	DF,WF	Humboldt
	IC	Fresno
	MP,Mz	Trinity
	PP	Calaveras
Phaeolus schweinitzii	LP	Del Norte
Unknown	IC,PP	Siskiyou
	MP	Butte
	To	Mendocino
RUST DISEASES:		
Cronartium coleosporioides	CP,DP, JP,KP	Los Angeles
Cronartium ribicola	SP	Tuolumne
	SP	Yuba
Endocronartium harknessii	AP,CP	Los Angeles
	JP	Siskiyou

TABLE II (Cont.)

AGENT	HOST	COUNTY
RUST DISEASES (Cont.):		
Melampsora sp.	Wi	Mono
Puccinia coronata	HC	Kern
Pucciniastrum goeppertianum	Hb	Plumas

HOST ABBREVIATIONS

AP =	Aleppo pine	LP =	Lodgepole pine
AC =	Arizona cypress	Md =	Madrone
Ck =	Chinkapin	MP =	Monterey pine
CL =	California laurel	Mz =	Manzanita
CP =	Coulter pine	PP =	Ponderosa pine
Cy =	Cypress	QA =	Quaking aspen
DF =	Douglas-fir	RF =	Red fir
DP =	Digger pine	SP =	Sugar pine
Hb =	Huckleberry	SS =	Sitka spruce
HC =	Hollyleaf coffeeberry	To =	Tanoak
IC =	Incense-cedar	WF =	White fir
JP =	Jeffrey pine	WH =	Western hemlock
Ju =	Juniper	Wi =	Willow
KP =	Knobcone pine	Wt =	Whitethorn
LO =	Live oak		

TABLE III. DISEASE-CAUSED FOREST NURSERY LOSSES, 1979-1983[1]

HOST	DISEASE	NO. OF SEEDLINGS KILLED OR UNUSABLE (in thousands)				
		1979	1980	1981	1982	1983
DOUGLAS-FIR	Phoma needle blight	2,636	3,401	509	896	2,874
	Phomopsis canker	942	886	634	660	482
	Fusarium root rot	8	16	11	44	120
PONDEROSA PINE	Fusarium root rot	41	23	457	500	340
	Sirococcus tip blight	62	8	39	1	5
JEFFREY PINE	Fusarium root rot	33	18	160	144	46
	Sirococcus tip blight	48	0	10	13	1
SUGAR PINE	Fusarium hypocotyl rot	86	92	66	165	249
	Phytophthora root rot	12	12	5	16	34
RED FIR	Phoma needle blight	257	261	26	410	86
	Fusarium hypocotyl rot	180	250	300	365	178
	Phytophthora root rot	0	0	0	5	0
WHITE FIR	Phoma needle blight	237	165	63	154	349
	Fusarium hypocotyl rot	200	276	357	360	199
GIANT SEQUOIA	Gray mold	2	5	5	8	1
WESTERN HEMLOCK	Phomopsis canker	0	0	0	58	0

[1]Data for Table III were compiled over a 5-year period from two Forest Service, three State, and three industrial nurseries in California.

STATUS AND CONTROL OF ANIMAL PESTS

DEER. Deer browsing damage was widespread in conifer plantations. 50 to 400 trees per acre were injured in plantations up to five years of age and in a few older plantings. The largest acreages of damage were in Humboldt and Mendocino Counties, where Douglas-fir and redwood up to 10 years of age were browsed. The overall damage trend was static with localized increases and decreases in injury in most timber areas. No increased damage was reported in the Sierra Nevada south of Sierra County. Seedling protectors were the most common control measures, but the use of repellents increased.

POCKET GOPHER. Pocket gopher damage was widespread on at least 20,000 acres of pine and true fir plantations in the northern interior forests and the Sierra Nevada. Damage intensity was frequently 50 to 100 trees per acre and often higher, ranging up to 400 trees per acre in some locations. Douglas-fir and redwood were injured on several thousand acres of one-to-five year-old plantations in Humboldt and Mendocino Counties. Most reports of increased gopher damage came from the northern Sierra Nevada. Baiting with strychnine-treated grain was the major control method; vegetation control with herbicides, traps, and seedling protectors was used on a few areas.

PORCUPINE. Porcupines damaged pines in plantations and natural stands across northern California and southward through the Sierra Nevada. The largest acreages of injury were in Siskiyou, Shasta, Lassen, and Modoc Counties. Douglas-fir was damaged in Del Norte, Humboldt, and western Trinity Counties. Most injury rates were less than 25 trees per acre. The overall damage trend was static. Limited control was accomplished with traps and strychnine-salt blocks.

RABBITS. Rabbits damaged conifer plantations in the north coast and northern interior areas and in the northern Sierra Nevada. There were no reports of injury from south of Nevada County in the Sierra Nevada. The damage trend was static. Seedling protectors were used for control on a few sites.

BLACK BEAR. Black bear damage to redwood and Douglas-fir occurred as expected in Del Norte, Humboldt, Siskiyou, and Trinity Counties. Three of the seven reports from that area noted an increase in damage. Bear injury to Jeffrey pine and true firs occurred in the southern Sierra Nevada. Hunting was the only control measure used.

OTHER ANIMALS. The animals listed in Table IV were reported from the Counties or regions shown. Damage was serious on some sites but it was generally not widespread.

TABLE IV. ANIMALS OF LESSER IMPORTANCE IN CALIFORNIA FORESTS - 1984

SPECIES	COUNTY OR REGION
Antelope	Modoc
Beaver	Plumas, Riverside, Shasta, Sierra, Siskiyou
Birds	Northern interior (blue grouse), Santa Cruz (jays in seed beds)
Domestic Stock	All major timber areas
Dusky-footed Woodrat	Del Norte, Humboldt, Mendocino, Shasta, Siskiyou, Trinity
Ground Squirrel	Calaveras, Los Angeles, Riverside
Meadow Mouse	Shasta, Siskiyou
Mountain Beaver	Del Norte, Humboldt
Small Seed-eating Mammals	Humboldt, Trinity
Tree Squirrels	El Dorado, Humboldt, Mendocino, Riverside, San Bernardino, Santa Cruz, Shasta, Siskiyou, Sonoma

STATUS AND CONTROL OF WEEDS

Weeds caused conifer growth losses and mortality in most plantations and young growth stands in the State. To assess their impact State-wide, the Weed Committee began a survey of forest land managers in 1984. The survey will continue at least through 1985. Results to date report on 90,942 acres of plantations on 2,115,000 acres of total forest land. Thirty-two percent of the plantations were below optimum stocking because of weed competition, and 19 percent were replanted each year because of weed-caused failures. Weed-related growth loss was estimated to be 14 percent annually.

CONTROL. Recent studies have shown success in controlling bear clover and tanoak sprouts. Michigan-California Lumber Company and the Cooperative Extension Service reported substantial reductions of bear clover regrowth after two years following spring treatments with four ounces per acre active ingredient (a.i.) DPX 6376 (an experimental DuPont product) or four pounds per acre a.i. triclopyr amine, and fall treatment with four pounds per acre a.i. glyphosate. Other compounds tested were less successful.

Soper-Wheeler Company and the Cooperative Extension Service tested eight chemicals for stump treatment of freshly-felled tan oaks. After two years, no resprouting occurred following fall applications of picloram and fosamine. Spring applications of picloram, and fall or spring applications of dicamba and triclopyr amine were less successful, achieving 68-86 percent control of resprouts after two years.

1985 FIELD TRIP. The annual Weed Committee field meeting is scheduled for the Mt. Shasta-Pondosa-Burney area during the second week of June. Field stops will be at previously-unreported studies and projects that demonstrate vegetative control practices. Further details will become available later in the spring.

Know Your Forest Pests

GYPSY MOTH

The gypsy moth, Lymantria dispar, is native to the temperate regions of Europe, southern Asia, and northern Africa. Although the moth periodically reaches outbreak proportions and causes widespread defoliation in its native habitat, the presence of natural enemies minimizes these outbreaks. The insect was introduced and accidentally released in the United States in 1869 in the State of Massachusetts. It has spread from its site of introduction to all of the New England States, New York, New Jersey, Maryland, Virginia, North Carolina, West Virginia, and Pennsylvania. Isolated infestations occur in Michigan, Wisconsin, Illinois, Ohio, Washington, Oregon, Canada, and California.

LIFE CYCLE. The adult female gypsy moth is white with dark sawtoothed patterns on its wings and has a 2 inch wing span. The female is generally flightless. The male has a 1 to 1-1/2 inch wing span with similar patterns on its brown wings, and is a strong flier. Males have distinctive feathery antennae which they use to detect the pheromone produced by the female so mating can take place. Shortly after mating, the female usually deposits a single egg mass. The male moth can mate with more than one female.

In the Northeast the gypsy moth has one generation per year and overwinters as eggs which are deposited in late July and August. Eggs are laid in clusters of 100 to 1,000 and are covered with the abdominal hairs of the female. The resulting velvety tan mass is about 1-1/2 inches long and 3/4 inch wide. Egg masses are deposited on trees, rocks, ground foliage, houses, yard equipment, wood piles, vehicles, and a variety of other sites. Egg masses on outdoor furniture and vehicles are primary means of accidental long distance spread of the gypsy moth.

Egg hatch varies with climatic conditions. In the Northeast, egg hatch occurs in late April to mid-May and lasts for 5 to 21 days. In San Jose, California, egg masses hatched in late February and continued for about one month. In the mild climate of San Juan Capistrano and Santa Barbara, eggs have hatched as early as mid-February, with the duration of the hatch being more than two months. The precise pattern of hatching has not been determined over the range of California's climatic conditions.

Newly-hatched larvae are approximately 0.1 inch in length and are covered with long hairs. If disturbed or under the stress of high population density, newly hatched larvae react by lowering themselves from tree branches on silken threads. Aided by the long hairs on their bodies, the insects are carried by the wind over considerable distances, depending on the terrain, wind velocity, and other factors. Wind dispersal is the major source of natural spread of gypsy moth, most

often being 1/4 mile. During outbreak populations in hilly areas of the Northeast, dispersal by wind has exceeded distances of 10-16 miles.

Availability of host plants is critical for survival of newly-hatched larvae. Even though over 300 species of plants serve as hosts, the first stage larvae feed on a narrower range of hosts than the later instars. Some preferred hosts of the first instar larvae are hardwoods such as oak, poplar, alder, willow, and birch.

After the first instar, larvae have distinctive blue and red dots on their backs. The host range of older larvae is broader and includes a number of conifers as well as hardwood and brush species. By the last instar, the larvae have increased to 3 to 3-1/2 inches in length and have undergone a 1,000-fold increase in weight. Feeding occurs primarily during the night although it may be continual. The larval stage lasts approximately 8-10 weeks.

Larvae tend to pupate in protected spots such as bark crevices and holes in trees. At high densities, they may also pupate on outdoor furniture or vehicles, which may contribute to long distance spread. The pupal period lasts approximately 10-14 days.

GYPSY MOTH, Lymantria dispar. The photo shows two female moths on a tree near several egg masses. The females are white with dark saw-toothed patterns, and have a 2-inch wingspan. Egg masses are velvety tan and are about 1-1/2 inches long and 3/4 inch wide.

POTENTIAL FOR ESTABLISHMENT. Establishment and dispersal of the insect in California will depend on host availability, topography, and climatic influences.

Based on recent gypsy moth feeding studies, which indicate that there are a number of potential hosts throughout the State, and the fact that there have been several established gypsy moth infestations in California, it can be concluded that the flora of California can support the growth of gypsy moth populations.

The climate in California is similar to that found in the moth's native habitat and should be suitable for its survival and dispersal. Throughout most of California, the temperature does not approach the lethal low of -9°F (-23°C) for the eggs of this insect. Areas with lower winter temperatures can support gypsy moth populations because snow insulates egg masses near the ground. Winter temperatures that dropped to -26°F (-32°C) in Maine killed only 85 percent of the gypsy moth eggs.

Lack of rain during the summer can be favorable to the caterpillar since the incidence of disease in larval populations appears to be directly related to high precipitation. Prevailing winds determine the natural spread of first instar larvae, both in direction and distance. In densely populated coastal areas where introductions are most apt to occur, strong daily winds are likely to promote rapid dispersal.

POTENTIAL FOR IMPACT. While the impact of gypsy moth on California's forest, agricultural, and urban lands cannot be predicted precisely, the moth will be a serious pest if it becomes established. Assessments of potential damage are based on about 100 years of study on the economic and environmental impact of the moth in the Northeast.

Agricultural crops such as apples, pears, apricots, cherries, prunes, and plums are suitable hosts. Orchard pest management costs in California are lower than those in the Northeast because the number of insect pests attacking the trees are few. Although the pesticides already used are adequate to control gypsy moth, it is conceivable that a build-up of gypsy moth populations would occur at times when orchards not normally subject to management practices would require additional spraying aimed specifically at the gypsy moth. A second impact on the fruit industry of the State are marketing perceptions that may have no basis in actual gypsy moth damage, but, in a competitive marketplace, can act to reduce the value of a crop.

People in urban areas use large numbers of the preferred host species for landscaping, including willow, birch, ornamental plum and cherry, and acacia. The known nuisance value and documented costs in tree replacement, clean-up, reduced property value, and recreational loss indicate that gypsy moth impact would be severe in California's cities. An additional cost is the potential for adverse environmental damage due to the repeated use of pesticides by individual residents to control gypsy moths on their property.

Laboratory feeding studies have shown that gypsy moth can feed on a number of native California hardwoods, conifers, and brush species. Potential hardwood hosts include red and white alder, blue oak, California black oak, valley oak, Garry oak, coast live oak and tanoak. Conifers include Douglas-fir, grand fir, red fir, white fir, Coulter pine, Digger pine, Jeffrey pine, Monterey pine, ponderosa pine, Torrey pine, coast redwood, giant sequoia, and western hemlock. Brush or chaparal hosts include flannel bush, manzanita, poison oak, salal, serviceberry, sugarbush, and toyon.

Defoliation can reduce the annual radial growth of hardwoods and softwoods. The extent of growth loss depends on the species of tree, the number of years of defoliation, and the tree's site, age, and condition. In general, most deciduous trees can withstand 2 to 3 years of moderate to heavy defoliations without dying. Conifers, however, can die from one complete defoliation. Tree defoliation, tree mortality, and radial growth loss can change the forest stand composition in terms of tree species, size, and age over a period of time. Defoliation also reduces the forest canopy and exposes the forest floor to direct sunlight, which raises the temperature and reduces the humidity, disrupting the habitat of many animals including birds, beneficial parasites, and predators. Changes in the forest affect soil erosion, watersheds, wildlife habitat, aquatic habitat, and human use of the forest.

CONTROL. Gypsy moth continues to be introduced into California. Border station inspection and inspection of household goods at their destination by the California Department of Food and Agriculture have been relatively effective in intercepting gypsy moth before it can become established. The Statewide trapping program is used to detect the presence of male moths. The capture of male moths in the State-wide trapping program will trigger a local intensive trapping program and possibly an egg mass survey. If evidence of a breeding population is discovered at a site, the California Department of Food and Agriculture will apply insecticide to eradicate the infestation. Carbaryl and Bacillus thuringiensis have generally been the insecticides used to date.

SURVEYS AND EVALUATIONS

DEMONSTRATION THINNING PLOTS IN THE EASTSIDE PINE TYPE ON THE LASSEN NATIONAL FOREST. In 1978-79 the Forest Service established six demonstration thinning plots in the eastside pine type to show the effects of thinning on pest-caused tree losses in areas of high tree mortality. The stands chosen were primarily pole-size ponderosa and Jeffrey pine mixed with some white fir and incense-cedar, growing on medium to low sites and ranging in age from 60 to 100 years.

Within the six demonstration plots, four levels of stocking density -- 40, 55, 70, and 100 percent of normal basal area -- were established to demonstrate the biological and economic alternatives available for management planning. Normal basal area is the basal area that a stand should produce when fully stocked with trees. Five years after thinning, the treatments had reduced mortality from 86 to 100 percent of the level in unthinned stands (Table V).

TABLE V. COMMERCIAL TREE MORTALITY (IN TREES PER ACRE) BY STOCKING LEVEL (IN PERCENT OF NORMAL BASAL AREA) FOR FIVE YEARS AFTER THINNING. Commercial trees are 8 inches dbh and larger, with straight boles, yielding a 10-foot log with a 6-inch top; the mountain pine beetle killed most trees.

YEAR	RESIDUAL STOCKING AFTER THINNING			
	40%	55%	70%	100%
1980	0.0	0.2	0.2	2.4
1981	0.0	0.0	0.7	2.4
1982	0.0	0.5	0.3	3.6
1983	0.0	0.1	0.8	4.1
1984	0.0	0.0	0.0	1.0
MEAN	0.0	0.2	0.4	2.8
Range: (by Year)	0	0-0.5	0-0.8	1.0-4.1
(by Treatment)	0	0-1.0	0-4.0	0-8.8
% REDUCTION	100.0	92.9	85.7	---

UNITED STATES DEPARTMENT OF AGRICULTURE - FOREST SERVICE — CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL

FOREST PEST DETECTION REPORT

I. FIELD INFORMATION (*See instructions on reverse*)

1. COUNTY:	2. FOREST (FS ONLY):	3. DISTRICT (FS ONLY):
4. LEGAL DESCRIPTION: T._____ R._____ S._____ 5. DATE:	6. LOCATION:	7. LAND OWNERSHIP: 1. FOREST SERVICE ☐ 2. OTHER FEDERAL ☐ 3. STATE ☐ 4. PRIVATE ☐
8. SUSPECTED CAUSE(S) OF INJURY: 1. INSECT ☐ 5. CHEMICAL ☐ 2. DISEASE ☐ 6. MECHANICAL ☐ 3. ANIMAL ☐ 7. WEED ☐ 4. WEATHER ☐ 8. UNKNOWN ☐	9. SIZE(S) OF TREE(S) AFFECTED: 1. SEEDLING ☐ 4. SAWTIMBER ☐ 2. SAPLING ☐ 3. POLE ☐ 5. OVERMATURE ☐	10. PART(S) OF TREE(S) AFFECTED: 1. ROOT ☐ 5. TWIG ☐ 2. BRANCH ☐ 6. FOLIAGE ☐ 3. LEADER ☐ 7. BUD ☐ 4. BOLE ☐ 8. CONE ☐
11. SPECIES AFFECTED:	12. NUMBER AFFECTED:	13. ACRES AFFECTED:

14. INJURY DISTRIBUTION:	15. STATUS OF INJURY:
1. SCATTERED ☐ 2. GROUPED ☐	1. DECREASING ☐ 2. STATIC ☐ 3. INCREASING ☐

16. PLANTATION ?	17. STAND COMPOSITION (SPECIES):	18. STAND AGE AND SIZE CLASS:
1. YES ☐ 2. NO ☐	19. STAND DENSITY (BASAL AREA):	20. SITE QUALITY:

21. PEST NAMES (IF KNOWN), AND REMARKS (SYMPTOMS AND CONTRIBUTING FACTORS):

22. SAMPLE FORWARDED ?	23. ACTION REQUESTED:	24. REPORTER'S NAME:	25. REPORTER'S AGENCY:
1. YES ☐ 2. NO ☐	1. YOUR INFORMATION ONLY ☐ 2. LAB IDENTIFICATION ☐ 3. FIELD EVALUATION ☐	26. REPORTER'S ADDRESS, ZIP CODE, & PHONE NO.:	

II. REPLY (*Pest Management Use*)

27. RESPONSE:

31. FILE NO.

28. REPORT NUMBER:	29. DATE:	30. EXAMINER'S SIGNATURE:

R5-3400-1 (Rev. 2/82)

THE FOREST PEST DETECTION REPORT. This Conditions Report was compiled from information recorded on this form by Federal, State, and private forest managers and individuals. Copies are available from local offices of the Forest Service, or from the California Department of Forestry.

SUMMARY OF RESOLUTIONS ADOPTED BY THE COUNCIL, NOVEMBER 30, 1984

RESOLUTION NO. 1 -- ANIMAL DAMAGE RESEARCH. To Mark Hatfield, Chairman, Senate Appropriations Committee; James McClure, Chairman, Senate Subcommittee Appropriations - Interior; Sidney Yates, Chairman, House Subcommittee Appropriations; Norman Dicks and Les AuCoin, Members, House Appropriations Committee; James Corlett, Executive Director, Western States Legislative Task Force; State Senator Barry Keene; and State Assemblyman Norman Waters:

> Urges them to direct the Fish and Wildlife Service to immediately halt the dispersal of personnel and closure of the Olympia, Washington and Bend, Oregon Forest Animal Damage Research Stations until the FY 1985 Federal Appropriation is final, and to seek an alternative to continue support of the Forest Animal Damage Research Project for FY 1985 and beyond.

RESOLUTION NO. 2 -- PESTICIDE ORDINANCES. To the California Department of Food and Agriculture and the California Board of Forestry:

> Urges the Department of Food and Agriculture to pursue whatever court actions are necessary to eliminate local ordinances and fully implement AB 2635 at the earliest possible date.

RESOLUTION NO. 3 -- WESTERN SPRUCE BUDWORM EPIDEMIC. To the Director of Forestry, Board of Forestry, Regional Forester, Assemblyman Norman Waters, and the Boards of Supervisors of Shasta and Trinity Counties:

> Recommends and supports the designation of the California Department of Forestry as "Lead Agency" of a project to provide for immediate action to organize and implement a plan for the control of the western budworm outbreak.

RESOLUTION NO. 4 -- GYPSY MOTH IN OREGON. To John Block, Secretary of Agriculture; Chief, Forest Service; Regional Foresters, Regions Five and Six; USDA, APHIS; Director of Agriculture, Oregon; Board of Forestry, Oregon; State Forester, Oregon; and Western Forestry Legislative Task Force:

> Urges the Forest Service, USDA-APHIS, and the Oregon Department of Agriculture to take the necessary measures to eradicate the gypsy moth infestation in Lane County.

RESOLUTION NO. 5 -- GYPSY MOTH TRAPPING. To the Bureau of Indian Affairs, Regional Director of the Park Service, Regional Forester, Board of Forestry, Director of Food and Agriculture, and Director of Forestry:

> Recommends that the State and Federal Agencies which have responsibility for forest management in California expand the trapping program for gypsy moth surveillance in forested areas throughout the State, and requests the California Department of Food and Agriculture to furnish the necessary traps.

COUNCIL AND COMMITTEE OFFICERS, 1984-1985

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Council Vice-Chairman: Bill Blackwell (Southern Pacific, Weaverville)

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