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IMPORTANT FOREST PEST OUTBREAKS IN
OREGON AND WASHINGTON IN 1975

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INSECT CONDITIONS IN BRIEF

Western spruce budworm infestations in Washington have intensified in stands of mixed conifer type. New defoliation was recorded in Douglas-fir and true fir stands on portions of the Okanogan and Wenatchee National Forests and the North Cascades National Park. In Oregon the outbreaks on the Wallowa-Whitman National Forest and the Warm Springs Indian Reservation have both increased in size and intensity.

Modoc budworm populations, significantly declining, caused visible light defoliation in the Warner and Gearhart Mountains on the Fremont National Forest.

Larch casebearer activity was at about the same level as last year in both States. However, new populations were detected in the Washington Cascades in the vicinity of Swauk Pass southwest of Wenatchee.

No Douglas-fir tussock moth defoliation was recorded in either State.

Damage caused by the balsam woolly aphid was again observed in both States. A new center of damage, representing a northern extension of the pest, was found on the Mt. Baker-Snoqualmie National Forest in the vicinity of Concrete, Washington. No damage was observed in the Blue Mountain area where the insect was discovered in 1974.

A new center of gouty pitch midge was recorded in second-growth ponderosa pine stands along the western edge of upper Klamath Lake.

Bark beetle activity increased in both Oregon and Washington in 1975. The mountain pine beetle continued to cause heavy mortality in lodgepole pine stands in eastern Oregon. The largest outbreak, encompassing approximately 920,000 acres occurs in the Umatilla, Wallowa-Whitman, and Malheur

National Forests. The area of fir engraver damage more than doubled in Washington and increased nearly five-fold in Oregon. Douglas-fir beetle losses more than doubled in the eastern portion of both States. The outbreak on the Gifford Pinchot National Forest near Packwood, Washington was effectively controlled by helicopter salvage logging. Western pine beetle activity more than doubled in both States. A flatheaded fir borer outbreak triggered by drought conditions in southern Oregon in 1974 has increased significantly this year.

STATUS OF INSECTS

Western spruce budworm, *Choristoneura occidentalis* Freeman - The total number of acres defoliated by the western spruce budworm remained about the same as last year. Approximately 532,000 acres of Douglas-fir and true firs have been defoliated to some extent this year. The majority of the damage occurred on the Okanogan and Wenatchee National Forests and the North Cascades National Park in north central Washington. Scattered light to moderate feeding, totaling about 8,400 acres occurred on the Wallowa-Whitman National Forest in northeastern Oregon. Light to heavy defoliation was detected on 10,560 acres on the Warm Springs Indian Reservation on the eastern slopes of the Oregon Cascades south of Mount Hood.

Aerial and ground surveys indicate trees are beginning to decline in vigor as evidenced by failure to produce new buds and foliage. Some trees in the heaviest defoliation centers are beginning to exhibit dead tops, twigs, and branches.

During the spring of 1975 the weather was considerably cooler and wetter than normal. This condition probably had some adverse effect on larval survival. However, the results of the 1975 fall egg mass survey indicate that populations will be high enough to cause light to heavy defoliation in most areas again in 1976.

With the knowledge obtained from previous outbreaks it is reasonable to assume that a continuation of these outbreaks will result in an acceleration of growth loss and top-killing. Direct control on approximately 350,000 acres is being planned for 1976. Sevin-4-Oil is the only effective material registered with EPA. It will be applied at the rate of 1 pound active ingredient in 40 ounces of total oil volume per acre.

The objectives of this proposed action will be to reduce budworm populations significantly enough to prevent an acceleration of growth loss and top-kill, restore tree vigor, reduce the threat of extensive loss of reproduction, prevent serious impairment of the aesthetic and recreational values of these areas, and restore the production of cone and tree seed in the defoliated areas.

A pilot project using fenitrothion (Sumithion[®]), was conducted on the Okanogan and Wenatchee National Forests in 1975. Preliminary results using fenitrothion in both a single and double application rate were disappointing. The percent reduction in populations on the test plots, ranging from 66 to 77 percent was not sufficient to save foliage. No additional testing of the chemical is planned.

The preliminary results of the cooperative field experiments conducted by Region 6 and the Pacific Southwest Forest and Range Experiment Station using Orthene and Matacil were encouraging. However, it does not appear that these insecticides could be registered in time for operational use in 1976. Some additional field experiments using other promising insecticides may be conducted in Region 6 during 1976.

Modoc budworm, *Choristoneura viridis* Free. - Populations of this insect declined greatly in 1975. Very light defoliation, totaling approximately 28,450 acres occurred in localized areas in the Warner and Gearhart Mountains on the Fremont National Forest in southeastern Oregon. The results of an egg mass survey indicate that populations will continue to decline in 1976.

Larch casebearer, *Coleophora laricella* Hbn. - Populations of this insect continued at low levels in western larch stands of eastern Washington and northeast Oregon. A new infestation was observed at Swauk Pass in the Washington Cascades southwest of Wenatchee. Population densities were not, however, sufficient to cause visible defoliation.

An aerial survey conducted in early June showed that visible defoliation, totaling less than 7,000 acres, occurred in northeastern Oregon and Washington. The largest area of visible defoliation, totaling nearly 6,500 acres, occurred on the Umatilla National Forest between Fry Meadow and Mosier Spring. The decline of this pest in 1974 and 1975 is considered to be a result of cool, wet spring climate during both years.

Boise Cascade Corporation released several different species of parasites in northeast Oregon in 1975. This release is a part of an Intermountain Forest and Range Experiment Station research study on the biological control of this introduced forest pest.

Gouty pitch midge, *Retinodiplosis inopsis* (O.S.) - A new center, totaling 1,190 acres and consisting of very heavy damage, was observed in the vicinity of Howard Bay (upper Klamath Lake), 9 miles northwest of Klamath Falls. The damage, consisting of bud and needle mortality on 1975 shoots, occurs in stands of second-growth ponderosa pine less than 30 feet tall. The trend of this outbreak is not known.

Douglas-fir tussock moth, *Orgyia pseudotsugata* McD. - No defoliation caused by this insect was observed in either Oregon or Washington. However, individual larvae were recovered from defoliator monitoring plots

on the Deschutes, Fremont, Mt. Hood, and Winema National Forests in Oregon and the Wenatchee National Forest in Washington.

Balsam woolly aphid, *Adelges piceae* (Ratz.) - Damage caused by this insect continued to be observed in the true fir stands of western Oregon and Washington. A new center of damage in subalpine fir was recorded on the Mt. Baker-Snoqualmie National Forest in the vicinity of Concrete, Washington. This find represents a northern extension of range as this pest had never previously been found north of the Snoqualmie River.

Aerial surveys are no longer flown during the season when aphid damage is most visible. However, visible damage is still recorded during the course of the annual aerial survey. Damage is normally recorded in subalpine fir stands where visible damage and tree killing is most pronounced. Special surveys are not made unless there is evidence to indicate there is need.

Mountain pine beetle, *Dendroctonus ponderosae* Hopk. - This insect continued to cause heavy mortality in lodgepole pine stands in eastern Oregon. About 181 million board feet of timber was killed this year. Nearly 70 percent of this mortality occurred on the Umatilla and Wallowa-Whitman National Forests. Additional losses amounting to 25.9 million board feet occurred on the Malheur National Forest. In Washington, losses in lodgepole pine continued to be light.

Losses of western white pine remained low throughout the mountainous regions of both States. In Oregon, the heaviest tree killing occurred on the Willamette National Forest while those in Washington occurred on the Mt. Baker-Snoqualmie, Okanogan, and Wenatchee National Forests.

Mountain pine beetle attacks in ponderosa pine increased nearly four-fold in Oregon, but remained nearly the same as last year in Washington. The heaviest damage occurred in the Grande Ronde River drainage near La Grande; in the Powder River drainage in the vicinity of Sumpter, Oregon; in the vicinity of Dooley Mountain south of Baker; and in the Wallowa Mountains southeast of Elgin (see attached map of mountain pine beetle activity).

Fir engraver, *Scolytus ventralis* Lec. - Populations have greatly increased throughout the Region this past year. All eastside Forests suffered some damage. Particularly heavy losses occurred on the Malheur, Ochoco, Umatilla, and Wallowa-Whitman National Forests in Oregon; and on the Umatilla and Okanogan National Forests in Washington. The trend of these infestations is not known.

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Douglas-fir beetle, *Dendroctonus pseudotsugae* Hopk. - This insect killed approximately 14.7 million board feet of Douglas-fir in Oregon and Washington in 1975. Losses were slightly less than those of last year. The largest outbreaks have been observed on the Wallowa-Whitman and Umatilla National Forests in Oregon and on the Okanogan and Mt. Baker-Snoqualmie National Forests in Washington.

The severe 1974-75 infestation on the Gifford Pinchot National Forest near Packwood, Washington was successfully terminated by helicopter logging. A total of 68.6 million board feet of timber was removed between November 1974 and July 1975.

Although no Douglas-fir beetle activity was observed in the old tussock moth outbreak areas during the 1975 aerial survey, field surveillance indicates beetle activity is increasing in the tussock moth areas. These infected trees will start to fade this winter and ~~will~~ ^{can} be easily detected during the 1976 aerial survey. Many of the infested trees are currently being logged in the process of salvaging the trees killed by the tussock moth. mention drought

Spruce beetle, *Dendroctonus rufipennis* (Kby.) - Tree killing increased throughout the Region. Aerial detection surveys reported numerous widely scattered new patches of mortality. The heaviest damage occurred on the Wallowa-Whitman and Umatilla National Forests in Oregon. The trend of these outbreaks is unknown.

Western pine beetle, *Dendroctonus brevicomis* LeC. - Infestations increased throughout the Region. In central Oregon nearly 11.9 million board feet of timber has been killed on the Fremont, Ochoco, Malheur, Deschutes, and Winema National Forests. In Washington the heaviest losses occurred on the Yakima Indian Reservation.

Flatheaded fir borer, *Melanophila drummondi* (Kirby) - Infestations continued on low site forest lands in southwestern Oregon between Roseburg and the Oregon-California State line. Most of the tree killing, on approximately 140,000 acres, occurs on dry rocky sites located along the foothills of the Rogue and Umpqua River drainages in the vicinity of Riddle, Grants Pass, Medford, and Ashland.

The continuation of this outbreak is attributed largely to severe drought conditions which occurred in 1973 and 1974.

The results of evaluations by Oregon State Department of Forestry entomologists indicate that populations have declined. This is probably a result of the increased precipitation which occurred during the 1975 growing season. This downward trend is expected to continue.

Other Insects - European pine shoot moth, *Rhyacionia buoliana* (Schiff.). Oregon State Department of Agriculture report surveys using pheromone traps in commercial nurseries and ornamental plantings of pines in northwestern Oregon have revealed two new infestations; one in a field nursery in Clackamas County and another in a senior citizens housing project located near Woodburn, Marion County. EPSM larvae were recovered from the nursery in question and the pines have been placed under ^{surveillance} until the infestation is eradicated. Delimiting surveys conducted in a 2 mile radius around the infested nursery have revealed no additional infestations.

Smaller European elm bark beetle, *Scolytus multistriatus*. Oregon State Department of Agriculture reports numerous beetles were caught in pheromone traps throughout the State of Oregon. The insect was also reported collected from fire wood and standing American elm trees for the first time in 2 years in Union County, Oregon. Dutch elm disease, *Ceratocystis ulmi*, (Burs.) C. Moreau, was cultured from a tree from Union County in 1974 substantiating the presence of the disease in the State.

STATUS OF FOREST TREE DISEASES IN OREGON AND WASHINGTON IN 1975

Phytophthora root rot of Douglas-fir seedlings - Four species of Phytophthora fungi have been isolated from root rotted and dead Douglas-fir seedlings in several forest nurseries in Oregon and Washington. The four species have been tentatively identified as *P. cinnamomi*, *P. dreschleri*, *P. cryptogea*, and an unidentified specie. With the exception of *P. cinnamomi*, the Phytophthoras had not previously been reported on Douglas-fir or other northwest conifers. All of these fungi have been demonstrated to be pathogenic to Douglas-fir seedlings in small-scale pot tests.

Mortality of seedlings in the infested nurseries has occurred in very wet portions of beds, sections where water tends to remain on the surface. Disease incidence is absent or very limited in well-drained portions of the infested nurseries.

Survival of stock outplanted from an area known to be infested in one nursery was poor.

Evaluations of the biology of the fungi, particularly their survival and spread in nurseries are planned. Tests of control methods are also planned.

Drought injury - The prolonged dry fall of 1974, which extended well into November before measurable precipitation occurred, contributed to widespread tree killing, top-killing, and branch flagging on Douglas-fir in southern Oregon and scattered locations throughout Oregon and Washington. In a few cases damage became apparent in November and December 1974, but symptom expression on most trees was delayed until the spring of 1975. The damage was particularly noticeable in the Illinois Valley around Cave Junction. The moist conditions of 1975 have helped relieve much of the drought stress.

Elytroderma needle blight - Elytroderma needle blight, caused by *Elytroderma deformans*, became quite noticeable throughout much of eastern Oregon in 1975. Ponderosa pine stands in the Ochoco Mountains and portions of the Blue Mountains displayed the most damage. These are the same areas that were severely damaged by an outbreak in the late 1940's. Damage is not severe enough to cause tree killing. The amount of visible damage is expected to increase significantly in 1976 because of good infection conditions which existed in 1975.

Rhabdocline needle cast of Douglas-fir - Rhabdocline needle cast caused by *Rhabdocline pseudotsugae* damaged Christmas tree plantations in Clackamas County this spring. No increase in infection was evident in forest stands. The PNW Station is testing several fungicides for control.

The cool, moist spring, summer, and fall weather contributed to an increase in infection by several rust fungi which infect foliage. Although these fungi normally cause very little impact in forest stands, their appearance can often times be striking. *Pucciniastrum geoppertianum*, *Chrysomya ledicola*, and *Melampsora abietis-canadensis* were common on true firs and hemlocks this year.

Decays, root rots, and dwarf mistletoes - The most important forest diseases in Oregon and Washington are the decays, root rots, and dwarf mistletoes. These diseases, while taking a large yearly toll, are not subject to yearly fluctuations. They are the quiet thieves and killers of the forest who frequently go unnoticed because of their ever present nature.

The number of forest stands known to be infected by laminated root rot caused by *Phellinus* (*Poria*) *weirii* continues to increase largely as a result of increased awareness of the disease by many foresters. Several infection centers were detected in stands in eastern Oregon and Washington and in southern Oregon in 1975.

Decays continue to cause large losses in northwest forests. This serious problem is not going to disappear as the old-growth stands are removed, because wounds on young-growth trees provide ideal infection courts for decay causing organisms. This problem is especially acute in western hemlock trees which have been wounded by logging or bears.

The Shigometer, an electric meter used to detect decay in wood, was tested in several locations in Oregon and Washington this fall. The tests showed the meter has great potential for accurately detecting and measuring many of the decays in northwest trees.

Dutch elm disease - Dutch elm disease was not reported from any new locations in 1975. The disease had previously been detected in Ontario, Nyssa, and Union, Oregon.

Table 1.--Extent of Spruce Budworm
in 1975 by Reporting Area and Intensity of Infestation

	Infes- tation Centers Number	Intensity of Infestation			
		Light	Moderate	Heavy	All Intensities
		-----Acres-----			
OREGON					
Total Fremont N.F.	42	28,450	0	0	28,450*
Total Wallowa-Whitman N.F.	19	6,670	1,490	270	8,430
Total Warm Springs I.R.	4	5,620	2,500	2,440	10,560
Total Oregon Areas	65	40,740	3,990	2,710	47,440
WASHINGTON					
Total Okanogan N.F.	156	91,520	56,450	22,360	170,330
Total Wenatchee N.F.	438	173,080	96,950	37,620	307,650
Total North Cascades N.P.	44	22,910	10,270	1,870	35,050
Total Washington Areas	638	287,510	163,670	61,850	513,030
REGIONAL TOTAL	703	328,250	167,660	64,560	560,470**

*Modoc budworm, *C. viridis* Free. in southeastern Oregon.

**Total acres includes acreage of modoc budworm, identified above; net western spruce budworm acres in Region is 532,020.

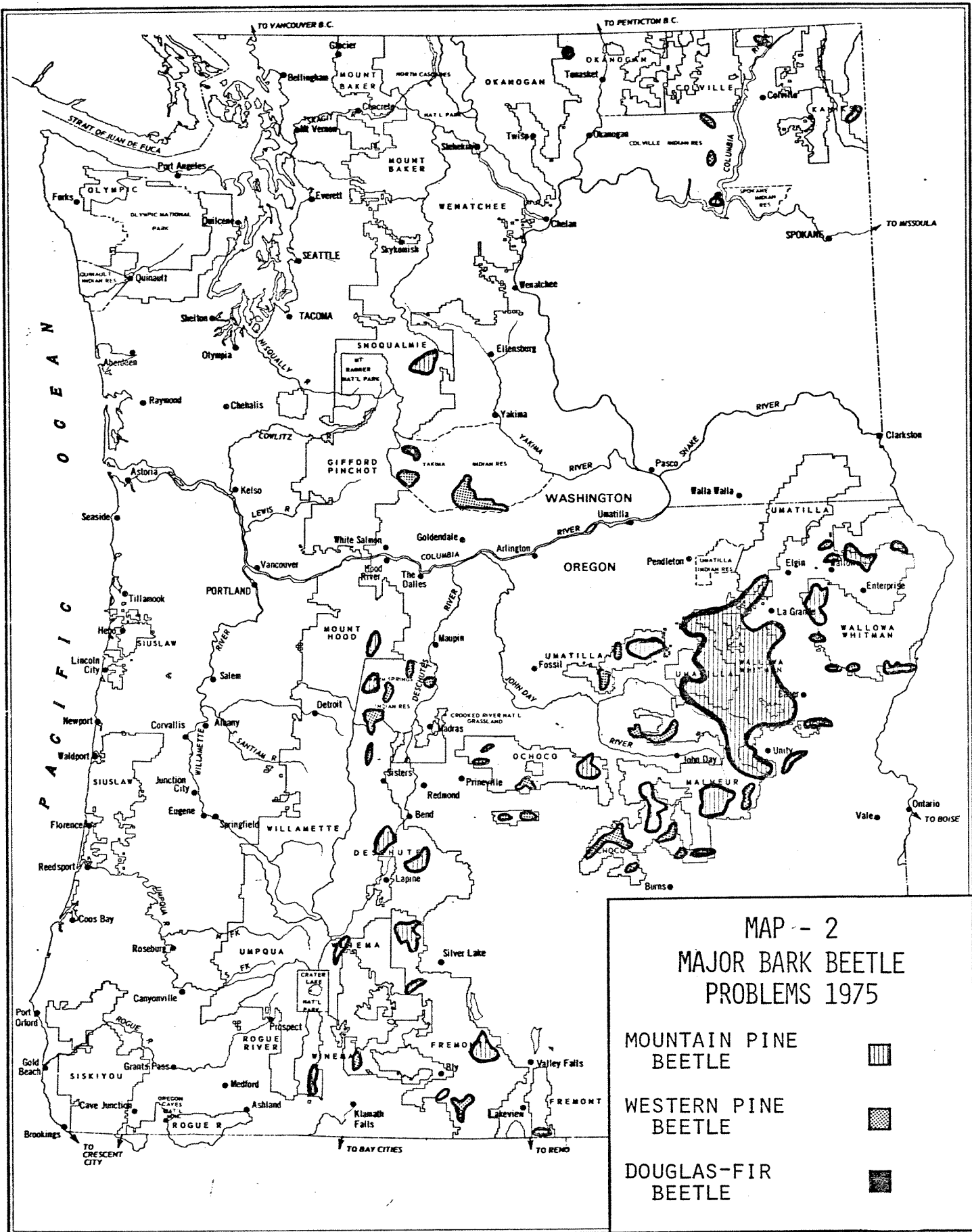
Table 2.--Summary of 1975 Forest Insect Epidemic Infestations
in Oregon and Washington

INSECTS	OREGON		WASHINGTON		REGIONAL TOTAL	
	Infestation	Area	Infestation	Area	Infestation	Area
	Centers	Acres	Centers	Acres	Centers	Acres
Defoliators						
Spruce Budworm	65	47,440	638	513,030	703	560,470*
All Defoliators	65	47,440	638	513,030	703	560,470
Sucking Insects						
Balsam Woolly Aphid	29	11,210	4	550	33	11,760
Spider Mite	12	3,130	4	250	16	3,380
All Sucking Insects	41	14,340	8	800	49	15,140
Other						
Oregon Pine Ips	147	16,390	7	590	154	16,980
All Other	147	16,390	7	590	154	16,980
Not An Insect						
Bear Damage	4	70	0	0	4	70
All Not An Insect	4	70	0	0	4	70
ALL DAMAGE	257	78,240	653	514,420	910	592,660



*Includes 28,450 acres of Modoc budworm in southeastern Oregon.

Table 3.--Summary of 1975 Forest Epidemic Infestations in Oregon and Washington for All Bark Beetle Damage Excluding Oregon Pine Ips

INSECTS	Infestation Centers Number	Area Acres	Number of Trees	Volume MBF
OREGON				
Douglas-fir beetle-eastside	563	52,790	13,746	7,713.440
Douglas-fir beetle-westside	59	1,830	399	640.580
Douglas-fir engraver	15	930	175	210.750
Engelmann spruce beetle	29	5,540	1,380	332.400
Fir engraver	736	135,770	44,278	11,639.990
Flatheaded borer-eastside	1	190	20	12.078
Flatheaded borer-westside	690	140,110	66,344	8,624.720
Mountain pine beetle-L	1,162	1,107,520	2,587,810	180,923.750
Mountain pine beetle-S	19	1,200	132	118.280
Mountain pine beetle-W	139	16,300	20,985	8,738.700
Mountain pine beetle-P	744	195,140	139,975	8,330.340
Western pine beetle	969	220,590	22,608	16,646.650
OREGON TOTAL	5,126	1,877,910	2,897,852	329,952.027
WASHINGTON				
Douglas-fir beetle-eastside	226	21,730	10,531	5,732.990
Douglas-fir beetle-westside	68	1,880	703	653.570
Engelmann spruce beetle	10	1,140	595	148.750
Fir engraver	160	23,500	11,696	3,103.400
Mountain pine beetle-L	15	1,860	1,267	88.690
Mountain pine beetle-W	221	25,420	18,860	8,494.360
Mountain pine beetle-P	172	10,670	7,451	373.530
Western pine beetle	180	36,950	5,464	3,232.210
WASHINGTON TOTAL	1,052	123,150	56,567	21,827.500
REGIONAL TOTAL	6,178	2,001,060	2,954,419	351,779.527



MAP -- 2
 MAJOR BARK BEETLE
 PROBLEMS 1975

MOUNTAIN PINE BEETLE	
WESTERN PINE BEETLE	
DOUGLAS-FIR BEETLE	