PACIFIC NORTHWEST

FOREST PEST CONDITIONS

DURING 1983

Compiled by

USDA Forest Service
Oregon State Department of Forestry
Washington State Department of Natural Resources
Oregon Department of Agriculture

SURVEY FINDINGS IN BRIEF

The spruce budworm and mountain pine beetle continued to account for most of the infested acreage reported in the Pacific Northwest Region.

The western spruce budworm-defoliated areas covered about 2.5 million acres. This acreage includes the 524,561 acres receiving insecticidal treatments in 1983.

Mountain pine beetle-caused tree killing increased with about 1.3 acres infested. Majority of the loss, 1 million acres, occurred in the lodgepole pine stands in south-central Oregon.

Root diseases are among the most serious pests in Pacific Northwest forests because of the magnitude of losses and difficulty of treatment. Annual timber volume losses due to root diseases are estimated at 130 million cubic feet in Oregon and Washington.

Dwarf mistletoes continue to cause large timber losses, although they are steadily declining. Annual losses are estimated at 133 million cubic feet.

Good progress is being made to hazard rate sites for white pine blister rust infection and damage potential.

The incidence of several foliage diseases increased in 1983 over that observed in 1982. Large areas of lodgepole and ponderosa pines were affected.

Damage from top-blight in Douglas-fir bare root seedling nurseries is increasing. Causes remain unknown.

TREND OF FOREST PEST CONDITIONS
WASHINGTON
1981-1983

Pest	Acres Infested		
	1981	1982	1983
D-F Beetle East Side	5,970	4,860	8,380
D-F Beetle West Side	1,520	820	2,110
Spruce Beetle	0	5,250	1,350
Douglas-fir Engraver	1,490	0	60
Fir Engraver (Ips)	5,370	4,140	4,810
Mt. Pine Beetle (P.P.)	25,870	11,420	36,650
Mt. Pine Beetle (W.W.P.)	57,830	30,150	39,850
Mt. Pine Beetle (L.P.P.)	40,050	75,090	70,120
Mt. Pine Beetle (W.B.P.)	0	40	0
Pine Engraver (Ips)	1,050	1,470	1,750
Western Pine Beetle	15,810	12,940	15,840
Silver fir Beetle	0	0	380
Balsam Woolly Aphid	1,750	570	410
Spruce Aphid	400	0	220
Larch Looper	60,550	23,590	0
W. Spruce Budworm	30,050	9,270	37,850
Larch Budmoth	0	0	13,440
Bear Damage	4,790	0	2,870
Douglas-fir Tussock Moth	0	1,550	17,090
	252,500	181,160	253,180

MAJOR DEFOLIATORS

Western Spruce Budworm

In the Pacific Northwest Region, the area of visible defoliation 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. 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 egg mass survey in the fall of 1983 indicates an increasing population trend in new areas and continued defoliation in current areas in 1984.

In 1983, 501,994 acres were treated with carbaryl, 12,472 acres with *Bacillus thuringiensis (B.t.)*, and 10,095 with mexacarbate. An environmental analysis of the budworm infestation is being made to evaluate current situation.

EXTENT OF SPRUCE BUDWORM IN 1983 BY REPORTING AREA

REPORTING AREA	TOTAL ACRES
TOTAL DESCHUTES N.F.	3850
TOTAL MALHEUR N.F.	974020
TOTAL MT. HOOD N.F.	61110
TOTAL OCHOCO N.F.	423030
TOTAL UMATILLA N.F.	472340
TOTAL WALLOWA-WHITMAN N.F.	459070
TOTAL WARM SPRINGS I.R.	1480
TOTAL CENTRAL OREGON	44270
TOTAL OREGON	2439170
TOTAL OKANOGAN N.F.	37850
TOTAL WASHINGTON	37850
TOTAL FOR REGION	2477020

Douglas-fir Tussock Moth, *Orgyia pseudotsugata* (McDonnogh)

In 1982 and early 1983, 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, Stevens, and Okanogan Counties of Washington. Most damage was on State and private lands in the upper Sandpoint and upper Curlew River drainages in Ferry Counties. In Oregon, 10 acres of light defoliation appeared north of La Grande on private lands adjacent to the Wallowa-Whitman National Forest.

The defoliation is expected to decrease in 1984. During mid-summer of 1983, indications began to appear that natural forces were beginning to regulate the population. By the time of moth flight in the fall, 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. Agents responsible for the collapse of the tussock moth population in Oregon has not yet been identified.

EXTENT OF DOUGLAS-FIR TUSSOCK MOTH IN 1983
BY REPORTING AREA AND INTENSITY OF INFESTATION

REPORTING AREA	NUMBER OF INFESTATION CENTERS	INTENSITY OF INFESTATION LIGHT	MODERATE	HEAVY	TOTAL
		ACRES			
TOTAL WALLOWA-WHITMAN N.F.	1	10	0	0	10
TOTAL OREGON	1	10	0	0	10
TOTAL OKANOGAN N.F.	27	8360	1000	0	9360
TOTAL COLVILLE N.F.	65	4730	1540	1460	7730
TOTAL WASHINGTON	92	13090	2540	1460	17090
TOTAL FOR REGION	93	13100	2540	1460	17100

BARK BEETLES

Mountain Pine Beetle

Mountain pine beetle losses continued about the same in Washington and have intensified in Oregon. This beetle is still the most destructive tree killer in the Pacific Northwest. Region-wide, 65.929 million cubic feet of pine were killed by mountain pine beetle.

The lodgepole pine losses increased almost four times of the 1982 figure on the Deschutes National Forest. The Fremont and Winema National Forests both experienced a 100 percent increase in losses in lodgepole pine stands due to mountain pine beetle.

The Wallowa-Whitman and the Malheur National Forest losses in lodgepole pine dropped to half of what they were in 1982. The Umatilla National Forest experienced a dramatic decrease of beetle activity in lodgepole pine stands. Tree mortality on these three Forests continues to decline primarily because the most suitable host trees have already been killed. At the same time, new and intensified mountain pine beetle areas in south-central Oregon are causing extreme losses to lodgepole pine which should continue.

Mountain pine beetle activity in second-growth ponderosa and sugar pine stands on the Deschutes National Forest increased significantly in 1983. Majority of this loss occurred in and near the beetle-infested lodgepole pine stands on the Forest.

EXTENT OF MTN PINE BEETLE, PONDEROSA PINE IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL DESCHUTES N.F.	99	45100	163974	.017	2787.640
TOTAL FREMONT N.F.	133	21300	30297	.016	484.750
TOTAL MALHEUR N.F.	17	2890	3355	.010	33.550
TOTAL MT. HOOD N.F.	3	70	25	.011	.290
TOTAL OCHOCO N.F.	50	8430	5780	.010	57.800
TOTAL ROGUE RIVER N.F.	42	1740	553	.014	7.740
TOTAL SISKIYOU N.F.	10	290	62	.011	.740
TOTAL UMATILLA N.F.	39	2960	1180	.044	51.920
TOTAL WALLOWA-WHITMAN N.F.	45	2970	535	.043	23.080
TOTAL WINEMA N.F.	46	8740	9923	.016	158.770
TOTAL WARM SPRINGS I.R.	9	280	110	.016	1.760
TOTAL CENTRAL OREGON	5	170	25	.010	.250
TOTAL OREGON	498	94940	215819	.016	3608.290
TOTAL GIFFORD PINCHOT N.F.	4	110	165	.014	2.310
TOTAL OKANOGAN N.F.	38	4730	1315	.010	13.150
TOTAL UMATILLA N.F.	2	80	15	.044	.660
TOTAL WENATCHEE N.F.	58	7330	2820	.011	31.150
TOTAL COLVILLE N.F.	127	6260	2425	.010	24.250
TOTAL KANIKSU N.F.	1	2820	2820	.010	28.200
TOTAL COLVILLE I.R.	78	4640	1820	.010	18.200
TOTAL SPOKANE I.R.	19	1430	510	.010	5.100
TOTAL YAKIMA I.R.	10	320	225	.011	2.500
TOTAL NORTHEAST WA	119	8590	3575	.012	42.900
TOTAL GLENWOOD	14	340	255	.012	3.060
TOTAL WASHINGTON	470	36650	15945	.010	171.480
TOTAL FOR REGION	968	131590	231764	.016	3779.770

EXTENT OF MTN PINE BEETLE, W. WHITE PINE IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL DESCHUTES N.F.	26	3420	2255	.086	193.930
TOTAL MT. HOOD N.F.	6	220	50	.121	6.060
TOTAL ROGUE RIVER N.F.	19	1470	255	.105	26.830
TOTAL SISKIYOU N.F.	2	150	10	.030	.300
TOTAL WINEMA N.F.	10	1140	90	.060	5.400
TOTAL WARM SPRINGS I.R.	8	920	130	.092	11.960
TOTAL CRATER LAKE N.P.	2	110	10	.080	.800
TOTAL OREGON	73	7430	2800	.087	245.280
TOTAL GIFFORD PINCHOT N.F.	1	10	5	.122	.610
TOTAL MT. BAKER-SNOQUALMIE N.F.	9	270	75	.104	7.800
TOTAL OKANOGAN N.F.	44	3090	990	.111	109.950
TOTAL OLYMPIC N.F.	11	430	130	.110	14.300
TOTAL WENATCHEE N.F.	209	15440	5488	.083	455.830
TOTAL COLVILLE N.F.	106	11930	4528	.089	403.140
TOTAL KANIKSU N.F.	24	3370	820	.089	72.990
TOTAL YAKIMA I.R.	6	200	185	.083	15.360
TOTAL NORTHEAST WA	12	1490	335	.104	34.840
TOTAL GLENWOOD	1	10	5	.106	.530
TOTAL OLYMPIC N.P.	36	1420	500	.092	46.000
TOTAL NORTH CASCADES N.P.	29	2190	530	.104	55.120
TOTAL WASHINGTON	488	39850	13591	.089	1216.470
TOTAL FOR REGION	561	47280	16391	.089	1461.750

West Side Douglas-fir Beetle

Since most of the timber lands west of the Cascades was not covered during the 1982 aerial survey, the trend of the Douglas-fir beetle in the area is unknown.

In 1983, the largest concentration of Douglas-fir beetle activity west of the Cascades occurred in Washington on the Packwood District, Gifford Pinchot National Forest. No beetle activity was observed in the Mount St. Helens volcanic area. This lack of beetle activity could be attributed to the rapid salvage of the damaged trees. In western Oregon, Douglas-fir beetle activity was concentrated in the Coast Range in Coos, Douglas, and Siskiyou Counties.

EXTENT OF DOUGLAS-FIR BEETLE WEST SIDE DF IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL MT. HOOD N.F.	4	130	40	.295	11.810
TOTAL ROGUE RIVER N.F.	4	160	81	.413	33.460
TOTAL SISKIYOU N.F.	10	330	55	.430	23.650
TOTAL SIUSLAW N.F.	2	60	20	.559	11.180
TOTAL COOS-DOUGLAS	7	520	50	.388	19.400
TOTAL OREGON	27	1200	246	.404	99.500
TOTAL GIFFORD PINCHOT N.F.	10	840	111	.192	21.310
TOTAL MT BAKER-SNOQUALMIE N.F	2	20	15	.225	3.380
TOTAL OLYMPIC N.F.	2	50	10	.224	2.240
TOTAL WASHINGTON	14	910	136	.198	26.930
TOTAL FOR REGION	41	2110	382	.331	126.430

Western Pine Beetle

Tree mortality caused by the western pine beetle 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.

EXTENT OF WESTERN PINE BEETLE IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL DESCHUTES N.F.	18	5220	710	.170	120.700
TOTAL FREMONT N.F.	17	1320	123	.157	19.370
TOTAL MALHEUR N.F.	6	1050	30	.144	4.320
TOTAL OCHOCO N.F.	27	2520	623	.157	97.900
TOTAL ROGUE RIVER N.F.	55	3900	452	.148	66.900
TOTAL SISKIYOU N.F.	8	890	45	.101	4.580
TOTAL UMATILLA N.F.	5	600	35	.127	4.460
TOTAL WALLOWA-WHITMAN N.F.	10	1190	80	.143	11.470
TOTAL WINEMA N.F.	13	2450	1321	.167	220.630
TOTAL WARM SPRINGS I.R.	3	50	15	.160	2.400
TOTAL CENTRAL OREGON	1	30	5	.128	.640
TOTAL COOS-DOUGLAS	3	150	15	.116	1.740
TOTAL OREGON	166	19270	3454	.160	555.110
TOTAL GIFFORD PINCHOT N.F.	2	20	10	.122	1.220
TOTAL OKANOGAN N.F.	42	2910	241	.113	27.410
TOTAL UMATILLA N.F.	4	320	25	.127	3.190
TOTAL WENATCHEE N.F.	24	1990	1115	.081	90.410
TOTAL COLVILLE N.F.	28	2070	240	.107	25.780
TOTAL COLVILLE I.R.	75	4600	803	.101	81.380
TOTAL SPOKANE I.R.	2	70	10	.102	1.020
TOTAL YAKIMA I.R.	44	2630	685	.117	80.220
TOTAL NORTHEAST WA	5	280	40	.125	5.010
TOTAL GLENWOOD	21	950	355	.105	37.320
TOTAL WASHINGTON	247	15840	3524	.100	352.960
TOTAL FOR REGION	413	35110	6978	.130	908.070

Douglas-fir Engraver, *Scolytus unispinosus* (Lec.)

Losses attributed to the Douglas-fir engraver in 1983 was far below the losses reported in 1981. Timber lands on the west side of the Cascades where this beetle is generally detected were not covered during the 1982 aerial survey.

EXTENT OF DOUGLAS-FIR ENGRAVER IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL ROGUE RIVER N.F.	3	100	15	.014	.210
TOTAL SIUSLAW N.F.	1	20	5	.014	.070
TOTAL OREGON	4	120	20	.014	.280
TOTAL OKANOGAN N.F.	1	60	5	.012	.060
TOTAL WASHINGTON	1	60	5	.012	.060
TOTAL FOR REGION	5	180	25	.013	.340

Spruce Beetle

Spruce beetle activity in Engelmann spruce stands in northeast Washington was very low this year.

EXTENT OF ENGELMANN SPRUCE BEETLE IN 1983
BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	NUMBER OF INFESTATION CENTERS		NUMBER OF TREES	AVG VOL PER TREE MCF	VOLUME MCF
	NUMBER	ACRES			
TOTAL COLVILLE N.F.	5	910	460	.050	23.000
TOTAL KANIKSU N.F.	4	440	140	.050	7.000
TOTAL WASHINGTON	9	1350	600	.050	30.000
TOTAL FOR REGION	9	1350	600	.050	30.000

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 to train people how to use these programs.

Stem decay fungi still consume enormous volumes of wood with the majority of losses occurring 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.

The incidence of several foliage diseases increased substantially in 1983 compared to 1982. Hundreds of thousands of acres of ponderosa and lodgepole pine on the East Side were affected by red band needle blight caused by *Dothistroma pini*. Elytroderma needle blight caused by *Elytroderma deformans* increased dramatically over most of the ponderosa pine range. Douglas-firs in central Oregon were subject to needle casting by *Rhabdocline pseudotsugae*.

Phytophthora root rot on Douglas-fir seedlings was found in several more nurseries in Oregon and Washington. Infection and mortality was confined primarily to low or poorly drained areas of nursery beds. Several species of *Phytophthora* were identified on diseased roots. Application of the fungicide metalaxyl seemed to help reduce losses.

Douglas-fir top blight, causes unknown, is increasing in extent in western Oregon and Washigton bare root nurseries. No controls have been developed. An intensive effort is underway to identify causes and preventative treatments.

DOUGLAS-FIR NEEDLE MIDGE, *Contarinia* spp., caused light defoliation of Douglas-fir in eastern Oregon on the Wallowa-Whitman National Forest. Defoliation decreased from 38,810 acres in 1982 to 1,670 acres in 1983. The defoliation is not expected to cause serious damage on the infested trees.

EXTENT OF DOUGLAS-FIR NEEDLE MIDGE IN 1983
BY REPORTING AREA AND INTENSITY OF INFESTATION

REPORTING AREA	NUMBER OF INFESTATION CENTERS	INTENSITY OF INFESTATION LIGHT	MODERATE	HEAVY	TOTAL
		ACRES			
TOTAL WALLOWA-WHITMAN N.F.	4	1670	0	0	1670
TOTAL OREGON	4	1670	0	0	1670
TOTAL FOR REGION	4	1670	0	0	1670

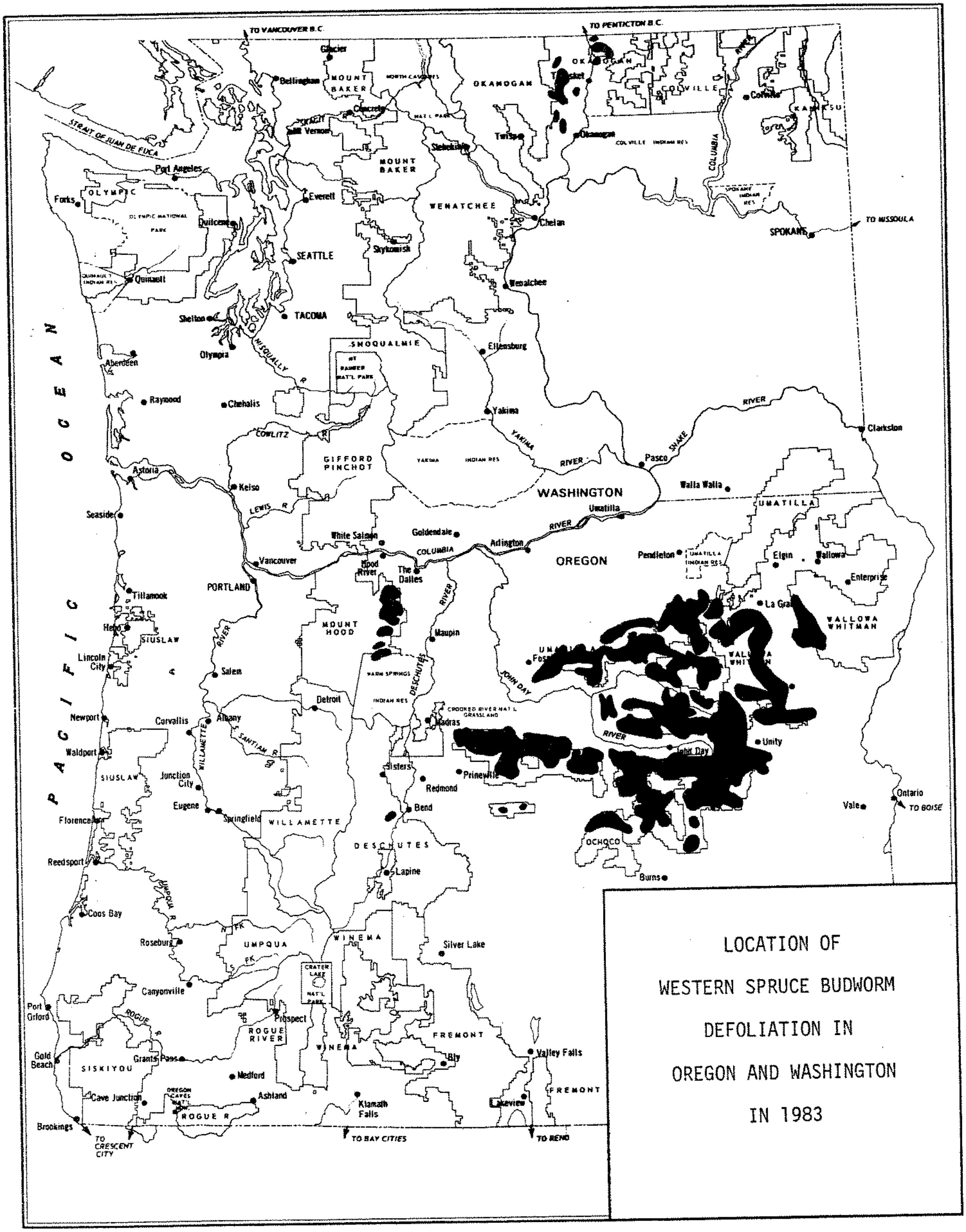
GYPSY MOTH, *Lymantria dispar* (L.) - In Washington, adults were trapped in eight counties. Egg mass surveys are beginning in November where adults were trapped. In 1983, approximately 1,400 acres were treated with three applications of *B.t.* Each treatment was 1 week apart. The spraying greatly diminished the gypsy moth populations.

In Oregon, 50 acres were treated with Sevin 805 from the ground. To date, no gypsy moth activity has been reported in the treatment area. There were, however, multiple moth catches in West Portland, Gresham, around Salem and Corvallis, and single catches around Eugene, Lowell, and Ashland. Oregon's egg mass survey has just started. All discoveries to date have been in urban and suburban situations.

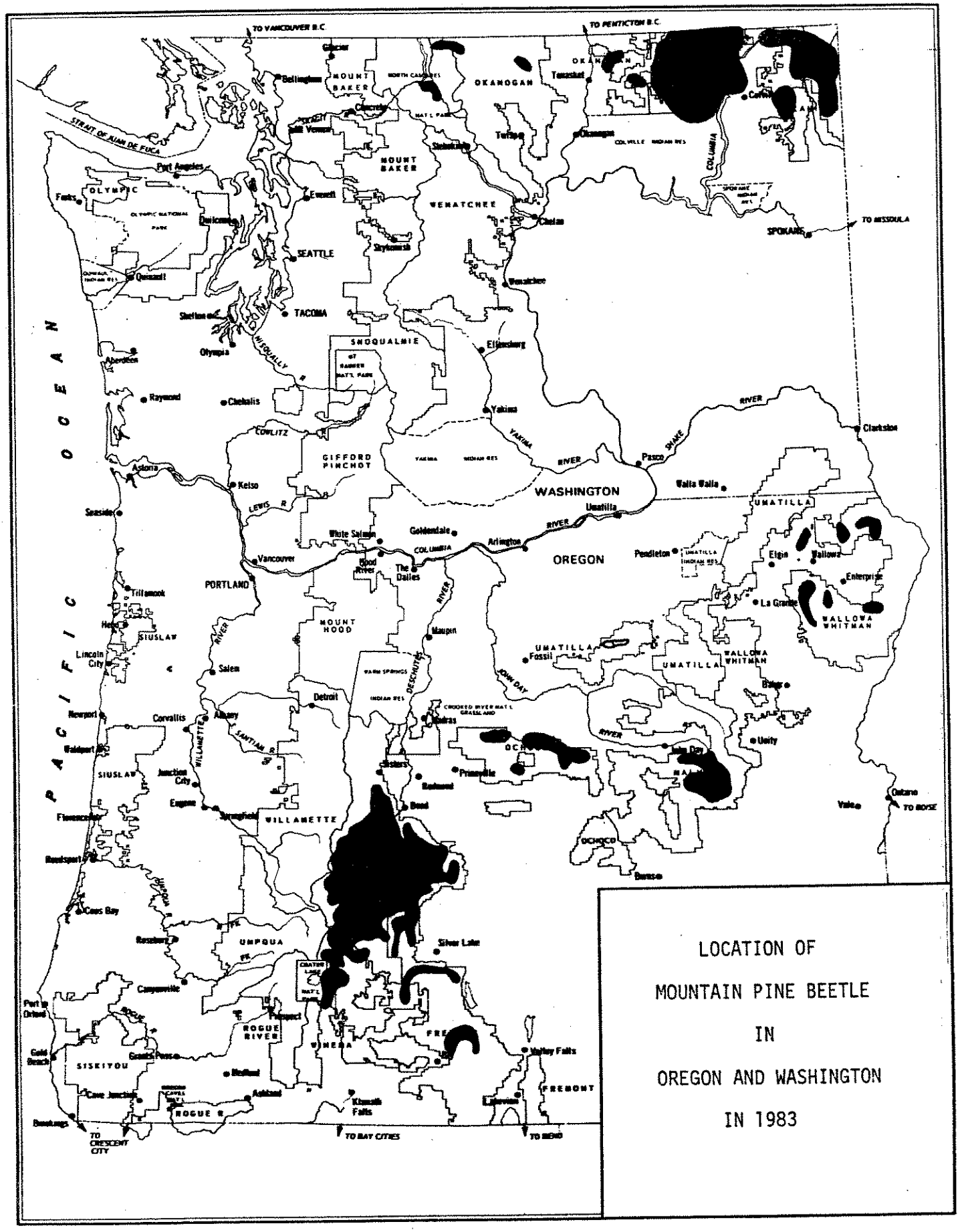
LARCH CASEBEARER, *Colephora laricella* - Populations are again increasing after collapsing in 1981. The parasite population also appears to be increasing.

CONE AND SEED INSECTS - As was expected, the 1983 Douglas-fir cone crop west of the Cascades was very light. Late frost seriously affected cone crops in producing seed orchards throughout the Willamette Valley this spring. Numerous western conifer seedbug, *Leptogiossus occidentalis* Heideman, were reported feeding on western white pine cones at the Dorena Tree Improvement Center near Cottage Grove, Oregon.

SATIN MOTH, *Leucoma (Stilpnotia) salicis* - This insect was found defoliating aspen in the vicinity of the Okanogan National Forest, Washington, and on the Mount Hood National Forest, Oregon.



LOCATION OF
WESTERN SPRUCE BUDWORM
DEFOLIATION IN
OREGON AND WASHINGTON
IN 1983



LOCATION OF

MOUNTAIN PINE BEETLE

IN

OREGON AND WASHINGTON

IN 1983