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PACIFIC NORTHWEST
FOREST PEST CONDITIONS
DURING 1982

Compiled by

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

INSECT CONDITIONS - 1982

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Bark beetle-caused damage was slightly reduced in 1982. On the other hand, defoliators appear to be increasing over the Region.

Douglas-fir beetle-caused damage has been in a steady decline for the last 5 years. This year's decline is due to major reductions in activity west of the Cascade Mountains.

Mountain pine beetle populations are static; however, losses remain high, with over 24.4 million cubic feet of timber lost on 789,490 acres.

Fir engraver and western pine beetle activity were little changed over the last year.

The western spruce budworm continues to increase in Oregon where 1.5 million acres were defoliated.

The Douglas-fir tussock moth is again at a higher population level with some minor defoliation in northeast Washington. Elsewhere, tussock moth populations are showing what appears to be the start of a decline in population densities.

For the first time since insect conditions record keeping began in 1947, the pine butterfly has caused some defoliation in Central Oregon.

TREND OF MAJOR INSECT PESTS
IN
PACIFIC NORTHWEST 1978-82

Insect	Acres Infested				
	1978	1979	1980	1981	1982
Douglas-fir Beetle	46,450	37,480	13,650	16,610	10,980
Mt. Pine Beetle	1,910,240	1,225,710	1,086,250	715,270	789,490
Western Pine Beetle	241,930	110,800	52,970	23,600	21,030
Fir Engraver	41,410	25,710	18,550	12,680	6,850
Flatheaded Borer	13,360	1,040	0	0	0
W. Spruce Budworm	198,950	406,660	132,430	342,690	1,540,000
D-F Tussock Moth	10,080	0	0	0	1,550
Pine Butterfly	0	0	0	0	2,650
Larch Looper	0	0	0	60,550	23,590

FOREST PEST CONDITIONS
PACIFIC NORTHWEST
1981-1982

Pest	Acres Infested	
	1981	1982
Douglas-fir Beetle	16,610	10,980
Engelmann Spruce Beetle	0	5,250
Douglas-fir Engraver	1,650	0
Fir Engraver	12,680	6,850
Mt. Pine Beetle	715,270	789,490
Pine Engraver	16,150	7,410
Western Pine Beetle	23,600	21,030
W. Spruce Budworm	342,690	1,540,000
Douglas-fir Tussock Moth	0	1,550
Larch Looper	60,550	23,590
Pine Butterfly	0	2,650
Blackheaded Budworm	320	0
Needle Miners	0	1,490
Balsam Woolly Aphid	1,750	570
Modoc Budworm	0	4,950
Spruce Aphid	2,750	0
Douglas-fir Needle Midge	0	38,810
Black Pine Needle Scale	0	2,970
	<u>1,198,970</u>	<u>2,457,590</u>

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TREND OF FOREST PEST CONDITIONS
OREGON
1981-1982

Pest	Acres Infested	
	1981	1982
D-F Beetle East Side	4,570	5,270
D-F Beetle West Side	4,550	30
Douglas-fir Engraver	160	0
Fir Engraver	7,310	2,710
Mt. Pine Beetle (P.P.)	67,630	55,580
Mt. Pine Beetle (S.P.)	860	0
Mt. Pine Beetle (W.W.P.)	950	1,820
Mt. Pine Beetle (L.P.P.)	522,080	615,390
Pine Engraver	15,100	5,940
Western Pine Beetle	7,790	8,090
Black Pine Needle Scale	0	2,970
Pine Butterfly	0	2,650
Needle Miners	0	1,490
W. Spruce Budworm	312,640	1,530,730
Modoc Budworm	0	4,950
Douglas-fir Needle Midge	0	38,810
	<u>946,150</u>	<u>2,276,430</u>

TREND OF FOREST PEST CONDITIONS
WASHINGTON
1981-1982

	Pest	Acres Infested	
		1981	1982
5	D-F Beetle East Side	5,970	4,860
	D-F Beetle West Side	1,520	820
6	Spruce Beetle	0	5,250
	Douglas-fir Engraver	1,490	0
7	Fir Engraver	5,370	4,140
	Mt. Pine Beetle (P.P.)	25,870	11,420
8	Mt. Pine Beetle (W.W.P.)	57,830	30,150
	Mt. Pine Beetle (L.P.P.)	40,050	75,090
9	Mt. Pine Beetle (W.B.P.)	0	40
	Pine Engraver	1,050	1,470
10	Western Pine Beetle	15,810	12,940
	Balsam Woolly Aphid	1,750	570
11	Spruce Aphid	400	0
	Larch Looper	60,550	23,590
12	W. Spruce Budworm	30,050	9,270
	Bear Damage	4,790	0
13	Douglas-fir Tussock Moth	0	1,550
		<u>252,500</u>	<u>181,160</u>

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SUMMARY OF 1982 BARK BEETLE INFESTATIONS BY OWNERSHIPS
IN OREGON AND WASHINGTON
(EXCLUDING FPS)

INSECT SPECIES	FOREST SERVICE (COM.FOR.LANDS)		OTHER FEDERAL (BLM & BIA)		DEDICATED LANDS (WILD & NAT. PARKS)		STATE AND PRIVATE LANDS		TOTAL ALL FOREST LANDS	
	ACRES	MCF	ACRES	MCF	ACRES	MCF	ACRES	MCF	ACRES	MCF
Douglas-fir Beetle, East Side DF	4360	198.16	160	11.20	250	8.61	500	29.77	5270	247.74
Douglas-fir Beetle, West Side DF	10	1.48	0	0.00	0	0.00	20	1.48	30	2.96
Fir Engreaver	2040	22.59	70	1.84	0	0.00	600	6.83	2710	31.26
Mtn. Pine Beetle, Ponderosa Pine	32940	534.66	1190	4.20	140	2.15	21310	346.96	55580	885.97
Mtn. Pine Beetle, W. White Pine	620	14.30	1190	43.70	0	0.00	10	.43	1820	58.43
Mtn. Pine Beetle, Lodgepole Pine	526550	17661.71	8420	174.69	18130	346.45	62290	1837.74	615390	20020.59
Western Pine Beetle	6950	117.01	380	7.19	20	.72	740	22.58	8090	147.50
Total Oregon	573470	18549.91	11410	242.82	18540	357.93	85470	2243.79	688890	21394.45
Douglas-fir Beetle, East Side DF	1930	102.21	470	16.12	10	.55	2450	111.52	4860	230.40
Douglas-fir Beetle, West Side DF	430	43.97	0	0.00	0	0.00	390	35.33	820	79.30
Engelmann Spruce Beetle	660	16.82	0	0.00	4530	942.24	60	1.61	5250	960.67
Fir Engreaver	1470	40.17	990	14.80	360	8.96	1320	52.74	4140	116.67
Mtn. Pine Beetle, Ponderosa Pine	570	3.52	2170	7.33	0	0.00	8680	53.42	11470	64.27
Mtn. Pine Beetle, W. White Pine	20820	980.67	710	16.61	3130	97.24	5490	238.53	30150	1333.05
Mtn. Pine Beetle, Lodgepole Pine	63570	1867.09	2500	86.53	6250	82.95	2770	21.79	75090	2058.36
Mtn. Pine Beetle, Whitebark Pine	20	.08	0	0.00	0	0.00	20	.39	40	.47
Western Pine Beetle	3270	75.08	4890	110.96	0	0.00	4780	136.89	12940	322.93
Total Washington	92740	3129.61	11730	252.35	14280	1131.94	25960	652.22	144710	5166.12
Total for Region	666210	21679.52	23140	495.17	32820	1489.87	111430	2896.01	833600	26560.57

1 East Side Douglas-fir Beetle, *Dendroctonus pseudotsugae* Hopk.

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3 Damage caused by the Douglas-fir beetle east of the Cascade Mountains remains
 4 at a low level. Acres infested changed little from the 10,540 mapped in 1981
 5 to 10,130 in 1982. Most of the damage occurred on the Umatilla and Wallowa-
 6 Whitman National Forests and the Warm Springs Indian Reservation. Damage is
 7 concentrated in areas defoliated by the Douglas-fir tussock moth during the
 8 1972-74 outbreak and in western spruce budworm-defoliated areas in more recent
 9 years.

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11 EXTENT OF DOUGLAS-FIR BEETLE, EAST SIDE DF
 12 IN 1982 BY REPORTING AREA AND VOL. LOSS

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13 REPORTING AREA	12 INFESTATION CENTERS		13 NUMBER OF TREES	13 VOLUME MCF
	13 NUMBER	13 ACRES		
14 Total Deschutes NF	1	30	20	2.580
15 Total Malheur NF	1	10	5	.540
Total Ochoco NF	1	20	5	.540
16 Total Umatilla NF	28	970	195	21.370
Total Wallowa-Whitman NF	100	4060	2081	210.370
17 Total Winema NF	1	10	5	.600
Total Warm Springs IR	6	160	70	11.200
18 Total Central Oregon	1	10	5	.540
19 Total Oregon	139	5270	2386	247.740
20 Total Okanogan NF	22	740	365	41.300
Total Umatilla NF	7	270	60	6.570
21 Total Wenatchee NF	37	990	417	42.230
Total Colville NF	53	2150	1030	112.400
22 Total Colville IR	10	400	135	13.390
Total Northeast WA	6	180	66	8.400
23 Total Glenwood	5	130	56	6.110
24 Total Washington	140	4860	2129	230.400
25 Total for Region	279	10130	4515	478.140

1 West Side Douglas-fir Beetle, *Dendroctonus pseudotsugae* Hopk.

2
 3 Douglas-fir beetle activity west of the Cascade Mountains in Oregon and
 4 Washington was again at a very low level in 1982. Damaged and dead timber
 5 from the 1980 eruption of Mount St. Helens has caused few beetle population
 6 increases of significance. There was an increase of beetle attacks on Douglas-
 7 firs apparently damaged by mudflows along the Muddy River southeast of Mount
 8 St. Helens. These trees were salvaged in summer 1982 before brood emergence.
 9 Observations will continue as long as damaged timber remains suitable for the
 10 beetle.

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 13 EXTENT OF DOUGLAS-FIR BEETLE, WEST SIDE DF
 14 IN 1982 BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Mt. Hood NF	2	30	10	2.960
Total Oregon	2	30	10	2.960
Total Gifford Pinchot NF	40	820	413	79.300
Total Washington	40	820	413	79.300
Total for Region	42	850	423	82.260

1 Spruce Beetle, *Dendroctonus rufipennis* (Kirby)

2

3 Activity of the spruce beetle caused low level to moderate losses in Engelmann
 4 spruce stands of north-central Washington. Heaviest losses were found on the
 5 Okanogan National Forest. Minor losses occurred on the Wenatchee and Colville
 6 National Forests.

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EXTENT OF SPRUCE BEETLE
 IN 1982 BY REPORTING AREA AND VOL. LOSS

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REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Okanogan NF	9	4530	18120	942.240
Total Wenatchee NF	5	140	80	3.680
Total Colville NF	6	580	295	14.750
Total Washington	20	5250	18495	960.670
Total for Region	20	5250	18495	960.670

Fir Engraver, *Scolytus ventralis* (Lec.)

Fir engraver activity decreased in Washington, both in acreage infested and volume lost. A major part of this tree mortality occurred on the east slope of the Cascade Range in Washington. In Oregon, most damage occurred in the Blue Mountains on the Umatilla National Forest.

EXTENT OF FIR ENGRAVER
IN 1982 BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Deschutes NF	2	20	10	.860
Total Fremont NF	2	50	10	.800
Total Malheur NF	1	40	5	.250
Total Mt. Hood NF	2	20	10	.920
Total Ochoco NF	2	40	10	.500
Total Umatilla NF	29	1600	270	13.500
Total Wallowa-Whitman NF	6	110	30	1.080
Total Winema NF	11	740	150	11.260
Total Warm Springs IR	2	70	20	1.840
Total Central Oregon	1	20	5	.250
Total Oregon	58	2710	520	31.260
Total Gifford Pinchot NF	13	360	300	27.320
Total Okanogan NF	21	880	535	27.820
Total Umatilla NF	8	310	50	2.500
Total Wenatchee NF	37	990	415	22.930
Total Colville NF	15	270	240	12.000
Total Colville IR	4	110	70	3.500
Total Yakima IR	16	880	205	11.300
Total Glenwood	11	340	186	9.300
Total Washington	125	4140	2001	116.670
Total for Region	183	6850	2521	147.930

1 Mountain Pine Beetle, *Dendroctonus ponderosae*, Hopk.

2

3 Mountain pine beetle losses continued throughout Oregon and Washington. This
4 beetle is still the most destructive tree killer in the Pacific Northwest.
5 Region-wide, 24.4 million cubic feet of timber were killed on 789,490 acres.
6 Tree mortality continued to decline in older areas of the outbreak in north-
7 east Oregon, primarily because the most suitable host material already has been
8 killed. Mortality totaled in excess of 24 million cubic feet, with 20 million
9 of this volume being in lodgepole pine stands in Oregon. Greatest damage in
10 Washington occurred on the Colville National Forest where 1.6 million cubic
11 feet of lodgepole pine were killed.

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EXTENT OF MTN. PINE BEETLE, LODGEPOLE PINE
IN 1982 BY REPORTING AREA AND VOL. LOSS

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REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Deschutes NF	482	307070	740659	11110.410
Total Fremont NF	151	58950	187869	2630.170
Total Malheur NF	183	43170	62361	873.060
Total Mt. Hood NF	3	170	35	.490
Total Ochoco NF	66	16930	39340	472.080
Total Umatilla NF	94	25390	24952	349.340
Total Umpqua NF	8	3610	7500	82.510
Total Wallowa-Whitman NF	265	60200	98459	1280.110
Total Winema NF	168	93880	217525	3045.360
Total Warm Springs IR	25	4970	9325	149.200
Total Central Oregon	3	1050	1990	27.860
Total Oregon	1448	615390	1390015	20020.590
Total Gifford Pinchot NF	4	4380	9815	157.040
Total Okanogan NF	70	8720	7710	107.940
Total Umatilla NF	12	1210	380	5.320
Total Wenatchee NF	29	3050	4025	52.360
Total Colville NF	195	55090	117752	1648.530
Total Colville IR	13	1400	5660	79.240
Total Yakima IR	4	1100	560	7.290
Total Northeast WA	2	140	40	.640
Total Washington	329	75090	145942	2058.360
Total for Region	1777	690480	1535957	22078.950

EXTENT OF MTN. PINE BEETLE, PONDEROSA PINE
IN 1982 BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Deschutes NF	56	7980	11545	196.320
Total Fremont NF	191	19310	12167	194.670
Total Malheur NF	55	2830	1095	10.950
Total Mt. Hood NF	1	10	5	.060
Total Ochoco NF	32	1230	370	3.700
Total Umatilla NF	67	3570	1985	87.340
Total Wallowa-Whitman NF	117	11250	7580	326.170
Total Winema NF	49	7930	3825	61.200
Total Warm Springs IR	11	960	210	3.360
Total Central Oregon	21	510	220	2.200
Total Oregon	600	55580	39002	885.970
Total Gifford Pinchot NF	5	750	400	5.600
Total Okanogan NF	57	4010	1770	17.700
Total Umatilla NF	1	80	10	.440
Total Wenatchee NF	48	2640	1935	21.380
Total Colville NF	36	570	380	3.800
Total Colville IR	40	1200	545	5.450
Total Yakima IR	12	970	170	1.880
Total Northeast WA	10	210	203	2.440
Total Glenwood	11	990	465	5.580
Total Washington	220	11420	5878	64.270
Total for Region	820	67000	44880	950.240

EXTENT OF MTN. PINE BEETLE, W. WHITE PINE
IN 1982 BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Deschutes NF	15	590	150	12.900
Total Mt. Hood NF	3	40	15	1.830
Total Warm Springs IR	13	1190	475	43.700
Total Oregon	31	1820	640	58.430
Total Gifford Pinchot NF	23	830	295	35.730
Total Okanogan NF	59	4660	1295	143.800
Total Wenatchee NF	288	14850	7315	607.610
Total Colville NF	76	8240	5396	480.340
Total Yakima IR	13	710	200	16.610
Total Northeast WA	9	770	390	40.560
Total Glenwood	3	90	80	8.400
Total Washington	471	30150	14971	1333.050
Total for Region	502	31970	15611	1391.480

EXTENT OF MTN. PINE BEETLE, WHITEBARK PINE
IN 1982 BY REPORTING AREA AND VOL. LOSS

REPORTING AREA	INFESTATION CENTERS		NUMBER OF TREES	VOLUME MCF
	NUMBER	ACRES		
Total Gifford Pinchot NF	1	20	5	.080
Total Wenatchee NF	1	20	30	.390
Total Washington	2	40	35	.470
Total for Region	2	40	35	.470

1 Pine Engraver, *Ips pini* (Say)

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Activity of the pine engraver continues at a low level. Regionwide, 7,410 acres were infested in 1982. Most of the activity was centered on the Fremont and Ochoco National Forests in Oregon.

EXTENT OF PINE ENGRAVER
IN 1982 BY REPORTING AREA

REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DAMAGE
Total Wallowa-Whitman NF	2	90
Total Fremont NF	46	3000
Total Malheur NF	5	130
Total Mt. Hood NF	3	140
Total Ochoco NF	11	1430
Total Umatilla NF	1	10
Total Wallowa-Whitman NF	1	30
Total Winema NF	6	750
Total Warm Springs IR	1	20
Total Central Oregon	8	340
Total Oregon	84	5940
Total Okanogan NF	6	490
Total Wenatchee NF	10	460
Total Colville IR	4	60
Total Yakima IR	7	290
Total Northeast WA	2	170
Total Washington	29	1470
Total for Region	113	7410

1 Western Pine Beetle, *Dendroctonus brevicomis* LeConte

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3 Tree mortality caused by the western pine beetle continued at a low level. In
 4 1982, infested area was 21,030 acres with 470.4 MCF of timber killed. Current
 5 damage is greatest on the Deschutes, Fremont and Ochoco National Forests in
 6 Oregon and on the Okanogan and Wenatchee National Forests and Yakima Indian
 7 Reservation in Washington. Some activity has occurred on all Forests and
 8 Indian Reservations within the host range.

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10 EXTENT OF WESTERN PINE BEETLE
 11 IN 1982 BY REPORTING AREA AND VOL. LOSS

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13 REPORTING AREA	12 INFESTATION CENTERS		12 NUMBER OF TREES	12 VOLUME MCF
	13 NUMBER	13 ACRES		
14 Total Deschutes NF	23	1360	170	28.900
Total Fremont NF	47	2620	350	55.120
15 Total Malheur NF	13	880	90	12.920
Total Ochoco NF	19	1850	125	19.700
16 Total Umatilla NF	3	60	20	2.550
Total Wallowa-Whitman NF	6	300	30	4.320
17 Total Winema NF	14	670	105	17.590
Total Warm Springs IR	8	350	40	6.400
18 Total Oregon	133	8090	930	147.500
19 Total Gifford Pinchot NF	3	220	60	7.270
20 Total Okanogan NF	40	2060	350	39.680
Total Umatilla NF	1	30	5	.640
21 Total Wenatchee NF	55	3300	1255	101.780
Total Colville NF	16	660	191	20.470
22 Total Colville IR	13	580	125	12.650
Total Yakima IR	24	4310	840	98.310
23 Total Glenwood	17	1780	401	42.130
24 Total Washington	169	12940	3227	322.930
25 Total for Region	302	21030	4157	470.430

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Balsam Woolly Aphid, *Adelges piceae* (Ratz)

Balsam woolly aphid infestations continued to decrease in 1982. Number of visible infestation centers decreased from 18 in 1981 to 6 in 1982. In 1982, 570 acres were mapped on the Gifford Pinchot and Wenatchee National Forests in Washington.

EXTENT OF BALSAM WOOLLY APHID
IN 1982 BY REPORTING AREA

REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
Total Gifford Pinchot NF	5	560
Total Wenatchee NF	1	10
Total Washington	6	570
Total for Region	6	570

1 Black Pine Leaf Scale, *Nuculaspis californica* (Coleman)

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3 This common pest caused moderate defoliation on 2,970 acres of the Winema
4 National Forest in southern Oregon.
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7 EXTENT OF BLACK PINE LEAF SCALE
8 IN 1982 BY REPORTING AREA

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10 REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
11 Total Winema NF	4	2970
12 Total Oregon	4	2970
13 Total for Region	4	2970

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

Populations continue to increase in northeast Washington where 1,550 acres of light to heavy defoliation occurred in 1982. Pheromone-baited traps also reflect the higher populations. All surveys, however, indicate that if serious defoliation does occur, it will not be before 1984 or 1985. Surveys elsewhere in the Region show a static to a downward trend in population levels.

EXTENT OF DOUGLAS-FIR TUSSOCK MOTH
IN 1982 BY REPORTING AREA

REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
Total Colville NF	10	1420
Total Colville IR	1	130
Total Washington	11	1550
Total for Region	11	1550

1 Western Spruce Budworm, *Choristoneura occidentalis* (Freeman)

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3 In Region 6, the area of visible defoliation increased from 342,690 acres in
4 1981 to 1,540,000 acres in 1982. Activity in Oregon was on the Malheur,
5 Umatilla, Ochoco, and Wallowa-Whitman National Forests and adjacent State,
6 private and Bureau of Land Management property. In Washington, small centers
7 of infestations continued on the Okanogan, Wenatchee, and Colville National
8 Forests.

9

10 During 1982, 178,000 acres were treated with carbaryl and acephate in eastern
11 Oregon.

12

13 Egg masses sampled from 411 plots in eastern Oregon indicate continued wide-
14 spread defoliation in 1982. An environmental analysis of the budworm infesta-
15 tion is being conducted.

16

17 Budworm populations appear to be decreasing in Washington with detected defo-
18 liation decreasing from 30,000 acres in 1981 to 9,000 in 1982.

19

20 Modoc Budworm, *Choristoneura viridis* (Freeman)

21

22 Moderate defoliation by this budworm occurred on true firs on the Fremont and
23 Winema National Forests in southern Oregon. This outbreak is expected to
24 continue into 1983.

25

1 EXTENT OF SPRUCE BUDWORM
2 IN 1982 BY REPORTING AREA

3 REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
4 Total Malheur NF	358	729360
5 Total Ochoco NF	86	137980
Total Umatilla NF	203	450490
6 Total Wallowa-Whitman NF	102	175600
Total Central Oregon	21	37300
7 Total Oregon	770	1530730
8 Total Okanogan NF	23	7720
9 Total Wenatchee NF	5	1030
Total Colville NF	3	520
10 Total Washington	31	9270
11 Total for Region	801	1540000

13
14 EXTENT OF MODOC BUDWORM
15 IN 1982 BY REPORTING AREA

17 REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
18 Total Fremont NF	6	1760
Total Winema NF	1	3190
19 Total Oregon	7	4950
20 Total for Region	7	4950

1 Pine Butterfly, *Neophasia menapia* (Felder and Felder)

2

3 Pine butterfly damage on ponderosa pine was reported in three pockets in
4 Oregon on the Ochoco National Forest and the Warm Springs Indian Reservation.
5 This is the first report of defoliation in Oregon and Washington by this insect
6 since the annual aerial surveys began in 1947.

7

8

9 EXTENT OF PINE BUTTERFLY
10 IN 1982 BY REPORTING AREA

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12 REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
13 Total Ochoco NF	2	2630
Total Warm Springs IR	1	20
14 Total Oregon	3	2650
15 Total for Region	3	2650

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1 Larch Casebearer, *Coleophora laricella* (Hbn.)

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3 Populations levels of larch casebearer varied over the region during 1982.
4 Some heavy defoliation occurred in the Central Oregon Cascades. In other larch
5 stands in Oregon, populations were generally at a lower level than last year
6 with light to moderate defoliation. In northeast and north-central Washington,
7 the population level is also low. Defoliation was generally light. Popula-
8 tions in the Cascade Mountains of Washington caused very light defoliation in
9 1982.

10
11 Larch Looper, *Semiothisa sexmaculata sexmaculata* (Packard)

12
13 The larch looper defoliated 23,590 acres of larch and associated species on
14 the Colville National Forest and adjoining State and private lands. The defo-
15 liation declined from 60,550 acres in 1981 and occurred in the same general
16 area where defoliation was detected since 1979. The infestation is expected
17 to continue its decline.

18
19 EXTENT OF LARCH LOOPER IN 1982
20 BY REPORTING AREA

21

22 REPORTING AREA	NUMBER OF INFESTATION CENTERS	ACRES OF DEFOLIATION
23 Colville NF	40	23,590
24 Total Washington	40	23,590
25 Total for Region	40	23,590

26

1 Gypsy Moth, *Lymantria dispar* (L.)

2

3 In Washington, adults have been now trapped in 22 locations in 6 counties.
4 Results of eradication by trapping-out at several localities in the Puget
5 Sound area ranged from completely successful to the opposite, where capture
6 rates in survey traps increased in 1982.

7

8 In Oregon, approximately 10 square miles were aeriaily sprayed with Sevin 4-Oil®
9 in a very successful eradication attempt in South Salem. Traps captured moths
10 in Albany, Corvallis, North Salem, Lowell, and Turner. Some of these captures
11 were single individuals and were thought to be "hitchhikers" into the area.
12 Capture rates in the Portland area were much lower this past year.

13

14 Douglas-fir Needle Midge, *Contarinia* sp.

15

16 Moderate defoliation of Douglas-fir in eastern Oregon was caused by one or more
17 species of *Contarinia*. On the Wallowa-Whitman and Umatilla National Forests,
18 38,810 acres of defoliation were recorded on the aerial detection survey.

19

20 Needle Miner, *Coleotechnites* sp.

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22 A species of *Coleotechnites* caused defoliation on 1,490 acres of ponderosa
23 pine on the Winema National Forest in southern Oregon.

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Cone and Seed Insects

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West of the Cascades Douglas-fir cone crops were generally good and abundant pollen insured high seed set. Cone and seed insect impact on viable seed in producing seed orchards ranged from 4 to 16 percent. Douglas-fir cone gall midge, *Contarinia oregonensis* Foote, Douglas-fir cone scale midge, *Contarinia washingtonensis* Johnson and *Camptomyia pseudotsugae* Hedlin and Johnson, caused minor damage in the orchards surveyed. Douglas-fir seed chalcid, *Megastigmus spermotrophus* Wachtl, at one orchard reduced filled seed yield by 16 percent. Both the Douglas-fir cone moth, *Barbara colfaxiana* (Kearfott), and fir coneworm, *Dioryctria abietivorella* (Grote) caused very little cone and seed damage.

Cone production in 1983 is expected to be light; as a result, cone and seed insect impact will seriously regulate viable seed production in seed orchards and natural stands.

DISEASE CONDITIONS - 1982

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Forest Diseases

Tree root disease incidence is becoming more evident in Pacific Northwest forests. The number of people trained to recognize root diseases is steadily increasing, thereby improving the detection effort. However, the actual incidence of root diseases is increasing, often in direct response to human activity. Laminated root rot, Armillaria root rot, annosus root and butt rot, and black stain root disease repeatedly have been found causing damage, especially throughout the mixed-conifer types of the Cascade Range from California to Canada. Root disease losses on commercial forest lands of all ownerships in Oregon and Washington in 1982 are estimated to be 130.6 million cubic feet. Annual mortality losses due to all root diseases have been estimated at 0.1 percent of the total white and grand fir volume in Oregon and Washington.

Laminated root rot, caused by *Phellinus weirii*, is estimated to have removed about 5 percent of the West Side Douglas-fir type from production. The acreage of infestation is probably closer to 10 percent. Damage is also severe in some grand and white fir stands.

1 Annosus root and butt rot caused by *Fomes annosus* is responsible for exten-
2 sive losses in many partially-cut white fir stands in southern and eastern
3 Oregon. Infection levels of as high as 77 percent of all white fir have been
4 found in stands on the Fremont National Forest. This disease appears to be
5 particularly severe in stands that were formerly dominated by ponderosa pine
6 but have been invaded by white fir as a result of strict fire exclusion poli-
7 cies. Most loss is due to outright tree mortality.

8

9 Armillaria root rot continues to appear throughout the region. The most seri-
10 ous losses to this disease occur on the East Side. Serious losses on the West
11 Side are usually confined to stressed stands; for example, off-site plantings.
12 Plots have been established to monitor the effects of precommercial thinning
13 in Armillaria-infected Douglas-fir, Shasta red fir and ponderosa pine stands.
14 Direct control through stump and root removal is being practiced in severely
15 infected eastern Washington stands.

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1 Numerous new findings of black stain root disease have been made in second-
2 growth Douglas-fir stands. In southwestern Oregon, where this is by far the
3 most commonly encountered disease in Douglas-fir plantations, it appears to be
4 especially damaging where disturbances have occurred, especially in roadside
5 Douglas-firs cut back by mechanical choppers. A recently completed survey
6 shows that 38 percent of the thinned and 9 percent of the unthinned Douglas-
7 fir plantations on the Siskiyou National Forest have some black stain. A sur-
8 vey in progress indicates that a greater proportion of plantations have disease
9 and infection centers and losses are greater on the Coos Bay District, Bureau
10 of Land Management. There is beginning to be concern about the apparent
11 association between occurrence of this disease and precommercial thinning.

12

13 Phytophthora root rot caused, by *Phytophthora lateralis*, continues to cause
14 widespread mortality of Port-Orford cedar in southwestern Oregon. The USDA
15 Forest Service is evaluating the possibility of screening Port-Orford cedars
16 for resistance and/or tolerance to the disease.

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1 Dwarf mistletoes are all too common pathogens in most of the Pacific North-
2 west. However, as stand management intensifies, losses due to this group of
3 disease-causing organisms are declining. Dwarf mistletoes caused an estimated
4 loss of 132.7 million cubic feet of timber in Oregon and Washington in 1982.
5 A model for estimating present volume and projected reductions in yield, along
6 with economic analysis, has been developed for dwarf mistletoe-infected Central
7 Oregon lodgepole pine. Programs are written for popular handheld programmable
8 calculators. Growth loss and associated mortality is high in some dwarf mis-
9 tletoe-infected grand fir stands in Central Oregon. A Forest Pest Management
10 evaluation revealed trees with high live crown ratios and low dwarf mistletoe
11 ratings grew the fastest over the last 25 years, while trees with low live
12 crown ratios and high dwarf mistletoe ratings grew the slowest. Other organ-
13 isms besides dwarf mistletoe, such as *Cytospora abietis*, fir engravers, and
14 root diseases also contribute to tree mortality.

15

16 White pine blister rust continues to be the most important disease of western
17 white and sugar pines. Annual losses to white pine and sugar pine blister
18 rust in western Oregon are estimated to be 15 million cubic feet. Gains are
19 being made through identification of resistant trees and ratings of sites for
20 infection hazard. Hazard rating programs developed for popular handheld
21 programmable calculators predict the blister rust infection hazard and disease
22 losses for specific sites.

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1 Stem decay fungi still consume enormous volumes of wood with the majority of
2 losses occurring in old-growth stands. Significant losses are occurring in
3 younger stands as wounding of residual trees during stand entries both acti-
4 vates dormant infections and creates excellent infection courts. Programs for
5 handheld calculators have been developed to estimate percentages of infection
6 and decay in white and grand fir understories, two of the most defective spe-
7 cies in the Region.

8

9 The incidence of foliage diseases was much reduced in 1982 compared to 1981.
10 An outbreak of *Pucciniastrum epilobii*, the cause of fir-fireweed rust, was
11 observed on several hundred acres of Pacific silver fir in the northern
12 Washington Cascades. Little damage is anticipated.

13

14 Swiss needle cast, caused by *Phaeocryptopus gaumanni*, continues to plague
15 Douglas-fir Christmas tree growers in western Oregon and Washington. Many
16 growers are spraying fungicides to prevent infection. The disease is also
17 widespread in Douglas-fir stands dedicated to timber production, but damage is
18 usually inconsequential. Managers of Douglas-fir seed orchards are becoming
19 concerned about the effects of defoliation on cone and seed production. Some
20 seed orchards have been sprayed with fungicides to prevent infection.

21

22 Dutch elm disease has only been reported in Walla Walla County in Washington.
23 In Oregon, the disease is found in Nyssa, Ontario, and Union Counties.

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1 The incidence of ponderosa pine needle blight, caused by *Elytroderma deformans*,
2 remains high around Republic, Washington, and in the Maury Mountains south of
3 Prineville, Oregon. A biological evaluation done this year identified a high
4 level of *E. deformans* infection being present in a 520-acre survey block near
5 Winthrop, Washington.

6

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

12

13 *Fusarium* root rot, caused by *Fusarium oxysporum* f. sp. *pini*, resulted in
14 mortality of sugar pine seedlings at the J. Herbert Stone Nursery. Further
15 losses occurred when 2-0 seedlings with root decay were culled. *F. oxysporum*
16 was also responsible for the death of Douglas-fir seedlings in one area of the
17 Wind River Nursery that had been inadequately fumigated.

18

19 Beds of 3-0 western redcedar browsed by deer at the Wind River Nursery suffered
20 dieback caused by a fungus identified tentatively as *Phoma prunicola*. Up to
21 as high as 47 percent of the seedlings were damaged in five seedlots. Damage
22 incidence increased with seedling stocking density and decreased with increas-
23 ing seedling top size.

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1 Other diseases observed at the Wind River Nursery included gray mold (*Botrytis*
2 *cinerea*) and larch needle cast (*Meria laricis*). Gray mold occurred in 2-0
3 noble fir beds that had not received preventative sprays; damage incidence in-
4 creased with seedling density. All 2-0 larch were infected with *Meria lari-*
5 *cis*.

6

7 Root galling occurred on a small proportion of incense cedar seedlings at the
8 J. Herbert Stone Nursery. The causal agent has been identified tentatively as
9 the bacterium *Agrobacterium tumefaciens*, which is the cause of crown gall.
10 *A. tumefaciens* probably is introduced through root pruning wounds.

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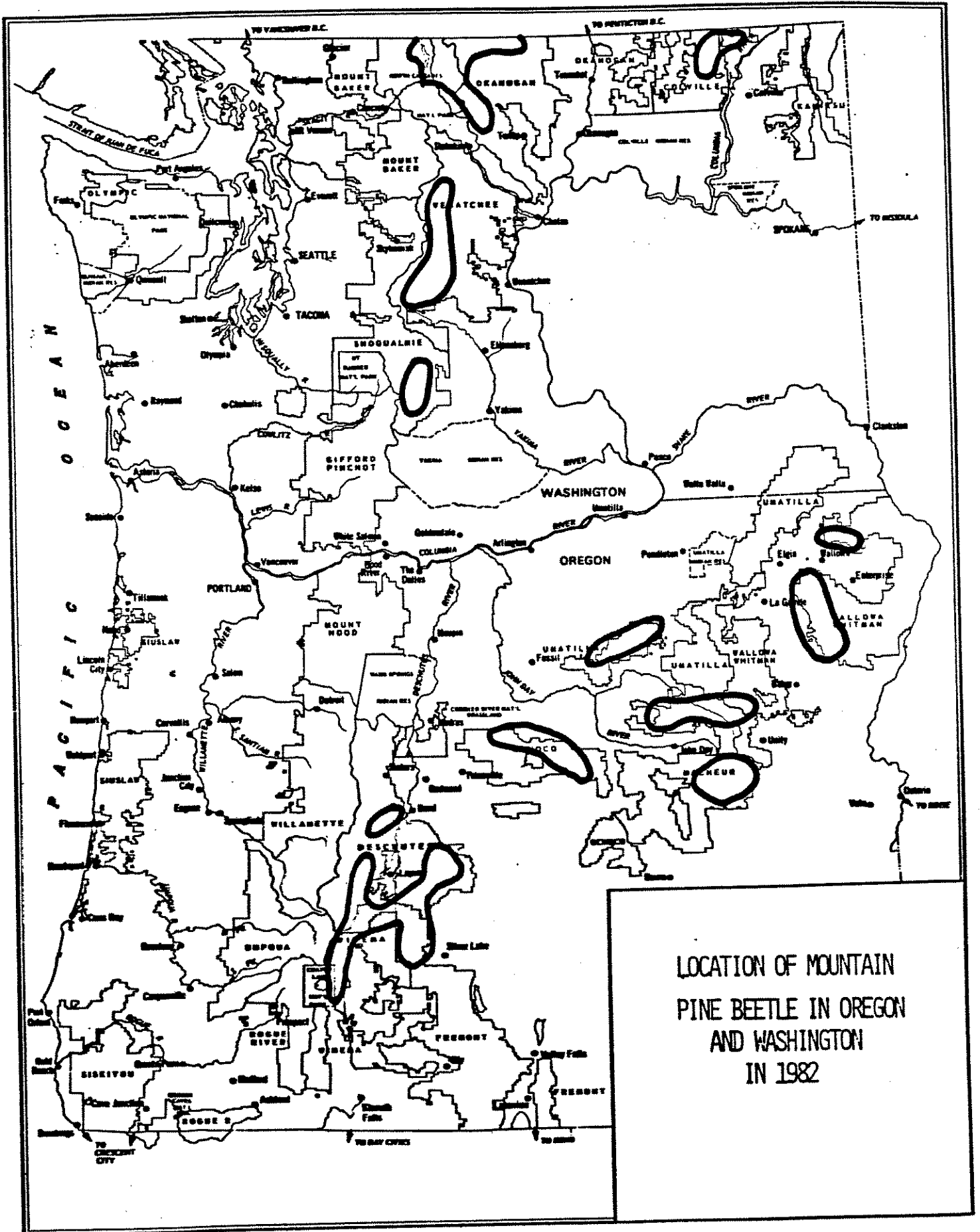
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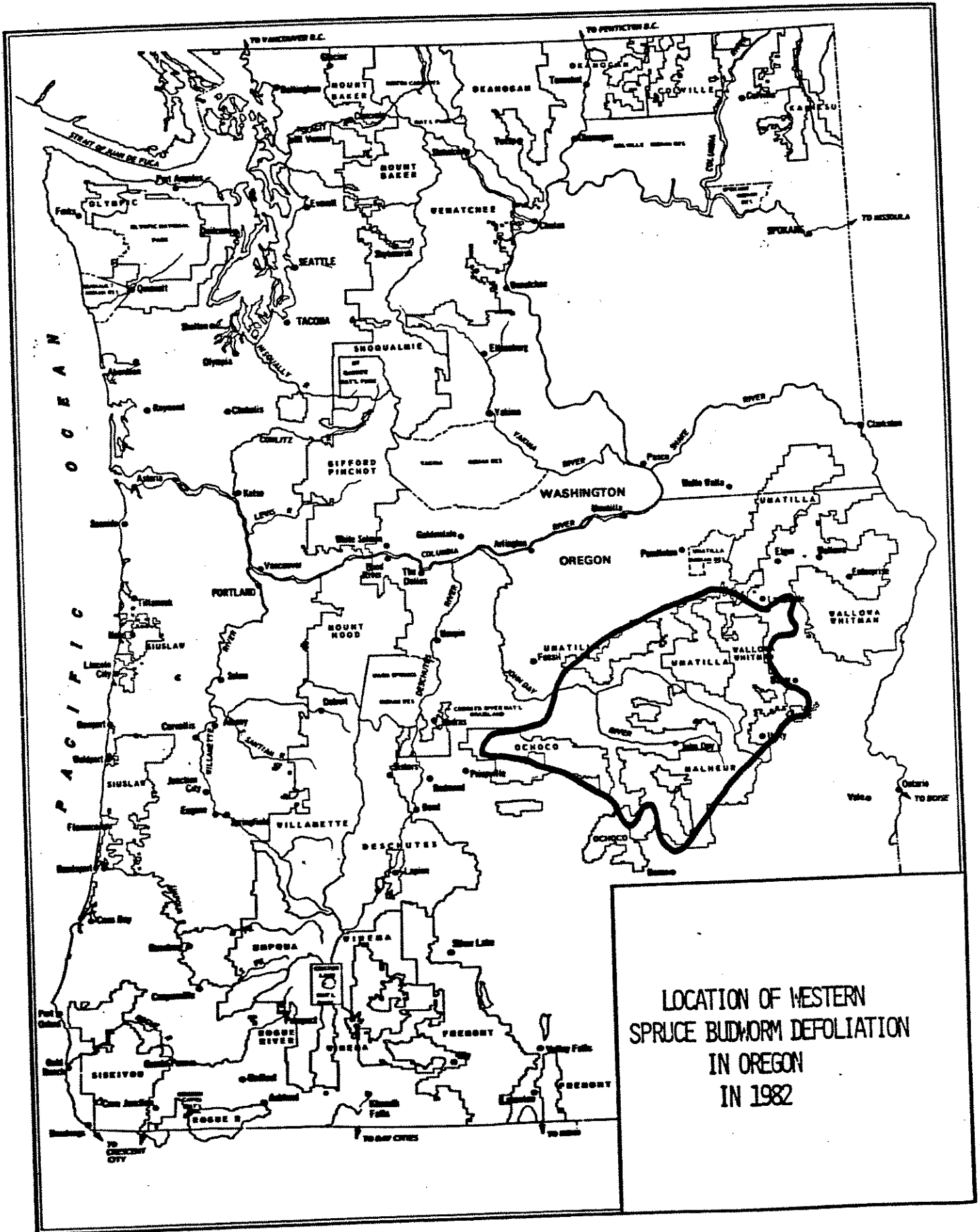
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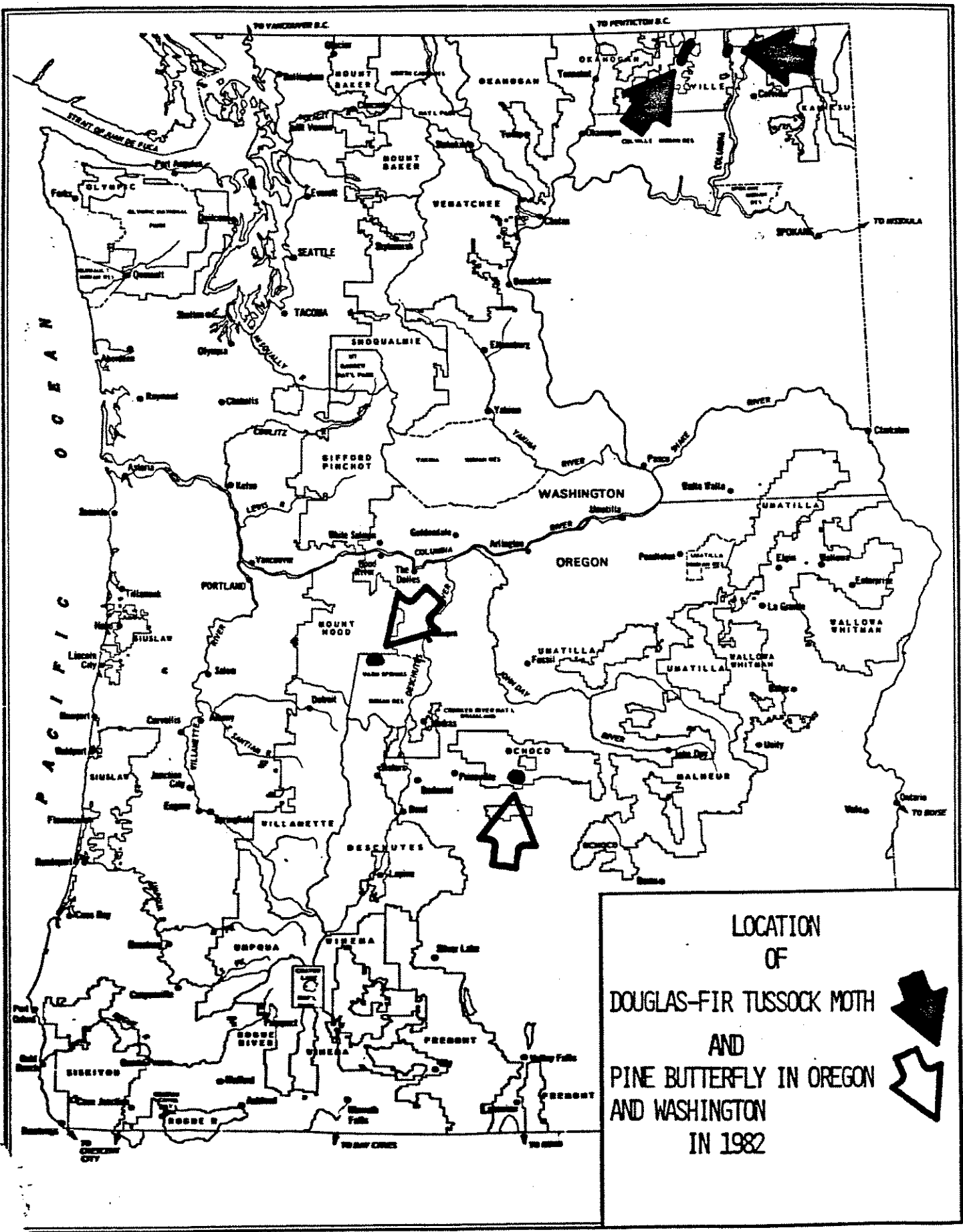
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LOCATION OF MOUNTAIN
 PINE BEETLE IN OREGON
 AND WASHINGTON
 IN 1982





LOCATION
OF
DOUGLAS-FIR TUSSOCK MOTH
AND
PINE BUTTERFLY IN OREGON
AND WASHINGTON
IN 1982