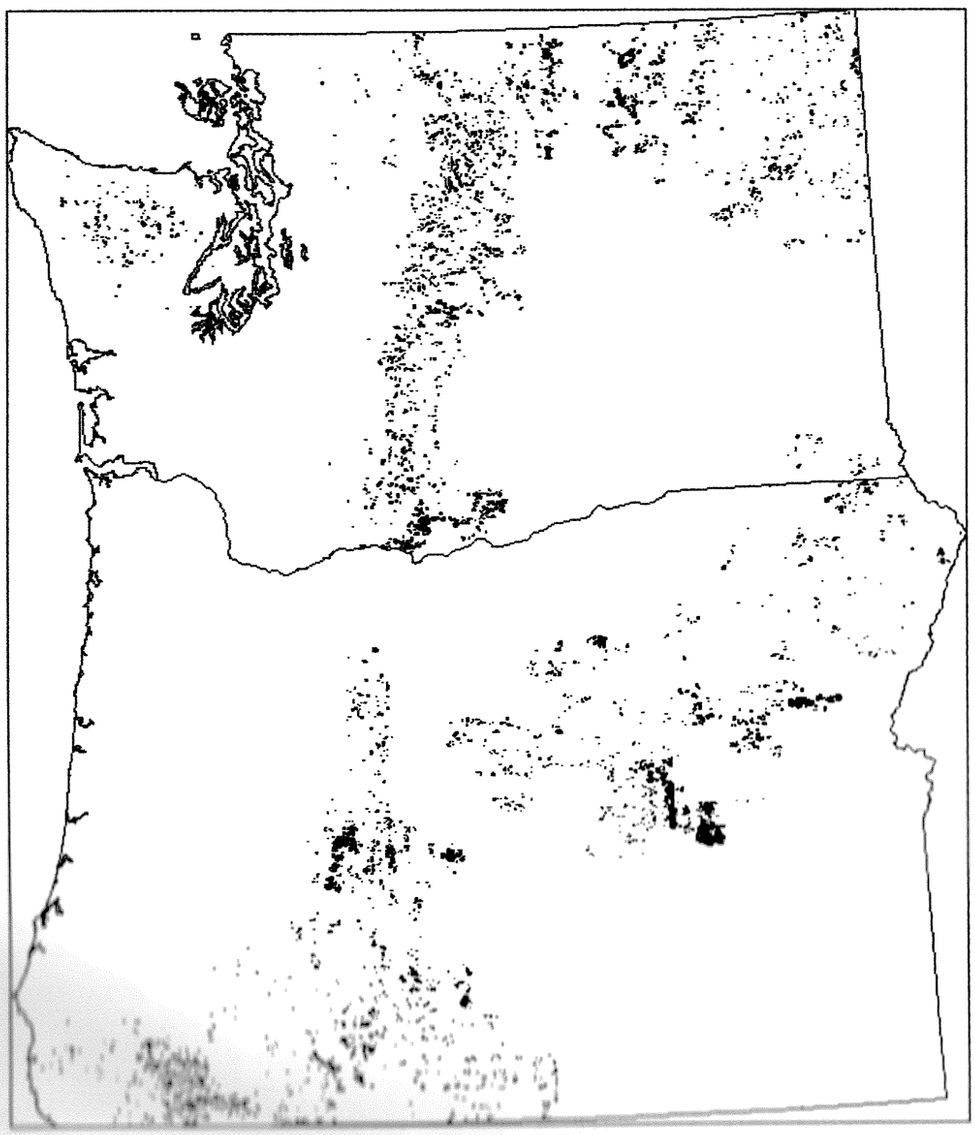
REGION SIX MOUNTAIN PINE BEETLE, 1991



1991 CONDITIONS REPORT
PCIFIC NORTHWEST REGION

Summary
Part II
Disease Conditions in the Pacific Northwest Region
Prepared by Ellen Michaels Goheen

Root diseases are among the most serious pests in forests of the Pacific Northwest. They are diseases of the site and thus may intensify from one rotation to the next and are difficult to control. Reports of root disease incidence increase as use of stand examinations to detect root disease becomes more common. Approximately 8% of the acreage of commercial forest land on all ownerships is affected by root disease. It is estimated that production is reduced by 50% on those affected acres. Laminated root rot is the most serious disease of forests west of the Cascade crest and accounts for 60% of all root disease losses. Armillaria root disease, annosus root disease, and black stain root diseases all cause significant damage in some locations. East of the Cascade crest Armillaria root disease, annosus root disease, and laminated root rot are common. Mortality was severe in drought-stricken stands where root diseases and bark beetles work together in pest complexes. Reports of black stain root disease affecting pines on eastside sites are increasing. Port-Orford-cedar root rot causes damage in southwestern Oregon.

The impact from dwarf mistletoes changes little from year to year, however long term losses in timber values in unmanaged stands are great. Annual losses are estimated at 131 million cubic feet. Douglas-fir dwarf mistletoe is the most serious disease in stands east of the Cascades.

Damage from needle diseases increased as microclimatic conditions conducive to disease were present during the spring and early summer of 1991.

Pacific Northwest Region Diseases
Prepared by Ellen Michaels Goheen

1991

Disease	Host	Location	Remarks
STEM AND BRANCH DISEASES			
Dwarf mistletoes *Arceuthobium* spp.	Various conifers	Oregon, Washington	The impact from dwarf mistletoes in Washington and Oregon changes little from year to year, however, long term losses in unmanaged stands are great. Dwarf mistletoes were present on 9.5 million acres and caused an estimated loss of 131 million cubic feet of timber. All conifer species are affected to some degree. Most of the damage occurred east of the Cascade crest. Douglas-fir dwarf mistletoe was the most damaging tree disease in stands east of the Cascades, infecting 42% of the host type. Western larch dwarf mistletoe causes serious damage in northcentral Washington.
Branch cankers *Phomopsis* spp. *Sclerophoma* spp. *Dermea* spp. *Cytospora* spp.	Douglas-fir True firs	Oregon Washington	Top, branch, and whole tree mortality associated primarily with drought and secondarily with complexes of canker fungi occurred in plantations and pole-size stands located in southwestern portion of the region. Canker fungi were found in association with true fir dwarf mistletoe throughout the Region.
Stem decay *Phellinus pini* *Echinodontium tinctorium* Others	Various conifers	Oregon, Washington	Stem decay fungi still consume enormous volumes of wood. Most losses occurred in younger stands of thin-bark species, which are susceptible to wounding during stand entries. Wounding of residual trees both activates dormant infections and creates excellent infection courts.
White pine blister rust *Cronartium ribicola*	Sugar pine, western white pine	Oregon, Washington	White pine blister rust caused mortality throughout the range of western white pine and sugar pine and prevented the management of susceptible trees on high

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Armillaria root disease *Armillaria ostoyae*	Various conifers	Oregon, Washington	The most serious losses to this disease occurred east of the Cascades in mixed-conifer stands. In localized areas, ponderosa pine was seriously damaged. Losses west of the Cascades were usually confined to stressed stands, such as off-site plantings. Planting or favoring tolerant or resistant species was recommended as a control measure.
Laminated root rot *Phellinus weirii*	Douglas-fir, Grand fir, White fir	Oregon, Washington	Laminated root rot was the most serious forest tree disease west of the Cascades in Washington and Oregon. Where the disease occurs Douglas-fir and true fir productivity has been reduced 50 percent. West of the Cascade Mountains, an estimated 8 percent of the Douglas-fir and true firs have been taken out of production. East of the Cascades, grand and white fir stands experienced severe damage. Tolerant, resistant, and immune species were favored or planted in an effort to suppress this disease.
Tomentosus Root Rot *Inonotus tomentosus*	Engelmann Spruce	Washington Oregon	Tomentosus root and butt was found commonly in stands dominated by mature and older Engelmann spruce. It causes root and butt rot, predisposing trees to windthrow or collapse. Trees are seldom killed outright. Windthrow associated with this disease maintains endemic populations of spruce beetle at higher elevations.
Port-Orford-cedar root disease *Phytophthora lateralis*	Port-Orford-cedar	Southwestern Oregon	Port-Orford-cedar root disease causes mortality of Port-Orford-cedar in southwestern Oregon. Disease control strategies are being analyzed for all projects where Port- Orford-cedar may be affected. These strategies are reducing disease spread on a project by project basis. Resistance to the fungus is being tested using artificial inoculation techniques.
	Pacific Yew	Southwestern Oregon	*Phytophthora lateralis* has been isolated from dead Pacific yew on the Illinois Valley, Gold Beach, and Powers Ranger

			Districts of the Siskyou National Forest. Occurrence of the fungus on Pacific yew has thus far been limited to locations where Port-Orford-cedar and yew are intermingled within the same project areas. Monitoring is ongoing to determine the range and severity of the disease on yew.
VASCULAR WILTS AND DECLINES			
Black Stain Root Disease *Ophiostoma wageneri* [*Leptographium wageneri*]	Douglas-fir Ponderosa pine	Oregon Washington	In southwestern Oregon, black stain root disease was the most commonly encountered disease in Douglas-fir plantations. It was particularly damaging where disturbances such as road building or soil compaction had occurred or where roadside Douglas-fir was cut by mechanical choppers. Losses were also greater on tractor-logged sites, which have greatersoil compaction, than on cable-logged sites. Black stain root disease on ponderosa pine has been observed with increasing frequency in eastern Oregon. Numerous centers have ben identified over a large area of the Burns RD, Malheur NF.
FOLIAGE DISEASES			
Dothistroma needle blight *Mycosphaerella pini* [*Dothistroma septospora* (=*Dothistroma pini*)]	Douglas-fir, lodgepole pine, ponderosa pine	Oregon, Washington	The incidence of several foliage diseases increased during 1991 due to favorable microclimatic conditions. Larch needle cast was prevalent throughout northeastern Washington. Swiss needle cast was common in Douglas-fir plantations in northwestern Oregon. Elytroderma needle cast was common on pine sites in northcentral Washington. Infection levels and damage were most severe in the 3500 feet elevation zone.
Douglas-fir needle cast *Rhabdocline pseudotsugae*			
Swiss needle cast *Phaeocryptopus gaeumannii*			
Elytroderma disease *Elytroderma deformans*			
Larch needle cast *Meria laricis*			
NURSERY DISEASES			
Damping-off	Most conifers	Oregon Washington	Loss of seedlings before and shortly after emergence averaged approximately 1% in

Summary
Part II
Insect Conditions in the Pacfic Northwest Region
Prepared by Iral Ragenovich

Five years of less-than-normal precipitation continued in parts of the Pacific Northwest Region. However, insect activity, such as bark beetles, often associated with drought conditions, decreased throughout the Region. The only significant increase in insect activity was western spruce budworm defoliation.

Douglas-fir beetle, western pine beetle, Englemann spruce beetle, and Ips engraver beetle activity all decreased significantly. Fir engraver beetle activitiy decreased in the Blue Mountains of Northeastern Orgeon, but increased significantly in the Central and South Central forests of Oregon. Mountain pine beetle activity continued to decrease in lodgepole pine, but increased in second-growth ponderosa pine, especially on the Ochoco, Umatilla, and Malheur National Forests.

Western spruce budworm defoliation increased in all infested areas of both Washington and Oregon. Acres of defoliation were up from 2.34 million acres in 1990, to 4.7 million acres in 1991. No suppression projects for western spruce budworm were conducted on Federal lands. One small project using carbaryl and Bacillus thuringiensis was done on private land near Goldendale, WA. About, 195,000 acres of National Forest and private lands are planned for treatment with B.t. in 1992.

Larval sampling and pheromone trapping of Douglas-fir tussock moth in northeast Oregon (Wallowa-Whitman National Forest) indicated potential outbreak areas in 1991. A supression project using B.t. was conducted on 116,000 aces was conducted on federal and some state and private land on the Wallowa-Whitman National Forest. Pheromone and population sampling indicate no major areas of population outbreak in 1992, and no treatment is planned.

Only a small ground treatment was done for gypsy moth in Lake Oswego, OR. Pheromone trap catches during the summer and fall identified potential gypsy moth populations near Cave Junction, OR, as well as in several places around the Puget Sound, and in Colville, WA. Small erdication projects are planned for these areas.

Asian gypsy moth egg masses were found on Siberian grain ships docking in Northwest ports. As a result, trapping was increased around major ports in both Washington and Oregon, as well as along the coast and the Columbia River. There were confirmed Asian gypsy moth captures in Tacoma, WA and one catch in Portland, OR. Positive catches were also made in Vancouver, B.C. Unlike the European form, the female Asian gypsy moth is capable of flying long distances, and the larvae have a much broader range of host species, including larch. As a result, there is potential for significant impact to Northwest forests, and economics. Eradication projects are planned for the areas where there were confirmed Asian gypsy moth trap catches.

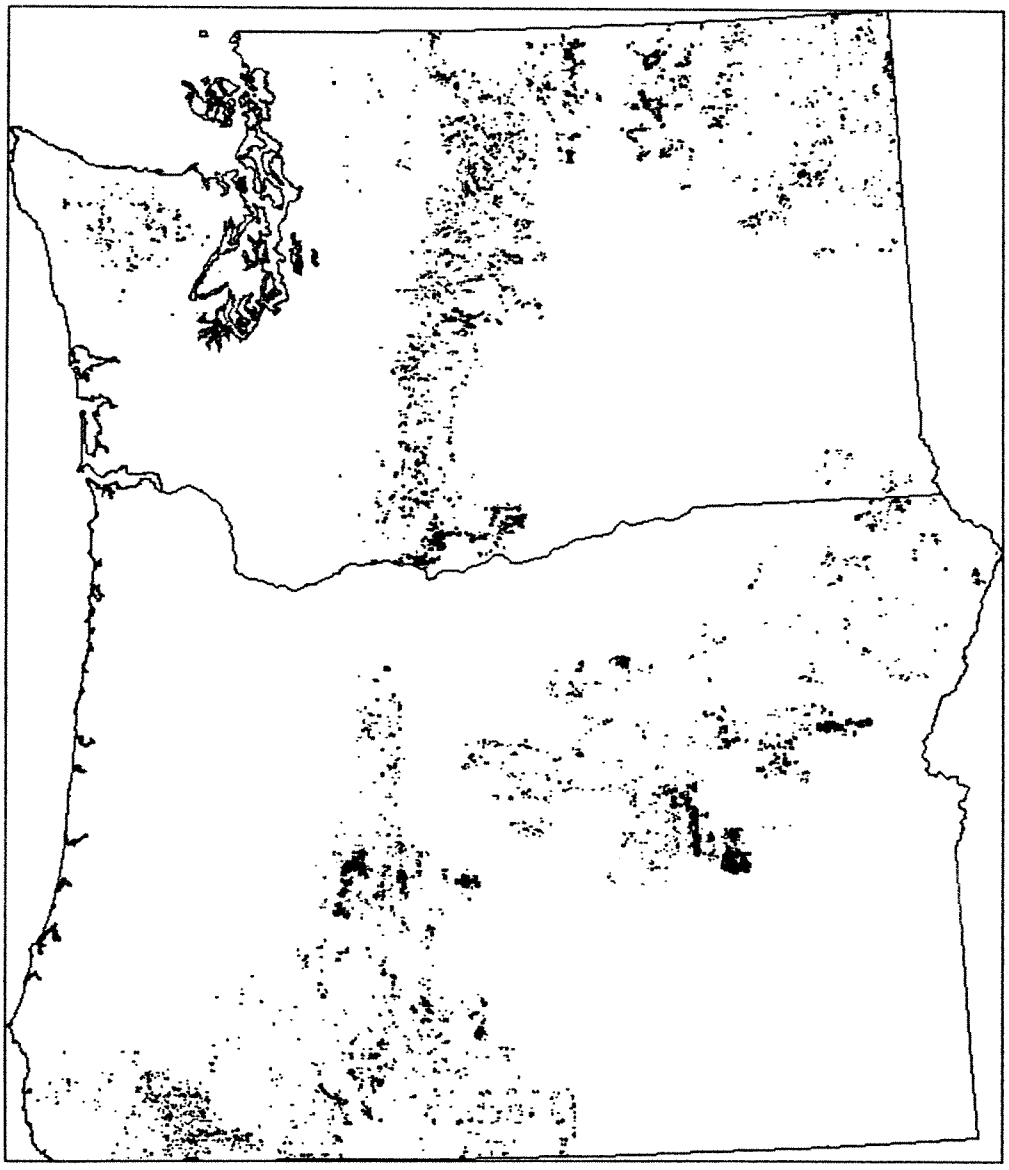
Forest health has become a significant issue in the Pacific Northwest. In 1991, the Wallowa-Whitman, Umatilla, and Malheur National Forests completed a detailed forest health assessment.

PACIFIC NORTHWEST REGION INSECTS
Prepared by Iral Ragenovich

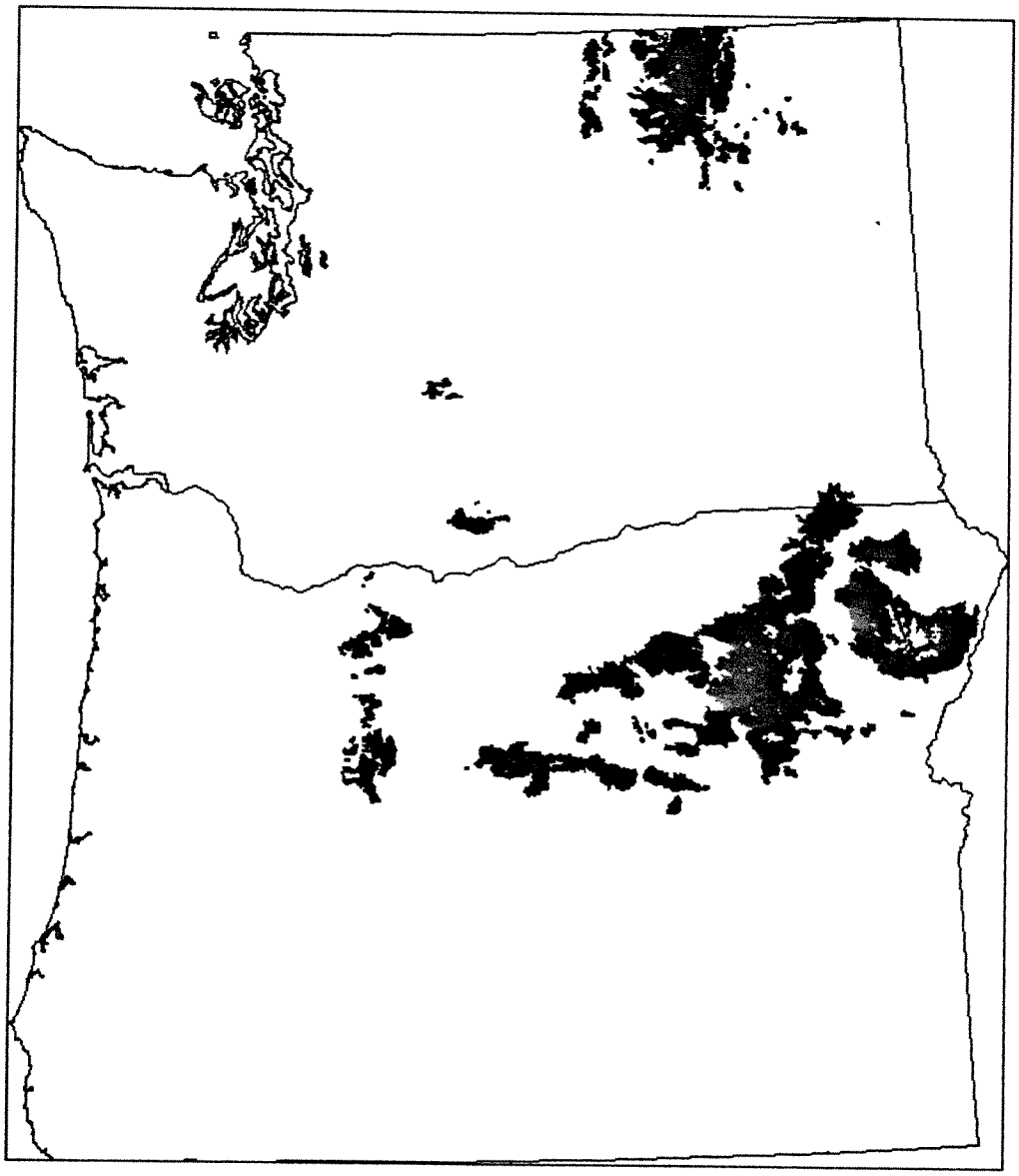
Insect	Host	Location	Remarks
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Oregon, Washington	Douglas-fir beetle damage decreased significantly throughout the Region. Affected acres decreased from 263,000, in 1990 to 103,021 acres in 1991. The greatest damage in 1991 was on the Wallowa-Whitman NF. In WA, Douglas-fir beetle decreased in all areas, except the Colville NF, where damage remained at about the same level as the previous year.
Douglas-fir tussock moth *Orgyia pseudotsugata*	True firs,	Eastern Oregon	An aerial suppression project was conducted on 116,000 acres on the Wallowa-Whitman National Forest using the biological insecticide *Bacillus thuringiensis* (*B.t.*) at a rate of 24 BIU's per acre. Early warning trapping and population sampling in the summer and fall of 1991 indicated that only localized population increases could occur, but no Regionwide outbreak was expected in 1992. Defoliation was not observed from the air because Douglas-fir tussock moth populations occured in areas with western spruce budworm defoliation.
Fir engraver beetle *Scolytus ventralis*	True firs	Oregon, Washington	Fir engraver activity increased in Oregon and Washington. Total losses occurred on 544,527 acres (32.3 million cubic feet) as compared with 524,800 acres (17.9 million cubic feet) in 1990. Fir engraver caused mortality decreased in the Blue Mountains of Northeastern Oregon. Most notable increases occured on the Ochoco, Rogue River, Freemont, and Winema NF's in Central and South Central Oregon.

Gypsy moth (European form) *Lymantria dispar*	Conifers, Hardwoods	Oregon, Washington	Only 23 Gypsy moths were trapped in Oregon in 1991. A 500 acre eradication project is planned near Cave Junction, OR in 1992. In WA, moths were primarily were trapped around the Pudget Sound area, and in Northeast WA near Colville. Two 70 acre projects are planned, one near Colville and one near Mt. Vernon.
Gypsy moth (Asian form) *Lymantria dispar*	Conifer, Hardwoods	Oregon, Washington	Asian gypsy moth egg masses were found on grain ships coming from Siberian ports and arriving in Pacific Northwest ports. Currently, there is an ongoing outbreak of the gypsy moth in the vicinity of the Siberian ports. Trapping was increased around shipping ports and along the Columbia River. Several moths trapped in the Tacoma area, and one moth trapped in Northwest Portland, were identified as the Asian gypsy moth. Steps were taken to initiate an eradication project in both areas. Asian gypsy moths were also trapped in Vancouver, B.C.
Modoc budworm *Choristoneura viridis*	Douglas-fir, True firs	Southern Oregon	No Modoc budworm defoliation was detected from the air in 1991.
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole pine, Ponderosa pine, Western white pine, Sugar pine, Jeffry pine	Oregon, Washington	The number of acres (405,055) and the volume affected (8.73 million cubic feet) did not differ significantly from those reported in 1990. Acres and volume decreased in all affected species, except ponderosa pine. Most notable was the continuing decline in the lodgepole pine type. Both acres and volume of ponderosa pine affected almost doubled. In 1991 there were 226,547 acres as compared to 132,029 acres in 1990; and 2.25 million cubic feet as compared to 1.1 million cubic feet in 1990. Forests experiencing the most significant increases were the Ochoco, Malheur, and Umatilla.
Pine engraver beetles *Ips* spp.	Ponderosa pine	Oregon, Washington	Pine engraver activity continued to decline from 8,971 acres in 1990, to 2,651 acres in 1991.

REGION SIX MOUNTAIN PINE BEETLE, 1991_



REGION SIX SPRUCE BUDWORM 1991_



Forest Pest Information System Data Entry Form

Region: 6 Date: 3 /16/92 Name of preparer: J.Johnson/I.Ragenovich

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) (1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
MOUNTAIN PINE BEETLE	OREGON	National Forest	172.4	1,683.0	106.5	
		Other Federal	17.1	515.0	7.2	
		State & Private	60.1	926.0	46.6	
MOUNTAIN PINE BEETLE	WASH.	National Forest	65.1	3,374.0	153.7	
		Other Federal	26.1	829.0	38.1	
		State & Private	64.2	1,401.0	106.6	
DOUGLAS FIR BEETLE	OREGON	National Forest	71.6	10,946.0	105.0	
		Other Federal	2.0	189.0	1.0	
		State & Private	12.4	1,212.0	10.6	
DOUGLAS FIR BEETLE	WASH.	National Forest	8.8	1,066.0	8.4	
		Other Federal	2.0	204.0	1.8	
		State & Private	6.2	794.0	5.9	
FIR ENGRAVER	OREGON	National Forest	262.4	24,548.0	467.1	
		Other Federal	8.2	200.0	2.9	
		State & Private	127.3	3,874.0	85.2	
FIR ENGRAVER	WASH.	National Forest	95.8	2,331.0	43.6	
		Other Federal	3.0	110.0	2.1	
		State & Private	47.7	1,243.0	23.0	
ALL OTHER BARK BEETLES	OREGON	National Forest	15.1	428.0	3.3	
		Other Federal	5.0	160.0	1.8	
		State & Private	18.5	461.0	7.7	

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ALL OTHER BARK BEETLES	WASH.	National Forest	1.6	56.0	0.7	
		Other Federal	13.4	702.0	11.2	
		State & Private	13.2	510.0	9.8	
WESTERN SPRUCE BUDWORM	OREGON	National Forest	2,799.7			
		Other Federal	74.8			
		State & Private	850.4			
WESTERN SPRUCE BUDWORM	WASH.	National Forest	409.1			
		Other Federal	248.0			
		State & Private	370.6			
ROOT DISEASES	OREGON	National Forest	807.0	57,787.0		
		Other Federal	153.0	10,352.0		
		State & Private	740.0	32,562.0		
ROOT DISEASES	WASH.	National Forest	366.0	30,982.0		
		Other Federal	13.0	9,117.0		
		State & Private	882.0	44,321.0		
DWARF MISTLE-TOES	OREGON	National Forest	2,703.0	21,831.0		
		Other Federal	505.0	3,924.0		
		State & Private	2,470.0	12,344.0		
DWARF MISTLE-TOES	WASH.	National Forest	1,137.0	10,124.0		
		Other Federal	43.0	2,979.0		
		State & Private	2,760.0	14,482.0		

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) (1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
OTHER DISEASES	OREGON	National Forest	11,481.0	1,058.0		
		Other Federal	2,175.0	190.0		
		State & Private	10,514.0	599.0		
OTHER DISEASES	WASH.	National Forest	5,194.0	532.0		
		Other Federal	179.0	156.0		
		State & Private	12,538.0	762.0		
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				

Forest Pest Information System
PEST OCCURRENCE NATIONAL SUMMARY

Date Run: 20-NOV-92
Report: FPIRPNAT.00

Calendar Year: 1991

Pest	Area (1000 acres)	Volume (MCF)	Trees Killed (1000)	SPB Spots
DM	23,254.5	168,915.0	1	0
FR	12,797.4	48,455.3	0	0
GM	3,985.5	235,618.3	0	0
MPB	15,819.8	95,496.4	2,222	6
RDS	5,305.0	70,719.4	0	0
SB	.2	9.6	0	0
SPB	10,788.2	48,773.1	1,897	24,162
WSB	7,171.0	13,591.1	0	0
Total:	79,121.6	681,578.2	4,121	24,168

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Prepared by Iral Ragenovich

Five years of less-than-normal precipitation continued in parts of the Pacific Northwest Region. However, insect activity, such as bark beetles, often associated with drought conditions, decreased throughout the Region. The only significant increase in insect activity was western spruce budworm defoliation.

Douglas-fir beetle, western pine beetle, Englemann spruce beetle, and Ips engraver beetle activity all decreased significantly. Fir engraver beetle activitiy decreased in the Blue Mountains of Northeastern Orgeon, but increased significantly in the Central and South Central forests of Oregon. Mountain pine beetle activity continued to decrease in lodgepole pine, but increased in second-growth ponderosa pine, especially on the Ochoco, Umatilla, and Malheur National Forests.

Western spruce budworm defoliation increased in all infested areas of both Washington and Oregon. Acres of defoliation were up from 2.34 million acres in 1990, to 4.7 million acres in 1991. No suppression projects for western spruce budworm were conducted on Federal lands. One small project using carbaryl and Bacillus thuringiensis was done on private land near Goldendale, WA. About, 195,000 acres of National Forest and private lands are planned for treatment with B.t. in 1992.

Larval sampling and pheromone trapping of Douglas-fir tussock moth in northeast Oregon (Wallowa-Whitman National Forest) indicated potential outbreak areas in 1991. A supression project using B.t. was conducted on 116,000 aces was conducted on federal and some state and private land on the Wallowa-Whitman National Forest. Pheromone and population sampling indicate no major areas of population outbreak in 1992, and no treatment is planned.

Only a small ground treatment was done for gypsy moth in Lake Oswego, OR. Pheromone trap catches during the summer and fall identified potential gypsy moth populations near Cave Junction, OR, as well as in several places around the Puget Sound, and in Colville, WA. Small erdication projects are planned for these areas.

Asian gypsy moth egg masses were found on Siberian grain ships docking in Northwest ports. As a result, trapping was increased around major ports in both Washington and Oregon, as well as along the coast and the Columbia River. There were confirmed Asian gypsy moth captures in Tacoma, WA and one catch in Portland, OR. Positive catches were also made in Vancouver, B.C. Unlike the European form, the female Asian gypsy moth is capable of flying long distances, and the larvae have a much broader range of host species, including larch. As a result, there is potential for significant impact to Northwest forests, and economics. Eradication projects are planned for the areas where there were confirmed Asian gypsy moth trap catches.

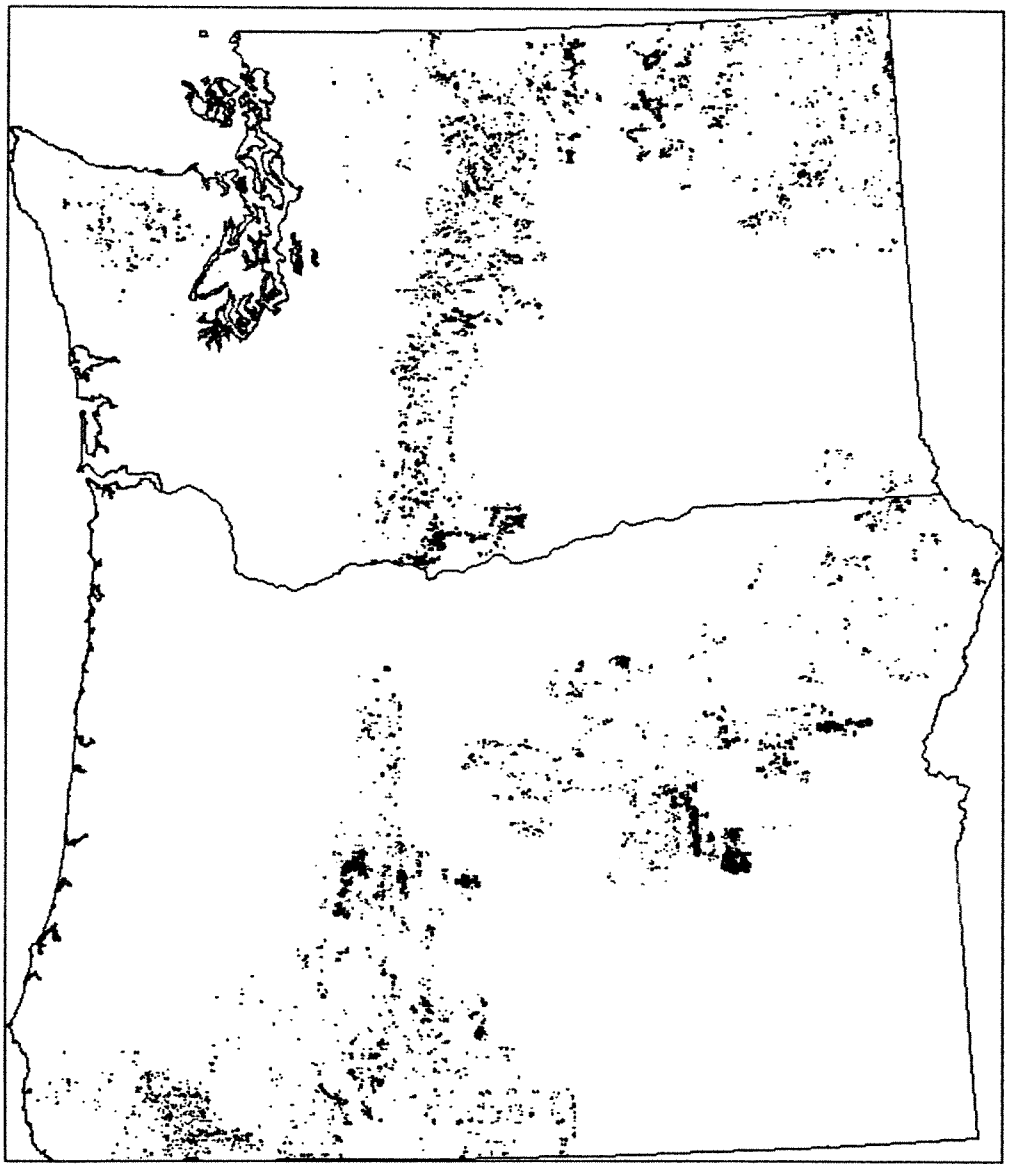
Forest health has become a significant issue in the Pacific Northwest. In 1991, the Wallowa-Whitman, Umatilla, and Malheur National Forests completed a detailed forest health assessment.

PACIFIC NORTHWEST REGION INSECTS
Prepared by Iral Ragenovich

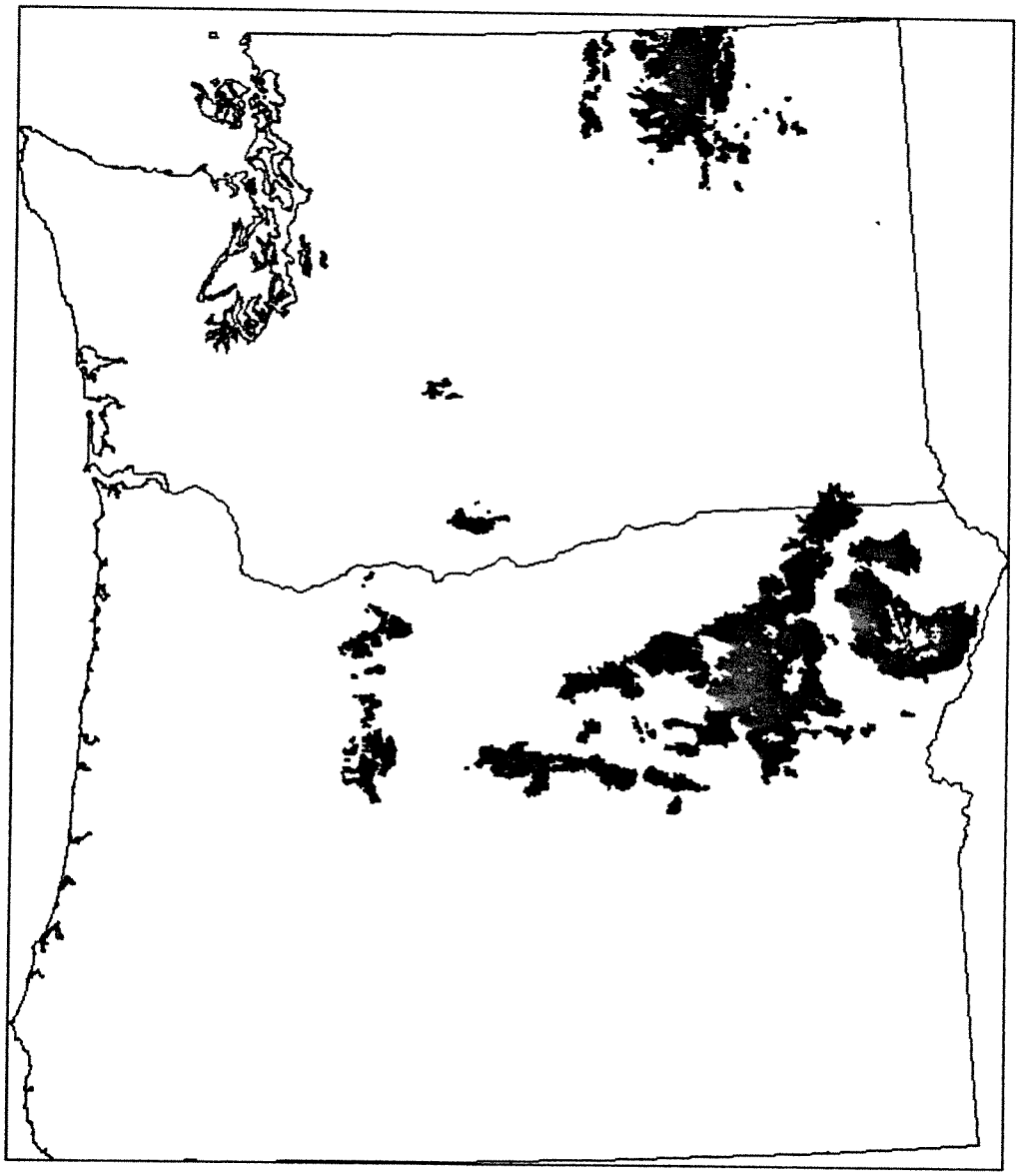
Insect	Host	Location	Remarks
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Oregon, Washington	Douglas-fir beetle damage decreased significantly throughout the Region. Affected acres decreased from 263,000, in 1990 to 103,021 acres in 1991. The greatest damage in 1991 was on the Wallowa-Whitman NF. In WA, Douglas-fir beetle decreased in all areas, except the Colville NF, where damage remained at about the same level as the previous year.
Douglas-fir tussock moth *Orgyia pseudotsugata*	True firs,	Eastern Oregon	An aerial suppression project was conducted on 116,000 acres on the Wallowa-Whitman National Forest using the biological insecticide *Bacillus thuringiensis* (*B.t.*) at a rate of 24 BIU's per acre. Early warning trapping and population sampling in the summer and fall of 1991 indicated that only localized population increases could occur, but no Regionwide outbreak was expected in 1992. Defoliation was not observed from the air because Douglas-fir tussock moth populations occured in areas with western spruce budworm defoliation.
Fir engraver beetle *Scolytus ventralis*	True firs	Oregon, Washington	Fir engraver activity increased in Oregon and Washington. Total losses occurred on 544,527 acres (32.3 million cubic feet) as compared with 524,800 acres (17.9 million cubic feet) in 1990. Fir engraver caused mortality decreased in the Blue Mountains of Northeastern Oregon. Most notable increases occured on the Ochoco, Rogue River, Freemont, and Winema NF's in Central and South Central Oregon.

Gypsy moth (European form) *Lymantria dispar*	Conifers, Hardwoods	Oregon, Washington	Only 23 Gypsy moths were trapped in Oregon in 1991. A 500 acre eradication project is planned near Cave Junction, OR in 1992. In WA, moths were primarily were trapped around the Pudget Sound area, and in Northeast WA near Colville. Two 70 acre projects are planned, one near Colville and one near Mt. Vernon.
Gypsy moth (Asian form) *Lymantria dispar*	Conifer, Hardwoods	Oregon, Washington	Asian gypsy moth egg masses were found on grain ships coming from Siberian ports and arriving in Pacific Northwest ports. Currently, there is an ongoing outbreak of the gypsy moth in the vicinity of the Siberian ports. Trapping was increased around shipping ports and along the Columbia River. Several moths trapped in the Tacoma area, and one moth trapped in Northwest Portland, were identified as the Asian gypsy moth. Steps were taken to initiate an eradication project in both areas. Asian gypsy moths were also trapped in Vancouver, B.C.
Modoc budworm *Choristoneura viridis*	Douglas-fir, True firs	Southern Oregon	No Modoc budworm defoliation was detected from the air in 1991.
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole pine, Ponderosa pine, Western white pine, Sugar pine, Jeffry pine	Oregon, Washington	The number of acres (405,055) and the volume affected (8.73 million cubic feet) did not differ significantly from those reported in 1990. Acres and volume decreased in all affected species, except ponderosa pine. Most notable was the continuing decline in the lodgepole pine type. Both acres and volume of ponderosa pine affected almost doubled. In 1991 there were 226,547 acres as compared to 132,029 acres in 1990; and 2.25 million cubic feet as compared to 1.1 million cubic feet in 1990. Forests experiencing the most significant increases were the Ochoco, Malheur, and Umatilla.
Pine engraver beetles *Ips* spp.	Ponderosa pine	Oregon, Washington	Pine engraver activity continued to decline from 8,971 acres in 1990, to 2,651 acres in 1991.

REGION SIX MOUNTAIN PINE BEETLE, 1991_



REGION SIX SPRUCE BUDWORM 1991_



Forest Pest Information System Data Entry Form

Region: 6 Date: 3 /16/92 Name of preparer: J.Johnson/I.Ragenovich

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) (1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
MOUNTAIN PINE BEETLE	OREGON	National Forest	172.4	1,683.0	106.5	
		Other Federal	17.1	515.0	7.2	
		State & Private	60.1	926.0	46.6	
MOUNTAIN PINE BEETLE	WASH.	National Forest	65.1	3,374.0	153.7	
		Other Federal	26.1	829.0	38.1	
		State & Private	64.2	1,401.0	106.6	
DOUGLAS FIR BEETLE	OREGON	National Forest	71.6	10,946.0	105.0	
		Other Federal	2.0	189.0	1.0	
		State & Private	12.4	1,212.0	10.6	
DOUGLAS FIR BEETLE	WASH.	National Forest	8.8	1,066.0	8.4	
		Other Federal	2.0	204.0	1.8	
		State & Private	6.2	794.0	5.9	
FIR ENGRAVER	OREGON	National Forest	262.4	24,548.0	467.1	
		Other Federal	8.2	200.0	2.9	
		State & Private	127.3	3,874.0	85.2	
FIR ENGRAVER	WASH.	National Forest	95.8	2,331.0	43.6	
		Other Federal	3.0	110.0	2.1	
		State & Private	47.7	1,243.0	23.0	
ALL OTHER BARK BEETLES	OREGON	National Forest	15.1	428.0	3.3	
		Other Federal	5.0	160.0	1.8	
		State & Private	18.5	461.0	7.7	

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) (1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
ALL OTHER BARK BEETLES	WASH.	National Forest	1.6	56.0	0.7	
		Other Federal	13.4	702.0	11.2	
		State & Private	13.2	510.0	9.8	
WESTERN SPRUCE BUDWORM	OREGON	National Forest	2,799.7			
		Other Federal	74.8			
		State & Private	850.4			
WESTERN SPRUCE BUDWORM	WASH.	National Forest	409.1			
		Other Federal	248.0			
		State & Private	370.6			
ROOT DISEASES	OREGON	National Forest	807.0	57,787.0		
		Other Federal	153.0	10,352.0		
		State & Private	740.0	32,562.0		
ROOT DISEASES	WASH.	National Forest	366.0	30,982.0		
		Other Federal	13.0	9,117.0		
		State & Private	882.0	44,321.0		
DWARF MISTLE-TOES	OREGON	National Forest	2,703.0	21,831.0		
		Other Federal	505.0	3,924.0		
		State & Private	2,470.0	12,344.0		
DWARF MISTLE-TOES	WASH.	National Forest	1,137.0	10,124.0		
		Other Federal	43.0	2,979.0		
		State & Private	2,760.0	14,482.0		

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) (1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
OTHER DISEASES	OREGON	National Forest	11,481.0	1,058.0		
		Other Federal	2,175.0	190.0		
		State & Private	10,514.0	599.0		
OTHER DISEASES	WASH.	National Forest	5,194.0	532.0		
		Other Federal	179.0	156.0		
		State & Private	12,538.0	762.0		
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				

Forest Pest Information System
PEST OCCURRENCE NATIONAL SUMMARY

Date Run: 20-NOV-92
Report: FPIRPNAT.00

Calendar Year: 1991

Pest	Area (1000 acres)	Volume (MCF)	Trees Killed (1000)	SPB Spots
DM	23,254.5	168,915.0	1	0
FR	12,797.4	48,455.3	0	0
GM	3,985.5	235,618.3	0	0
MPB	15,819.8	95,496.4	2,222	6
RDS	5,305.0	70,719.4	0	0
SB	.2	9.6	0	0
SPB	10,788.2	48,773.1	1,897	24,162
WSB	7,171.0	13,591.1	0	0
Total:	79,121.6	681,578.2	4,121	24,168