The Upper Clark Fork ERU displayed significant increases in richness and SHDI but not in dominance. Increased richness was a function of increased variety in cover type and structural class combinations during the sample period. Increasing patch type richness was commonly observed among forest-dominated ERUs. Results of transition analysis indicated that increase was most likely a consequence of timber harvest and fire exclusion. The Upper Clark Fork ranked fifth in overall change in richness and diversity as measured by ranked and averaged mean difference values. Large increases in richness led to a prediction that evenness would be reduced, and significant reductions were observed for both evenness metrics. The Upper Clark Fork was the only ERU exhibiting a significant decrease in both indices and the only ERU displaying a significant decline in interspersion not accompanied by an increase in contagion; the general trend among ERUs was inverse change.

The Upper Klamath and Upper Snake ERUs displayed few changes in landscape patterns. The Upper Klamath ranked 11th in overall change in diversity and richness as measured by ranked and averaged mean difference values. The N2 was the only diversity and dominance measure to increase significantly, and evenness of dominant patch types as measured by R21 displayed the expected increase. Increasing cropland area and juniper cover in woodlands was the likely cause of increased dominance. Increasing evenness among dominant patch types was most influenced by increasing evenness among forest structural classes.

The Upper Snake ERU ranked last in overall change in richness and diversity. No change in richness or diversity was in evidence. But interspersion increased significantly, with the second largest change observed among all ERUs. Increased interspersion was most influenced by sharply increased patch density and reduced mean patch size of colline low-medium shrublands (appendix 2). Surprisingly, change in contagion was insignificant, and the sign of change was positive. Mean edge contrast also increased significantly, indicating increasing juxtaposition of dissimilar structural and physiognomic conditions. The magnitude of change in edge contrast was fourth largest among ERUs. Given the small historical (17.3 percent) and current (18.9 percent) values of AWMECI as compared to values from forest-dominated ERUs, this increase is especially significant. It reflects the widespread replacement and fragmentation of once vast native shrublands by cropland and seminative and nonnative grasslands.

Forest Vulnerability to Insect and Pathogen Disturbances

We found that vulnerability characterizations and associated change analysis revealed more of the complexity and subtlety of change in forest vegetation patterns than was possible with direct analysis of change in cover type, structural class, or physiognomic condition alone (appendix 2). This was true because vulnerability characterizations were based on raw interpreted data as well as derived attributes (see table 4 and Hessburg and others, in press). This difference enabled the discovery of changes within cover types and structural conditions and the recognition that they are truly varied rather than homogeneous as classifications tend to imply. Results of vulnerability characterizations were a less-than-subtle reminder that maps and classifications partially disguise the truth about what is mapped or classified. We were reminded that investigators must be wary of their own and others' maps and classifications—that perhaps more information may be cloaked than revealed.

Management practices significantly increased vulnerabilities in some subbasins and ERUs and decreased them in others. Vulnerability changes at the ERU scale often were insignificant or masked owing to high variation among sampled subwatersheds. High variability among subwatersheds within ERUs was a function of large geographic extent, high variability in vegetative communities and biophysical conditions, and variable climatic and disturbance regimes. We have learned that to detect change in vegetation patterns or associated changes in landscape vulnerability to various pathogen and insect disturbances, it is better to consider change among subwatersheds highly

similar in climatic regime and biophysical environment composition (see "Ecological Regionalization," below). For these reasons, trends reported in "Results" are apt to be highly conservative estimates for ERUs.

In this section, we discuss some of the major changes in forest landscape vulnerability to insect and pathogen disturbances. We concentrate on the most significant changes and underlying probable causes. Because we were unable to directly measure levels and areal extent of management activities, we speculate on the most probable management activities responsible for the changes we observed and present evidence to support those speculations. We do not discuss broad vulnerability trends for the Northern Great Basin, Owyhee, and Upper Snake ERUs because of their small forest area, but results of vulnerability characterizations for all ERUs are discussed in the "Results," summarized in appendix 3, and displayed in figures 46 to 56. Table 31 allows the reader to review at a glance vulnerability changes among ERUs; significant and nonsignificant increases and decreases in vulnerability are indicated so that the reader can observe general trends in vulnerability among ERUs in addition to significant change.

Blue Mountains ERU—Our analysis indicated that forests of the Blue Mountains ERU have been influenced quite significantly and predictably by timber harvesting, fire suppression, fire exclusion, and grazing. In our historical vegetation coverage, 22 percent of the forest area exhibited obvious visible signs of logging (table 27). In the current condition, 28 percent of the forest area exhibited visible signs of logging. Timber harvest reduced old-forest area and area with remnant large trees to a fraction of the historical area (table 20) and, more significantly, restricted availability of medium and large trees in all structures (table 21). Medium and large trees were harvested from all major cover types including ponderosa pine, grand fir-white fir, Engelmann spruce-subalpine fir, and Douglas-fir (appendix 2). In the absence of frequent fires and under the influence of selective harvesting and grazing, Douglas-fir cover expanded (table 29 and appendix 2), forest structures became more layered (table 23), grass and shrub understories were replaced by those comprised of shade-tolerant conifers (tables 24 and 25), and forests and woodlands expanded substantially in areas formerly grasslands and shrublands (appendix 2).

In the Blue Mountains, area vulnerable to western spruce budworm did not change significantly; a relatively large proportion of the ERU (38.2 percent) was highly vulnerable in the historical coverage, and a similar proportion (38.9 percent) is vulnerable in the current condition. Furthermore, increased area vulnerable to budworm disturbance (ns) was associated with increased area of multilayered shade-tolerant understories (tables 23 and 24). At the ERU scale, it appears that a similar area is vulnerable to defoliation, but were defoliation to occur under current conditions, growth and mortality effects likely would be more pronounced. We believe that the lack of significant change in area vulnerable to budworm disturbance was primarily due to high inherent variability among subwatersheds pooled at the scale of the ERU. At a subbasin scale, we observed highly significant differences in vulnerability to western spruce budworm. Budworm vulnerability results (appendix 3) and fire regime changes (fig. 71, A and B) shown by Hann and others (1997) also suggest that a considerable amount of change in vegetation conditions was already set in motion during the 50 to 60 years before the start of the historical coverage (see also table 3). Domestic sheep and cattle grazing and selection cutting (Oliver and others 1994; Wickman 1992; Wissmar and others 1994a, 1994b) were the principal agents of change.

Area vulnerable to Douglas-fir beetle increased during the sample period because Blue Mountains landscapes in the current condition display increased cover and connectivity of Douglas-fir and increased stand densities. Figure 80, A, provides an example of increased area vulnerable to Douglas-fir beetle disturbance in a subwatershed of the Silvies subbasin.

Area vulnerable to western pine beetle (type 1) disturbance of mature and old ponderosa pine declined because medium and large ponderosa pine were selectively harvested from old and other forest structures (tables 20 and 21). We believe that this decline in vulnerability has had and will

Table 31—Insect and pathogen disturbance vulnerability changes in 13 ecological reporting units in the midscale assessment of the interior Columbia River basin

	Ecological reporting units												
Disturbance Agent[a]	Blue Mts.	Central Idaho Mts.	Col. Plateau	Lower Clark Fork	Nor. Cascade	Nor. Glac. Mts.	Nor. Great Basin	Owyhee Uplands	Snake Headw.	So. Cascade	Upper Clark Fork	Upper Klamath	Upper Snake
WSB	+[b]	+	+ +	+	-	- -	na	na	+ +	+ +	-	+	+
DFB	++	+	-	+	-	+	na	na	+ +	- -	- -	nc	+
WPB1	nc	+	-	na	- -	-	na	na	na	-	- -	-	na
WPB2	+	nc	+ +	+	- -	-	na	na	na	+	- -	+	na
MPB1	- -	+	+	+ +	+	+ +	na	na	- -	-	+	-	-
MPB2	+	nc	+ +	+	- -	-	na	na	na	+	- -	+	na
FE	- -	+ +	+ +	+	+	+	na	na	-	+	+ +	+ +	na
SB	- -	+	na	+	-	+ +	na	na	- -	nc	-	na	na
DFDM	+ +	-	-	+	-	+	na	na	+ +	- -	- -	-	+
PPDM	- -	- -	-	+	- -	- -	na	na	na	+	- -	-	na
WLDM	-	-	na	nc	nc	- -	na	na	na	na	- -	na	na
LPDM	nc	+	na	+	+	-	na	na	- -	+	-	nc	nc
AROS	+	+	+	+	- -	+ +	na	na	+ +	+ +	-	+	+
PHWE	+ +	-	-	+	- -	+	na	na	+ +	+ +	-	-	+
HEANs	- -	+ +	+ +	+	+ +	+ +	na	na	+ +	+	+	+	+
HEANp	-	- -	-	na	- -	+	na	na	na	+ +	- -	+	na
TRBR	- -	+ +	na	na	- -	+ +	na	na	+	nc	+	na	na
SRBR	+ +	-	-	-	- -	-	na	na	-	+	-	- -	+ +
WPBR1	na	nc	- -	+	+ +	- -	na	na	na	nc	-	na	na
WPBR2	na	nc	na	na	+ +	nc	na	na	-	na	-	na	na
RRSR	-	+	na	+	+ +	+ +	na	na	na	+	+	-	na

[a] WSB = western spruce budworm; DFB = Douglas-fir beetle; WPB1 = western pine beetle - type 1 attack of mature and old ponderosa pine; WPB2 = western pine beetle - type 2 attack of immature and overstocked ponderosa pine; MPB1 = mountain pine beetle - type 1 attack of overstocked lodgepole pine; MPB2 = mountain pine beetle - type 2 attack of immature and overstocked ponderosa pine; FE = fir engraver; SB = spruce beetle; DFDM = Douglas-fir dwarf mistletoe; PPDM = ponderosa pine dwarf mistletoe; WLDM = western larch dwarf mistletoe; LPDM = lodgepole pine dwarf mistletoe; AROS = *Armillaria* root disease; PHWE = laminated root rot; HEANs = S-group annosum root disease; HEANp = P-group annosum root disease; TRBR = tomentosus root and butt rot; SRBR = Schweintizii root and butt rot; WPBR1 = white pine blister rust - type 1 on western white pine/sugar pine; WPBR2 = white pine blister rust - type 2 on whitebark pine; RRSR = rust-red stringy rot. See also appendix A.

[b] + + = significant increase at P≤0.2; + = nonsignificant increase; - - = significant decrease at P≤0.2; - = nonsignificant decrease; "na" = not applicable; and nc = no change.

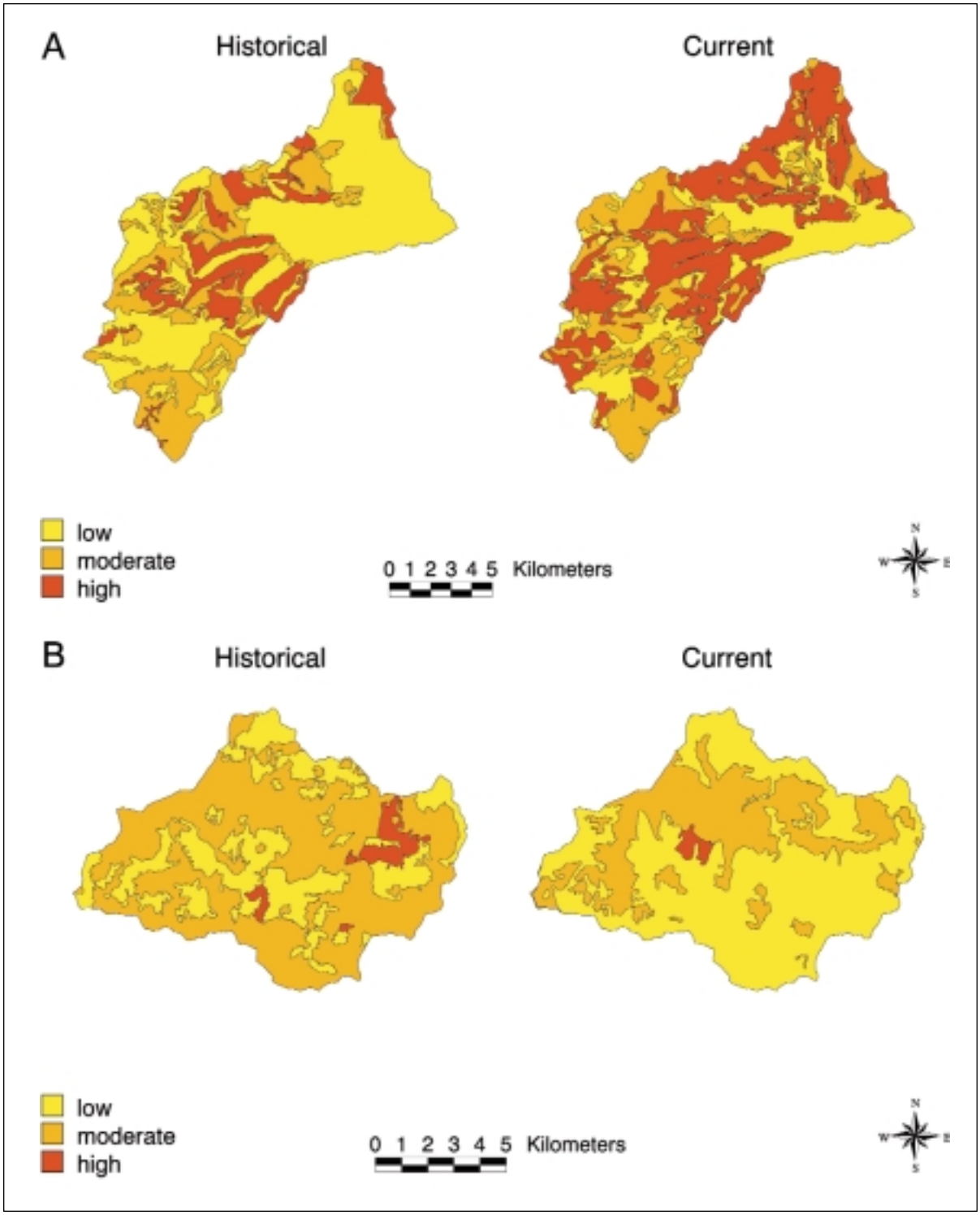

Figure 80—Historical and current maps of vegetation vulnerability to (A) Douglas-fir beetle disturbance in subwatershed 40C in the Silvies subbasin of the Blue Mountains ERU, and (B) mountain pine beetle type 1 disturbance in subwatershed 40 in the Wallowa subbasin of the Blue Mountains ERU.

continue to have important ecological ramifications. Ponderosa pine is the primary early seral species naturally occurring in the ERU. As such, it historically had the opportunity to achieve great age and stature under presettlement disturbance regimes, and large areas of the ERU (old forest or otherwise) supported some amount of ponderosa pine in the overstory. Ponderosa pine produces snags of excellent quality and potentially long residence time (Bull 1983; Keen 1929, 1955). Selective harvesting of live medium and large ponderosa pine has depleted the current and future availability of pine snags.

Area vulnerable to mountain pine beetle (type 1) disturbance of high-density lodgepole pine declined, but area of the lodgepole pine cover type did not change significantly. In the Blue Mountains, area where lodgepole pine comprises a pure cover type is small in comparison with the area where it occurs in mixed types. The observed decline in vulnerability is indicative of declining area where lodgepole pine occurs as a major early seral species in mixed types. With the exclusion of stand-regenerating fires, ongoing mountain pine beetle mortality has steadily removed lodgepole pine in many such stands (Schmitt and others 1991). Figure 80, B, provides an example of reduced area vulnerable to mountain pine beetle (type 1) disturbance in a subwatershed of the Wallowa subbasin.

Area vulnerable to fir engraver and spruce beetle disturbance also declined. In both cases, area of host cover declined as a result of timber harvest or salvage, extended drought, and western spruce budworm and prior bark beetle disturbance (Gast and others 1991, Schmitt and others 1991). Figure 81, A, illustrates reduced area vulnerable to fir engraver disturbance in a subwatershed of the Lower Grande Ronde subbasin. Figure 81, B, provides an example of reduced area vulnerable to spruce beetle disturbance in a subwatershed of the Upper Grande Ronde subbasin.

Area vulnerable to Douglas-fir dwarf mistletoe increased with expanded area of Douglas-fir cover and increased canopy layering and contiguity of host patches. In contrast, area vulnerable to ponderosa pine and western larch dwarf mistletoe disturbances declined; these declines were associated with reduced area of ponderosa pine and western larch overstory cover, respectively, from timber harvest. Figure 82, A, provides an example of increased area vulnerable to Douglas-fir dwarf mistletoe disturbance in a subwatershed of the Wallowa subbasin.

Even with declining area of grand fir, white fir, and subalpine fir overstory cover, area vulnerable to S-group annosum root disease likely increased. We believe this is true because (1) the total area occupied by host species actually increased (table 24), but hosts now more often occur in understories in intermediate and suppressed crown classes; and (2) a large percentage of the forest has been entered for timber harvest (table 27), and freshly cut stumps provide avenues for spread of this disease to new patches (Hadfield and others 1986).

Area and connectivity of area vulnerable to laminated root rot disturbance increased primarily as a result of increased cover and connectivity of Douglas-fir patches but also because of increasing area occupied by understory true firs. Area and connectivity of area vulnerable to Schweinitzii root and butt rot disturbance increased as a result of increased cover and connectivity of Douglas-fir patches. Figure 82, B, displays increased area vulnerable to Schweinitzii root and butt rot disturbance in a subwatershed of the Burnt subbasin.

Central Idaho Mountains ERU—Few significant changes in vulnerability were in evidence in the Central Idaho Mountains (table 31). For the most part, vulnerability characterizations indicated that the primary influence during the sample period was fire exclusion. Shade-tolerant true firs increased slightly in area and dominance, and insects and pathogens that specialize in attacking true firs were modestly favored by that increase. Area vulnerable to western spruce budworm increased but the change was not significant at this reporting scale; a large proportion of the ERU area (49.4 percent) was highly vulnerable in the historical coverage, and a similar proportion (51.1percent) is vulnerable in the current condition. Area vulnerable to fir engraver and S-group annosum root disease disturbance also increased. Figure 83, A, provides an example of increased area vulnerable to fir engraver disturbance in a subwatershed of the South Fork Clearwater subbasin.

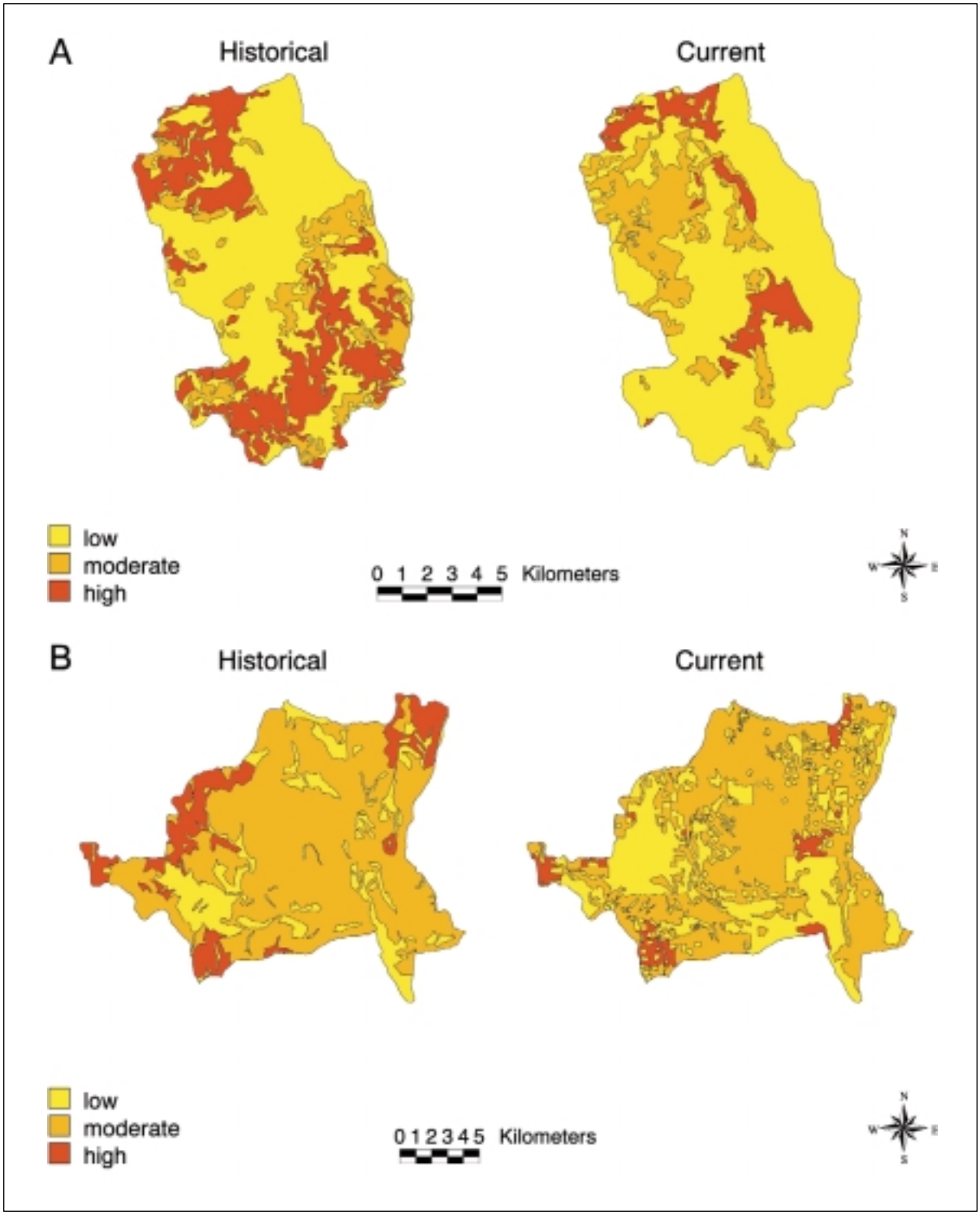

Figure 81—Historical and current maps of vegetation vulnerability to (A) fir engraver disturbance in subwatershed L2 in the Lower Grande Ronde subbasin of the Blue Mountains ERU, and (B) spruce beetle disturbance in subwatershed u28 in the Upper Grande Ronde subbasin of the Blue Mountains ERU.

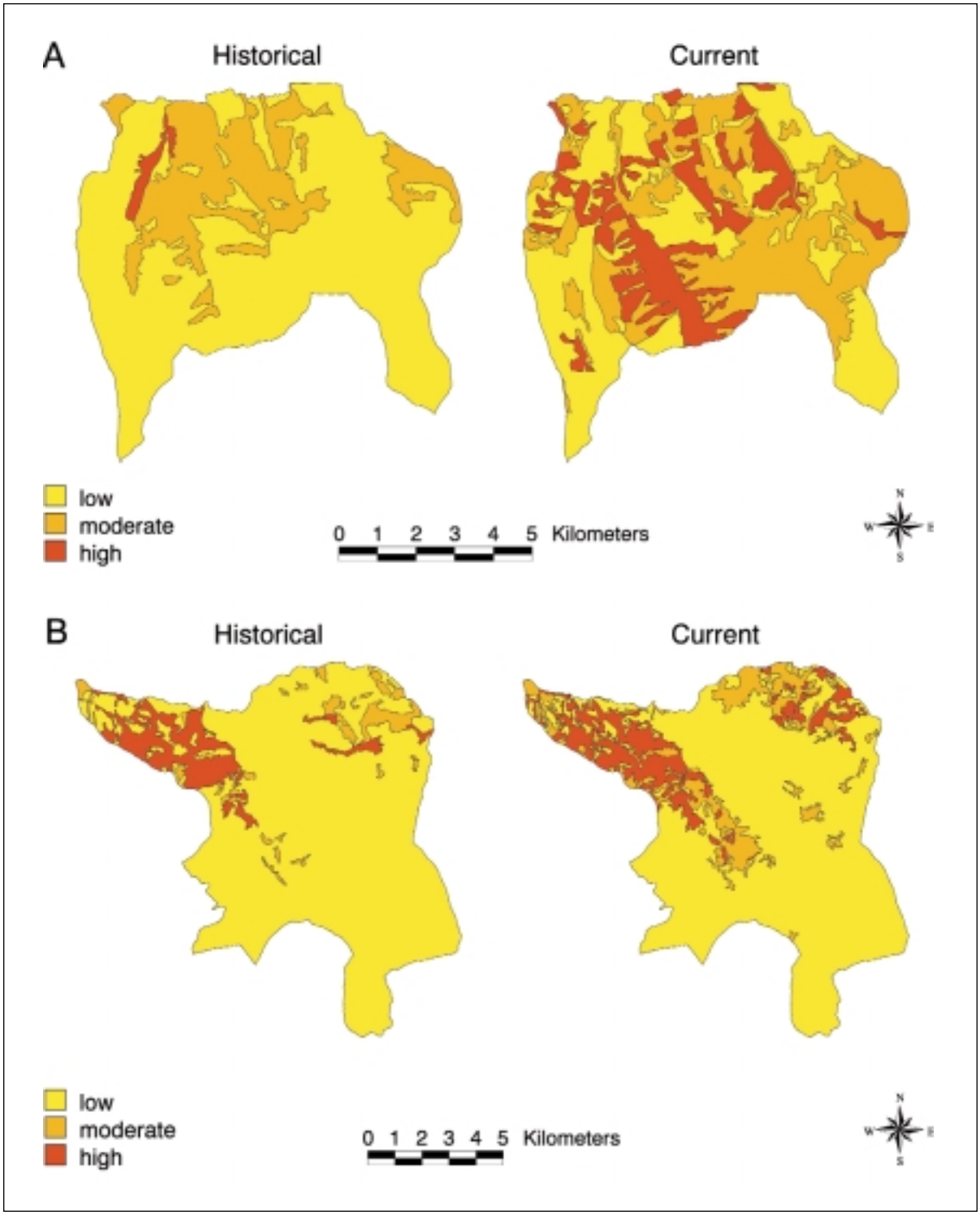

Figure 82—Historical and current maps of vegetation vulnerability to (A) Douglas-fir dwarf mistletoe disturbance in subwatershed 29 in the Wallowa subbasin of the Blue Mountains ERU, and (B) Schweinitzii root and butt rot disturbance in subwatershed 0901 in the Burnt subbasin of the Blue Mountains ERU.

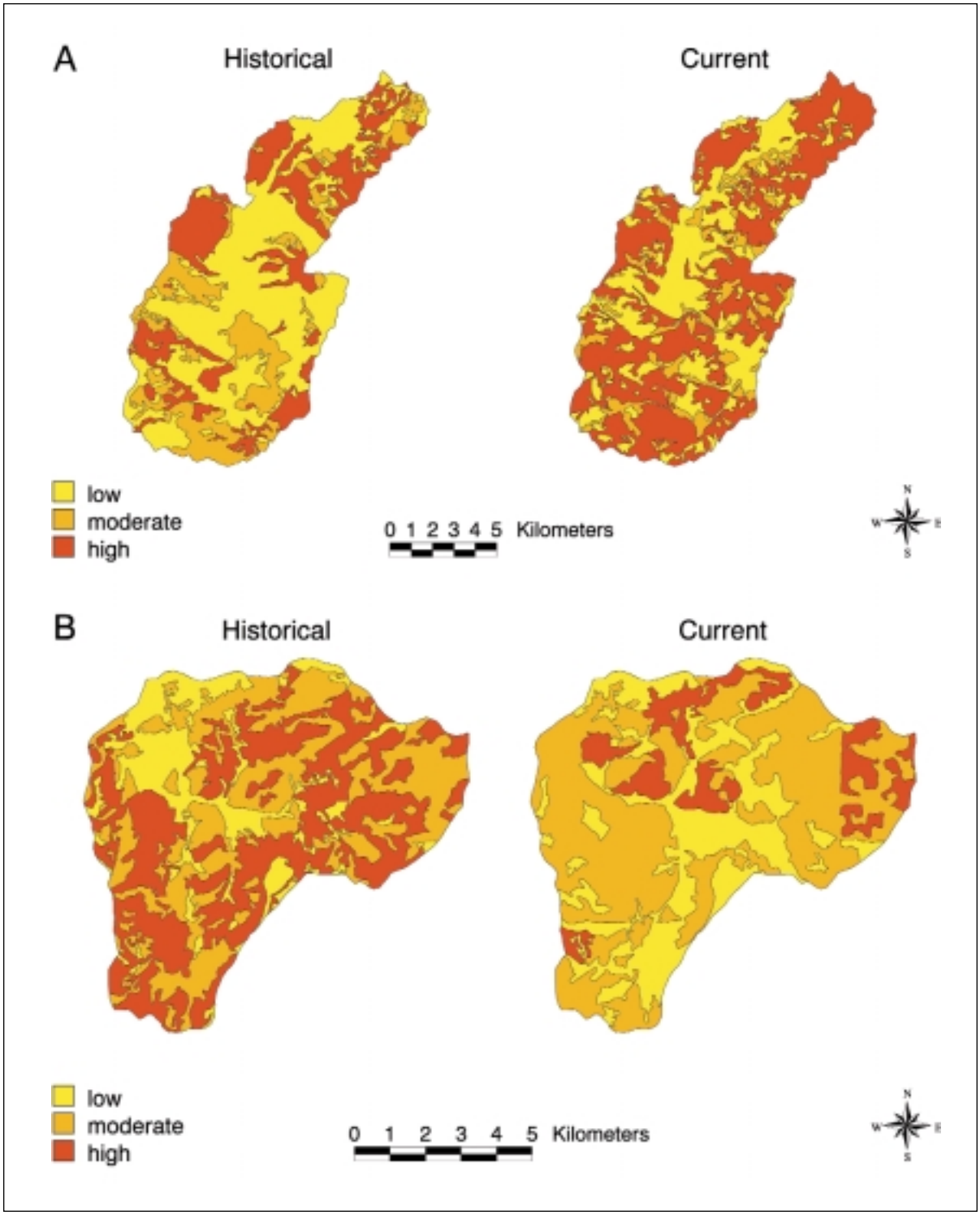

Figure 83—Historical and current maps of vegetation vulnerability to (A) fir engraver disturbance in subwatershed 0703 in the South Fork Clearwater subbasin of the Central Idaho Mountains ERU, and (B) western pine beetle type 1 disturbance in subwatershed 1303 in the Lower John Day subbasin of the Columbia Plateau ERU.

Columbia Plateau ERU—Our results indicated that dry and mesic forests of the Columbia Plateau have been influenced in a predictable manner by selective harvesting, fire suppression, and fire exclusion. Area highly vulnerable to western spruce budworm disturbance increased during the sample period from an average of 9.3 to 12.0 percent of the ERU (appendix 3). In the historical condition, 36 percent of the forest area was vulnerable to western spruce budworm disturbance. In the current condition, 41 percent of the forest area is vulnerable to budworm disturbance (appendices 2 and 3). Increased vulnerability was associated with expanded area of Douglas-fir cover (appendix 2 and table 29) and increased area of Douglas-fir and grand fir in multilayered understories (tables 23, 24, and 25), both predicted consequences of fire exclusion and selective harvesting (table 27).

Selective harvesting reduced area in old forest structures (table 20) and reduced abundance of medium and large trees in all structures (table 21). Consequently, we observed a modest decline in vulnerability to western pine beetle (type 1) disturbance of mature and old ponderosa pine. Figure 83, B, displays an example of reduced area vulnerable to western pine beetle (type 1) disturbance in a subwatershed of the Lower John Day subbasin. Area vulnerable to western pine beetle (type 2) and mountain pine beetle (type 2) disturbance of immature, high-density ponderosa pine increased during the sample period. Increased vulnerability was associated with expanded area of ponderosa pine cover in young multistory structures (appendix 2), a likely consequence of the combined effects of selective harvesting, fire exclusion and suppression, and domestic livestock grazing. Figure 84, A and B, provides illustrations of increased area vulnerable to western pine beetle (type 2) and mountain pine beetle (type 2) disturbances in subwatersheds of the Lower John Day and Palouse subbasins, respectively.

Area highly vulnerable to fir engraver disturbance increased as a consequence of increased area of grand fir understories. Area highly vulnerable to S-group annosum also increased because grand fir and western hemlock in mixed species cover types and occurring as understory species increased during the sample period, as did area in these types with visible logging entry. Area vulnerable to white pine blister rust (type 1) disturbance of western white pine declined; decline was likely the result of blister rust mortality and early selective harvest of western white pine.

Lower Clark Fork ERU—Analysis of cover type and structural changes, and vulnerability characterizations indicated that significant harvesting has occurred in highly productive forests of this ERU (table 27), but fire exclusion and fire suppression also have greatly affected conditions we observe today. In our sample, area with medium and large trees increased during the sample period (table 21), ERU area in the 90- to 100-percent crown cover class increased by 23.7 percent (table 22), and ERU area in multilayered canopies increased by more than 11 percent (tables 23 and 24). Each change was a predictable consequence of fire exclusion, especially in an area where stand-replacing fire historically played such a significant role.

Area vulnerable to western spruce budworm increased but the change was not significant at this reporting scale; a large proportion of the ERU (56.8 percent) was highly vulnerable in the historical coverage, and a similar proportion (65 percent) is vulnerable in the current condition. The 8.2-percent increase was not statistically significant because of our small sample size; further sampling is needed to establish the trend.

In the absence of fire, lodgepole pine-dominated landscapes of the Lower Clark Fork aged and became more synchronous in their vulnerability to bark beetle and fire disturbances. With increased overstory and understory grand fir cover (appendix 2 and table 24) developing during the sample period, vulnerability to fir engraver disturbance also increased (appendix 3 and table 31), but the 8.7-percent increase was not statistically significant because of our small sample size; further sampling is needed to establish the trend. Similarly, area vulnerable to *Armillaria* root disease increased by 10 percent, but the change was not significant because of our small sample size.

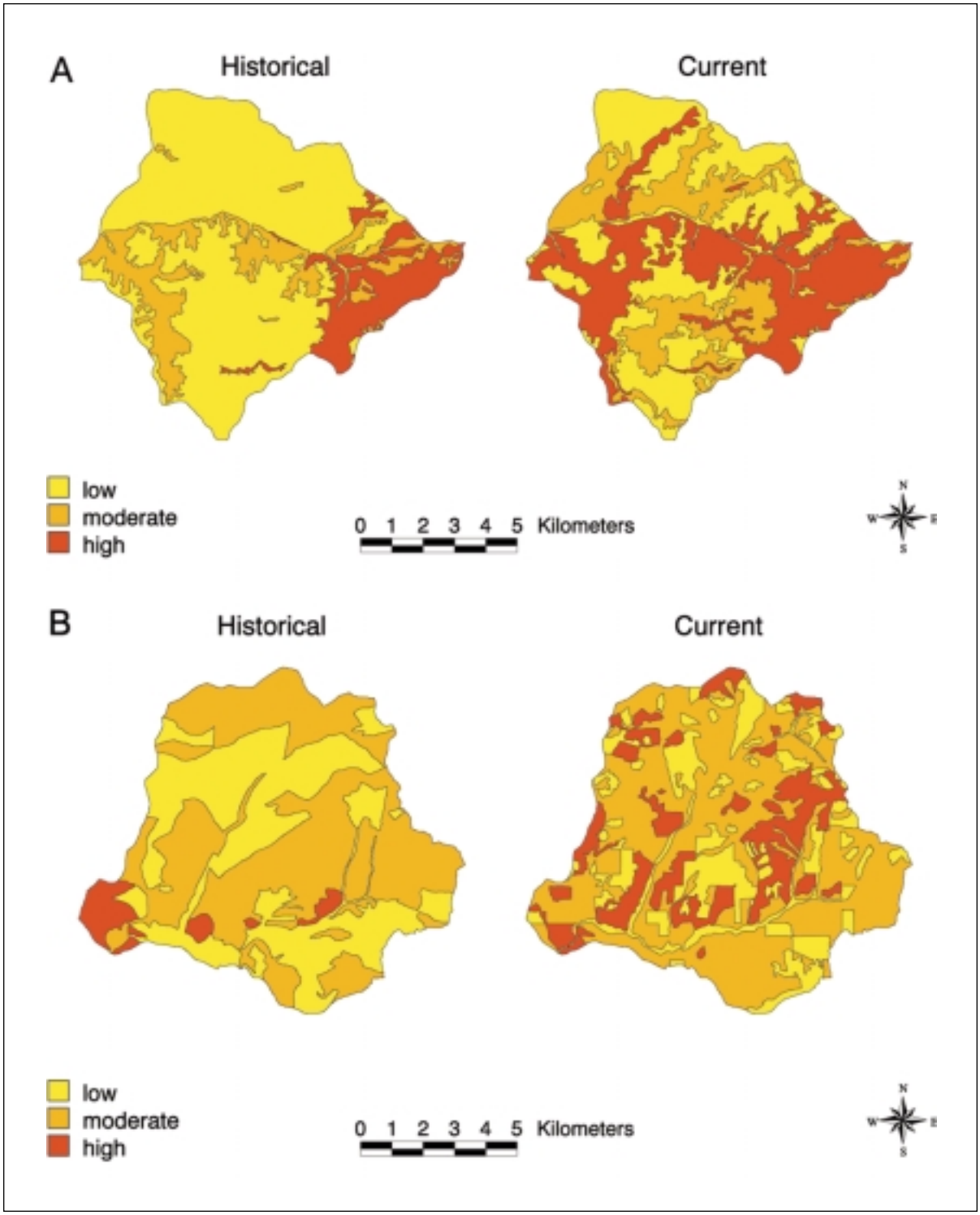

Figure 84—Historical and current maps of vegetation vulnerability to (A) western pine beetle type 2 disturbance in subwatershed 1903 in the Lower John Day subbasin of the Columbia Plateau ERU, and (B) mountain pine beetle type 2 disturbance in subwatershed 2002 in the Palouse subbasin of the Columbia Plateau ERU.

Northern Cascades ERU—Results of vulnerability characterizations for this ERU indicated that the primary effect of management during the sample period was probably timber harvest (table 27) followed by active fire suppression and fire exclusion. Area occupied by old-forest structures (table 20) and medium and large trees (table 21) declined significantly during the sample period, as did area of ponderosa pine cover (appendix 2 and table 29). Area of Douglas-fir cover increased significantly, but area of medium and large Douglas-fir declined. These results explain much of the change we observed in vulnerability to pathogen and insect disturbances.

Vulnerabilities to western pine beetle (type 1) disturbance of mature and old ponderosa pine and Douglas-fir beetle disturbance both declined with the loss of medium and large hosts. Connectivity of highly vulnerable area also declined, indicating that remaining distributions of medium and large ponderosa pine and Douglas-fir are fragmented. Area and connectivity of area vulnerable to western pine beetle (type 2) and mountain pine beetle (type 2) disturbance of immature, high-density ponderosa pine also declined owing to reduced area of ponderosa pine cover in young (new) and middle-aged (intermediate) structures. Figure 85, A and B, provides illustrations of increased area vulnerable to western pine beetle (type 2) and mountain pine beetle (type 2) disturbances in subwatersheds of the Naches and Methow subbasins, respectively.

Area vulnerable to western (ponderosa pine) dwarf mistletoe disturbance declined with the loss of ponderosa pine overstories (for example, see fig. 86, A). In contrast, area vulnerable to S-group annosum root disease disturbance increased during the sample period (fig. 53). The observed increase in high-vulnerability area was associated with increased area and stature of grand fir and Pacific silver fir cover (appendix 2) and increased area with visible logging entry (table 27).

Northern Glaciated Mountains ERU—Results of our analysis indicated that fire suppression and exclusion and timber harvest together produced the changes in vulnerability we observed. In the historical vegetation coverage, visible logging entry was apparent on 8.6 percent of the forested area (table 27 and appendix 2). In the current condition, visible logging activity was apparent on 26.5 percent of the forested area. But old-forest area and area with remnant large trees did not decline during the sample period (table 20); furthermore, area occupied by medium and large trees actually increased. We speculate that because stand-replacing fires were once common in the ERU, regrowth of forest in the absence of fire apparently offset some of the effects of harvesting (note the substantial decline in area of stand-initiation structures in appendix 2). Predicted effects of fire exclusion also were observed: increased crown cover (table 22), increased canopy layering (table 23), and increased cover of shade-tolerant understory conifers (table 24).

Area vulnerable to western spruce budworm disturbance increased with increasing cover of grand fir and subalpine fir and increased canopy layering. In the absence of fire, lodgepole pine-dominated landscapes became more synchronous in their vulnerability to mountain pine beetle and fire disturbances. Area and connectivity of area vulnerable to spruce beetle disturbance also increased (fig. 49) with increased area, size, and stature of Engelmann spruce (see fig. 86, B).

As we would expect, area vulnerable to ponderosa pine and western larch dwarf mistletoe disturbances declined (appendix 3) with the reduction of ponderosa pine and western larch cover (table 29). Figure 87, A, illustrates reduced area vulnerable to western larch dwarf mistletoe disturbance in a subwatershed of the Swan subbasin. Area vulnerable to *Armillaria* (see fig. 87, B) and S-group annosum root diseases increased with increasing dominance of shade-tolerant overstories and understories (table 24 and appendix 2). Finally, area and connectivity of area vulnerable to white pine blister rust (type 1) disturbance of western white pine declined (fig. 55 and appendix 3) as a result of blister rust mortality and early selective harvest of western white pine (see fig. 88, A).

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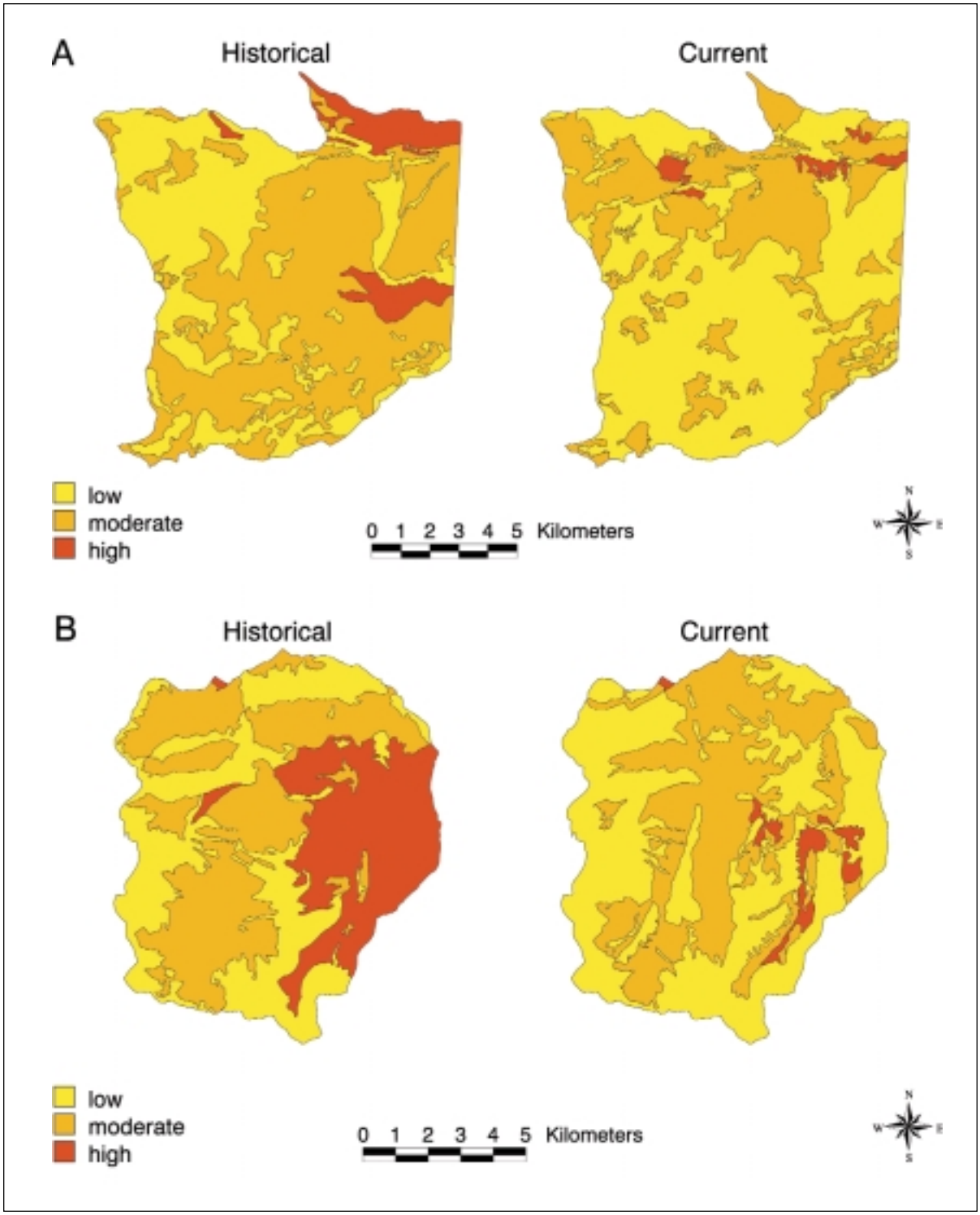

Figure 85—Historical and current maps of vegetation vulnerability to (A) western pine beetle type 2 disturbance in subwatershed 10 in the Naches subbasin of the Northern Cascades ERU, and (B) mountain pine beetle type 2 disturbance in subwatershed 55 in the Methow subbasin of the Northern Cascades ERU.

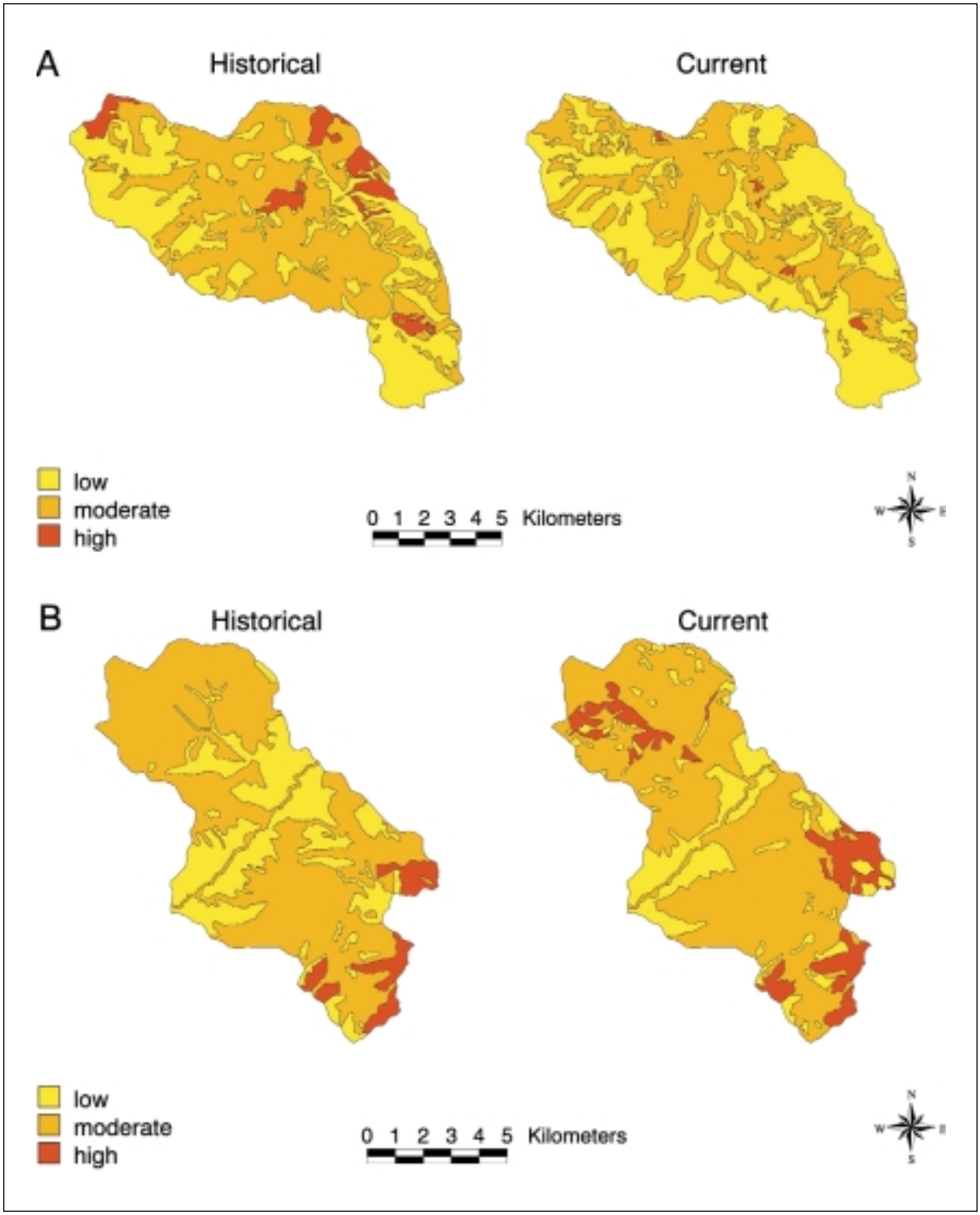

Figure 86—Historical and current maps of vegetation vulnerability to (A) western dwarf mistletoe disturbance in subwatershed 35 in the Wenatchee subbasin of the Northern Cascades ERU, and (B) spruce beetle disturbance in subwatershed 0801 in the Lower Flathead subbasin of the Northern Glaciated Mountains ERU.

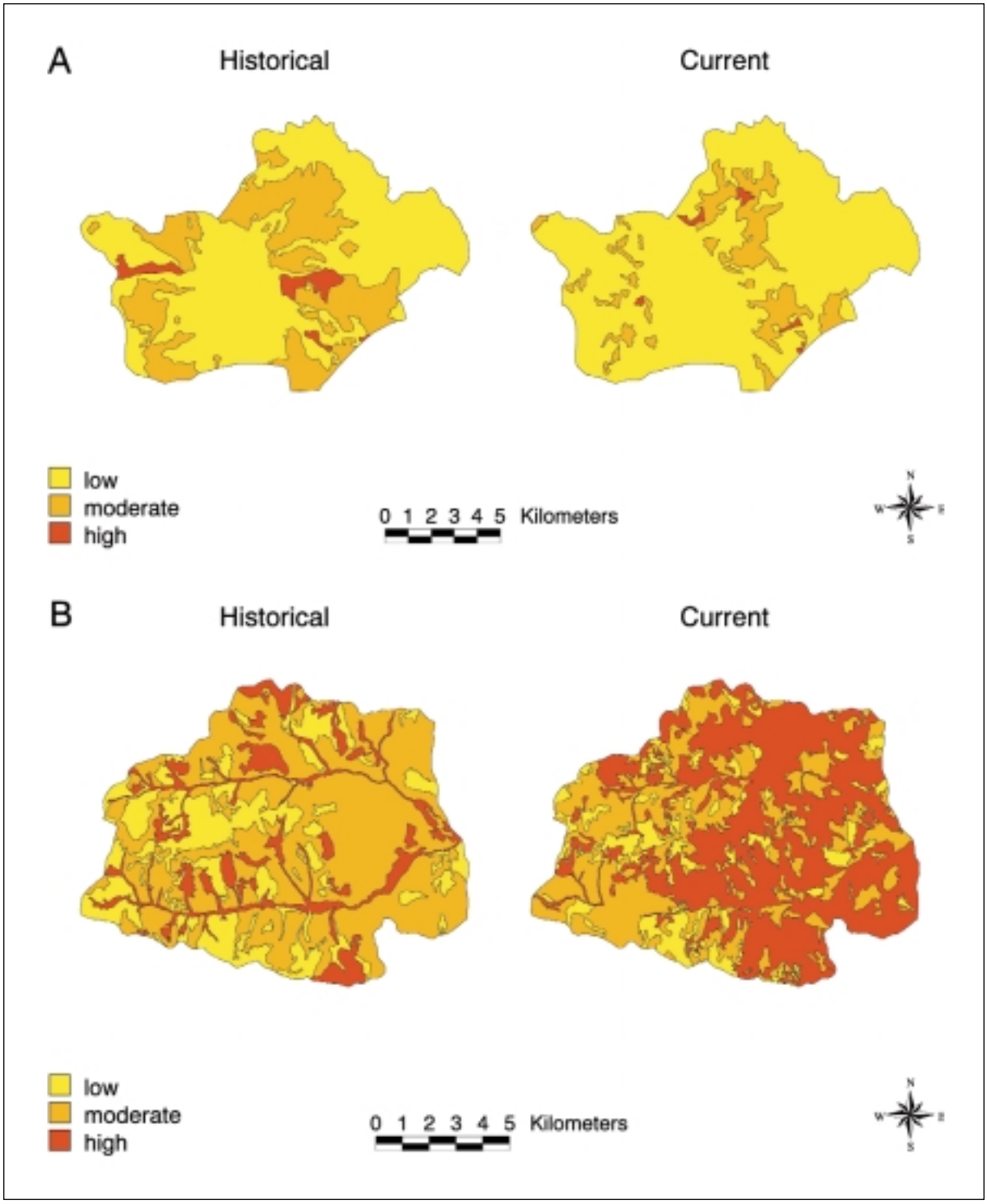

Figure 87—Historical and current maps of vegetation vulnerability to (A) western larch dwarf mistletoe disturbance in subwatershed 0202 in the Swan subbasin of the Northern Glaciated Mountains ERU, and (B) *Armillaria* root disease disturbance in subwatershed 20 in the Kettle subbasin of the Northern Glaciated Mountains ERU.

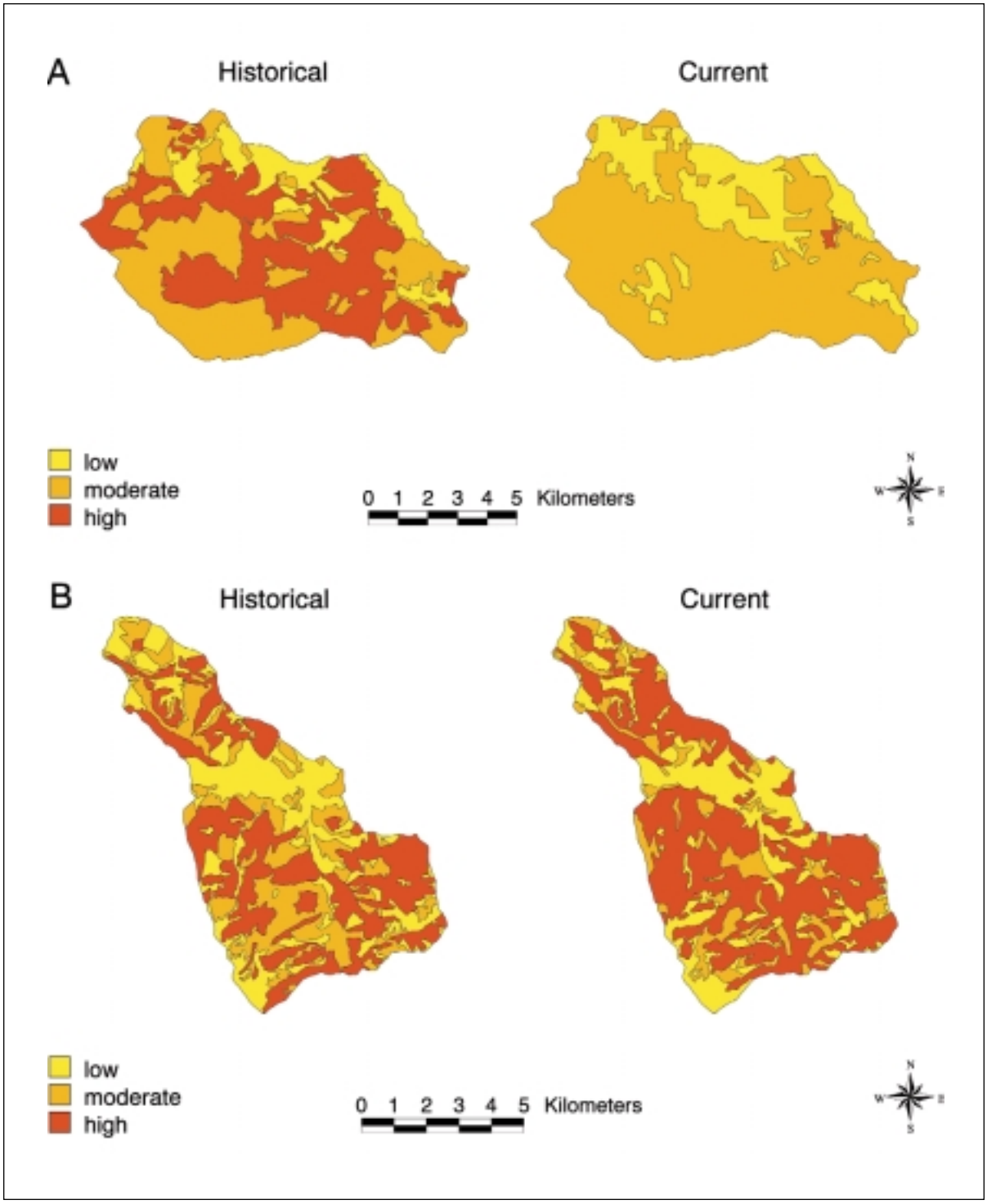

Figure 88—Historical and current maps of vegetation vulnerability to (A) white pine blister rust type 1 disturbance in subwatershed 09 in the Pend Oreille subbasin of the Northern Glaciated Mountains ERU, and (B) western spruce budworm disturbance in subwatershed 1102 in the Palisades subbasin of the Snake Headwaters ERU.

Snake Headwaters ERU—Our results suggest that fire suppression and exclusion, and to a lesser extent timber harvest, interacted to produce the changes in vulnerability we observed. In the historical vegetation coverage, no visible logging entry was apparent for 100 percent of the forested area (table 27 and appendix 2). In the current condition, signs of visible current or past logging were apparent for only 2 percent of the area. Old-forest area and area with remnant large trees declined during the sample period (table 20), but changes were not statistically significant. Area occupied by medium and large trees also declined. Overall, increased area with visible logging could not account for the changes in vulnerability we observed.

Area and connectivity of area vulnerable to western spruce budworm disturbance increased dramatically during the sample period (fig. 46 and appendix 3); increase was associated with increased area of Engelmann spruce-subalpine fir cover in multilayered canopy arrangements (tables 23 and 24 and appendix 2). Figure 88, B, illustrates increased area vulnerable to western spruce budworm disturbance in a subwatershed of the Palisades subbasin. Area and connectivity of area vulnerable to Douglas-fir beetle disturbance also increased (appendix 3). Because total area in old-forest structures declined by 40 percent from an average of 5.2 to 3.1 percent of the ERU (appendix 2), most of the increased area vulnerable to Douglas-fir beetle disturbance likely was associated with increased abundance of Douglas-fir larger than 22.9 cm d.b.h. in structural classes other than old forest.

Area vulnerable to mountain pine beetle (type 1) disturbance of high density lodgepole pine fell from an average of 34.6 to 29.2 percent of the ERU, and area of the lodgepole pine cover type declined from 15.6 to 11.3 percent of the ERU. Our results indicated that area of pole, small, and medium lodgepole pine in both pure and mixed compositions declined during the sample period. We know that before and during the period of our sample, large areas of lodgepole pine forest were attacked and killed by the mountain pine beetle. But these results suggest that salvage and regeneration efforts influenced, at best, less than half of that area (table 27). Beetle disturbance and fire exclusion have resulted in cover type conversion of some areas to Engelmann spruce and subalpine fir. This change was corroborated by transition analysis. Area vulnerable to *Armillaria* root disease and S-group annosum root disease increased significantly with increasing dominance of shade-tolerant overstories and understories (table 24 and appendix 2). Figure 89, A, illustrates increased area vulnerable to S-group annosum root disease disturbance in a subwatershed of the Snake Headwaters subbasin.

Southern Cascades ERU—Our vegetation analysis and disturbance vulnerability characterizations indicated that the Southern Cascades have been influenced quite significantly and predictably by timber harvest, fire suppression, and fire exclusion. In the historical vegetation coverage, 12 percent of the forest area exhibited visible signs of logging (table 27). In the current condition, 38 percent of the forest area exhibited visible signs of logging. During the sample period, forest and woodland area affected by selective harvesting alone jumped from less than 10 percent to nearly one-quarter of the area. Overall, the level of timber harvest had little effect on old-forest area, which increased modestly but nonsignificantly during the sample period. Area with remnant large trees declined, but the change was not significant (table 20).

Area with medium and large trees actually increased (table 21). In the absence of fires and under the influence of selective harvesting, forest crown cover increased (table 22), forest structures became highly layered (table 23), and large areas developed conifer understories (tables 24 and 25). Expansion of forest area was the result of regrowth of forests cut before our historical vegetation coverage (appendix 2). These results explain much of the change in vulnerability to pathogen and insect disturbances that we observed.

In the Southern Cascades, area vulnerable to western spruce budworm disturbance increased significantly; increased area was associated with increased area of multilayered shade-tolerant understories (tables 23 and 24). But area vulnerable to budworm disturbance amounted to little

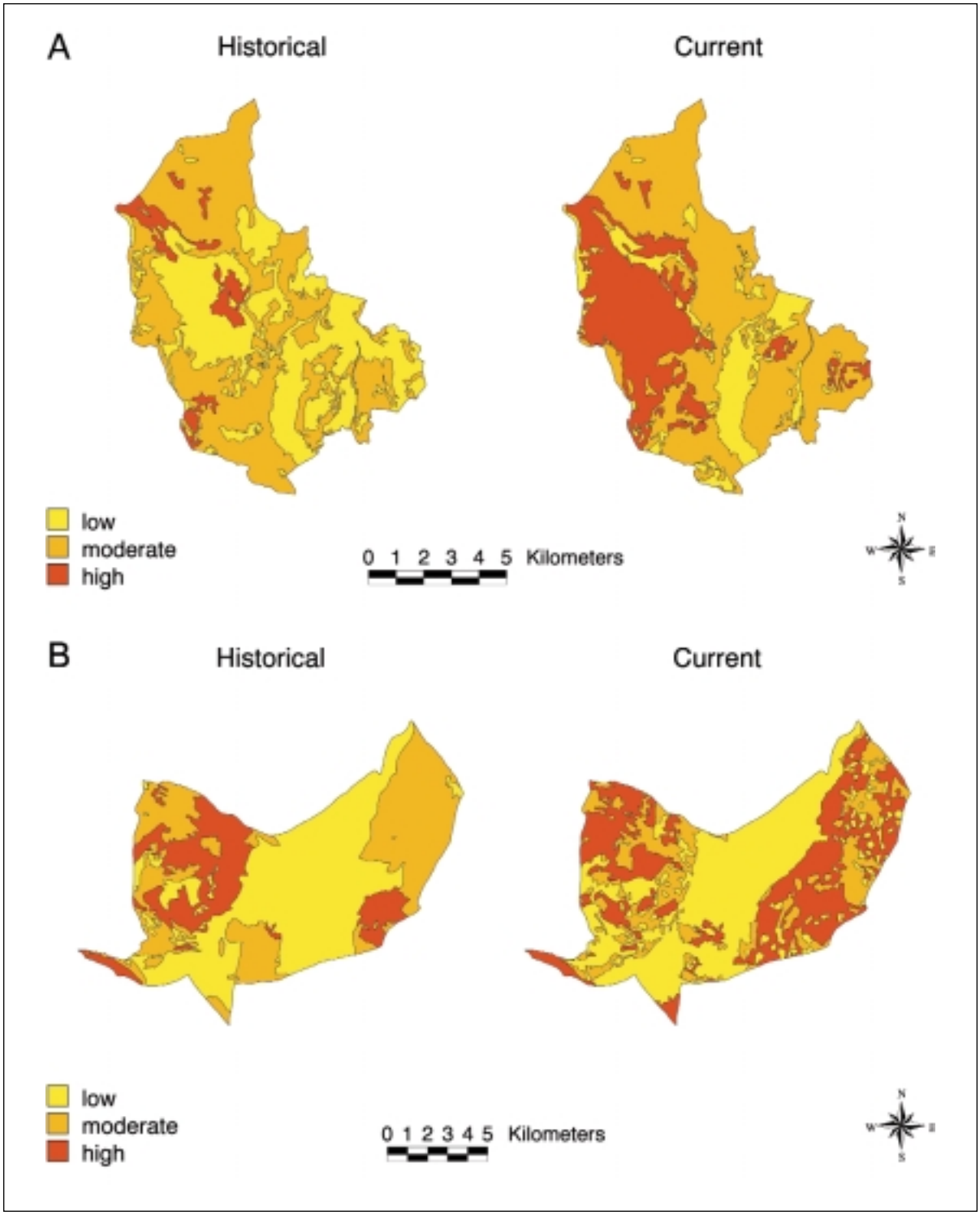

Figure 89—Historical and current maps of vegetation vulnerability to (A) S-group annosum root disease disturbance in subwatershed 0305 in the Snake Headwaters subbasin of the Snake Headwaters ERU, and (B) laminated root rot disturbance in subwatershed 30 in the Upper Deschutes subbasin of the Southern Cascades ERU.

more than 10 percent of the ERU, even in the current condition. Area vulnerable to Douglas-fir beetle and Douglas-fir dwarf mistletoe disturbances declined because area and connectivity of patches with medium and large Douglas-fir in old forest and other structures declined. In contrast, area vulnerable to mountain pine beetle (type 1) disturbance of high-density lodgepole pine declined by 14 percent from an average of 29.0 to 24.9 percent of the ERU, and area of the lodgepole pine cover type remained unchanged. As was the case in the Blue Mountains, our results indicate that area of lodgepole pine in historically mixed compositions declined during the sample period as a result of mountain pine beetle outbreaks and exclusion of regenerative fires.

Area vulnerable to *Armillaria* root disease and laminated root rot disturbance increased (fig. 52 and appendix 3); increased area was associated with expanded area of subalpine fir, grand fir, and Douglas-fir in pure and mixed species compositions, expanded area of shade-tolerant understories, and increased crown cover of host species. Figure 89, B, illustrates increased area vulnerable to laminated root disease disturbance in a subwatershed of the Upper Deschutes subbasin.

Upper Clark Fork ERU—Forest vegetation of the Upper Clark Fork ERU has been radically altered by timber harvest and, to a lesser extent, fire exclusion. In the historical vegetation coverage, 12 percent of the forest area exhibited visible signs of logging (table 27 and appendix 2). In the current condition, 37 percent of the forest area exhibited visible signs of logging. During the sample period, forest and woodland area affected by regeneration and selective harvesting alone jumped from 10 to 20 percent of the forest area. Overall, the level of timber harvest had little effect on old-forest area or area with remnant large trees (table 20 and appendix 2).

It was apparent from the area of stand-initiation structures in our historical vegetation coverage that stand-replacement fires played a major role in regenerating and patterning forests, and it is likely that large areas of new and intermediate structure were typical historically for these landscapes. Indeed, in the historical condition, 15.9 percent of the ERU area or 18.2 percent of the forest area was comprised of stand-initiation or new forest structures, and 70.5 percent of the ERU area or 80.8 percent of the forest area was comprised of intermediate (stem exclusion, understory reinitiation, and young multistory) forest structures.

Area with medium and large trees remained unchanged despite the level of timber harvest (table 21). In the historical condition, 19.7 percent of the ERU area or 22.6 percent of the forest area was comprised of forest patches with medium and large trees regardless of their structural affiliation. In the current condition, 17.2 percent of the ERU area or 20 percent of the forest area was comprised of forest patches with medium and large trees. In the absence of fires and under the influence of selective harvesting forest crown cover declined (table 22), forest structures became less layered (table 23), and large areas developed grass and shrub understories (tables 24 and 25) where conifer understories once were more typical. Forest area declined by an average of 1 percent of the ERU, but the change was not statistically significant (appendix 2). Even area with visible dead trees and snags declined significantly during the sample period (table 26).

Among forested ERUs, the Upper Clark Fork was one of those most heavily influenced by past timber harvest. It was not surprising that most vulnerability changes were declines (table 31 and appendix 3). Area and connectivity of area vulnerable to Douglas-fir beetle disturbance declined owing to reduced crown cover of large and medium Douglas-fir across all forest structural classes. Figure 90, A, provides an example of reduced area vulnerable to Douglas-fir beetle disturbance in a subwatershed of the Blackfoot subbasin. Area vulnerable to western pine beetle (type 1) disturbance of mature and old ponderosa pine also declined as a result of reduced area in the ponderosa pine cover type and reduced crown cover of medium and large ponderosa pine across all forest structural classes.

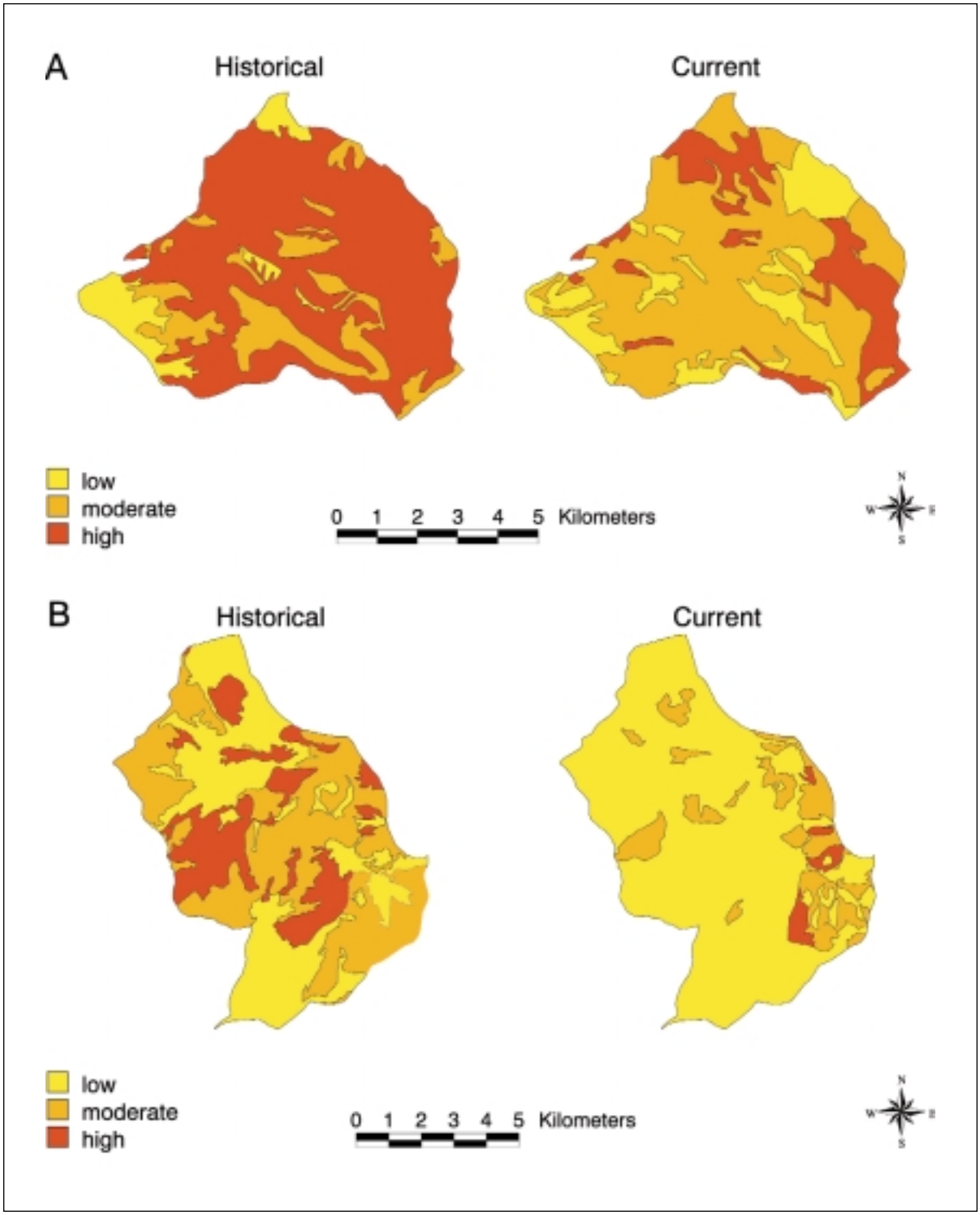

Figure 90—Historical and current maps of vegetation vulnerability to (A) Douglas-fir beetle disturbance in subwatershed 0103 in the Blackfoot subbasin of the Upper Clark Fork ERU, and (B) Douglas-fir dwarf mistletoe disturbance in subwatershed 0902 in the Flint Rock subbasin of the Upper Clark Fork ERU.

Area vulnerable to western pine beetle (type 2) and mountain pine beetle (type 2) disturbance of immature, high-density ponderosa pine declined as a result of reduced area in the ponderosa pine cover type and reduced area of stem-exclusion, understory reinitiation, and young multistory structures with ponderosa pine in pure or mixed compositions. In contrast, area and connectivity of area vulnerable to fir engraver disturbance increased during the sample period. High-vulnerability area increased primarily as a result of increased area in the subalpine fir-Engelmann spruce cover type in all forest structural classes but stand initiation.

Area vulnerable to Douglas-fir, ponderosa pine, and western larch dwarf mistletoe disturbances declined during the sample period. The observed decline in area of high vulnerability was the result of significantly reduced patch area and contiguity with medium and large hosts in multilayered structures (large trees in the overstory were removed). Figure 90, B, illustrates reduced area vulnerable to Douglas-fir dwarf mistletoe disturbance in a subwatershed of the Flint Rock subbasin.

Upper Klamath ERU—In the historical vegetation coverage, more than one-half (53 percent) of all forest cover was ponderosa pine (appendix 2), 23 percent of all forest structure was old forest (table 20), and 38 percent of all forest structures had at least 10 percent or more crown cover of large trees (table 20). In the current condition, 49 percent of all forest cover is ponderosa pine, 21 percent of all forest structure is old forest, and 36 percent of all forest structures have at least 10 percent or more crown cover of large trees, but crown cover of medium and large trees has been substantially reduced (table 21). Selection cutting reduced the crown cover of medium and large trees across 31 percent of the forest area (16 percent of the ERU). Much like the Upper Clark Fork, in the absence of fires and under the influence of heavy selective harvesting (table 27), forest crown cover declined (table 22), forest structures became less layered (table 23), and large areas developed grass and shrub understories (tables 24 and 25) where conifer understories were once more typical. Forest area declined by 6 percent from an average of 50.5 to 47.5 percent of the ERU (appendix 2). Likewise, area with visible dead trees and snags declined significantly during the sample period (table 26). Among forested ERUs, the Upper Klamath was probably the second most heavily influenced by past timber harvest after the Upper Clark Fork.

Few vulnerability changes were significant, but one change was particularly revealing (table 31 and appendix 3). Area vulnerable to Schweinitzii root and butt rot declined by 32 percent from 26.4 to 17.9 percent of the ERU. The observed decline in area of high vulnerability was the result of significantly reduced area in the ponderosa pine cover type and reduced patch area and contiguity with medium and large overstory ponderosa pine and Douglas-fir. Mean size of patches in the low vulnerability class rose by 77 percent from an average of 1551.8 to 2746.9 ha.

Ecological Regionalization

The midscale assessment was designed to evaluate change in patterns of structural and compositional attributes and links between landscape pattern change and associated change in insect, pathogen, and fire (Ottmar and others, in prep.) disturbance processes. Two criteria make midscale assessment data particularly relevant to land management planning:

1. The scale of observation in our assessment is equivalent to the scale at which management occurs; that is, vegetation data were collected at a patch scale similar to the scale of the "stand" used by managers to prescribe and evaluate management treatments.
2. Historical and current conditions and changes in conditions were characterized for areas much larger than forest planning and watershed analysis areas. Midscale assessment findings provide valuable contextual or "big picture" information for project planning, watershed analysis, and landscape restoration at these spatial scales.

Based on stated purposes (Jensen and Everett 1994, and references therein; Overbay 1992), ecosystem management activities in the 21st century likely will be motivated by the twin goals of providing goods, services, and values for people

while conserving ecological integrity. By "conserving ecological integrity," we mean that ecosystem management designs do not intentionally encumber or minimize the capacity of any ecosystem to maintain its structure and organization through time, especially in the face of natural or human disturbance. And when designs are recognized via monitoring and evaluation that do not conserve integrity, they are quickly replaced with improved designs in a highly adaptive and learning mode. To succeed at ecosystem management, it will be important for land managers to understand the various contexts of ecosystems they will manage. Ecosystem management activities will be centered on accomplishing human goals framed, and to some extent redirected, by those larger ecological contexts. Each watershed and landscape will play a role in some larger context(s).

Forest and rangeland managers throughout the basin will need a repeatable method to (1) accurately diagnose the degree of departure in watershed or landscape pattern conditions from natural or more nearly representative conditions for their specific biophysical environments, and (2) develop management and investment priorities for allocating scarce resources. A mechanism is needed for differentiating high-priority areas from low-priority areas for conservation, rehabilitation, restoration, and production. Departure characterizations, such as we have provided, contribute critical reference information. They do not necessarily provide target or desired future conditions, but they do enable assessment of relative risks associated with greater or lesser departures from more typical or native biophysical environment conditions.

We assume that Forest Service and Bureau of Land Management administrative units within the basin assessment area are interested in evaluating current vegetation conditions within their boundaries to determine whether structure, composition, patterns, and associated disturbance regimes are more or less typical or atypical of what would occur within specific biophysical environments under inherent disturbance regimes. To do that, they must have the ability to differentiate typical from atypical, or more natural conditions from those less so. The diagnostic procedure must be the same for neighboring yet dissimilar watersheds in the same administrative area and for highly similar watersheds in differing administrative areas.

In this midscale assessment, results of change analysis were reported for province-scale ERUs, which offered many challenges in interpretation. High inherent variability of environments pooled at that very large scale masked considerable change, and it often was difficult to determine where sample variation in an ERU ended and change began. Grouping subwatersheds into "subregions" based on similarity of ecological attributes (regionalization) would organize environmental variability, make change detection more transparent, and refine estimates of historical variation in vegetation spatial patterns for each environment.

The basin assessment area contains more than 7,500 subwatersheds, which are not entirely unique. Many share similar biological and physical features such as geology, landform, hydrology, major soil taxa, current and potential vegetation, and climate. From available digital coverages of broadscale potential vegetation and climate attributes, such as mean annual temperature, total annual precipitation, and total annual solar radiation (for example, see Hann and others 1997, Thornton and others 1997), we can group similar subwatersheds in the basin into ecological subregions according to their similar composition of attributes by using a multivariate "fingerprinting" exercise.

Regionalization would employ both agglomerative and divisive analytical procedures, such as hierarchical cluster analysis and two-way indicator species analysis, to obtain and validate groupings. The end result would be a map of all subwatersheds in the basin with each one assigned to a particular ecological subregion. In this context, ecological subregions are comprised of a spatially disjunct population of similar subwatersheds. By grouping subwatersheds in this manner, we assume that vegetation and disturbance patterns are closely linked with climate and environment, and that environmental composition of subwatersheds and other large landscapes can be approximated by potential vegetation and climate attribute fingerprinting.

Once a map of ecological subregions of the basin is created, we can estimate historical variability of conditions within each subregion. The subregion map will provide the needed basis for poststratifying sampled subwatersheds and extrapolating information from sampled subwatersheds of a subregion to other subwatersheds of the same subregion. Because it is difficult and costly to sample historical vegetation structure, composition, and patterns continuously over large geographic areas, and in chronosequence over long historical time frames, we can substitute a sampling of space (that is, we can sample many similar biophysical environments) for a sampling of time (versus repeatedly sampling the same environments over many decades or centuries). If we sample enough areas that are similar in their biophysical features, we should be able to observe a cross-section or range of conditions typical for relatively short historical periods of similar climatic regime (Pickett 1989, and references therein).

We can estimate typical ranges of historical conditions in subregions for patch types, such as physiognomic types, forest and rangeland cover types, structural classes, successional stages, fuel condition classes, crown fire potential classes, fire behavior attribute classes, and insect and pathogen disturbance vulnerability classes. This approach assumes no all-pervasive influence that differs from the historical sample period to the present day. The typical range of historical conditions for subregions could be estimated by using a median 75- or 80-percent range or other similar range metric. We can then summarize the following by ecological subregion: mean, standard error, and range estimates of the historical condition for each patch type; class metrics, such as percentage area, patch density, mean patch size, edge density, and nearest neighbor distance; and other landscape pattern metrics that might be thought essential or informative.

Information on the range of condition can be used to diagnose departure in conditions of any subwatershed within an ecological subregion. It is desirable to develop range-of-condition information for the earliest historical conditions obtainable, because these are conditions under which large land areas were least affected by management during any observable period, and area and connectivity relations of patch types will likely be more rather than less typical of what would normally occur in each biophysical setting under a similar climatic regime.

Additional Validation and Research

To complete the landscape characterizations and analyses reported here, various methods were used. Some were tried and true, others were based on published theory or related applications, and still others were based partially on established literature and empirical study and partially on field experience and judgment. We believe that efforts to assess and refine the accuracy of raw and derived data and to validate new models and maps generated by this study would give us and the agencies benefitting directly from this work improved insight into the reliability of our characterizations and findings and provide tremendous future benefits for landscape analysis.

Validation—On this project, time and financial resources were severely constrained, and efforts were minimized to field verify interpreted attributes. This was done to meet short timelines and control costs but at the potential expense of reliability. We made every attempt to ensure quality and reliability in our data capture; to check for errors in remotely sensed raw attributes as vegetation coverages were assembled and as new attributes were derived; to check for errors in programs, scripts, and analysis protocols; and to run routine error checks for inconsistencies and miscalculations. Despite these efforts, we were unable to conduct field accuracy assessments of raw and derived attributes because of constraints. We believe that our data and methods are acceptably reliable, but the reliability of each should be evaluated. To that end, we suggest the following as priority validation needs:

- Assess the accuracy of the following abridged list of photointerpreted forest patch attributes: total and overstory crown cover, canopy layers, riparian and wetland status, visible logging entry, overstory and understory size class, overstory and understory species, and dead tree and

snag abundance; and nonforest attributes: nonforest overstory species, overstory crown cover, and tree and shrub cover of herbland and shrubland types.

- Assess the accuracy of derived forest and range cover types, structural classes, and potential vegetation types; correct classification errors and revise map coverages as needed.
- Field verify by random sampling the patch vulnerability values for each insect and pathogen disturbance modeled, fuel conditions, and potential fire behavior and smoke production attributes (see Ottmar and others, in prep.).

Vegetation research—To develop vegetation management strategies (including no active management) and activities for ecosystems that conserve native species and natural processes and their effects, resource managers will need to be knowledgeable of the ecological ramifications of natural and management disturbances on landscape patterns and processes. Future Forest Service and Bureau of Land Management project planning may call for more intensive ecological characterization of planning areas than has occurred previously.

This study is a first attempt at a midscale ecological assessment of the basin. It represents a first characterization of the historical range variability of ERUs, and a first characterization of recent departure of forest and rangeland vegetation patterns and forest vulnerability to insect and pathogen disturbances. At the close of the study, many basic and applied research questions remain unanswered. Further analysis of this landmark data set will reveal new information useful to conservation and management of basin ecosystems. We propose the following additional research that can be accomplished by building on databases and models established through this study:

- Develop an ecological regionalization of all subwatersheds in the basin. Ecological subregions would provide a powerful basis for extrapolating information on reference conditions and a much improved basis for change detection analysis in either assessment or monitoring modes.
- Compute ranges of historical structure, composition, pattern, and disturbance vulnerability conditions for each ecological subregion.
- Evaluate through similarity analysis, structural and compositional change of current and historical subwatershed pairs to detect significant compositional change and determine direction and magnitude of change.
- Evaluate average similarity among all subwatershed pairs at several pooling scales, and test for differences between average historical and average current similarity to detect compositional trend of subwatersheds within a pooling stratum.
- Use compositional attribute data from the similarity analysis, above, to ordinate (DECORANA or CANOCO) and graphically display patterns of change in attribute space.
- Examine and contrast variation in landscape patterns and disturbance processes by PVT, topographic and physiographic setting, and management history.
- Evaluate pathways of vegetation change at a subregion scale, through detailed analysis of change in structure and composition and by using transition analysis, to improve predictive modeling of future landscape change.
- Evaluate the effects of recent change in spatial patterns of composition and structure on spatial patterns of vulnerability to insect, pathogen, and fire disturbances.
- Develop reliable, continuous, field-verified, midscale (1:24,000) ecological land unit and PVT maps for public lands in the basin.
- For ecological subregions, classify habitat values of cover-structure patch types for all historical and current subwatershed pairs, initially for threatened, endangered, sensitive, and candidate species and other terrestrial species where habitat and environmental correlations are reasonably well established. Use habitat and environmental correlates associated with other midscale GIS map coverages as needed to complete the classifications. For all pairs of midscale subwatersheds, evaluate and report trends

in area and connectivity of habitats. Quantify effects of predicted habitat changes on wildlife species diversity during the sample period. Correlate predicted results with known status of species, especially currently listed and candidate species.

- For ecological subregions, use historical and current subwatershed vegetation conditions and associated vulnerabilities to insect, pathogen, and fire disturbances as a basis for evaluating risks associated with alternative landscape configurations or desired future conditions. Rank subwatershed conditions within each subregion according to their risk of crown fires, disease, and insect disturbance vulnerabilities. This would be especially useful to land management planning, watershed assessment, and project planning efforts.
- Develop reliable, continuous, field-verified, midscale (1:24,000) fire regime maps for ecological and units of the basin, and link map units with potential fire behavior and smoke emissions information. Correlate fire regimes with biophysical environmental characteristics and potential vegetation.
- Assess the relative contribution of social and biophysical factors to landscape change. Also assess interactions among factors by relating landscape changes, their biophysical settings, or individually significant ecosystem elements to social and biophysical drivers of change. Significant ecosystem elements can be those things people care a great deal about, elements important to a great many species, or elements that have experienced great change and are particularly vulnerable to more change.
- Determine the best approaches for extrapolating broadscale (Hann and others 1997) and midscale landscape data from place to place. For example, determine the extent to which broadscale coverages can be used to guide extrapolation from one place to the next at the midscale, and the extent to which midscale coverages help to interpret past changes and vulnerability to future changes in project areas at the fine scale.
- Examine alternative approaches to characterizing natural or historical range variability in vegetation spatial patterns.
- Examine the geographical and biophysical settings of nonforest types to determine why some settings and types appear to be more prone than others to change.
- Develop alternative methods for characterizing the spatial distribution, predictability, area, and synergism among disturbance regimes and patch dynamics that incorporate (1) the different agents of disturbance, their interactions, their spatial patterning and extent; (2) disturbance effects on species richness, the distribution of dominance, community structure, and genetic diversity; (3) effects on filling and change within disturbed and undisturbed patches; (4) relations among patches of a given type and the matrix; and (5) flows of organisms, materials, and energy among patches (refer to the rich theoretical foundation developed in Pickett and White [1985]).
- Use these midscale data to validate and extend the utility of vegetation and disturbance dynamics simulation models such as CRBSUM (Keane and others 1996). The CRBSUM model already has a framework for simulating the effects of multiple agents of disturbance on landscape patterns and could be readily extended to include contagious spread and other spatial characteristics of disturbance, particularly if midscale vegetation change results were used to develop and test the new subroutines and related hypotheses.

Insect and pathogen research—For human valuation of ecosystem status, forest insect and pathogen disturbances can be viewed as producing favorable or unfavorable results. From the standpoint of ecological structures and functioning, disturbances at one level may provide great variety in living and dead structure, and the agents themselves are the key to many vital future processes. At a much higher level of disturbance, structure and process needs may be more than satisfied at the expense of other forest values important or essential to human needs.

In recent decades, resource managers have attempted to actively manipulate stand- and landscape-level insect and disease conditions (that is, the amount of insect or pathogen disturbance they wanted to allow) by using direct suppression and prevention strategies. Suppression activities typically employed chemical insecticides or biological control agents such as bacteria or viruses; prevention was accomplished through silvicultural manipulations of stand-level species composition and structure.

Little attention has been given to landscape vegetation patterns, processes, organisms, and interactions whose function is to naturally regulate disturbances and the agents responsible for them. For example, fires historically played a key role in regulating the density and composition of forests, especially dry and mesic forests. Fires were directly involved in determining where shade-tolerant true firs and Douglas-fir would typically grow, thereby shaping the population dynamics and disturbance regime characteristics of forest insects such as the western spruce budworm and the Douglas-fir tussock moth. Fires of varying intensity and extent determined, by influencing the landscape patterns of hosts, where *Armillaria* laminated root rot, and S- and P-group annosum root diseases played a significant role in snag production, canopy gap development, and coarse wood recruitment.

In addition, many forest insects and pathogens capable of altering forest structure and composition have numerous natural enemies, and little is known of the environmental factors, patch-scale vegetation conditions, and landscape patterns favoring their survival and prosperity. Critical gaps exist in our knowledge of (1) insect and pathogen population dynamics under managed, unmanaged, and "natural" conditions; (2) regulatory processes, organisms, and interactions associated with natural insect and pathogen disturbances; (3) interactions among insect, pathogen, and fire disturbance processes, climate, and management activities; and (4) functional roles of insects and pathogens under managed, unmanaged, and "natural" scenarios. Important research emphases follow:

- Develop decision-support tools for stand and landscape management to predict insect and pathogen responses to natural and management disturbances.
- Survey the natural enemies of native and important nonnative pathogens and insects. Learn their habitat requirements, associations, and responses to changing landscape patterns and environments; study immigration and emigration processes, and habitat and environmental constraints.
- Examine the community ecology of native and important nonnative insects and pathogens in each of the major forest plant associations. Discover changes in functional roles and dynamics along various successional trajectories.
- Study the functional roles of the major native and important nonnative root pathogens, dwarf mistletoes, bark beetles, defoliators, stem decays, and rusts in (1) forest succession, (2) wildlife habitat development, (3) coarse wood recruitment, and (4) carbon and nutrient cycling in each of the major plant associations of the basin.
- Experimentally examine options for developing replacement wildlife microhabitat structures by using native organisms and microbial successional processes in areas currently depauperate of such structures (Parks and others 1996a, 1996b).
- Study the effects of the more extreme oscillations in climatic conditions on native insect and pathogen population dynamics and associated disturbances for major plant-association groups of the basin. Learn also how such oscillations affect their natural enemies.
- For each of the major plant-association groups and their successional communities, study the effects of conventional management practices on insect and pathogen populations and their natural enemies.

- Evaluate conventional and new management techniques to determine the extent to which each can be used to modify forest structure and composition (living and dead), while the beneficial roles of pathogens and insects and their natural enemies are maintained and long-term adverse effects on soils, streams, and native species diversity are minimized.

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Conclusions

The primary utility of landscape assessments and change analysis summaries is in understanding the characteristics of ecosystems that we manage (Morgan and others 1994). Knowledge of landscape pattern change at regional, provincial, and subregional scales provides critical context for regional and forest planning and watershed analysis and project-level planning, and valuable insight for ecological restoration, conservation, and monitoring decisions and activities. Summaries of landscape pattern change provide answers to simple but vital questions, such as How important is the type and degree of change noted in one place relative to the broader picture? or How important is a particular patch type (for example, ponderosa pine-old forest, single story) within a given watershed, subbasin, or subregion? Landscape change analysis provides an essential empirical basis to evaluate the historical and current rarity of landscape pattern features and is an aid in determining how representative current patterns are in comparison with recent historical conditions.

The basin assessment area is large, and we have summarized a great many changes in vegetation condition and associated change in vulnerability to insect and pathogen disturbances. Ottmar and others (in prep.) will similarly summarize change in fire behavior attributes and potential smoke emissions associated with these same vegetation changes. But here we will focus on some of the most important generalities lest we lose them in a sea of detail.

Most dramatic of all changes in physiognomic conditions was the across-the-board regional decline in shrubland area. The greatest declines were to colline and montane low-medium shrub cover types in both open and closed structural conditions. Losses of native shrublands resulted from a variety of factors, including forest and woodland expansion as observed in the Blue Mountains and Northern Great Basin ERUs, cropland expansion as in the Northern Great Basin ERU, and conversion to seminative and nonnative herbland as in the Owyhee Uplands, Snake Headwaters, and Southern Cascades ERUs. Loss of historical dry herblands to agriculture was equally dramatic but had already been sustained by the start of our historical vegetation coverage (Hann and others 1997). During our sample period, herbland area actually increased modestly, but most increase was in the form of seminative or nonnative herbland, and it was to the detriment of native shrublands.

Forest cover increased substantially in several ERUs at the expense of shrubland and herbland, and woodland cover rose sharply in all ERUs where woodland was more than a minor physiognomic condition. It was clear that the distribution of forest and woodland physiognomies had been altered and that this change could be observed at subwatershed to regional scales; our results indicated that direct fire suppression, indirect exclusion of fire, and domestic livestock grazing were primary influences.

Predicted shifts from early to late seral species were evident in many ERUs. Most of the observed change in ponderosa pine, western larch, and Douglas-fir cover was associated with decline in area and connectivity of patches with medium and large trees of these species. We also observed precipitous decline in area and connectivity of western white pine cover in northern Idaho and northwestern Montana, the heart of the historical

range. Loss of white pine cover was attributable to early selective and regeneration harvesting and mortality associated with white pine blister rust infection and mountain pine beetle infestation.

Overstories and understories comprised of shade-tolerant species were evident in many forested ERUs; across the basin, forests are now more contagiously dominated by shade-tolerant conifers than was true in the historical condition. Lacking significant forest pattern restoration, we can expect that insects and pathogens (for example, the western spruce budworm, Douglas-fir tussock moth, fir engraver, Douglas-fir dwarf mistletoe, *Armillaria* root disease, and S-group annosum root disease) favored by increased areal extent and contiguity of patches of shade-tolerant conifers will have an expanding role in shaping forest patterns by their direct disturbance influence, via mortality inputs, and by indirect but substantial influence on fire regimes.

Area in old-forest structures declined sharply in all forested ERUs where they historically occupied more than a minor area. The same was true of remnant large trees associated with structural classes other than old forest. But when we evaluated change in area with medium and large trees, regardless of their structural affiliation (tables 20 and 21), we observed what we believe was the most important change in structure in several ERUs. In the Blue Mountains, Northern Cascades, and Upper Klamath ERUs, decline in area with medium and large trees both overshadowed and augmented losses to historical old-forest area.

Our results suggested that 20th-century timber harvest activities did not target old forest; instead, timber harvest targeted medium- and large-sized trees regardless of their structural affiliation. They were most economical to harvest and most accessible, sawmills were tooled to handle them most efficiently and economically, and timber sales were most viable when offered volumes were in the form of medium and large trees. Our results indicated that medium and large trees were harvested wherever they stood; they were often but not always associated with old forest.

There are at least two important ramifications of this observation. First, it has been broadly assumed by forest managers and ecologists alike, that large trees are principally associated with old forest, where they obviously contribute important living and dead structure. But our results indicate that large (and medium) trees were, in several ERUs, widely distributed in other forest structures as a conspicuous remnant after stand-replacing disturbance. In some cases, large trees comprised as much as 24 percent of the crown cover of forest structures that were not old and, although subordinate to other features, contributed important living and dead structure. Hence, many non-old-forest structures of historical forest landscapes contributed some measure of late-successional functionality and connectivity with old forest. Second, in those ERUs where old-forest area and area with large trees has been depleted, the present and future supply of medium and large dead trees as snags and down logs has been substantially diminished. This is especially true of snags and down logs of early seral species, such as ponderosa pine, western larch, Douglas-fir, western white pine, and sugar pine—all preferred commercial species that have been the primary focus of 20th-century harvest activities. Owing to the magnitude of the deficit, it is likely that terrestrial and aquatic species and ecological processes requiring medium and large dead tree structure may be adversely influenced by this current and future reduction, unless steps are taken to remedy the shortfall through replacement.

Along with reduced area containing large overstory trees, we observed a marked reduction in landscape vulnerability to dwarf mistletoes of early seral species such as ponderosa pine and western larch. It was generally apparent from comparisons of historical and current subwatersheds that timber harvest reduced or eliminated overstory crown cover of large trees of early seral species while one or more (often shade-tolerant) coniferous understory strata developed.

As expected, we observed that area in stand-initiation (new forest) structures dramatically declined in several ERUs (Central Idaho Mountains, Lower Clark Fork, Northern Glaciated Mountains, and

Upper Clark Fork) where stand-replacing fires once were relatively common events. Such reduction was evident despite widespread timber harvest activity. Along with declining area in stand-initiation and old-forest structures, we observed sharply increased area and connectivity of intermediate forest structure, including stem-exclusion, understory reinitiation, and young multistory structures, across the basin.

Results from nearly all forested ERUs indicated that the absence of fire by direct suppression or exclusion has had profound effects on forest and woodland area and connectivity at subwatershed to regional scales. The history and legacy of fire suppression and prevention programs is well documented, but the effect of fire exclusion has been more difficult to pin down because many interacting factors played a role in excluding fire from fire-dependent ecosystems. As a result, it is possible and even likely that the efficacy of fire prevention and suppression programs has been overstated, and the role of factors responsible for exclusion of fire has been understated. Key factors responsible for fire exclusion were the widespread elimination of flashy fuels through extensive domestic livestock grazing and overgrazing, especially in the first half of the 20th century (Hann and other 1997, and references therein; Skovlin and Thomas 1995; Wissmar and others 1994a, 1994b); reduced connectivity of fire-prone landscapes through placement of extensive road networks; settlement of fire-prone interior valleys and subsequent conversion to agriculture by European immigrants; and the movement onto reservations of Native Americans, who frequently used fire as a management tool (Robbins and Wolf 1994, Woods and Horstman 1996).

Many direct effects of fire exclusion and fire suppression were observed in our results. In appendix 2 and figure 25, we show increased area and connectivity of forest and woodland physiognomies. Total forest and woodland crown cover increased in many forested ERUs (table 22 and fig. 39), as did area with more than two canopy layers (table 23 and fig. 40). Area with conifer understories increased (table 25), especially area with shade-tolerant conifer understories (table 24 and fig. 41).

Throughout the basin, current forests and rangelands are more fragmented than were landscapes of our historical condition. Whether patch types are cover types, structural classes, or cover type-structural class couplets, patch densities are now higher, mean patch sizes are smaller, the largest patch of any given cover type or structural class is generally smaller, and edge density is greater. These combined outcomes point to landscape fragmentation and reduced patch type connectivity, primarily as a consequence of timber harvest activities and road construction. Contagion, interspersion, and juxtaposition metrics displayed in table 19 confirm the presence of highly fragmented landscapes in the current condition and point to increased complexity in managed landscape patterns. The converse appears to be true in roadless area and wilderness-dominated subwatersheds, where patch type connectivity generally increased and landscape patterns were simplified.

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English Conversions

When you know:	Multiply by:	To obtain:
centimeters	0.3937007874	inches
meters	3.280839895	feet
meters	0.04970960	chains
square meters	0.0002471054	acres
kilometers	0.6213711922	miles
square kilometers	247.1054	acres
hectares	2.471054073	acres

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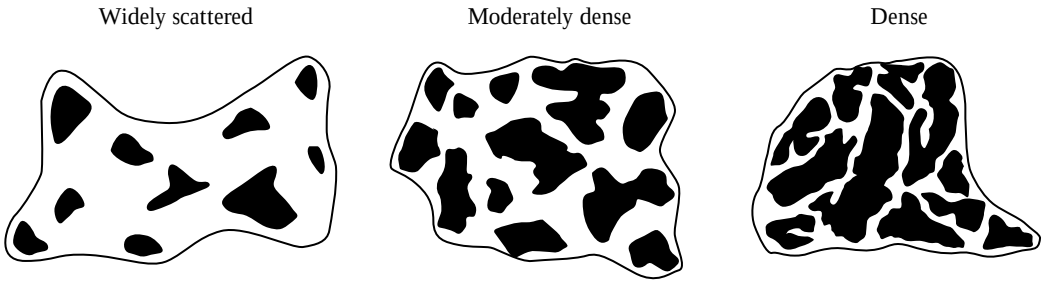
Appendix 1

Attributes of Forest and Nonforest Patches

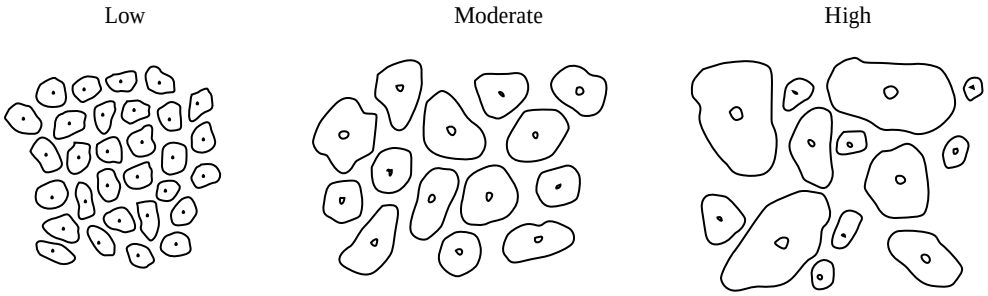
The following describes the attributes of forest and nonforest patches interpreted from aerial photographs in the midscale ecological assessment of the interior Columbia River basin.

Total crown cover and overstory crown cover—Total and overstory forest crown cover were estimated to the nearest 10 percent for all forest patches. Forest patches were defined as having at least 10 percent of their patch area under a forest canopy. A new patch was delineated by total crown cover alone when two adjacent patches similar in all attributes differed in average total crown cover by at least 20 percent.

Clumpiness—This term refers to the horizontal "patchiness" of tree cover within a patch. Patches were rated as (1) clumpy—yes or no; (2) if clumpy, clump distribution was widely scattered, moderately dense, or dense (see below); and (3) average clump size was < 0.4 ha, 0.4 to 2.0 ha, or > 2.0 ha, but < 4.0 ha.



Crown differentiation—Degree of differentiation among overstory tree crowns was estimated as low (< 30 percent difference), moderate (30 to 100 percent difference), and high (> 100 percent difference). Visual templates are shown.



Canopy layers—Canopy layers were estimated as 1, 2, or > 2 layers visible.

Riparian or wetland—These terms indicated whether a patch resided within a riparian or wetland setting and was used in conjunction with overstory vegetation to estimate forest and nonforest riparian and wetland area.

Nonforest type—A vegetation patch was interpreted as nonforest when total crown cover was < 10 percent. Categories were rock, water (lake or pond), wet meadow or marsh (soils saturated year-round), alpine meadow, dry meadow (soils saturated seasonally), grasses or forbs after logging, shrubland (with at least 5 percent shrub canopy cover), bare ground (burned or logged), bare ground (from slumps or erosion), agriculture cropland, urban or rural development, pasture (irrigated grasses or forbs), grassland (with at least 20 percent canopy cover), woodland (< 10 percent total crown cover and at least two trees per acre), bare ground (from roadcuts or sidecast adjacent to highways), stream channel and nonvegetated flood plains, grass or forbs after wildfire, sand dune, glacier, and bare ground (dry lake beds, playa).

Visible logging entry—Visible logging was interpreted as no logging apparent, regeneration harvested (clearcut, shelterwood, seedtree), selection harvested (overstory removal, final removal, selective harvest), thinned (commercial or precommercial), or patch clearcut (clearcut patches were < 4 ha). If patch clearcut, we estimated the percentage of patch area in clearcut patches to the nearest 10 percent.

Overstory and understory tree size classes—Tree sizes were estimated as seedlings and saplings (< 12.7 cm d.b.h.), poles (12.7 to 22.6 cm d.b.h.), small trees (22.7 to 40.4 cm d.b.h.), medium trees (40.5 to 63.5 cm d.b.h.), and large trees (> 63.5 cm d.b.h.).

Overstory and understory species—Dominant overstory and understory species were recorded. To be named as an overstory species in pure or mixed compositions, a species comprised at least 20 percent of the basal area. To be named as an understory species in pure or mixed compositions, a species comprised at least 20 percent of the trees per hectare.

Primary overstory species or species mixes were ponderosa pine; western larch; lodgepole pine; Douglas-fir; grand fir or white fir, or both; Pacific silver fir; subalpine fir or Engelmann spruce, or both; western hemlock or western redcedar, or both; mountain hemlock; whitebark pine or subalpine larch, or both; western white pine or sugar pine; hardwoods (Oregon and Washington subbasins only); juniper; noble fir; Shasta red fir; ponderosa pine and sugar pine; ponderosa pine and Douglas-fir; Douglas-fir and mountain hemlock; lodgepole pine and Engelmann spruce; mountain hemlock and white fir; Douglas-fir and Engelmann spruce; incense-cedar; western larch and lodgepole pine; Douglas-fir and western larch; limber pine; blue spruce; pinyon pine; white spruce; maple; birch; aspen; cottonwood; Douglas-fir and limber pine; pinyon pine and juniper; Douglas-fir and western white pine; grand fir and western white pine; subalpine fir and western white pine; western larch and western white pine; western larch, lodgepole pine, and western white pine; western larch and ponderosa pine; western larch and Engelmann spruce; lodgepole pine and subalpine fir; lodgepole pine and Douglas-fir; lodgepole pine and grand fir; subalpine fir and limber pine; grand fir and Engelmann spruce; Douglas-fir and aspen; lodgepole pine and aspen; subalpine fir and Douglas-fir; grand fir and ponderosa pine; grand fir and subalpine fir; grand fir and western larch; Russian olive; subalpine fir and whitebark pine.

Primary understory species or species mixes were ponderosa pine; western larch and lodgepole pine; Douglas-fir or grand fir or white fir or Pacific silver fir, or combinations; western hemlock or western redcedar, or both; mountain hemlock; subalpine fir or Engelmann spruce, or both; hardwood (Oregon and Washington subbasins only); juniper; grasses and forbs; shrubs; bare ground; lodgepole pine; ponderosa pine and lodgepole pine; ponderosa pine and Douglas-fir; grand fir or white fir; mountain hemlock and white fir; mountain hemlock and lodgepole pine; Douglas-fir and mountain hemlock; lodgepole pine and Engelmann spruce; whitebark pine or subalpine larch, or both; Shasta red fir; incense-cedar; western white pine; Douglas-fir and western larch; Douglas-fir and Engelmann spruce; limber pine; blue spruce; pinyon pine; white spruce; maple; aspen; cottonwood; Douglas-fir and limber pine; lodgepole pine and Douglas-fir; beargrass; and Pacific silver fir.

Dead trees and snags—Dead tree and snag abundance was estimated as none apparent, < 10 percent of trees dead, 10 to 39 percent of trees dead, 40 to 70 percent of trees dead, and > 70 percent of trees dead.

Elevation zones of nonforest types—Elevation zones were interpreted as colline (below lower timberline); lower montane (above lower timberline but not including such forest types as subalpine fir, lodgepole pine, Engelmann spruce, mountain hemlock, Pacific silver fir, noble fir, or Shasta red fir); upper montane (below upper timberline and including the forest types listed immediately above); subalpine (above upper timberline but with trees as islands or krummholz); and alpine (above upper treeline).

Nonforest overstory species—Dominant herbland and shrubland overstory species were recorded. The primary species groups were native bunchgrasses (for example, wildrye, bluebunch wheatgrass, Idaho fescue, alkali grass, bottlebrush squirreltail); annual grasses (for example, cheatgrass, medusahead); seeded wheatgrasses (for example, crested wheatgrass, other seeded dryland grasses); exotic forbs (for example, spotted knapweed, yellowstar thistle, leafy spurge); native moist site herbs (for example, sedges, rushes); low sagebrush (for example, low sagebrush, salt desert shrub); low alpine shrubs (for example, meadow heathers); sagebrush and bitterbrush (for example, basin big sagebrush, Wyoming sagebrush, mountain big sagebrush, silver sagebrush, bitterbrush, rabbitbrush); mahoganies (for example, mountain and curlleaf mahoganies); mountain shrubs (for example, serviceberry, rose, snowberry, Rocky Mountain maple, Scouler's willow, buffaloberry, chokeberry, bittercherry); wet site shrubs (for example, willow, alder, bog birch, dogwood); and beargrass.

Overstory canopy cover nonforest types—Canopy cover of herbland and shrubland patches was estimated to the nearest 15 percent. A new patch was delineated by canopy cover alone when two adjacent patches were similar in all attributes and differed in average total canopy cover by at least 15 percent. Cover classes were estimated as 0 to 15 percent canopy cover, 16 to 33 percent cover, 33 to 66 percent cover, and > 66 percent cover.

Tree cover of herbland and shrubland types—Tree cover was identified, where present, in herbland and shrubland patches.

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Appendix 2

Table 32—Historical and current percentage of area, patch density, and mean patch size for physiognomic types, cover types, and structural classes of sampled subwatersheds in the ERUs of the midscale ecological assessment of the interior Columbia River basin

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Blue Mountains ERU:											
Physiognomic types—											
Forest	+	nc	62.8	64.1	1.4*	9.3	137.6	-0.3	1984.3	1925.0	-59.3
Woodland	+	+	2.7	4.2	1.6*	5.9	6.2	0.3	17.4	29.8	12.5*
Shrubland	-	nc	14.1	10.7	-3.4*	7.9	7.9	0.0	128.0	90.3	-37.6
Herbland	nc	+	17.4	18.0	0.6	24.0	28.8	4.8*	89.5	103.8	14.3
Other[e]	nc	+	3.0	2.9	-0.1	5.5	4.6	-0.9*	37.7	45.9	8.2
Cover types-forest and woodland—											
Grand fir-white fir	-	-	15.3	8.4	-6.9*	8.0	11.0	3.0*	136.2	54.7	-81.5*
Engelmann spruce-subalpine fir	-	-	6.3	4.4	-1.9*	2.3	3.8	1.5*	64.8	40.0	-24.8*
Aspen-cottonwood-willow	nc	nc	0.1	0.1	0.0	0.3	0.4	0.1	4.7	3.1	-1.6
Juniper	+	+	2.7	4.2	1.5*	5.8	6.3	0.5	17.6	29.6	12.0*
Western larch	nc	-	2.6	2.2	-0.4	3.8	7.8	4.1*	21.2	15.8	-5.4
Whitebark pine-subalpine larch	+	+	0.0	0.7	0.7*	0.0	0.4	0.4*	0.0	15.9	15.9*
Lodgepole pine	nc	nc	2.4	2.3	-0.1	4.6	5.6	1.0	29.1	29.1	0.0
Limber pine	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	-0.6
Ponderosa pine	nc	-	28.4	28.9	0.5	12.2	24.0	11.8*	419.5	428.6	9.1
Douglas-fir	+	+	7.7	17.1	9.4*	11.7	20.6	8.9*	54.4	107.7	53.3*
Cover types-shrubland—											
Colline low-medium	-	-	7.2	4.7	-2.5*	2.0	266.4	264.7*	116.9	2.7	-114.2*
Montane low-medium	nc	-	6.0	5.4	-0.6	4.8	5.0	0.2	47.7	32.3	-15.4*
Montane mahogany	-	nc	0.4	0.2	-0.1*	1.2	0.9	-0.3*	6.4	4.4	-2.0
Colline tall	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Montane tall	-	nc	0.1	0.0	-0.1*	0.5	0.2	-0.4*	3.3	2.7	-0.6
Colline wet-site	nc	nc	0.0	0.1	0.0	0.1	0.2	0.1*	1.9	2.3	0.4
Montane wet-site	nc	nc	0.1	0.1	0.0	0.8	0.5	-0.3	4.0	5.4	1.4
Cover types-herbland—											
Alpine	nc	nc	0.1	0.2	0.2	0.3	0.7	0.4*	2.9	2.3	-0.6
Dry-meadow	-	-	6.2	5.3	-0.9*	11.0	14.6	3.7*	24.5	24.6	0.2
Colline bunchgrass	nc	+	3.9	4.6	0.7	1.6	1.0	-0.6*	83.7	146.7	63.0*
Montane bunchgrass	nc	-	3.4	3.5	0.1	5.9	8.4	2.5*	27.4	23.5	-3.9
Colline exotic grasses-forbs	+	+	0.3	1.3	1.0*	0.6	0.4	-0.2	6.3	34.4	28.1*
Montane exotic grasses-forbs	nc	nc	1.3	1.2	-0.1	2.8	3.4	0.6	17.5	20.5	3.0
Colline moist-site	nc	nc	0.1	0.0	0.0	0.1	0.0	-0.1	6.5	2.6	-4.0
Montane moist-site	-	nc	0.7	0.5	-0.2*	2.7	2.1	-0.6	9.4	8.5	-0.9
Wet-meadow	-	-	0.2	0.0	-0.2*	0.5	0.1	-0.4	3.6	0.2	-3.4*
Postlogging grasses-forbs	+	-	0.0	0.1	0.1*	0.1	5.7	5.6*	1.8	0.1	-1.8*

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* --------		
Cover types-agriculture-urban rural—											
Cropland	-	-	2.3	1.8	-0.5*	3.2	1.7	-1.6*	34.7	33.7	-1.0
Pasture	nc	+	1.0	1.0	0.0	1.0	0.7	-0.3*	25.1	50.3	25.2
Urban-rural	nc	nc	0.1	0.1	0.0	0.2	0.2	0.0	4.4	4.1	-0.3
Cover types-other—											
Bare ground-road	nc	nc	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.3	-0.3
Rock	nc	nc	0.6	0.7	0.1	1.6	1.6	0.0	9.3	8.9	-0.4
Postlogging-bare ground-burned	+	+	0.0	0.3	0.6*	0.0	0.7	0.7*	5.3	10.5	5.2
Postlogging-bare ground-slumps-erosion	nc	nc	0.1	0.0	-0.1	0.1	0.1	-0.1	3.3	0.7	-2.7
Stream channel-nonvegetated flood plain	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	0.6	0.4	-0.2
Water	nc	+	0.1	0.1	0.0	0.4	0.4	0.0	7.8	10.7	2.9*
Structural classes-forest—											
Stand initiation	+	+	3.9	6.5	2.6*	10.2	17.9	7.7*	34.1	41.8	7.6
Stem exclusion, open canopy	-	-	14.3	9.6	-4.7*	29.6	25.7	-3.9*	51.5	41.5	-10.0*
Stem exclusion, closed canopy	nc	nc	5.0	5.0	0.0	10.3	10.7	0.4	48.4	43.2	-5.3
Understory reinitiation	-	nc	13.6	11.2	-2.4*	15.7	16.8	1.0	90.8	83.5	-7.3
Young, multistory	+	nc	21.3	29.6	8.2*	25.9	27.8	1.9	112.3	130.5	18.2
Old, multistory	-	-	2.2	1.0	-1.3*	4.1	2.8	-1.3*	33.6	16.8	-16.8*
Old, single story	-	-	2.7	0.9	-1.7*	4.9	2.4	-2.5*	31.1	17.8	-13.3*
Structural classes-woodland—											
Stand initiation	nc	nc	0.0	0.1	0.0	0.2	0.1	0.0	1.5	4.0	2.6
Stem exclusion	+	+	2.4	4.0	1.6*	4.8	6.0	1.2*	14.9	28.6	13.7*
Understory reinitiation	nc	-	0.3	0.2	-0.1	1.3	0.5	-0.8*	9.7	4.6	-5.1*
Old, multistory	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.2	1.2	0.9
Structural classes-shrubland—											
Open low-medium	-	-	11.0	8.3	-2.7*	7.0	6.4	-0.6	96.6	61.0	-35.6
Closed low-medium	nc	-	2.3	1.8	-0.4	3.4	3.0	-0.4	19.8	12.1	-7.7*
Open tall	nc	nc	0.5	0.4	0.0	1.6	1.4	-0.2	9.9	12.4	2.4
Closed tall	nc	-	0.2	0.1	-0.1*	1.2	0.5	-0.7*	4.5	2.1	-2.4*
Structural classes-herbland—											
Open	+	+	6.4	8.5	2.1*	7.6	9.8	2.2*	40.8	67.3	26.6*
Closed	-	nc	3.2	2.5	-0.7*	5.1	3.9	-1.2	33.2	31.0	-2.2
Structural classes-other[e]—											
Nonforest-nonrange	-	-	11.1	10.0	-1.1*	17.2	21.1	3.9*	74.5	69.0	-5.5

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Central Idaho Mountains:											
Physiognomic types—											
Forest	nc	+	73.4	73.5	0.2	7.7	8.1	0.4	2983.7	3457.6	474.9*
Woodland	nc	nc	0.1	0.0	0.0	0.3	0.4	0.0	0.3	0.3	-0.1
Shrubland	-	nc	19.2	17.1	-2.0*	13.4	14.7	1.3	218.6	158.3	-60.3
Herbland	+	-	3.2	4.5	1.0*	9.0	13.7	4.7*	42.4	37.3	-5.1
Other[e]	+	nc	4.2	4.9	1.0*	12.4	13.8	1.4	32.2	39.3	7.0
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	9.6	10.2	0.5	4.5	5.6	1.2	213.2	75.0	-138.2
Engelmann spruce-subalpine fir	nc	nc	22.7	24.1	1.4	13.0	14.4	1.4	231.1	350.5	119.4
Aspen-cottonwood-willow	nc	-	1.1	0.8	-0.2	1.8	2.4	0.6*	11.0	11.2	0.2
Juniper	nc	nc	0.1	0.0	0.0	0.3	0.4	0.0	0.3	0.3	-0.1
Western larch	nc	nc	0.5	0.3	0.0*	1.3	1.5	0.2	14.6	6.0	-8.6
Whitebark pine-subalpine larch	-	nc	5.1	2.5	-2.5	5.2	5.6	0.4	170.8	18.3	-152.6
Lodgepole pine	nc	-	9.7	9.5	-0.2	12.2	14.6	2.4*	53.6	47.5	-6.0
Limber pine	nc	nc	0.4	0.4	-0.1	0.7	0.4	-0.3	1.4	1.8	0.5
Ponderosa pine	nc	-	6.0	5.9	-0.2	3.7	4.9	1.2*	48.7	39.8	-8.9*
Douglas-fir	nc	+	17.6	18.5	1.0	16.0	19.2	3.2*	118.0	138.6	20.5
Western hemlock-western redcedar	nc	-	0.9	1.3	0.4	0.7	1.1	0.4*	10.4	8.4	-1.9*
Mountain hemlock	nc	+	0.0	0.0	0.0*	0.0	0.2	0.2*	0.3	1.1	0.8
Cover types-shrubland—											
Colline low-medium	nc	-	8.2	8.0	-0.3	1.3	571.5	570.2*	186.4	5.7	-180.7*
Montane low-medium	nc	nc	5.3	4.9	-0.4	6.4	7.0	0.6	32.5	46.8	14.3
Subalpine-alpine low-medium	nc	nc	0.5	0.4	-0.1	1.2	1.8	0.6	11.7	8.3	-3.4
Colline mahogany species	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	0.7	0.5	-0.2
Montane mahogany species	-	-	0.4	0.2	-0.2*	1.3	0.8	-0.5*	5.2	4.1	-1.1
Subalpine-alpine mahogany species	nc	nc	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.2	-0.3
Colline tall	nc	nc	0.5	0.3	-0.3	0.5	0.4	-0.1	7.0	14.6	7.6
Montane tall	nc	-	3.7	3.2	-0.5	7.0	8.8	1.8	35.4	17.7	-17.7*
Colline wet-site	nc	-	0.1	0.1	-0.1	0.4	0.3	-0.1	3.9	1.7	-2.2*
Montane wet-site	-	nc	0.7	0.6	-0.1*	1.9	1.6	-0.3	12.2	16.0	3.8
Subalpine-alpine wet-site	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.0	0.9
Montane subshrub	nc	+	0.1	0.1	0.0	0.4	0.5	0.1	1.3	2.6	1.3*
Subalpine-alpine subshrub	+	+	0.0	0.1	0.1*	0.0	6.2	6.2*	0.0	0.1	0.1*
Cover types-herbland—											
Alpine	nc	nc	0.0	0.1	0.1	0.0	0.0	0.0	0.0	3.5	3.5
Dry meadow	nc	nc	0.0	0.1	0.1	0.0	0.0	0.0	0.0	4.0	4.0
Colline bunchgrass	+	nc	0.1	0.2	0.1*	0.4	0.7	0.3	3.6	4.0	0.4
Montane bunchgrass	+	+	0.7	1.2	0.6*	3.3	4.3	1.0	6.4	11.0	4.6*
Subalpine-alpine bunchgrass	nc	+	0.0	0.0	0.0	0.1	0.1	0.0	0.6	1.2	0.6
Colline exotic grasses-forbs	nc	nc	0.6	0.8	0.1	0.5	0.6	0.1	10.8	10.9	0.1

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Montane exotic grasses-forbs	nc	+	0.1	0.2	0.1	0.5	1.1	0.6*	1.7	2.2	0.5
Colline moist-site	nc	nc	0.2	0.2	0.0*	0.2	0.2	0.0	3.7	6.0	2.3
Montane moist-site	nc	nc	0.7	0.6	0.0	2.2	3.0	0.8	9.9	8.4	-1.5
Subalpine-alpine moist-site	nc	nc	0.0	0.1	0.1	0.0	0.1	0.1	0.0	2.2	2.2
Postfire-grasses	nc	-	0.1	0.0	-0.1	0.1	0.0	-0.1	1.7	0.8	-0.9*
Postlogging-grasses-forbs	+	+	0.0	0.2	0.2*	0.3	4.3	4.0*	0.3	0.0	-0.2
Cover types-agriculture-rural-urban—											
Cropland	nc	nc	0.3	0.2	-0.1	0.4	0.3	-0.1	9.9	8.3	-1.6
Pasture	nc	+	0.1	0.1	0.1	0.3	0.4	0.1	1.5	3.4	1.8*
Urban-rural	+	+	0.0	0.3	0.2*	0.2	0.4	0.3*	1.8	7.7	5.9*
Cover types-other—											
Bare ground-road	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	1.2	1.1	-0.1
Rock	nc	nc	3.4	3.6	0.1	10.5	10.6	0.1	23.4	22.9	-0.5
Postlogging-bare ground-burned	+	+	0.2	0.7	0.5*	0.7	2.7	2.0*	4.5	6.8	2.3
Postlogging-bare ground-slumps-erosion	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.6	0.3
Stream channel-nonvegetated flood plain	nc	nc	0.0	0.1	0.0	0.2	0.3	0.1	2.0	3.3	1.4
Water	nc	nc	0.1	0.1	0.0	0.7	0.6	-0.1	1.9	2.4	0.4
Structural classes-forest—											
Stand initiation	-	-	9.7	5.9	-3.8*	19.0	18.0	-1.0	61.1	30.5	-30.6*
Stem exclusion, open canopy	nc	nc	18.4	17.7	-0.8	26.1	29.0	2.9	87.6	77.6	-10.0
Stem exclusion, closed canopy	nc	-	7.7	8.5	0.8	16.7	19.8	3.1*	42.0	34.5	-7.5
Understory reinitiation	+	+	16.0	21.4	5.5*	20.6	21.0	0.4	102.1	151.7	49.5*
Young, multistory	-	-	18.4	17.1	-1.2	30.3	31.5	1.2	75.1	62.0	-13.1*
Old, multistory	nc	-	1.4	1.2	-0.3	1.8	2.7	0.9*	32.6	9.3	-23.4*
Old, single story	nc	nc	1.8	1.7	-0.1	4.7	4.8	0.2	16.2	12.5	-3.7
Structural-woodland											
Stem exclusion	nc	nc	0.1	0.0	0.0	0.3	0.4	0.0	0.3	0.3	-0.1
Structural classes-shrubland—											
Open low-medium	nc	-	12.6	12.0	-0.5	7.0	8.8	1.7*	95.8	94.6	-1.2
Closed low-medium	nc	nc	1.6	1.4	-0.2	2.8	2.6	-0.2	21.8	21.3	-0.5
Open tall	nc	nc	2.8	2.8	0.1	7.0	8.0	1.1	25.0	27.7	2.7
Closed tall	-	-	2.7	1.5	-1.2*	6.5	6.2	-0.2	28.5	15.1	-13.4*
Structural classes-herbland—											
Open	nc	-	0.9	1.1	0.1	2.4	3.6	1.2*	25.6	16.7	-8.9
Closed	+	-	1.7	2.2	0.5*	4.8	6.5	1.6*	22.9	23.7	0.8
Structural classes-other[e]—											
Nonforest-nonrange	+	+	4.4	5.4	1.1*	12.8	15.8	3.0*	31.4	39.7	8.2

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Columbia Plateau ERU:											
Physiognomic types—											
Forest	+	nc	26.1	29.1	3.0*	5.6	4.9	-0.6	1116.2	930.0	-186.1
Woodland	+	+	6.7	12.2	5.5*	4.9	4.2	-0.7	69.9	220.6	150.8*
Shrubland	-	-	32.2	23.4	-8.8*	9.6	9.7	0.1	842.8	265.9	-576.9*
Herbland	nc	nc	12.7	14.0	1.4	17.1	18.7	1.6	205.1	155.4	-49.7
Other[e]	nc	nc	22.4	21.4	-1.0	11.3	9.8	-1.5	656.5	639.4	-17.1
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	1.1	0.4	-0.7	0.6	0.7	0.1	20.3	7.1	-13.2
Engelmann spruce-subalpine fir	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	6.1	1.5	-4.7
Aspen-cottonwood-willow	nc	nc	0.3	0.3	0.0	1.3	1.3	-0.1	10.8	7.5	-3.3
Juniper	+	+	6.5	12.0	5.5*	4.7	3.9	-0.8	60.6	208.4	147.8*
Western larch	-	nc	1.0	0.1	-0.9*	0.3	0.4	0.1	40.6	3.3	-37.3
Lodgepole pine	nc	nc	1.3	0.9	-0.4	0.7	1.1	0.4	93.9	11.9	-82.0
Ponderosa pine	+	nc	19.2	21.4	2.3*	5.2	5.3	0.1	752.8	334.4	-418.4
Douglas-fir	+	+	3.0	3.9	0.9*	2.4	3.6	1.2*	37.7	39.7	2.0
Western hemlock-western redcedar	+	+	0.4	2.2	1.9*	0.3	0.9	0.6*	5.7	14.7	9.0
Mountain hemlock	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2
Cover types-shrubland—											
Colline low-medium	-	-	29.1	21.7	-7.4*	5.2	1405.2	1400.1*	838.4	14.1	-824.3*
Montane low-medium	nc	+	1.3	0.9	-0.3	1.8	0.7	-1.1*	10.4	20.1	9.7
Colline mahogany species	nc	nc	0.4	0.1	-0.2	0.5	0.2	-0.4	7.0	11.4	4.4
Montane mahogany species	nc	nc	0.0	0.0	0.0	0.4	0.1	-0.3	0.3	0.1	-0.2
Colline tall	nc	nc	0.3	0.1	-0.1	0.8	0.7	-0.1	3.2	2.9	-0.4
Montane tall	nc	-	0.9	0.4	-0.6	1.5	1.8	0.3	12.3	2.8	-9.5*
Colline wet-site	-	nc	0.2	0.1	-0.1*	0.7	0.6	-0.1	9.3	6.9	-2.4
Montane wet-site	nc	nc	0.1	0.1	0.0	0.3	0.3	-0.1	4.4	4.0	-0.4
Montane subshrub	nc	nc	0.0	0.0	0.0	0.1	0.2	0.0	0.5	0.3	-0.2
Cover types-herbland—											
Dry meadow	nc	nc	0.1	0.0	-0.1	0.1	0.1	0.0	3.5	0.3	-3.2
Colline bunchgrass	-	nc	8.3	6.9	-1.4*	8.8	8.3	-0.5	258.2	416.6	158.4
Montane bunchgrass	+	nc	1.3	1.8	0.5*	4.5	4.1	-0.4	15.9	22.8	6.9
Colline exotic grasses-forbs	+	+	0.8	2.3	1.5*	2.4	4.2	1.8*	11.3	29.3	18.0*
Montane exotic grasses-forbs	nc	nc	0.1	0.3	0.2	0.4	0.7	0.3	6.9	7.3	0.5
Colline moist-site	nc	nc	0.1	0.2	0.1	0.7	0.6	-0.1	1.8	3.5	1.7
Montane moist-site	nc	nc	0.5	0.5	0.1	2.6	2.7	0.1	5.0	4.7	-0.2
Wet meadow	nc	nc	0.1	0.0	-0.1	0.4	0.0	-0.3	0.8	2.8	2.0
Postlogging-grasses-forbs	nc	-	0.0	0.0	0.0	0.2	2.4	2.2*	1.3	0.0	-1.3*
Cover types-agriculture-rural-urban—											
Cropland	nc	+	18.1	17.9	-0.1	7.8	4.8	-3.0*	708.9	815.4	106.4
Pasture	nc	nc	1.1	1.4	0.3	0.9	1.5	0.6	27.1	36.9	9.8
Urban-rural	nc	-	0.6	0.8	0.2	1.2	2.7	1.4*	17.1	9.5	-7.6

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Cover types-other—											
Rock	nc	+	0.4	0.5	0.1	2.8	2.4	-0.4	4.5	9.6	5.1*
Postlogging-bare ground-burned	nc	-	2.8	1.6	-1.2	0.4	2.2	1.8*	39.5	25.2	-14.3
Postlogging-bare ground-slumps-erosion	nc	+	0.0	0.1	0.1	0.0	0.3	0.3*	0.2	1.2	1.1
Stream channel-nonvegetated flood plain	nc	nc	0.3	0.0	-0.2	0.3	0.2	-0.1	12.9	1.6	-11.3
Water	+	+	0.3	0.4	0.1*	0.5	0.9	0.3*	13.0	16.4	3.4
Structural classes-forest—											
Stand initiation	nc	nc	2.3	2.8	0.5	4.0	5.1	1.1	71.1	24.7	-46.4
Stem exclusion, open canopy	nc	nc	6.7	7.8	1.1	12.7	9.9	-2.9	35.4	103.9	68.5
Stem exclusion, closed canopy	nc	nc	3.8	3.6	-0.2	1.6	2.2	0.5	65.7	34.6	-31.1
Understory reinitiation	nc	nc	3.1	3.3	0.2	4.6	4.3	-0.3	35.2	42.7	7.5
Young, multistory	+	-	7.3	10.0	2.7*	8.6	7.7	-0.9	54.6	81.4	26.8*
Old, multistory	nc	+	2.3	1.3	-1.0	1.0	1.2	0.2	33.9	11.1	-22.8*
Old, single story	nc	nc	1.1	1.0	-0.1	2.1	2.4	0.3	10.0	9.9	0.0
Structural classes-woodland—											
Stand initiation	nc	nc	0.1	0.3	0.2	0.3	0.4	0.2	2.7	5.5	2.8
Stem exclusion	+	+	5.9	10.9	5.0*	4.6	4.4	-0.2	63.8	152.7	88.9*
Understory reinitiation	nc	nc	0.6	1.0	0.3	0.9	1.3	0.4	16.9	10.2	-6.7
Old multistory	nc	nc	0.0	0.0	0.0	0.2	0.1	0.0	1.7	1.8	0.1
Old single story	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Structural classes-shrubland—											
Open low-medium	-	-	23.4	19.4	-4.1*	10.5	9.4	-1.1	435.1	172.9	-262.2*
Closed low-medium	-	-	6.9	3.3	-3.7*	5.2	2.9	-2.2*	61.4	54.2	-7.1
Open tall	-	nc	0.9	0.4	-0.6*	3.2	1.9	-1.4	13.4	9.1	-4.3
Closed tall	nc	-	0.9	0.4	-0.6	1.5	1.7	0.2	14.7	3.7	-11.0*
Structural classes-herbland—											
Open	+	nc	7.4	9.0	1.5*	11.6	11.5	-0.1	176.0	430.8	254.8
Closed	nc	-	3.8	3.2	-0.5	8.0	9.1	1.1	41.5	23.1	-18.4*
Structural classes-other[e]—											
Nonforest-nonrange	nc	-	23.8	23.2	-0.6	11.8	9.3	-2.5*	782.4	708.6	-73.9
Lower Clark Fork ERU:											
Physiognomic types—											
Forest	nc	nc	91.7	94.5	2.8	3.4	2.4	-1.0	4549.5	5749.1	1199.5
Shrubland	nc	nc	1.9	0.6	-1.4	6.6	4.2	-2.4	9.0	7.8	-1.2
Herbland	nc	nc	5.4	3.2	-2.3	13.6	18.6	5.0	48.9	43.3	-5.6
Other[e]	nc	nc	0.9	1.8	0.8	6.4	15.6	9.2	20.6	8.4	-12.3
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	40.4	42.5	2.1	20.8	23.8	3.0	210.4	206.6	-3.8

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Engelmann spruce-subalpine fir	nc	nc	2.5	2.2	-0.3	6.2	5.2	-1.0	32.7	34.5	1.8
Aspen-cottonwood-willow	nc	+	0.1	0.7	0.6	0.6	2.2	1.6*	3.0	14.2	11.2*
Western larch	nc	+	0.8	2.6	1.7	2.6	4.8	2.2*	18.6	39.7	21.1
Lodgepole pine	nc	-	2.1	1.8	-0.3	4.8	5.0	0.2	38.7	18.3	-20.4*
Limber pine	nc	nc	0.0	0.0	0.0	0.4	0.0	-0.4	2.3	0.0	-2.3
Sugar pine-western white pine	nc	nc	0.3	0.6	0.2	2.6	2.6	0.0	8.5	23.5	15.1
Ponderosa pine	nc	nc	3.0	5.1	2.1	5.2	4.4	-0.8	29.1	43.8	14.7
Douglas-fir	-	nc	26.4	21.1	-5.3	26.2	24.6	-1.6	125.1	90.9	-34.1
Western hemlock-western redcedar	nc	nc	14.7	17.3	2.6	19.0	20.0	1.0	63.0	66.5	3.5
Mountain hemlock	-	-	1.3	0.6	-0.7*	1.6	0.6	-1.0*	41.1	23.9	-17.2
Cover types-shrubland—											
Subalpine-alpine low-medium	nc	nc	0.2	0.1	-0.1	0.8	0.6	-0.2	5.8	3.6	-2.1
Montane tall	nc	nc	1.6	0.3	-1.3	6.8	3.8	-3.0	5.9	4.3	-1.6
Colline wet-site	nc	nc	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.8	0.8
Montane wet-site	nc	-	1.4	1.5	0.1	4.2	8.8	4.6*	63.9	20.0	-43.9
Cover types-herbland—											
Montane bunchgrass	nc	nc	0.1	0.2	0.1	0.8	0.6	-0.2	4.3	12.7	8.4
Montane exotic grasses-forbs	nc	nc	0.1	0.1	0.0	0.2	0.8	0.6	4.1	4.8	0.6
Montane moist-site	nc	nc	0.2	0.2	-0.1	1.2	0.8	-0.4	12.3	11.5	-0.8
Wet meadow	nc	nc	0.0	0.0	0.0	0.0	0.2	0.2	0.0	2.1	2.1
Postfire-grasses	nc	-	2.9	0.0	-2.9	8.8	0.0	-8.8*	13.3	0.0	-13.3*
Postlogging-grasses-forbs	nc	nc	0.4	0.9	0.5	2.0	20.4	18.4	6.3	0.2	-6.1
Cover types-agriculture-rural-urban—											
Pasture	nc	nc	0.4	0.4	0.0	2.2	1.4	-0.8	7.4	17.9	10.5
Urban-rural	nc	nc	0.0	0.0	0.0	0.2	0.0	-0.2	0.9	0.0	-0.9
Cover types-other—											
Rock	nc	nc	0.5	0.3	-0.2	5.6	3.8	-1.8	4.9	4.7	-0.2*
Postlogging-bare ground-burned	nc	+	0.0	1.1	1.1	0.6	10.2	9.6	0.8	6.3	5.4*
Stream channel-nonvegetated flood plain	nc	nc	0.2	0.3	0.1	0.2	0.8	0.6	11.9	14.6	2.7
Water	nc	nc	0.2	0.1	-0.1	0.6	1.4	0.8	18.5	2.6	-15.9
Structural classes-forest—											
Stand initiation	-	-	32.7	9.5	-23.3*	22.8	31.8	9.0	208.3	24.2	-184.2*
Stem exclusion, open canopy	-	-	15.7	9.2	-6.5*	28.0	23.0	-5.0*	52.4	25.9	-26.6*
Stem exclusion, closed canopy	+	+	10.3	17.6	7.3*	17.2	17.4	0.2	31.8	64.4	32.6*
Understory reinitiation	+	+	16.4	37.7	21.3*	24.0	33.8	9.8*	68.2	189.6	121.4
Young, multistory	+	nc	14.3	17.5	3.2	29.4	34.4	5.0	48.8	51.4	2.6
Old, multistory	nc	nc	0.2	0.5	0.3	0.4	1.6	1.2	11.8	6.8	-5.0
Old, single story	nc	-	2.2	2.5	0.4	2.8	8.2	5.4*	39.4	18.6	-20.8*
Structural classes-shrubland—											
Open low-medium	nc	nc	0.2	0.1	-0.1	0.8	0.2	-0.6	5.8	6.7	0.9

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			-------	*Percent*	-------	*No. /10 000 ha*			-------	*Hectares*	-------
Closed low-medium	nc	nc	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.6	0.6
Open tall	nc	nc	2.1	1.2	-0.9	4.8	4.4	-0.4	59.1	14.9	-44.2
Closed tall	nc	nc	1.0	0.7	-0.3	5.4	7.8	2.4	10.0	6.3	-3.7
Structural classes-herbland—											
Open	nc	nc	0.2	0.1	-0.1	1.8	1.0	-0.8	8.9	5.6	-3.3
Closed	nc	nc	0.2	0.3	0.2	0.4	0.8	0.4	10.3	21.9	11.6
Structural classes-other[e]—											
Nonforest-nonrange	nc	nc	4.7	3.2	-1.5	16.2	21.6	5.4	28.0	23.6	-4.4
Northern Cascades ERU:											
Physiognomic types—											
Forest	nc	nc	78.8	78.2	-0.6	3.8	3.6	-0.2	3769.5	3444.9	-324.6
Woodland	+	+	0.3	0.7	0.3*	1.1	1.8	0.7*	3.2	6.5	3.3*
Shrubland	nc	-	4.8	4.1	-0.7	7.2	8.7	1.5*	38.0	33.3	-4.7
Herbland	nc	-	6.7	6.5	-0.3	7.6	11.0	3.3*	78.5	55.0	-23.6*
Other[e]	+	+	9.4	10.6	1.2*	13.5	19.0	5.6*	79.4	86.6	7.3
Cover types-forest and woodland—											
Pacific silver fir	+	-	6.0	8.3	2.3*	4.0	359.8	355.7*	61.5	3.6	-57.9*
Grand fir-white fir	+	+	1.0	2.2	1.3*	1.1	3.7	2.5*	25.7	33.6	7.9
Engelmann spruce-subalpine fir	-	-	16.8	13.6	-3.2*	10.0	11.2	1.3*	283.8	158.2	-125.6*
Oregon white oak	+	+	0.6	0.9	0.3*	2.1	2.8	0.7*	10.8	12.1	1.3
Juniper	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.2
Western larch	nc	-	1.0	1.0	0.0	1.2	1.7	0.5*	24.3	21.5	-2.8
Whitebark pine-subalpine larch	+	+	3.3	4.7	1.4*	4.0	4.9	0.9*	35.4	63.3	27.8*
Lodgepole pine	nc	nc	5.9	5.2	-0.6	3.6	3.9	0.3	101.9	93.4	-8.5
Sugar pine-western white pine	nc	+	0.1	0.3	0.1*	0.2	0.5	0.3*	2.4	6.5	4.1*
Ponderosa pine	-	-	16.5	13.2	-3.2*	7.3	8.2	1.0*	241.3	156.1	-85.2*
Douglas-fir	+	-	23.8	25.8	2.0*	10.9	13.3	2.4*	294.1	254.0	-40.1
Western hemlock-western redcedar	-	-	3.0	2.4	-0.6*	1.3	2.2	0.9*	62.9	40.2	-22.8*
Mountain hemlock	nc	-	1.3	1.2	-0.1	1.5	1.7	0.2	30.4	22.8	-7.7*
Cover types-shrubland—											
Colline low-medium	nc	-	1.6	1.8	0.2	1.1	105.4	104.4*	12.7	1.1	-11.7*
Montane low-medium	nc	-	0.3	0.4	0.1	0.7	1.0	0.3	5.5	4.2	-1.3*
Colline mahogany species	nc	-	0.2	0.0	-0.1	0.0	0.2	0.2*	23.6	1.2	-22.4
Montane mahogany species	nc	+	0.0	0.0	0.0*	0.0	0.2	0.2*	0.4	1.1	0.7*
Colline tall	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	-0.6
Montane tall	nc	-	0.0	0.0	0.0*	0.1	0.0	-0.1*	2.6	0.7	-1.9*
Colline wet-site	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	4.9	1.4	-3.5
Montane wet-site	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Montane subshrub	nc	nc	0.9	0.3	-0.5	1.5	1.4	-0.1	5.0	2.2	-2.9
Cover types-herbland—											
Alpine	nc	nc	0.7	0.8	0.1	2.1	2.4	0.3	17.9	13.9	-4.1

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Dry meadow	nc	nc	1.7	1.5	-0.2	2.3	1.9	-0.4	47.1	36.6	-10.5
Colline bunchgrass	nc	-	1.0	1.2	0.2	0.7	1.9	1.2*	13.7	6.7	-7.0*
Montane bunchgrass	-	-	1.0	0.7	-0.3*	0.9	1.5	0.7*	9.3	5.5	-3.8
Colline exotic grasses-forbs	-	-	0.9	0.5	-0.4*	0.7	0.8	0.1	16.6	4.5	-12.1*
Montane exotic grasses-forbs	+	+	0.7	0.9	0.2*	0.9	0.7	-0.2*	8.2	12.8	4.6*
Colline moist-site	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Montane moist-site	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.3	-0.8
Wet meadow	nc	nc	0.2	0.1	-0.1	1.2	0.9	-0.3	6.3	7.4	1.0
Postlogging-grasses-forbs	+	-	0.1	0.4	0.4*	0.2	19.2	19.0*	1.6	0.2	-1.4*
Cover types-agriculture-rural-urban—											
Cropland	nc	nc	1.7	1.6	-0.1	1.6	1.5	-0.1	29.7	25.0	-4.7
Pasture	nc	-	0.3	0.2	-0.2	0.3	0.4	0.2*	7.0	2.8	-4.2*
Urban-rural	+	+	0.1	0.3	0.2*	0.2	0.7	0.5*	4.6	9.0	4.5*
Cover types-other—											
Rock	nc	+	4.8	5.1	0.3	7.9	8.3	0.4	62.4	84.2	21.9*
Postlogging-bare ground-burned	+	-	0.5	1.5	0.9*	0.8	5.7	4.9*	29.1	17.5	-11.6
Postlogging-bare ground-slumps-erosion	nc	-	1.5	1.3	-0.2	2.9	3.5	0.6*	13.1	12.5	-0.6
Water	nc	nc	0.8	0.8	0.0	2.6	2.4	-0.2	26.4	24.7	-1.7
Structural classes-forest—											
Stand initiation	nc	-	9.2	10.4	1.3	11.8	18.8	7.0*	100.0	67.4	-32.5
Stem exclusion, open canopy	nc	-	13.2	13.2	0.0	16.3	20.7	4.4*	88.2	70.1	-18.1*
Stem exclusion, closed canopy	nc	-	7.6	7.9	0.3	7.4	11.2	3.8*	101.2	88.1	-13.2
Understory reinitiation	+	+	17.5	19.5	2.0	15.7	19.5	3.8*	153.0	195.9	42.9
Young, multistory	nc	-	21.2	22.0	0.8	21.5	25.0	3.5*	130.3	101.2	-29.1*
Old, multistory	-	-	5.8	2.7	-3.1*	4.5	4.9	0.4	145.0	37.5	-107.5*
Old, single story	-	-	4.3	2.4	-1.9*	4.3	4.5	0.3	81.9	38.9	-43.0*
Structural classes-woodland—											
Stand initiation	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Stem exclusion	+	+	0.3	0.6	0.3*	1.0	1.7	0.7*	2.3	6.3	4.0*
Understory reinitiation	nc	nc	0.0	0.0	0.0*	0.0	0.2	0.1	0.5	1.5	1.0
Old multistory	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	2.7	2.4	-0.2
Old single story	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3
Structural classes-shrubland—											
Open low-medium	nc	-	2.0	1.8	-0.2	2.8	3.3	0.5*	9.2	8.9	-0.2
Closed low-medium	nc	-	0.8	0.8	0.0	0.4	1.3	0.9*	11.7	7.2	-4.5
Open tall	nc	-	0.0	0.0	0.0*	0.1	0.0	0.0	3.5	0.6	-2.9*
Closed tall	nc	nc	0.0	0.1	0.0*	0.0	0.1	0.1*	2.9	2.8	-0.2
Structural classes-herbland—											
Open	nc	-	2.3	2.4	0.1	1.4	2.0	0.5*	21.8	11.5	-10.3*
Closed	nc	-	1.5	1.0	-0.5	1.6	2.3	0.7*	14.3	6.5	-7.8*
Structural classes-other[e]—											
Nonforest-nonrange	+	-	14.3	15.2	0.9*	17.9	25.2	7.2*	117.0	104.3	-12.7*

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Northern Glaciated Mountains ERU:											
Physiognomic types—											
Forest	nc	nc	81.0	80.8	-0.2	4.8	5.1	0.2	3749.4	3919.1	169.8
Woodland	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	1.8	1.0	-0.8
Shrubland	nc	-	3.1	2.5	-0.5	5.0	9.5	4.5*	40.6	20.6	-20.0*
Herbland	nc	-	7.4	8.1	0.7	11.1	18.0	6.9*	93.8	65.9	-27.9
Other[e]	nc	-	8.5	8.5	0.0	12.4	17.9	5.5*	86.4	58.6	-27.8
Cover types-forest and woodland—											
Grand fir-white fir	+	+	0.0	1.2	1.2*	0.1	2.3	2.2*	3.6	18.9	15.3*
Engelmann spruce-subalpine fir	+	-	11.5	13.2	1.7*	6.1	11.0	4.9*	177.6	138.9	-38.6*
Aspen-cottonwood-willow	nc	+	0.3	1.9	1.6	1.2	2.6	1.5*	8.0	40.8	32.8
Juniper	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	1.8	1.0	-0.8
Western larch	-	-	14.8	11.4	-3.4*	9.6	13.7	4.1*	134.4	61.1	-73.4*
Whitebark pine-subalpine larch	nc	nc	0.3	0.2	-0.1	0.6	0.4	-0.2	10.6	5.8	-4.8
Lodgepole pine	nc	-	8.0	8.3	0.3	9.7	13.3	3.6*	68.8	52.4	-16.4*
Sugar pine-western white pine	-	-	1.5	0.0	-1.4*	0.6	0.2	-0.4*	21.5	1.7	-19.8*
Ponderosa pine	-	-	13.4	11.4	-2.0*	7.7	10.3	2.6*	151.9	108.8	-43.1
Douglas-fir	nc	-	30.3	30.2	-0.1	16.1	23.0	6.8*	441.8	427.4	-14.4
Western hemlock-western redcedar	+	-	0.7	2.8	2.5*	1.1	4.4	3.3*	19.1	17.0	-2.1
Mountain hemlock	nc	nc	0.1	0.0	0.0	0.2	0.2	0.0	0.6	0.7	0.0
Cover types-shrubland—											
Colline low-medium	nc	-	0.1	0.1	0.0	0.3	5.4	5.1*	1.8	0.1	-1.7*
Montane low-medium	+	+	0.0	0.1	0.1*	0.0	0.2	0.2*	0.0	2.2	2.2*
Subalpine-alpine low-medium	nc	-	1.1	0.8	-0.2	1.4	2.0	0.6*	8.4	5.1	-3.4
Colline mahogany species	-	-	0.4	0.0	-0.4*	0.4	0.0	-0.4*	7.2	0.0	-7.2*
Montane mahogany species	-	-	0.2	0.0	-0.2*	0.3	0.0	-0.3*	3.1	0.0	-3.1*
Colline tall	nc	nc	0.7	0.3	-0.4	0.8	0.6	-0.2	9.7	4.9	-4.8
Montane tall	nc	-	0.4	0.6	0.2	1.0	3.4	2.4*	12.1	9.2	-2.9
Colline wet-site	-	-	0.3	0.2	-0.1*	0.4	0.5	0.1	9.0	5.1	-3.9*
Montane wet-site	+	+	0.1	0.2	0.1*	0.3	0.6	0.3*	4.7	8.6	3.9*
Subalpine-alpine wet-site	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	0.2	0.0	-0.2
Montane subshrub	nc	-	0.3	0.4	0.1	0.7	2.3	1.6	2.8	1.2	-1.6*
Subalpine-alpine subshrub	+	-	0.0	0.1	0.1*	0.0	10.0	10.0*	2.2	0.1	-2.1
Cover types-herbland—											
Alpine	nc	nc	0.0	0.0	0.0	0.2	0.2	0.0	0.8	1.0	0.2
Dry meadow	nc	+	0.0	0.0	0.0*	0.1	0.4	0.3*	0.3	2.1	1.8*
Colline bunchgrass	-	-	1.6	0.8	-0.8*	0.7	1.5	0.8*	34.9	9.8	-25.0*
Montane bunchgrass	nc	nc	1.6	1.9	0.2	4.0	3.9	-0.1	22.0	41.4	19.4
Subalpine-alpine bunchgrass	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6
Colline exotic grasses-forbs	nc	+	1.0	1.2	0.2	0.9	1.9	1.0*	11.8	14.0	2.2

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Montane exotic grasses-forbs	nc	nc	0.5	0.7	0.1	2.6	2.3	-0.3	5.5	14.5	9.0
Colline moist-site	nc	nc	0.0	0.0	0.0	0.1	0.2	0.1	2.6	2.6	0.0
Montane moist-site	nc	nc	0.2	0.2	0.0	0.8	1.0	0.2	7.7	5.4	-2.3
Subalpine-alpine moist-site	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.3	-0.1
Wet meadow	nc	+	0.0	0.1	0.1*	0.2	0.8	0.6*	2.0	4.1	2.1
Postlogging-grasses-forbs	+	-	0.1	0.8	0.7*	0.7	21.2	20.6*	4.1	0.2	-3.9*
Cover types-agricultural-rural-urban—											
Cropland	nc	-	3.4	4.3	0.9	4.1	3.2	-0.9*	49.0	47.3	-1.7
Pasture	+	+	1.4	1.7	0.3*	1.4	1.1	-0.3	11.2	49.1	38.0*
Urban-rural	nc	+	0.2	0.3	0.1	0.8	1.3	0.5*	4.1	8.1	4.0*
Cover types-other—											
Bare ground	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.2
Glacier	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	1.4	2.0	0.7
Rock	+	-	2.3	2.7	0.5*	4.9	9.2	4.3*	32.5	29.2	-3.4
Postlogging-bare ground-burned	-	-	2.2	0.4	-1.7*	1.3	3.1	1.8*	24.9	7.2	-17.7
Postlogging-bare ground-slumps-erosion	nc	+	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.7	0.4*
Stream channel-nonvegetated flood plain	nc	-	0.1	0.1	0.0*	0.0	0.0	0.0	11.8	10.8	-0.9*
Water	nc	nc	0.4	0.5	0.1	2.7	3.0	0.3	8.8	10.1	1.2
Structural classes-forest—											
Stand initiation	-	-	16.9	9.4	-7.5*	18.3	26.5	8.2*	103.6	38.5	65.1*
Stem exclusion, open canopy	nc	-	11.8	11.6	-0.2	18.0	27.8	9.9*	75.3	49.1	-26.2*
Stem exclusion, closed canopy	+	+	7.2	12.8	5.6*	8.6	15.0	6.5*	61.2	71.4	10.2
Understory reinitiation	+	-	18.4	23.3	4.9*	12.9	22.1	9.2*	170.6	150.7	-19.9
Young, multistory	-	-	25.5	22.8	-2.7	22.2	32.4	10.2*	218.1	106.3	-111.9*
Old, multistory	nc	-	0.5	0.4	-0.1	0.5	1.2	0.8*	22.7	7.8	-14.8*
Old, single story	nc	nc	0.7	0.6	-0.1	0.9	1.4	0.5	9.2	10.1	0.9
Structural classes-woodland—											
Stem exclusion	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	1.8	0.3	-1.5
Understory reinitiation	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9
Structural classes-shrubland—											
Open low-medium	nc	nc	1.2	1.1	-0.2	1.8	3.7	1.9	14.0	12.6	-1.3
Closed low-medium	nc	-	0.3	0.5	0.2	0.6	1.3	0.7*	5.6	4.5	-1.1
Open tall	nc	-	1.2	0.8	-0.4	1.7	3.2	1.5*	22.9	12.5	-10.4
Closed tall	nc	nc	0.3	0.4	0.2	0.8	1.9	1.1*	10.2	10.9	0.6
Structural classes-herbland—											
Open	nc	nc	1.4	1.5	0.1	2.7	2.6	-0.1	21.8	20.9	-0.8
Closed	nc	-	4.2	3.4	-0.8	6.9	7.9	1.0*	38.3	27.7	-10.6
Structural classes-other[e]—											
Nonforest-nonrange	+	+	10.5	11.6	1.1*	14.7	25.1	10.5*	90.3	221.4	131.0

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Northern Great Basin ERU:											
Physiognomic types—											
Forest	nc	nc	7.2	7.3	0.0	19.5	19.5	0.0	32.9	37.6	4.7
Woodland	+	nc	15.3	22.2	6.9*	12.8	11.5	-1.3	178.4	205.9	27.5
Shrubland	-	-	72.8	57.6	-15.2*	11.8	21.0	9.3	934.1	337.1	-597.0*
Herbland	+	+	3.9	12.2	8.3*	15.0	21.5	6.5	24.4	68.6	44.2*
Other[e]	nc	nc	0.8	0.8	0.0	3.0	3.8	0.8	6.5	5.1	-1.4
Cover types-forest and woodland—											
Aspen-cottonwood-willow	nc	nc	8.4	7.7	-0.8	20.0	19.0	-1.0	37.3	39.4	2.2
Juniper	+	nc	14.1	21.8	7.7*	12.3	12.3	0.0	139.9	180.4	40.5
Cover types-shrubland—											
Colline low-medium	nc	-	20.0	18.1	-1.8	1.3	1411.3	1410.0*	788.7	14.1	-774.6*
Montane low-medium	-	nc	51.2	37.7	-13.5*	16.8	22.5	5.8	316.1	248.1	-68.0
Subalpine-alpine low-medium	nc	nc	0.6	2.0	1.4	0.8	1.3	0.5	21.3	113.0	91.8
Montane mahogany species	nc	nc	0.4	0.4	0.0	0.3	0.3	0.0	32.4	30.2	-2.2
Montane tall	nc	nc	0.1	0.1	0.0	1.3	1.3	0.0	2.1	2.1	0.0
Montane wet-site	-	-	1.0	0.9	-0.1*	5.3	4.0	-1.3*	8.7	5.5	-3.3
Cover types-herbland—											
Colline bunchgrass	nc	nc	0.0	0.5	0.5	0.0	1.3	1.3	0.0	10.3	10.3
Montane bunchgrass	+	+	1.1	5.5	4.5*	3.0	5.3	2.3	11.2	92.6	81.4*
Subalpine-alpine bunchgrass	nc	nc	1.5	0.8	-0.7	1.8	2.0	0.3	40.2	21.9	-18.3
Colline exotic grasses-forbs	+	+	0.0	2.5	2.5*	0.0	3.3	3.3*	0.0	38.5	38.5*
Montane exotic grasses-forbs	nc	nc	0.0	0.0	0.0	0.5	0.0	-0.5	2.0	0.0	-2.0
Montane moist-site	nc	+	0.6	1.2	0.6	4.8	6.0	1.3*	8.9	14.2	5.3
Subalpine-alpine moist-site	nc	nc	0.1	0.0	-0.1	0.8	0.5	-0.3	4.6	2.3	-2.3
Cover types-other—											
Rock	nc	nc	0.8	0.7	-0.1	3.0	3.3	0.3	6.5	5.5	-1.0
Water	nc	nc	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.9	0.9
Structural classes-forest—											
Stem exclusion, open canopy	nc	nc	6.5	6.0	-0.5	19.8	18.8	-1.0	29.2	29.1	-0.1
Stem exclusion, closed canopy	nc	+	0.7	1.3	0.6	2.5	3.8	1.3*	22.5	31.7	9.2
Structural classes-woodland—											
Stem exclusion	+	nc	15.3	22.2	6.9*	12.8	11.5	-1.3	178.4	205.9	27.5
Structural classes-shrubland—											
Open low-medium	-	-	71.8	57.8	-13.9*	13.3	22.5	9.3	903.8	346.1	-557.8*
Open tall	nc	nc	1.2	1.2	0.0	3.3	3.5	0.3	14.0	13.3	-0.7
Closed tall	nc	nc	0.4	0.2	-0.1	3.5	2.0	-1.5	5.0	2.9	-2.1
Structural classes-herbland—											
Open	+	+	3.4	10.1	6.7*	11.0	17.0	6.0	28.3	64.8	36.5*
Closed	nc	nc	0.0	0.5	0.5	0.0	1.3	1.3	0.0	11.1	11.1
Structural classes-other[e]—											
Nonforest-nonrange	nc	nc	0.8	0.8	0.0	3.0	3.8	0.8	6.5	5.1	-1.4

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Owyhee Uplands ERU:											
Physiognomic types—											
Forest	nc	nc	0.2	0.2	0.0	0.2	0.4	0.2	10.2	6.4	-3.8
Woodland	+	+	5.5	7.6	2.1*	9.0	4.4	-4.6*	15.9	64.4	48.5*
Shrubland	-	-	88.8	81.0	-7.8*	7.9	5.7	-2.2*	4695.3	3439.3	-1256.0*
Herbland	+	+	1.0	7.4	6.4*	3.0	4.5	1.5*	22.2	202.0	179.7
Other[e]	nc	+	4.5	3.8	-0.6	6.7	4.5	-2.2*	53.2	86.0	32.8*
Cover types-forest and woodland—											
Aspen-cottonwood-willow	nc	nc	0.2	0.2	0.0	0.3	0.6	0.2	11.7	5.4	-6.3
Juniper	+	+	5.5	7.5	2.0*	9.0	4.4	-4.6*	15.8	64.3	48.5*
Douglas-fir	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.9	-0.8
Cover types-shrubland—											
Colline low-medium	-	-	87.7	79.3	-8.5*	8.9	7007.0	6998.1*	4443.5	70.1	-4373.4*
Colline mahogany species	nc	nc	0.8	1.1	0.4	2.3	0.6	-1.8*	4.1	18.9	14.8
Colline tall	nc	nc	0.1	0.3	0.2	0.4	0.7	0.3	1.9	4.7	2.7
Colline wet-site	nc	nc	0.3	0.3	-0.1	1.0	1.1	0.2	14.1	10.4	-3.7
Russian olive	nc	nc	0.1	0.0	-0.1	0.6	0.0	-0.6	1.0	0.0	-1.0
Cover types-herbland—											
Colline bunchgrass	nc	nc	0.2	0.2	0.0	1.3	1.2	0.0	3.4	4.1	0.6
Colline exotic grasses-forbs	+	+	0.2	6.2	6.1*	0.6	2.0	1.4*	5.8	195.8	190.0*
Colline moist-site	+	+	0.1	0.5	0.4*	0.1	0.6	0.5*	7.4	29.9	22.4*
Cover types-agricultural-rural-urban—											
Cropland	nc	+	1.1	1.4	0.3	0.5	0.3	-0.2*	21.8	31.7	10.0*
Pasture	nc	nc	0.5	0.5	0.0	0.8	0.7	0.0	13.4	24.7	11.2
Cover types-other—											
Bare ground	nc	nc	0.0	0.0	0.0	0.1	0.2	0.0	0.8	1.1	0.3
Bare ground-road	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	0.6	1.0	0.4
Rock	nc	-	2.8	1.9	-0.9	4.1	3.3	-0.8	34.3	23.5	-10.7*
Postlogging-bare ground-burned	nc	nc	0.1	0.1	0.0	0.0	0.1	0.0	4.7	3.1	-1.5
Stream channel-nonvegetated flood plain	nc	+	0.4	0.3	-0.1	2.3	0.7	-1.5*	6.5	8.3	1.8
Water	nc	+	0.1	0.1	0.0*	0.5	0.5	0.0	2.9	4.2	1.3*
Structural classes-forest—											
Stand initiation	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	1.7	1.7
Stem exclusion, open canopy	nc	nc	0.0	0.1	0.0	0.1	0.2	0.0	4.2	5.9	1.7
Stem exclusion, closed canopy	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.3
Understory reinitiation	nc	nc	0.4	1.1	0.7	1.2	1.7	0.4	10.2	11.8	1.6
Young, multistory	nc	nc	0.1	0.1	0.0	0.0	0.2	0.1	20.1	1.8	-18.4
Structural classes-woodland—											
Stand initiation	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	1.7	1.7
Stem exclusion	+	+	5.2	6.5	1.3*	8.8	5.3	-3.6*	15.4	42.2	26.8*
Understory reinitiation	nc	nc	0.3	1.1	0.8	1.2	1.5	0.3	4.8	10.0	5.2

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Structural classes-shrubland—											
Open low-medium	-	-	85.1	77.2	-7.8*	10.0	6.5	-3.5*	4607.3	3232.1	-1375.2*
Closed low-medium	nc	+	2.7	2.1	-0.6	4.7	1.6	-3.1*	24.3	103.8	79.5*
Open tall	+	nc	0.8	1.4	0.6*	2.8	2.3	-0.6	14.0	20.8	6.8
Closed tall	nc	nc	0.3	0.3	0.0	1.5	0.7	-0.8*	7.1	9.4	2.3
Structural classes-herbland—											
Open	+	+	0.3	6.4	6.1*	1.9	3.5	1.6*	6.3	183.0	176.7*
Closed	nc	nc	0.1	0.5	0.4	0.1	0.3	0.2	3.4	8.6	5.2
Structural classes-other[e]—											
Nonforest-nonrange	nc	+	5.0	4.4	-0.6	6.6	4.9	-1.7*	63.2	96.0	32.8*
Snake Headwaters ERU:											
Physiognomic types—											
Forest	nc	nc	74.5	73.8	-0.7	18.1	19.9	1.8	982.4	1013.9	31.4
Woodland	+	nc	0.2	0.3	0.1*	0.8	0.6	-0.1	1.7	7.2	5.5
Shrubland	-	-	16.3	13.9	-2.4*	22.3	23.6	1.3	56.7	43.5	-13.3*
Herbland	+	+	6.1	8.7	2.6*	21.3	29.1	7.8*	30.4	36.7	6.3
Other[e]	nc	+	3.0	3.3	0.4	7.6	5.2	-2.4*	26.6	34.2	7.7*
Cover types-forest and woodland—											
Engelmann spruce-subalpine fir	+	nc	24.3	31.4	7.1*	19.9	23.7	3.8	173.5	236.1	62.6
Aspen-cottonwood-willow	-	-	8.8	5.7	-3.1*	25.4	25.4	0.1	38.3	26.2	-12.1*
Juniper	+	nc	0.2	0.3	0.1*	0.7	0.6	-0.1	1.8	7.1	5.3
Whitebark pine-subalpine larch	nc	-	6.9	5.7	-1.3	6.0	4.1	-1.9*	57.0	37.8	-19.1
Lodgepole pine	-	+	15.6	11.3	-4.3*	19.1	15.4	-3.7*	93.8	125.1	31.3
Pinyon pine-juniper	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	4.8	4.8
Limber pine	+	+	0.7	1.1	0.4*	3.1	2.8	-0.3	2.3	9.9	7.7*
Ponderosa pine	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	0.3	0.0	-0.3
Douglas-fir	nc	+	18.2	18.6	0.4	19.3	18.8	-0.4	96.3	139.3	43.0*
Cover types-shrubland—											
Colline low-medium	nc	nc	0.1	0.0	-0.1	0.1	0.0	-0.1	6.5	0.0	-6.5
Montane low-medium	-	nc	13.0	10.7	-2.3*	22.7	22.4	-0.3	49.6	38.5	-11.1
Subalpine-alpine low-medium	nc	nc	0.1	0.3	0.2	0.3	0.2	-0.1	2.3	18.2	15.9
Montane mahogany species	nc	+	0.0	0.1	0.1	0.0	0.4	0.4*	0.0	2.4	2.4*
Colline tall	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	0.9	0.0	-0.9
Montane tall	nc	nc	2.1	2.1	-0.1	7.3	9.4	2.1	10.9	10.6	-0.3
Montane wet-site	nc	-	2.8	2.8	0.0	5.3	4.9	-0.4	66.1	49.1	-17.0*
Cover types-herbland—											
Colline bunchgrass	nc	nc	0.0	0.0	0.0	0.0	0.2	0.2	0.0	1.1	1.1
Montane bunchgrass	+	+	2.2	4.3	2.1*	12.8	19.7	6.9*	17.1	88.8	71.7
Subalpine-alpine bunchgrass	nc	nc	0.1	0.3	0.2	0.5	0.5	0.0	4.9	13.5	8.6
Montane exotic grasses-forbs	+	nc	0.2	0.7	0.5*	0.8	0.9	0.1	5.9	41.7	35.8

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Subalpine-alpine exotic grasses-forbs	nc	nc	0.0	0.1	0.1	0.0	0.1	0.1	0.0	6.3	6.3
Montane moist-site	-	nc	1.5	1.1	-0.4*	6.6	6.4	-0.2	13.7	17.8	4.1
Subalpine-alpine moist-site	nc	nc	0.0	0.0	0.0	0.1	0.3	0.3	1.7	0.5	-1.2
Postlogging-grasses-forbs	nc	nc	0.0	0.1	0.1	0.0	3.1	3.1	0.0	0.0	0.0
Cover types-agricultural-rural-urban—											
Cropland	nc	nc	0.3	0.1	-0.3	0.2	0.1	-0.1	17.3	12.1	-5.2
Cover types-other—											
Bare ground-road	nc	+	0.0	0.1	0.0	0.4	0.8	0.3*	1.5	2.0	0.5
Glacier	nc	nc	0.1	0.0	-0.1	0.5	0.3	-0.3	1.0	0.6	-0.4
Rock	nc	nc	1.7	2.1	0.5	2.1	2.0	-0.1	13.2	18.0	4.8
Postlogging-bare ground-burned	+	+	0.0	0.0	0.0*	0.0	0.3	0.3*	0.0	1.1	1.1*
Postlogging-bare ground-slumps-erosion	nc	nc	0.1	0.0	-0.1	0.3	0.2	-0.1	5.3	0.5	-4.8
Stream channel-nonvegetated flood plain	nc	nc	0.1	0.1	0.1	0.2	0.1	-0.1	5.8	12.7	7.0
Water	nc	nc	0.9	0.9	0.1*	4.3	2.4	-1.9*	11.8	13.1	1.3
Structural classes-forest—											
Stand initiation	nc	+	6.4	7.0	0.6	14.9	19.8	4.9	26.5	50.1	23.5*
Stem exclusion, open canopy	-	nc	19.1	15.3	-3.8*	35.7	39.2	3.5	55.8	43.8	-12.1
Stem exclusion, closed canopy	-	-	7.9	4.8	-3.1*	19.7	13.8	-5.9*	40.9	25.3	-15.6*
Understory reinitiation	nc	-	13.8	12.6	-1.2	18.4	19.9	1.6	96.7	61.5	-35.2*
Young, multistory	+	+	22.0	30.9	8.9*	23.9	34.8	10.9*	145.3	269.6	124.3*
Old, multistory	-	-	3.2	1.8	-1.4*	2.0	2.0	0.0	27.5	13.9	-13.6*
Old, single story	-	nc	2.0	1.3	-0.7*	3.1	2.1	-0.9	18.5	21.7	3.1
Structural classes-woodland—											
Stand initiation	nc	nc	0.1	0.0	-0.1	0.4	0.1	-0.3	1.9	0.1	-1.9
Stem exclusion	nc	+	0.1	0.3	0.2	0.4	0.6	0.2*	1.2	7.3	6.1
Understory reinitiation	nc	nc	0.0	0.0	0.0	0.3	0.3	0.1	0.2	0.4	0.2
Structural classes-shrubland—											
Open low-medium	-	nc	9.3	7.0	-2.3*	18.1	16.8	-1.4	39.8	38.6	-1.2
Closed low-medium	nc	nc	3.9	4.0	0.1	7.6	7.6	0.0	25.9	28.7	2.7
Open tall	nc	nc	2.9	2.6	-0.3	8.5	9.8	1.3	31.0	26.6	-4.4
Closed tall	nc	nc	2.1	2.3	0.2	4.8	5.6	0.8	36.4	27.9	-8.5
Structural classes-herbland—											
Open	+	+	1.8	4.2	2.4*	10.0	17.6	7.6*	12.6	90.2	77.6*
Closed	nc	nc	2.3	2.3	0.1	10.6	10.6	0.0	17.1	15.0	-2.1
Structural classes-other[e]—											
Nonforest-nonrange	nc	+	3.1	3.5	0.3	7.7	5.4	-2.3*	25.1	37.9	12.9*

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Southern Cascades ERU:											
Physiognomic types—											
Forest	+	nc	80.5	88.3	7.8	3.1	2.0	-1.1	7716.4	7484.1	-232.4
Woodland	+	+	0.0	0.4	0.4	0.0	0.2	0.2*	0.1	21.1	21.0
Shrubland	nc	-	0.5	0.5	0.1	0.9	1.9	1.1*	49.6	11.8	-37.7
Herbland	+	-	0.6	2.7	2.1*	3.6	19.4	15.8*	14.9	15.8	1.0
Other[e]	-	-	18.4	8.1	-10.4*	11.8	22.3	10.5*	835.0	46.6	-788.5
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	5.9	6.5	0.6	3.3	3.9	0.6	108.6	109.8	1.2
Engelmann spruce-subalpine fir	+	+	0.0	0.2	0.2*	0.0	0.4	0.4*	0.0	8.9	8.9*
Shasta red fir	nc	-	0.2	0.4	0.2	0.1	1.3	1.1*	14.4	4.1	-10.3*
Aspen-cottonwood-willow	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.9	-0.8
Juniper	nc	nc	0.0	0.4	0.4	0.0	0.1	0.1	0.0	20.8	20.8
Western larch	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.3	2.5	2.1
Whitebark pine-subalpine larch	+	+	0.0	0.8	0.8	0.0	0.3	0.3	0.0	20.5	20.5
Lodgepole pine	nc	+	19.4	20.6	1.2	5.2	7.3	2.1*	340.8	387.3	46.5
Sugar pine-western white pine	nc	-	0.3	0.3	0.0	0.6	1.1	0.5*	3.6	2.9	-0.7
Ponderosa pine	+	-	22.7	28.1	5.4	5.8	10.9	5.1*	1531.6	671.5	-860.1
Douglas-fir	nc	-	1.5	1.7	0.2	0.9	1.8	0.9*	35.7	24.5	-11.1
Mountain hemlock	nc	nc	30.5	29.7	-0.8	2.9	2.8	-0.2	970.5	995.6	25.1
Cover types-herbland—											
Alpine	nc	nc	0.1	0.2	0.1	0.4	1.4	1.0*	3.3	3.2	0.0
Dry meadow	+	+	0.0	0.1	0.0*	0.4	0.8	0.4*	1.6	2.7	1.2
Montane moist-site	nc	nc	0.0	0.1	0.1	0.0	0.2	0.2	0.2	3.0	2.8
Wet meadow	nc	+	0.5	0.6	0.0	2.6	4.3	1.7*	18.5	25.6	7.1
Postlogging-grasses-forbs	+	-	0.0	1.6	1.6*	0.0	42.1	42.1*	3.3	0.4	-2.9
Cover types-agricultural-rural-urban—											
Cropland	nc	nc	0.2	0.0	-0.1	0.2	0.0	-0.2	4.8	4.0	-0.8
Urban-rural	+	+	0.0	0.3	0.3*	0.1	0.4	0.4*	4.1	18.6	14.6*
Cover types-other—											
Rock	nc	nc	5.2	4.1	-1.1	3.7	4.3	0.6	89.6	66.4	-23.1
Postlogging-bare ground-burned	-	-	10.1	1.8	-8.4*	2.8	10.6	7.9*	749.3	8.5	-740.8
Postlogging-bare ground-slumps-erosion	nc	nc	0.4	0.2	-0.2	0.4	0.3	-0.1	13.9	5.0	-8.9
Stream channel-nonvegetated flood plain	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	10.3
Water	nc	nc	1.5	1.6	0.1	5.1	6.2	1.1	39.6	80.1	40.5
Structural classes-forest—											
Stand initiation	nc	-	9.1	9.9	0.8	6.8	24.3	17.6*	171.5	75.4	-96.2
Stem exclusion, open canopy	nc	-	12.3	14.3	2.1	8.6	19.2	10.6*	150.5	86.5	-64.0*
Stem exclusion, closed canopy	+	+	0.5	4.8	4.2*	0.9	4.8	3.9*	19.2	116.7	97.5*

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Understory reinitiation	nc	-	10.3	8.7	-1.7	5.6	9.2	3.6*	232.6	106.6	-126.1*
Young, multistory	nc	-	46.0	45.6	-0.4	7.6	17.3	9.8*	670.9	563.9	-106.9
Old, multistory	nc	nc	0.7	1.4	0.7	0.6	0.9	0.3	22.6	53.9	31.3
Old, single story	+	+	1.6	3.7	2.1	1.1	2.9	1.8*	52.9	54.5	1.6
Structural classes-woodland—											
Stem exclusion	+	+	0.0	0.4	0.4	0.0	0.2	0.2*	0.0	24.4	24.4
Old multistory	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.7
Structural classes-shrubland—											
Open	nc	nc	0.0	0.1	0.1	0.1	0.2	0.1	0.2	3.0	2.8
Structural classes-other[e]—											
Nonforest-nonrange	-	-	19.5	11.2	-8.3*	14.4	40.5	26.1*	856.6	40.4	-816.2
Upper Clark Fork ERU:											
Physiognomic types—											
Forest	nc	nc	87.2	86.2	-1.0	4.7	4.6	-0.1	4140.6	4436.8	296.3
Shrubland	nc	-	2.5	2.1	-0.4	3.7	4.6	0.9*	60.5	31.4	-29.0
Herbland	nc	-	5.5	5.7	0.2	13.8	18.2	4.4*	33.6	28.7	-4.9
Other[e]	nc	+	4.8	6.0	1.2	8.0	10.5	2.6*	44.3	50.4	6.1
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	0.0	0.1	0.1	0.0	0.0	0.0	0.7	14.3	13.6
Engelmann spruce-subalpine fir	+	-	14.2	17.3	3.1*	13.6	16.5	2.9*	126.7	120.1	-6.6
Aspen-cottonwood-willow	nc	nc	0.3	0.3	0.0	1.0	0.9	-0.1	9.8	11.2	1.3
Western larch	nc	-	2.5	3.0	0.6	3.8	6.6	2.8*	19.1	14.2	-4.8
Whitebark pine-subalpine larch	-	nc	4.3	3.5	-0.8*	6.6	5.3	-1.3	39.1	37.3	-1.9
Lodgepole pine	nc	nc	20.9	19.5	-1.3	17.8	16.4	-1.4	168.4	135.4	-33.0
Limber pine	nc	+	0.0	0.4	0.3	0.1	0.3	0.2*	3.4	7.7	4.3
Ponderosa pine	-	-	12.3	9.5	-2.9*	6.8	7.9	1.1	155.6	78.2	-77.3*
Douglas-fir	nc	-	32.7	32.5	-0.2	14.8	17.6	2.8*	417.1	262.9	-154.3*
Mountain hemlock	nc	+	0.0	0.1	0.1	0.0	0.1	0.1*	0.0	4.5	4.5*
Cover types-shrubland—											
Colline low-medium	nc	-	0.8	0.7	-0.1	0.5	21.1	20.5*	9.7	0.2	-9.5*
Montane low-medium	nc	+	0.4	0.7	0.2	0.5	0.7	0.2*	6.3	19.8	13.6
Subalpine-alpine low-medium	nc	nc	0.2	0.2	-0.1	1.0	0.9	-0.1	6.7	3.7	-3.0
Montane mahogany species	-	-	0.1	0.0	-0.1*	0.3	0.0	-0.3*	1.9	0.6	-1.3*
Montane tall	nc	+	0.2	0.2	-0.1	0.5	0.9	0.4*	8.0	8.1	0.1
Colline wet-site	nc	nc	0.1	0.1	0.0	0.2	0.3	0.0	2.5	1.6	-1.0*
Montane wet-site	nc	nc	0.6	0.6	0.0	2.8	3.0	0.2	14.0	12.8	-1.2
Subalpine-alpine wet-site	nc	-	0.0	0.0	0.0*	0.1	0.0	-0.1*	0.8	0.0	-0.8*
Montane subshrub	-	-	0.3	0.0	-0.3*	0.8	0.1	-0.7*	3.6	3.1	-0.6
Subalpine-alpine subshrub	nc	nc	0.0	0.0	0.0	0.0	1.6	1.6	0.0	0.0	0.0

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Cover types-herbland—											
Alpine	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.3
Colline bunchgrass	nc	nc	0.3	0.3	-0.1	0.5	0.6	0.1	3.1	1.7	-1.4
Montane bunchgrass	-	-	3.1	1.8	-1.4*	8.4	7.3	-1.2*	23.9	13.6	-10.2*
Subalpine-alpine bunchgrass	nc	nc	0.1	0.0	0.0*	0.4	0.2	-0.2*	1.3	1.2	-0.1
Colline exotic grasses-forbs	nc	nc	0.1	0.2	0.0	0.2	0.2	0.0	3.5	3.6	0.1
Montane exotic grasses-forbs	+	-	0.1	0.2	0.1*	0.4	1.2	0.8*	5.3	3.9	-1.4
Subalpine-alpine exotic grasses-forbs	nc	nc	0.1	0.0	-0.1	0.2	0.1	-0.2	1.0	0.8	-0.2
Colline moist-site	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.6	0.6
Montane moist-site	nc	+	0.7	0.7	0.0	1.8	2.3	0.5*	9.6	11.1	1.5
Subalpine-alpine moist-site	nc	+	0.0	0.3	0.2	0.1	0.6	0.4*	2.6	7.1	4.5
Postfire-grasses	nc	nc	0.0	0.5	0.4	0.2	0.8	0.7	1.0	1.9	0.9
Postlogging-grasses-forbs	+	-	0.0	0.9	0.9*	0.3	40.5	40.2*	1.9	0.4	-1.5*
Cover types-agricultural-rural-urban—											
Cropland	nc	nc	1.2	1.3	0.1	0.8	0.8	0.0	31.1	32.4	1.3
Pasture	nc	nc	0.4	0.4	0.0	0.7	0.8	0.1	12.3	7.8	-4.5
Urban-rural	nc	+	0.0	0.1	0.0	0.3	0.6	0.3*	1.2	2.0	0.8
Cover types-other—											
Bare ground-road	nc	nc	0.0	0.0	0.0*	0.1	0.1	0.0	2.7	1.9	-0.8*
Rock	nc	nc	2.5	2.4	-0.1	5.0	5.3	0.3	20.0	13.9	-6.1*
Postlogging-bare ground-burned	+	+	0.1	1.5	1.4*	0.5	2.3	1.8*	3.1	15.9	12.8*
Postlogging-bare ground-slumps-erosion	nc	nc	0.0	0.0	0.0	0.2	0.0	-0.2	0.6	0.0	-0.6
Stream channel-nonvegetated flood plain	nc	nc	0.1	0.1	0.0	0.2	0.4	0.2	2.2	3.1	0.9
Water	nc	+	0.8	0.7	-0.1	1.5	1.8	0.3*	23.6	26.9	3.3
Structural classes-forest—											
Stand initiation	-	-	15.9	11.1	-4.8*	21.1	23.5	2.5	69.8	50.8	-18.9*
Stem exclusion, open canopy	nc	-	18.5	18.2	-0.3	27.5	35.3	7.8*	78.2	56.3	-21.9*
Stem exclusion, closed canopy	+	+	16.7	21.1	4.4*	14.9	16.3	1.4	157.9	402.9	245.0*
Understory reinitiation	nc	-	15.6	14.0	-1.5	16.3	19.8	3.4*	97.6	68.6	-29.0*
Young, multistory	nc	nc	19.7	21.1	1.3	21.9	21.0	-0.9	90.5	100.6	10.1
Old, multistory	nc	nc	0.6	0.4	-0.2	0.6	1.2	0.5	3.1	7.3	4.2
Old, single story	nc	+	0.2	0.3	0.1	0.5	1.0	0.5	1.1	4.5	3.3*
Structural classes-shrubland—											
Open low-medium	nc	nc	1.2	0.8	-0.4	1.7	1.4	-0.3	12.7	24.3	11.6
Closed low-medium	nc	nc	0.6	0.8	0.2	1.3	1.5	0.2	5.0	8.4	3.4
Open tall	nc	+	0.5	0.6	0.2	2.0	2.7	0.7*	13.1	17.0	3.9
Closed tall	-	nc	0.5	0.3	-0.3*	1.7	1.5	-0.2	14.9	8.7	-6.2

Table 32—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Structural classes-herbland—											
Open	nc	nc	1.1	1.3	0.2	3.7	4.8	1.1*	15.5	15.8	0.3
Closed	-	-	3.5	2.1	-1.5*	8.3	7.6	-0.8	25.9	15.3	-10.6*
Structural classes-other[e]—											
Nonforest-nonrange	+	+	5.3	7.9	2.6*	8.7	14.6	5.9*	53.6	57.3	3.7
Upper Klamath ERU:											
Physiognomic types—											
Forest	-	-	50.5	47.5	-3.1*	7.8	5.9	-1.9*	1840.7	1711.3	-129.4
Woodland	+	+	8.4	12.8	4.4*	10.6	9.0	-1.6*	58.0	189.2	131.2*
Shrubland	nc	nc	21.4	18.8	-2.6	20.5	18.1	-2.4	275.8	116.8	-159.0
Herbland	nc	nc	10.6	9.0	-1.6	7.4	8.4	0.9	297.3	202.9	-94.5
Other[e]	+	+	9.1	12.0	2.9*	3.9	6.9	3.0*	160.2	338.7	178.4*
Cover types-forest and woodland—											
Grand fir-white fir	nc	nc	7.8	8.1	0.3	5.1	3.9	-1.2	152.1	261.3	109.1
Engelmann spruce-subalpine fir	nc	nc	0.1	0.1	0.0	0.1	0.2	0.1	4.2	4.1	-0.1
Shasta red fir	nc	nc	7.8	8.5	0.7	1.5	1.5	0.0	124.1	117.3	-6.9
Aspen-cottonwood-willow	nc	nc	0.0	0.1	0.0	0.1	0.0	-0.1	2.3	6.8	4.5
Juniper	+	+	8.4	12.8	4.4*	10.6	8.9	-1.7*	58.0	189.2	131.2*
Western larch	nc	nc	0.0	0.1	0.1	0.0	0.2	0.2	0.0	3.1	3.1
Whitebark pine-subalpine larch	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	1.8	1.4	-0.4
Lodgepole pine	nc	nc	1.4	1.7	0.3	2.7	2.4	-0.3	15.0	19.6	4.6
Sugar pine-western white pine	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	0.5	0.0	-0.5
Ponderosa pine	-	nc	26.7	23.5	-3.2*	8.2	8.7	0.5	387.3	256.7	-130.6
Douglas-fir	nc	-	2.1	1.2	-0.8	2.3	2.6	0.4	31.9	10.3	-21.6*
Mountain hemlock	nc	-	4.7	4.2	-0.5	1.1	1.0	-0.1	308.0	242.9	-65.1*
Cover types-shrubland—											
Colline low-medium	nc	-	1.8	2.9	1.1	4.7	139.0	134.3*	13.4	1.4	-12.0*
Montane low-medium	-	nc	18.5	14.9	-3.6*	15.0	13.6	-1.4	273.9	106.7	-167.2
Subalpine-alpine low-medium	nc	nc	0.1	0.1	0.0	0.2	0.1	-0.1	3.7	7.3	3.6
Colline mahogany species	nc	nc	0.0	0.1	0.1	0.2	0.2	0.0	2.6	5.0	2.4
Montane mahogany species	nc	nc	0.1	0.1	0.0	0.2	0.1	-0.1	18.0	9.3	-8.8
Colline tall	nc	nc	0.0	0.0	0.0	0.3	0.1	-0.1	2.1	1.5	-0.6
Montane tall	nc	nc	0.3	0.4	0.2	1.1	1.0	-0.1	8.9	7.0	-1.9
Colline wet-site	nc	nc	0.5	0.0	-0.5	0.6	0.0	-0.6	5.7	0.7	-5.0
Montane wet-site	-	-	0.6	0.4	-0.1*	1.5	0.8	-0.7*	35.8	29.5	-6.3
Cover types-herbland—											
Dry meadow	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.5
Colline bunchgrass	-	nc	2.8	1.0	-1.8*	2.4	0.8	-1.6	32.1	24.1	-8.0
Montane bunchgrass	-	-	0.7	0.4	-0.3*	1.5	1.1	-0.4	26.3	9.1	-17.2*
Colline exotic grasses-forbs	nc	+	0.0	0.4	0.4	0.1	0.4	0.3*	1.5	18.8	17.3

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Montane exotic grasses-forbs	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	1.2	0.0	-1.2*
Colline moist-site	-	-	1.1	0.1	-1.0*	0.4	0.2	-0.2	49.2	3.2	-46.0*
Montane moist-site	nc	-	0.8	0.7	-0.1	1.9	2.9	1.1*	14.7	12.2	-2.5
Postlogging-grasses-forbs	+	-	0.0	0.1	0.1*	0.1	7.4	7.2*	1.9	0.1	-1.9*
Cover types-agricultural-rural-urban—											
Cropland	+	+	7.0	10.5	3.5*	2.4	2.4	0.0	187.0	384.8	197.7*
Pasture	nc	+	4.4	5.3	0.9	0.3	0.0	-0.3*	702.3	898.1	195.8
Urban-rural	nc	+	0.0	0.1	0.1	0.4	0.5	0.1	1.2	3.8	2.5*
Cover types-other—											
Bare ground-road	nc	nc	0.0	0.0	0.0*	0.0	0.0	0.0	0.0	3.8	3.8*
Rock	nc	+	0.2	0.4	0.2	0.9	0.9	0.0	2.7	5.4	2.7*
Postlogging-bare ground-burned	+	+	0.0	0.4	0.4*	0.1	2.9	2.8*	4.2	5.7	1.5
Postlogging-bare ground-slumps-erosion	nc	nc	0.0	0.0	0.0	0.0	0.2	0.2	0.0	1.1	1.1
Water	nc	nc	2.2	1.4	-0.8	1.1	1.3	0.2	256.9	77.2	-179.7
Structural classes-forest—											
Stand initiation	nc	+	1.9	3.6	1.6	4.4	3.6	-0.7	31.2	62.1	30.9*
Stem exclusion, open canopy	nc	nc	11.3	10.9	-0.4	16.9	18.3	1.4	92.0	77.6	-14.4
Stem exclusion, closed canopy	nc	-	1.2	1.6	0.3	2.1	3.7	1.6*	23.7	22.1	-1.5
Understory reinitiation	+	+	5.6	8.1	2.5	6.9	10.5	3.6*	42.9	292.3	249.4
Young, multistory	-	nc	21.1	16.4	-4.7*	10.2	11.7	1.5	401.1	163.9	-237.2
Old, multistory	nc	-	4.3	5.5	1.2	3.5	6.6	3.1*	46.1	34.1	-11.9
Old, single story	-	-	7.4	4.8	-2.6*	3.9	7.1	3.3*	69.6	22.7	-47.0*
Structural classes-woodland—											
Stand initiation	+	nc	0.4	1.1	0.7	1.2	0.9	-0.3	7.1	8.5	1.5
Stem exclusion	+	nc	5.9	7.6	1.6*	8.2	7.1	-1.1	55.8	131.6	75.7
Understory reinitiation	+	+	2.0	3.8	1.8*	2.8	3.4	0.6*	5.3	330.1	324.9
Old multistory	nc	nc	0.0	0.3	0.3	0.3	0.6	0.4	0.9	3.2	2.3
Structural classes-shrubland—											
Open low-medium	nc	nc	18.5	15.9	-2.6	18.9	16.7	-2.2	269.6	99.3	-170.4
Closed low-medium	nc	+	1.9	2.0	0.1	3.6	1.4	-2.2*	24.8	73.1	48.3*
Open tall	nc	+	1.1	0.9	-0.2	3.2	1.9	-1.4*	32.5	48.3	15.8
Closed tall	nc	-	0.3	0.2	-0.1	1.3	0.6	-0.6*	9.2	4.3	-4.9*
Structural classes-herbland—											
Open	-	-	3.8	1.4	-2.4*	3.3	2.2	-1.1	101.6	35.8	-65.8
Closed	-	nc	1.6	1.1	-0.4*	2.7	3.3	0.6	28.9	24.2	-4.7
Structural classes-other[e]—											
Nonforest-nonrange	+	+	13.9	18.2	4.3*	4.5	9.1	4.6*	340.8	630.1	289.2*

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Upper Snake ERU:											
Physiognomic types—											
Forest	+	+	2.4	3.2	0.9*	2.7	2.1	-0.6	26.6	42.5	15.9*
Woodland	nc	nc	3.0	2.9	0.0	6.7	6.6	-0.1	13.5	20.7	7.2
Shrubland	-	nc	73.8	68.5	-5.3	7.6	7.6	0.0	3784.1	4304.2	520.1
Herbland	nc	nc	10.6	9.9	-0.7	7.1	7.6	0.5	345.8	497.1	151.3
Other[e]	+	nc	10.3	15.4	5.1	5.5	5.5	0.0	427.4	428.3	0.9
Cover types-forest and woodland—											
Engelmann spruce-subalpine fir	nc	nc	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.8	0.8
Aspen-cottonwood-willow	nc	+	0.9	1.0	0.1	2.3	2.5	0.2	5.5	7.0	1.5*
Juniper	nc	nc	2.6	2.5	-0.1	6.3	6.1	-0.2	12.4	19.2	6.9
Lodgepole pine	nc	nc	0.1	0.2	0.1	0.7	0.3	-0.4	1.3	13.3	12.0
Pinyon pine-juniper	nc	nc	0.4	0.5	0.1	0.7	0.7	0.0	8.3	10.2	1.9
Douglas-fir	nc	+	1.4	2.1	0.7	2.7	1.3	-1.4*	13.0	39.8	26.9
Cover types-shrubland—											
Colline low-medium	-	-	71.0	62.3	-8.6*	7.3	5679.9	5672.5*	3639.5	56.8	-3582.7*
Montane low-medium	nc	nc	0.3	0.5	0.2	0.7	1.2	0.5	2.8	5.5	2.7
Colline mahogany species	nc	nc	0.4	0.0	-0.4	0.5	0.0	-0.5	6.1	0.0	-6.1
Montane mahogany species	nc	nc	0.1	0.1	0.0	0.7	0.5	-0.3	0.6	0.8	0.2
Colline tall	nc	+	3.4	5.1	1.6	5.8	3.6	-2.2*	29.9	50.9	20.9*
Montane tall	nc	nc	0.1	0.4	0.3	0.3	1.6	1.3	4.5	4.7	0.1*
Colline wet-site	nc	nc	0.1	0.1	0.0	1.0	0.7	-0.3	1.7	4.9	3.1
Montane wet-site	nc	nc	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0
Cover types-herbland—											
Alpine	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	1.2	0.0	-1.2
Colline bunchgrass	+	nc	3.7	5.2	1.5*	1.1	1.9	0.8	344.4	488.2	143.8
Colline exotic grasses-forbs	nc	+	4.6	4.0	-0.6	5.3	5.4	0.1	29.3	75.4	46.2*
Colline moist-site	nc	nc	0.1	0.2	0.0	0.5	0.5	0.0	11.1	12.2	1.1
Wet meadow	nc	nc	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.9	0.9
Postfire-grasses-forbs	nc	nc	0.4	0.2	-0.2	0.5	0.2	-0.3	15.8	11.0	-4.7
Cover types-agricultural-rural-urban—											
Cropland	+	+	2.7	12.1	9.4*	3.3	4.2	0.9	52.1	229.4	177.3*
Pasture	nc	nc	0.1	0.2	0.2	0.1	0.2	0.1	9.4	13.3	3.9
Urban-rural	+	+	0.0	0.2	0.2*	0.6	1.7	1.1*	1.1	3.8	2.7*
Cover types-other—											
Bare ground-road	nc	nc	0.1	0.1	0.0	0.2	0.2	0.0	9.3	10.2	0.9
Rock	-	nc	6.8	2.6	-4.1*	0.5	0.7	0.2	1884.0	182.3	-1701.7
Sand	nc	nc	0.5	0.4	-0.1	0.6	0.5	-0.1	13.4	10.6	-2.8
Stream channel-nonvegetated flood plain	nc	nc	0.1	0.0	-0.1	0.4	0.0	-0.4	2.1	0.6	-1.5
Water	nc	nc	0.1	0.1	0.0	0.4	0.2	-0.2	3.4	5.5	2.1

Table 32—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Structural classes-forest—											
Stand initiation	-	+	0.8	0.3	-0.5*	4.9	1.7	-3.3*	3.7	6.4	2.7
Stem exclusion, open canopy	+	+	0.4	1.0	0.6*	3.0	3.3	0.3	6.9	11.9	5.1*
Stem exclusion, closed canopy	nc	nc	0.1	0.1	0.0	0.9	0.5	-0.4	1.6	1.5	-0.1
Understory reinitiation	nc	nc	2.5	1.6	-1.0	5.7	3.5	-2.1	11.6	13.7	2.0
Young, multistory	nc	+	0.6	1.1	0.5	2.7	1.2	-1.5*	7.5	22.6	15.1
Old, multistory	nc	nc	0.0	0.0	0.0	0.1	0.1	0.0	1.7	2.0	0.3
Old, single story	nc	nc	0.1	0.0	-0.1	0.3	0.1	-0.1	2.9	1.3	-1.7
Structural classes-woodland—											
Stand initiation	nc	nc	0.4	0.2	-0.3	2.8	0.9	-1.9	1.7	1.9	0.2
Stem exclusion	+	+	0.7	2.0	1.3*	4.0	6.2	2.2*	8.7	17.9	9.3*
Understory reinitiation	-	-	1.8	0.8	-1.1*	4.4	2.9	-1.5	7.9	4.4	-3.5*
Structural classes-shrubland—											
Open low-medium	-	nc	63.1	57.8	-5.3	9.7	8.5	-1.2	2352.3	2323.8	-28.5
Closed low-medium	-	+	8.2	5.0	-3.2	11.1	2.9	-8.2*	73.9	217.3	143.4
Open tall	+	+	3.0	5.2	2.3*	5.3	4.3	-1.1	35.6	54.5	18.9*
Closed tall	-	-	0.7	0.4	-0.4*	4.0	2.1	-1.9*	13.3	2.5	-10.8
Structural classes-herbland—											
Open	nc	nc	8.1	9.1	1.0	5.4	6.2	0.8	371.1	480.2	109.2
Closed	nc	nc	0.7	0.3	-0.4	2.0	1.1	-0.9	24.9	17.6	-7.3
Structural classes-other[e]—											
Nonforest-nonrange	+	nc	10.8	16.0	5.1	5.9	5.8	-0.1	395.0	433.3	38.3

[a] Choices for either field are (+) increase; (-) decrease; (nc) no ecologically significant change.

[b] Con. = connectivity change among patches in a patch type.

[c] H = historical ; C = current; MD = mean difference of pairwise comparisons of historical and current subwatersheds.

[d] * = statistically significant difference at P≤0.2; all values rounded to 1 decimal place.

[e] "Other" includes anthropogenic cover types and other nonforest and nonrangeland (nonshrubland, nonherbland, nonwoodland) types.

Appendix 3

Table 33—Historical and current percentage of area, patch density, and mean patch size for insect and pathogen disturbance vulnerability classes of sampled subwatersheds of the ERUs of the mid-scale ecological assessment of the interior Columbia River basin

	Trend[a]		Area			Patch density			Mean patch size		
Ecological reporting unit	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No. /10 000 ha*		-------	*Hectares*	-------
Blue Mountains ERU:											
Western spruce budworm—											
Low	nc	-	47.2	46.3	-0.9	27.7	35.3	7.6*	475.0	465.9	-9.1
Moderate	nc	-	14.6	14.8	0.2	29.1	35.0	5.9*	60.8	53.6	-7.2
High	nc	-	38.2	38.9	0.7	12.4	14.7	2.2*	568.4	516.4	-52.0
Douglas-fir beetle											
Low	-	-	75.0	69.8	-5.2*	16.2	19.5	3.3*	1332.0	1241.5	-90.5
Moderate	nc	+	19.8	22.4	2.6	17.7	22.8	5.0*	145.3	199.2	53.9
High	+	+	5.2	7.8	2.5*	4.5	8.9	4.4*	65.3	76.1	10.8
Western pine beetle (type 1)—											
Low	nc	+	78.8	81.0	2.3	12.4	13.2	0.8	2098.7	3572.1	1473.5*
Moderate	-	-	18.8	16.5	-2.3*	11.3	15.2	3.9*	304.5	128.5	-176.0
High	nc	nc	2.5	2.5	0.0	4.2	3.8	-0.4	31.3	23.0	-8.3
Western pine beetle (type 2)—											
Low	nc	nc	51.6	54.2	2.6	26.7	27.6	0.9	589.7	680.2	90.5
Moderate	-	-	30.6	26.0	-4.5*	20.6	26.7	6.0*	259.7	141.8	-118.0*
High	nc	+	17.8	19.7	1.9	10.5	13.7	3.1*	166.9	254.5	87.6*
Mountain pine beetle (type 1)—											
Low	nc	-	49.1	49.4	0.3	29.9	34.3	4.4*	661.0	447.3	-213.7*
Moderate	nc	nc	44.3	45.5	1.3	13.6	14.6	1.1	445.1	508.1	63.1
High	-	nc	6.7	5.1	-1.5*	9.1	10.6	1.6	55.0	46.1	-8.9
Mountain pine beetle (type 2)—											
Low	nc	nc	51.6	54.2	2.6	26.7	27.6	0.9	589.7	680.2	90.5
Moderate	-	-	30.6	26.0	-4.5*	20.6	26.7	6.0*	259.7	141.8	-118.0*
High	nc	+	17.8	19.7	1.9	10.5	13.7	3.1*	166.9	254.5	87.6*
Fir engraver—											
Low	+	-	65.0	70.4	5.3*	20.4	21.6	1.2	1907.4	1409.0	-498.4*
Moderate	+	+	10.3	14.6	4.3*	18.4	22.6	4.2*	65.3	81.4	16.1*
High	-	-	24.6	15.0	-9.7*	9.0	12.4	3.4*	428.3	142.2	-286.1*
Spruce beetle—											
Low	+	nc	63.3	66.0	2.7*	28.1	29.0	0.9	1466.6	1452.4	-14.2
Moderate	nc	nc	34.1	33.3	-0.8	16.7	15.2	-1.5	385.6	350.0	-35.6
High	-	nc	2.6	0.7	-2.0*	1.9	0.9	-1.0*	25.2	19.2	-6.0
Douglas-fir dwarf mistletoe—											
Low	-	-	65.5	57.4	-8.0*	20.8	29.0	8.2*	1016.1	903.9	-112.1
Moderate	nc	-	24.4	26.0	1.6	17.6	23.1	5.5*	199.6	185.0	-14.6
High	+	+	10.1	16.5	6.4*	9.3	19.6	10.3*	87.5	125.7	38.3*

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Western dwarf mistletoe—											
Low	nc	nc	70.9	71.1	0.2	13.7	14.0	0.4	1741.6	2037.2	295.6
Moderate	nc	+	18.7	20.9	2.1	16.4	22.9	6.5*	161.0	171.3	10.2
High	-	-	10.4	8.1	-2.3*	9.6	12.7	3.0*	83.8	59.8	-24.0
Western larch dwarf mistletoe—											
Low	+	nc	95.9	96.5	0.6*	5.2	4.9	-0.3	3638.2	4384.5	746.4
Moderate	nc	nc	2.9	2.7	-0.2	4.4	6.9	2.6*	26.5	30.1	3.5
High	nc	-	1.3	0.8	-0.4	1.8	3.6	1.7*	16.0	9.8	-6.1*
Lodgepole pine dwarf mistletoe—											
Low	+	+	93.9	95.1	1.2*	6.3	5.5	-0.8*	3203.1	4194.6	991.6*
Moderate	-	nc	4.5	3.3	-1.2*	6.1	7.4	1.2	42.3	43.3	1.0
High	nc	nc	1.5	1.6	0.0	2.9	4.0	1.0	21.5	21.8	0.3
Armillaria root disease—											
Low	nc	-	39.6	39.1	-0.5	27.3	34.2	7.0*	414.9	393.6	-21.2
Moderate	nc	-	19.6	19.9	0.2	28.7	35.2	6.6*	97.6	81.2	-16.4
High	nc	nc	40.7	41.0	0.3	13.0	13.6	0.7	485.0	616.2	131.2
Laminated root rot—											
Low	nc	nc	50.6	50.1	-0.6	27.3	34.0	6.7*	523.7	545.4	21.7
Moderate	-	nc	14.9	13.0	-1.9*	22.2	26.0	3.8*	84.5	90.5	6.0
High	nc	+	34.5	37.0	2.5	12.6	13.9	1.3	376.7	572.4	195.6*
S-group annosum root disease—											
Low	nc	nc	65.5	68.3	2.8	20.6	23.8	3.2*	2140.7	2092.4	-48.3
Moderate	+	+	10.2	14.8	4.7*	17.8	21.7	3.8*	54.0	84.1	30.0*
High	-	-	24.3	16.9	-7.5*	11.0	15.0	4.0*	238.3	114.7	-123.6*
P-group annosum root disease—											
Low	nc	nc	72.7	72.1	-0.6	13.4	13.2	-0.2	1759.3	1993.3	234.1
Moderate	nc	nc	15.7	17.5	1.8	17.2	26.3	9.1*	87.5	91.8	4.4
High	nc	-	11.6	10.4	-1.1	9.5	11.3	1.8	110.7	75.2	-35.5*
Tomentosus root and butt rot—											
Low	nc	nc	93.3	94.1	0.8	7.3	6.3	-1.0*	3335.0	3812.5	477.6
Moderate	+	nc	2.3	3.4	1.1*	3.7	4.9	1.3	18.4	23.5	5.2
High	-	nc	4.4	2.5	-1.9*	2.6	3.0	0.4	33.4	37.2	3.7
Schweinitzii root and butt rot—											
Low	nc	nc	38.1	37.3	-0.9	26.9	32.0	5.1*	376.6	389.0	12.4
Moderate	-	-	15.1	10.6	-4.5*	25.0	27.8	2.7*	63.3	41.5	-21.8*
High	+	+	46.7	52.1	5.4*	12.7	10.5	-2.2*	807.1	956.2	149.1
Rust-red stringy rot—											
Low	nc	nc	71.8	72.7	0.9	21.4	21.7	0.3	1656.8	1728.1	71.3
Moderate	nc	nc	27.0	26.5	-0.5	15.2	14.3	-1.0	233.3	215.2	-18.1
High	nc	nc	1.1	0.8	-0.4	1.7	2.4	0.7*	21.4	13.1	-8.3

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No. /10 000 ha*			------- *Hectares* -------		
Central Idaho Mountains ERU:											
Western spruce budworm—											
Low	nc	+	31.7	32.0	0.3	26.6	33.7	7.1*	461.0	474.4	13.3
Moderate	-	-	18.9	16.9	-2.0*	29.9	36.7	6.8*	73.9	51.9	-22.1*
High	nc	nc	49.4	51.1	1.7	13.4	14.0	0.7	869.7	911.9	42.2
Douglas-fir beetle—											
Low	nc	-	74.0	72.9	-1.1	14.7	15.5	0.8	2322.0	1776.8	-545.2*
Moderate	nc	nc	21.6	22.1	0.6	15.7	17.4	1.7	164.1	141.1	-23.0
High	nc	nc	4.4	5.0	0.6	8.1	8.6	0.5	44.4	60.6	16.2
Western pine beetle (type 1)—											
Low	nc	nc	94.7	95.2	0.4	7.2	8.4	1.2*	2679.7	2738.8	59.1
Moderate	-	-	4.3	3.5	-0.8*	3.7	4.3	0.6	34.3	20.1	-14.2*
High	nc	-	1.0	1.3	0.3	1.6	2.8	1.2*	9.3	8.7	-0.6
Western pine beetle (type 2)—											
Low	-	-	57.1	54.6	-2.6*	23.0	30.7	7.7*	888.3	850.7	-37.6
Moderate	+	nc	39.6	42.1	2.5*	22.4	22.7	0.3	395.2	463.0	67.8
High	nc	nc	3.3	3.3	0.0	3.0	3.6	0.6	28.7	23.8	-4.8
Mountain pine beetle (type 1)—											
Low	-	-	43.8	41.8	-2.0*	23.9	29.3	5.4*	1173.9	857.3	-316.6*
Moderate	nc	-	35.1	36.0	0.9	24.8	27.2	2.4	452.6	184.5	-268.1*
High	nc	nc	21.0	22.1	1.1	16.4	17.3	0.9	165.4	130.6	-34.8
Mountain pine beetle (type 2)—											
Low	-	-	57.1	54.6	-2.6*	23.0	30.7	7.7*	888.3	850.7	-37.6
Moderate	+	nc	39.6	42.1	2.5*	22.4	22.7	0.3	395.2	463.0	67.8
High	nc	nc	3.3	3.3	0.0	3.0	3.6	0.6	28.7	23.8	-4.8
Fir engraver—											
Low	nc	+	57.1	56.9	-0.2	20.5	26.9	6.4*	1079.7	1220.7	141.1
Moderate	-	-	21.6	16.9	-4.7*	30.3	32.3	2.1	97.2	55.9	-41.3*
High	+	+	21.3	26.2	4.9*	17.3	16.7	-0.6	156.7	254.6	97.9*
Spruce beetle—											
Low	-	-	65.8	63.1	-2.8*	17.4	23.9	6.5*	1831.2	1491.0	-340.2*
Moderate	+	nc	31.1	33.4	2.3*	19.9	19.8	-0.1	225.7	241.5	15.9
High	nc	nc	3.1	3.6	0.4	4.6	6.3	1.7*	59.4	37.2	-22.2
Douglas-fir dwarf mistletoe—											
Low	+	nc	67.4	69.6	2.2*	15.4	16.2	0.8	2343.7	1896.8	-446.9*
Moderate	-	nc	21.9	19.9	-2.0*	20.4	22.8	2.4	137.8	97.4	-40.4
High	nc	nc	10.7	10.5	-0.2	11.0	14.6	3.6*	95.4	75.0	-20.3
Western dwarf mistletoe—											
Low	nc	nc	93.8	93.9	0.1	6.7	8.3	1.5*	3121.7	2991.7	-130.0
Moderate	nc	nc	3.9	4.4	0.4	5.1	5.3	0.1	24.1	23.5	-0.6
High	-	-	2.2	1.8	-0.5*	2.8	2.8	0.0	17.2	11.4	-5.7*

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Western larch dwarf mistletoe—											
Low	+	+	97.4	98.7	1.3*	5.1	4.5	-0.7*	3389.1	4079.1	689.9*
Moderate	-	nc	2.1	1.1	-0.9*	3.7	3.0	-0.6	15.9	13.2	-2.7
High	nc	nc	0.5	0.1	-0.4	0.7	0.5	-0.1	5.5	3.1	-2.5
Lodgepole pine dwarf mistletoe—											
Low	+	nc	70.1	71.7	1.7*	13.6	14.3	0.7	2035.5	2086.5	51.0
Moderate	-	-	16.3	13.1	-3.1*	22.0	21.9	-0.2	68.0	50.7	-17.3*
High	nc	nc	13.7	15.1	1.5	16.4	16.1	-0.3	71.1	76.2	5.0
Armillaria root disease—											
Low	nc	-	31.6	30.7	-0.9	27.8	37.0	9.1*	541.7	425.5	-116.2
Moderate	nc	-	30.8	30.1	-0.7	31.8	33.9	2.1	166.8	128.2	-38.6*
High	nc	nc	37.6	39.2	1.6	17.5	18.6	1.0	361.6	418.2	56.6
Laminated root rot—											
Low	nc	-	43.6	43.7	0.1	23.8	32.0	8.2*	737.0	545.4	-191.6*
Moderate	nc	nc	27.0	28.5	1.4	26.8	28.2	1.4	196.3	227.6	31.3
High	nc	-	29.3	27.8	-1.5	14.5	19.3	4.8*	321.5	253.2	-68.3*
S-group annosum root disease—											
Low	nc	-	38.8	38.7	-0.2	28.7	36.3	7.5*	592.8	467.3	-125.6
Moderate	-	-	25.0	22.4	-2.5*	35.2	36.9	1.7	89.1	61.4	-27.7*
High	+	nc	36.2	38.9	2.7*	17.9	19.3	1.4	378.4	377.5	-0.9
P-group annosum root disease—											
Low	nc	nc	94.4	94.3	0.0	6.6	8.0	1.5*	2993.0	3088.2	95.2
Moderate	nc	nc	3.5	3.9	0.4	4.6	5.3	0.7	21.6	20.9	-0.6
High	-	-	2.1	1.7	-0.4*	2.7	2.8	0.1	15.0	12.4	-2.7*
Tomentosus root and butt rot—											
Low	nc	+	79.3	77.7	-1.6	11.1	11.8	0.7	2363.1	2375.5	12.4
Moderate	nc	-	11.4	11.3	-0.1	16.6	19.9	3.3*	55.4	43.1	-12.3*
High	+	+	9.3	11.0	1.7*	12.4	15.0	2.6*	61.5	69.9	8.4
Schweinitzii root and butt rot—											
Low	nc	-	30.2	29.9	-0.3	22.4	30.4	8.0*	591.0	462.4	-128.6
Moderate	nc	+	12.7	13.9	1.2	25.3	28.5	3.2*	50.9	53.2	2.2
High	nc	nc	57.1	56.2	-0.9	10.2	11.0	0.9	1254.1	1527.6	273.5
White pine blister rust (type 1)—											
Low	nc	nc	62.1	61.9	-0.1	8.9	10.0	1.2*	2912.8	2712.5	-200.3
Moderate	nc	nc	37.9	38.0	0.1	8.0	8.5	0.6	1154.9	1103.2	-51.7
High	nc	nc	0.0	0.1	0.0	0.2	0.4	0.2	1.4	0.5	-0.9
White pine blister rust (type 2)—											
Low	nc	-	84.1	84.1	0.0	4.4	5.9	1.5*	4812.1	4353.2	-458.9*
Moderate	nc	nc	15.2	15.3	0.1	11.5	12.1	0.5	151.5	128.7	-22.8
High	nc	nc	0.7	0.6	0.0	2.2	2.2	0.0	6.7	7.7	1.0

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Rust-red stringy rot—											
Low	-	-	80.4	77.6	-2.8*	7.9	12.3	4.4*	3042.7	2607.3	-435.4*
Moderate	+	nc	19.5	22.2	2.6*	18.9	19.5	0.6	125.7	178.6	52.9
High	nc	nc	0.1	0.3	0.2	0.2	0.5	0.3*	1.3	2.5	1.2
Columbia Plateau ERU:											
Western spruce budworm—											
Low	-	nc	83.7	82.3	-1.3*	9.9	12.4	2.4	3311.6	3089.5	-222.1
Moderate	nc	nc	7.0	5.7	-1.3	8.7	7.4	-1.3	66.4	43.3	-23.2
High	+	nc	9.3	12.0	2.7*	3.6	4.2	0.6	132.7	172.9	40.2
Douglas-fir beetle—											
Low	-	nc	90.0	88.0	-2.0*	10.4	10.1	-0.3	2690.2	2432.6	-257.6
Moderate	+	nc	7.1	9.4	2.3*	5.3	6.2	0.9	58.7	81.6	22.9
High	nc	nc	2.9	2.6	-0.3	2.2	2.0	-0.2	31.5	36.8	5.4
Western pine beetle (type 1)—											
Low	nc	nc	83.7	82.5	-1.2	11.9	10.6	-1.3	2651.5	2838.7	187.2
Moderate	+	+	11.8	14.6	2.9*	6.5	6.3	-0.2	105.2	171.5	66.3*
High	nc	-	4.6	2.9	-1.6	3.9	3.1	-0.8	50.8	26.6	-24.1*
Western pine beetle (type 2)—											
Low	-	nc	75.3	71.1	-4.2*	10.6	12.7	2.1	4404.0	3719.9	-684.1
Moderate	+	nc	9.8	11.8	2.0*	10.3	9.2	-1.1	81.3	301.2	219.9
High	+	nc	14.9	17.1	2.2*	4.6	4.0	-0.6	199.1	245.8	46.7
Mountain pine beetle (type 1)—											
Low	-	-	87.5	85.9	-1.7*	6.6	10.6	3.9*	4032.8	3505.1	-527.6
Moderate	nc	nc	10.7	11.7	1.1	6.5	6.3	-0.1	124.6	102.2	-22.4
High	nc	nc	1.8	2.4	0.6	1.4	2.6	1.1	32.2	36.2	4.1
Mountain pine beetle (type 2)—											
Low	-	nc	75.3	71.1	-4.2*	10.6	12.7	2.1	4404.0	3719.9	-684.1
Moderate	+	nc	9.8	11.8	2.0*	10.3	9.2	-1.1	81.3	301.2	219.9
High	+	nc	14.9	17.1	2.2*	4.6	4.0	-0.6	199.1	245.8	46.7
Fir engraver—											
Low	nc	+	92.9	94.8	1.9	6.1	7.1	1.0*	3089.7	3281.7	192.0
Moderate	nc	-	2.6	2.3	-0.3	3.9	4.4	0.5	27.9	20.2	-7.6*
High	+	nc	1.8	2.9	1.0*	1.6	2.7	1.1	47.2	26.8	-20.4
Douglas-fir dwarf mistletoe—											
Low	-	nc	87.5	85.5	-2.0*	10.7	10.9	0.2	2491.6	2397.0	-94.7
Moderate	+	nc	5.6	8.1	2.5*	8.9	7.3	-1.6	38.7	41.8	3.1
High	nc	nc	6.9	6.4	-0.6	3.9	3.9	0.0	70.1	65.7	-4.4
Western dwarf mistletoe—											
Low	-	nc	80.7	77.8	-2.9*	10.4	10.3	-0.1	3217.1	3203.4	-13.7
Moderate	+	+	8.5	14.3	5.9*	11.1	7.4	-3.7*	40.9	163.8	122.9*
High	nc	nc	10.8	7.8	-3.0	5.3	5.5	0.2	108.9	65.5	-43.4

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Western larch dwarf mistletoe—											
Low	+	nc	98.7	99.4	0.8*	5.9	6.1	0.2	4148.8	3954.7	-194.1
Moderate	-	nc	1.3	0.5	-0.8*	0.7	1.0	0.3	23.2	4.8	-18.4
High	nc	nc	0.0	0.1	0.0	0.1	0.2	0.2	2.0	3.2	1.1
Lodgepole pine dwarf mistletoe—											
Low	nc	+	98.3	98.1	-0.3	6.8	7.1	0.3	3689.6	4175.1	485.5*
Moderate	nc	nc	1.4	1.6	0.1	1.0	1.0	-0.1	89.6	31.2	-58.4
High	nc	+	0.2	0.4	0.1	0.4	0.3	-0.1	3.7	15.3	11.6*
Armillaria root disease—											
Low	nc	nc	77.2	76.2	-1.0	11.1	12.8	1.7	2568.0	2725.7	157.7
Moderate	nc	-	13.7	13.3	-0.5	10.8	10.8	0.0	349.2	78.5	-270.8*
High	nc	nc	9.1	10.5	1.4	4.0	5.0	1.0	117.8	117.8	0.0
Laminated root rot—											
Low	-	nc	84.7	82.1	-2.6*	10.7	11.3	0.6	3055.8	3239.5	183.7
Moderate	+	nc	4.9	8.3	3.4*	9.0	7.5	-1.5	37.3	55.4	18.1
High	nc	nc	10.4	9.7	-0.8	4.1	4.8	0.7	114.4	98.4	-16.0
S-group annosum root disease—											
Low	-	+	94.4	92.3	-2.1*	6.4	9.2	2.8*	3504.4	3588.7	84.4
Moderate	-	-	4.8	2.3	-2.5*	2.8	3.6	0.7	72.1	20.7	-51.4*
High	+	+	0.8	5.4	4.6*	1.3	2.2	0.9*	15.6	132.1	116.5*
P-group annosum root disease—											
Low	nc	nc	80.6	78.8	-1.8	11.4	10.2	-1.2	3116.6	3219.4	102.9
Moderate	+	nc	7.7	10.0	2.4*	10.6	9.1	-1.5*	53.2	61.7	8.5
High	nc	nc	11.8	11.2	-0.6	5.0	5.0	0.0	139.1	137.3	-1.8
Schweinitzii root and butt rot—											
Low	-	nc	75.1	72.6	-2.5*	11.1	13.3	2.2	2891.4	2727.1	-164.2
Moderate	+	nc	7.8	12.0	4.3*	10.4	9.6	-0.9	106.3	82.4	-23.8
High	nc	nc	17.2	15.4	-1.8	5.7	6.7	0.9	209.8	184.5	-25.4
White pine blister rust (type 1)—											
Low	+	nc	95.7	97.1	1.5*	4.1	4.7	0.6	8057.2	7847.6	-209.6
Moderate	nc	nc	2.9	2.8	-0.1	0.4	1.0	0.5	60.6	24.5	-36.1
High	-	nc	1.4	0.1	-1.4*	0.2	0.2	0.0	45.6	4.3	-41.3
Rust-red stringy rot—											
Low	-	-	98.2	95.2	-2.9*	6.0	7.7	1.6*	4276.8	3221.8	-1055.0*
Moderate	+	nc	1.8	4.7	2.9*	1.7	3.2	1.5*	30.0	36.3	6.4
High	nc	+	0.0	0.1	0.0*	0.1	0.2	0.1*	0.8	3.5	2.7*
Lower Clark Fork ERU:											
Western spruce budworm—											
Low	nc	-	20.2	15.7	-4.5	27.4	38.2	10.8	93.5	45.8	-47.7*
Moderate	nc	nc	23.0	19.3	-3.6	38.6	37.2	-1.4	59.6	54.9	-4.8
High	nc	nc	56.8	65.0	8.2	20.8	15.0	-5.8	511.6	563.2	51.6

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Douglas-fir beetle—											
Low	-	-	91.6	65.3	-26.4*	2.4	12.4	10.0*	4905.7	1580.2	-3325.5*
Moderate	+	+	8.1	28.8	20.7*	13.0	18.8	5.8	56.4	173.9	117.5*
High	nc	nc	0.2	5.9	5.7	0.2	4.2	4.0	19.0	49.2	30.2
Western pine beetle (type 1)—											
Low	nc	nc	99.9	96.5	-3.3	5.8	5.6	-0.2	3334.5	3339.5	5.0
Moderate	nc	nc	0.2	2.9	2.7	0.2	3.6	3.4	14.1	19.5	5.4
High	nc	nc	0.0	0.6	0.6	0.0	0.4	0.4	0.0	36.0	36.0
Western pine beetle (type 2)—											
Low	-	-	28.7	15.3	-13.4*	30.8	47.4	16.6	155.7	37.6	-118.1*
Moderate	+	+	69.8	80.9	11.1*	17.0	5.0	-12.0*	652.6	2399.2	1746.7*
High	nc	nc	1.5	3.8	2.3	2.4	3.6	1.2	26.3	35.6	9.3
Mountain pine beetle (type 1)—											
Low	-	-	30.0	17.3	-12.6*	28.8	49.4	20.6*	150.1	36.4	-113.7*
Moderate	nc	+	66.1	69.8	3.7	15.2	7.8	-7.4*	726.3	1898.4	1172.1
High	+	nc	4.0	12.9	8.9*	10.6	15.8	5.2	40.1	60.8	20.7
Mountain pine beetle (type 2)—											
Low	-	-	28.7	15.3	-13.4*	30.8	47.4	16.6	155.7	37.6	-118.1*
Moderate	+	+	69.8	80.9	11.1*	17.0	5.0	-12.0*	652.6	2399.2	1746.7*
High	nc	nc	1.5	3.8	2.3	2.4	3.6	1.2	26.3	35.6	9.3
Fir engraver—											
Low	nc	-	56.9	48.8	-8.1	16.2	28.6	12.4*	1435.3	198.3	-1237.0
Moderate	nc	nc	14.8	14.2	-0.6	27.2	33.6	6.4	54.0	49.3	-4.7
High	nc	nc	28.3	37.0	8.7	22.6	25.4	2.8	129.7	171.8	42.1
Spruce beetle—											
Low	nc	nc	87.8	85.7	-2.1	4.6	3.4	-1.2	4346.8	4712.6	365.8
Moderate	nc	nc	12.1	13.8	1.7	17.6	23.0	5.4	81.2	61.6	-19.6
High	nc	nc	0.1	0.5	0.4	0.6	1.4	0.8	11.0	16.8	5.8
Douglas-fir dwarf mistletoe—											
Low	nc	nc	56.5	58.0	1.5	12.2	14.6	2.4	642.1	624.4	-17.7
Moderate	nc	+	37.5	34.1	-3.4	32.4	22.8	-9.6*	127.9	208.2	80.3
High	nc	nc	6.0	7.9	1.9	13.0	15.4	2.4	44.7	52.0	7.3
Western dwarf mistletoe—											
Low	nc	nc	97.8	94.9	-2.9	4.8	4.6	-0.2	3437.3	4609.8	1172.5
Moderate	nc	+	2.2	4.3	2.1	3.4	5.2	1.8*	27.1	37.2	10.1
High	nc	nc	0.0	0.9	0.9	0.0	0.4	0.4	0.0	53.7	53.7
Western larch dwarf mistletoe—											
Low	nc	nc	95.7	94.9	-0.8	3.8	2.6	-1.2	3290.7	5281.9	1991.2
Moderate	nc	+	4.1	4.9	0.8	6.8	7.0	0.2	32.2	54.8	22.6*
High	nc	nc	0.2	0.2	0.0	0.6	0.8	0.2	6.7	11.6	4.9

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Lodgepole pine dwarf mistletoe—											
Low	nc	-	95.5	90.0	-5.5	2.2	3.8	1.6*	6118.5	2691.1	-3427.4*
Moderate	nc	nc	4.3	7.5	3.2	8.8	13.2	4.4	39.5	42.1	2.6
High	nc	+	0.2	2.6	2.3	1.2	3.4	2.2	9.1	31.2	22.1*
Armillaria root disease—											
Low	nc	nc	9.9	6.9	-3.0	21.2	34.8	13.6	61.7	25.7	-36.0
Moderate	nc	nc	35.1	28.0	-7.1	34.4	32.0	-2.4	124.0	88.8	-35.2
High	nc	nc	55.0	65.1	10.1	18.2	14.8	-3.4	684.7	548.2	-136.4
Laminated root rot—											
Low	nc	nc	11.2	11.0	-0.2	23.6	38.2	14.6	79.4	35.5	-43.9
Moderate	nc	nc	29.4	27.0	-2.4	33.0	33.8	0.8	99.2	83.9	-15.2
High	nc	nc	59.4	62.0	2.6	17.0	16.2	-0.8	515.9	479.0	-36.9
S-group annosum root disease—											
Low	nc	nc	11.0	10.0	-1.0	23.0	36.6	13.6	71.5	35.2	-36.3
Moderate	nc	nc	17.6	12.9	-4.7	32.0	23.0	-9.0*	62.7	65.6	2.9
High	nc	nc	71.4	77.0	5.7	12.0	8.0	-4.0	3051.7	2622.5	-429.2
P-group annosum root disease—											
Low	nc	nc	98.1	96.7	-1.4	5.8	4.8	-1.0	1896.2	3420.4	1524.3
Moderate	nc	nc	1.9	3.0	1.1	2.6	3.8	1.2	15.0	22.3	7.3
High	nc	nc	0.0	0.2	0.2	0.0	0.8	0.8	0.0	9.8	9.8
Tomentosus root and butt rot—											
Low	nc	nc	97.7	97.4	-0.3	3.8	2.0	-1.8	5265.8	6322.7	1056.9
Moderate	nc	nc	1.3	1.1	-0.2	4.6	4.6	0.0	17.5	21.5	4.1
High	nc	+	1.0	1.5	0.5	2.8	2.6	-0.2	28.3	42.6	14.3*
Schweinitzii root and butt rot—											
Low	nc	nc	8.4	6.1	-2.3	21.0	33.2	12.2	56.5	25.3	-31.2
Moderate	+	+	35.4	41.6	6.2*	25.0	17.8	-7.2*	204.2	479.6	275.4
High	nc	nc	56.2	52.3	-4.0	17.8	17.0	-0.8	436.8	1437.1	1000.2
White pine blister rust (type 1)—											
Low	nc	-	27.4	29.9	2.5	25.4	18.0	-7.4*	216.4	204.1	-12.3
Moderate	nc	nc	71.8	66.4	-5.4	7.2	8.8	1.6	1466.1	1814.6	348.5
High	nc	+	0.8	3.7	2.9	3.2	6.6	3.4*	29.8	54.1	24.2
Rust-red stringy rot—											
Low	nc	nc	47.9	46.2	-1.7	22.0	34.4	12.4	644.3	1073.8	429.5
Moderate	nc	+	51.2	52.1	0.9	18.6	14.2	-4.4*	400.9	1053.3	652.3*
High	nc	nc	1.0	1.7	0.7	2.6	4.2	1.6	16.2	30.8	14.6
Northern Cascades ERU:											
Western spruce budworm—											
Low	nc	+	30.7	31.8	1.1	21.1	29.0	7.9*	373.3	497.0	123.8
Moderate	nc	nc	17.8	17.8	0.0	20.3	27.0	6.7*	107.6	104.2	-3.4
High	nc	nc	51.5	50.4	-1.1	10.4	10.9	0.5	972.3	929.1	-43.2

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Douglas-fir beetle—											
Low	+	+	65.1	68.4	3.3*	11.7	16.9	5.2*	1599.1	1614.2	15.1
Moderate	nc	-	26.2	24.2	-2.0	11.8	15.2	3.4*	376.5	274.8	-101.7*
High	nc	-	8.7	7.4	-1.3	6.2	8.2	2.0*	149.9	89.2	-60.8*
Western pine beetle (type 1)—											
Low	+	nc	84.5	89.3	4.8*	7.3	6.9	-0.3	3112.8	3373.0	260.2
Moderate	-	-	11.8	8.9	-2.9*	7.2	7.5	0.3	153.9	89.4	-64.6*
High	-	-	3.7	1.8	-1.9*	2.8	2.4	-0.4	74.5	42.8	-31.7*
Western pine beetle (type 2)—											
Low	+	+	46.6	49.9	3.3*	16.8	23.0	6.1*	765.4	801.8	36.4
Moderate	nc	-	43.6	41.9	-1.7	13.5	17.4	3.9*	631.7	369.6	-262.1*
High	-	-	9.8	8.2	-1.6*	4.8	5.2	0.4	227.4	96.8	-130.6*
Mountain pine beetle (type 1)—											
Low	nc	+	48.5	48.8	0.3	16.9	23.1	6.1*	740.3	753.0	12.6
Moderate	nc	nc	46.2	44.4	-1.8	13.9	15.3	1.4	522.6	553.7	31.1
High	nc	+	5.3	6.8	1.5	4.8	6.6	1.7*	91.6	163.2	71.7
Mountain pine beetle (type 2)—											
Low	+	+	46.6	49.9	3.3*	16.8	23.0	6.1*	765.4	801.8	36.4
Moderate	nc	-	43.6	41.9	-1.7	13.5	17.4	3.9*	631.7	369.6	-262.1*
High	-	-	9.8	8.2	-1.6*	4.8	5.2	0.4	227.4	96.8	-130.6*
Fir engraver—											
Low	nc	-	57.0	57.8	0.8	16.1	21.0	5.0*	1569.1	1302.1	-267.0
Moderate	-	-	22.6	20.7	-1.9*	19.0	24.2	5.1*	149.3	126.7	-22.6
High	nc	nc	20.4	21.5	1.1	12.6	13.2	0.6	236.3	207.3	-29.0
Spruce beetle—											
Low	+	+	56.8	60.7	3.8*	15.5	19.1	3.6*	1023.9	1037.4	13.5
Moderate	-	-	37.2	34.0	-3.2*	13.8	16.6	2.8*	375.5	330.3	-45.2
High	nc	nc	6.0	5.3	-0.7	3.8	4.1	0.3	105.3	93.3	-12.0
Douglas-fir dwarf mistletoe—											
Low	nc	-	58.1	59.1	1.0	12.3	18.9	6.6*	1400.9	1250.2	-150.7
Moderate	nc	-	23.4	23.1	-0.3	14.1	18.1	4.0*	212.4	183.8	-28.6
High	nc	nc	18.6	17.9	-0.7	9.5	11.2	1.7*	222.1	196.2	-25.9
Western dwarf mistletoe—											
Low	+	nc	81.5	85.3	3.9*	7.6	7.7	0.1	2992.8	2971.5	-21.3
Moderate	-	-	13.0	10.8	-2.2*	7.1	9.2	2.1*	156.3	90.4	-65.8*
High	-	-	5.6	3.9	-1.7*	4.1	4.1	0.0	87.0	42.5	-44.6*
Western larch dwarf mistletoe—											
Low	nc	nc	98.5	98.4	0.0	3.7	4.1	0.5	5414.5	5393.3	-21.1
Moderate	nc	nc	1.0	1.1	0.1	1.8	2.2	0.4	29.5	23.9	-5.6
High	nc	nc	0.5	0.4	-0.1	0.6	0.5	-0.1	20.6	10.6	-10.0

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Lodgepole pine dwarf mistletoe—											
Low	nc	nc	90.8	91.8	1.0	4.7	3.9	-0.8*	4662.7	5303.4	640.8
Moderate	-	nc	6.5	5.1	-1.4*	4.3	4.4	0.1	104.1	114.2	10.2
High	nc	nc	2.7	3.1	0.4	2.2	2.5	0.4*	65.3	68.0	2.7
Armillaria root disease—											
Low	nc	nc	27.6	28.8	1.2	19.3	28.8	9.4*	353.2	330.6	-22.5
Moderate	+	nc	23.7	25.9	2.2*	20.4	26.2	5.7*	142.5	145.7	3.2
High	-	-	48.6	45.2	-3.4*	10.7	12.4	1.7*	681.2	563.9	-117.3*
Laminated root rot—											
Low	nc	+	35.8	35.7	-0.1	19.3	28.4	9.0*	575.7	625.7	49.9
Moderate	+	+	22.5	25.0	2.6*	16.8	21.3	4.5*	203.6	344.0	140.4
High	-	-	41.7	39.2	-2.5*	8.5	10.4	1.9*	837.9	541.1	-296.8*
S-group annosum root disease—											
Low	nc	-	47.6	46.4	-1.2	19.1	27.2	8.1*	1187.8	743.0	-444.8
Moderate	nc	nc	22.7	21.4	-1.4	17.7	19.1	1.4	144.0	147.0	3.0
High	+	+	29.6	32.2	2.6*	13.2	14.9	1.7*	335.3	360.5	25.3
P-group annosum root disease—											
Low	+	nc	82.0	85.1	3.1*	7.6	7.5	-0.1	2928.6	3196.4	267.8
Moderate	-	-	10.6	9.0	-1.6*	7.5	9.9	2.4*	99.6	52.7	-46.9*
High	-	-	7.5	5.9	-1.5*	4.6	4.8	0.2	114.1	74.9	-39.2*
Tomentosus root and butt rot—											
Low	nc	+	79.8	80.9	1.2	7.2	6.7	-0.6	2608.8	3563.5	954.6*
Moderate	nc	nc	8.9	9.2	0.3	11.3	11.6	0.3	74.1	72.3	-1.7
High	-	nc	11.4	9.9	-1.5*	8.4	9.5	1.1*	141.3	120.5	-20.8
Schweinitzii root and butt rot—											
Low	+	nc	26.0	27.4	1.4*	18.0	26.9	8.9*	358.4	387.1	28.7
Moderate	+	nc	12.9	15.4	2.6*	17.9	22.5	4.6*	76.8	83.4	6.6
High	-	-	61.2	57.2	-4.0*	5.9	7.6	1.7*	1855.9	1266.6	-589.4*
White pine blister rust (type 1)—											
Low	nc	nc	61.2	61.0	-0.2	8.4	9.0	0.7*	3103.1	3097.6	-5.5
Moderate	nc	nc	38.7	38.8	0.1	5.5	5.5	0.0	1053.2	1157.0	103.8
High	+	+	0.1	0.2	0.1*	0.3	0.4	0.1	2.2	6.7	4.5*
White pine blister rust (type 2)—											
Low	-	nc	93.2	92.7	-0.5*	1.8	1.7	-0.1	7479.3	7874.9	395.6
Moderate	nc	-	6.4	6.4	0.0	7.4	8.6	1.2*	77.1	59.5	-17.6*
High	+	+	0.4	0.9	0.5*	0.8	1.1	0.3*	11.5	24.5	13.0*
Rust-red stringy rot—											
Low	nc	-	64.5	64.8	0.3	14.7	19.0	4.2*	1504.8	1258.1	-246.8
Moderate	nc	-	34.9	34.1	-0.9	11.5	14.1	2.6*	399.7	364.1	-35.7
High	+	nc	0.6	1.1	0.6*	0.9	1.9	1.0*	21.0	25.1	4.1

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Northern Glaciated Mountains ERU:											
Western spruce budworm—											
Low	nc	-	29.8	28.2	-1.7	24.2	41.3	17.1*	405.0	334.2	-70.8
Moderate	nc	-	25.7	23.9	-1.7	23.3	38.3	15.0*	144.5	74.7	-69.7*
High	+	-	44.5	47.9	3.4*	12.2	16.5	4.3*	806.8	742.4	-64.4
Douglas-fir beetle—											
Low	nc	-	66.3	65.5	-0.7	15.7	26.0	10.3*	1363.3	834.5	-528.9*
Moderate	nc	-	30.2	29.5	-0.7	13.8	21.9	8.0*	359.2	281.3	-77.9*
High	nc	nc	3.6	5.0	1.4	4.9	9.3	4.4*	43.6	44.2	0.6
Western pine beetle (type 1)—											
Low	nc	nc	91.6	91.3	-0.3	7.9	10.0	2.1	3684.8	3900.6	215.8
Moderate	nc	nc	7.2	7.8	0.6	7.1	7.1	0.0	70.7	83.5	12.8
High	nc	nc	1.2	0.9	-0.3	1.7	2.9	1.2	13.5	8.8	-4.7
Western pine beetle (type 2)—											
Low	nc	-	45.6	45.9	0.3	25.1	39.4	14.3*	919.2	438.0	-481.2*
Moderate	nc	-	46.5	46.8	0.4	15.6	20.8	5.2*	704.3	578.3	-126.0
High	nc	nc	7.9	7.3	-0.6	6.0	7.0	1.0	81.1	110.5	29.4
Mountain pine beetle (type 1)—											
Low	nc	-	39.6	38.3	-1.3	21.9	37.2	15.3*	733.5	570.7	-162.9
Moderate	nc	-	45.1	42.8	-2.3	13.5	22.0	8.5*	561.7	367.9	-193.9*
High	+	+	15.4	18.9	3.6*	9.3	15.8	6.4*	186.6	201.1	14.5
Mountain pine beetle (type 2)—											
Low	nc	-	45.6	45.9	0.3	25.1	39.4	14.3*	919.2	438.0	-481.2*
Moderate	nc	-	46.5	46.8	0.4	15.6	20.8	5.2*	704.3	578.3	-126.0
High	nc	nc	7.9	7.3	-0.6	6.0	7.0	1.0	81.1	110.5	29.4
Fir engraver—											
Low	-	-	76.0	70.5	-5.5*	10.6	18.4	7.9*	2305.4	1307.7	-997.7*
Moderate	+	-	17.2	21.1	3.9*	14.4	22.8	8.5*	151.3	117.4	-33.9*
High	nc	-	6.8	8.4	1.6	4.3	12.0	7.7*	135.2	90.6	-44.7
Spruce beetle—											
Low	nc	-	60.7	60.2	-0.5	16.1	29.2	13.1*	1379.3	726.4	-653.0*
Moderate	nc	-	36.2	35.2	-1.0	13.3	19.3	6.0*	381.4	307.8	-73.6*
High	+	+	3.0	4.5	1.5*	2.6	4.7	2.1*	46.6	79.9	33.3*
Douglas-fir dwarf mistletoe—											
Low	nc	-	57.3	56.4	-1.0	17.1	28.2	11.1*	921.0	710.4	-210.6*
Moderate	nc	-	29.6	29.3	-0.3	18.2	27.4	9.2*	293.1	197.3	-95.8*
High	nc	-	13.1	14.3	1.2	9.4	15.8	6.4*	219.5	129.9	-89.6
Western dwarf mistletoe—											
Low	nc	nc	86.3	86.8	0.5	8.2	12.2	4.0*	3766.2	3466.3	-299.9
Moderate	nc	nc	9.9	10.7	0.8	9.2	10.5	1.3	96.3	123.6	27.4
High	-	-	3.8	2.5	-1.2*	4.1	5.3	1.2	57.1	16.0	-41.2*

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Western larch dwarf mistletoe—											
Low	+	+	73.8	81.3	7.5*	11.4	13.0	1.6	1923.9	2306.4	382.5*
Moderate	-	-	19.4	14.6	-4.8*	11.3	16.0	4.7*	195.2	92.2	-103.0*
High	-	-	6.9	4.2	-2.7*	7.8	7.0	-0.7	57.6	38.5	-19.1*
Lodgepole pine dwarf mistletoe—											
Low	+	nc	73.8	77.2	3.4*	9.8	13.2	3.5*	2245.8	2011.0	-234.8
Moderate	-	-	16.9	13.6	-3.3*	11.1	17.0	5.8*	156.0	91.0	-65.0*
High	nc	-	9.3	9.1	-0.1	6.1	9.9	3.8*	130.2	83.3	-46.9*
Armillaria root disease—											
Low	nc	+	24.1	23.8	-0.3	26.2	41.2	15.0*	289.3	315.9	26.5
Moderate	-	-	38.6	35.5	-3.1*	20.7	31.2	10.5*	324.0	199.1	-124.9*
High	+	-	37.3	40.7	3.4*	14.1	20.8	6.6*	511.9	461.9	-50.1
Laminated root rot—											
Low	-	-	40.2	35.9	-4.3*	23.9	40.8	16.9*	443.4	357.2	-86.2
Moderate	nc	-	32.0	33.1	1.1	19.0	26.6	7.6*	353.0	281.3	-71.7
High	nc	+	27.8	31.0	3.2	15.0	20.4	5.4*	364.3	537.3	172.9
S-group annosum root disease—											
Low	-	-	54.1	47.1	-6.9*	18.4	32.2	13.8*	776.2	531.0	-245.2*
Moderate	nc	-	25.9	26.1	0.2	17.2	31.0	13.8*	254.8	109.6	-145.2*
High	+	+	20.0	26.8	6.8*	9.3	20.5	11.2*	317.8	312.8	-5.0
P-group annosum root disease—											
Low	nc	nc	87.8	87.8	0.0	7.5	10.5	3.0*	4000.9	4282.0	281.1
Moderate	nc	nc	9.1	8.2	-0.9	8.5	11.1	2.6	105.9	103.7	-2.2
High	nc	nc	3.1	4.0	0.8	3.6	5.4	1.9	40.0	23.7	-16.4
Tomentosus root and butt rot—											
Low	nc	nc	85.1	83.4	-1.7	7.0	8.1	1.0*	2409.5	2265.9	-143.5
Moderate	nc	nc	7.8	7.5	-0.2	7.5	14.5	7.0*	98.0	87.4	-10.6
High	+	+	7.1	9.0	1.9*	5.9	10.8	4.9*	89.6	84.7	-4.9
Schweinitzii root and butt rot—											
Low	nc	+	20.0	20.1	0.1	20.1	34.0	14.0*	288.8	313.8	25.0
Moderate	nc	-	13.2	14.1	1.0	15.8	27.2	11.4*	93.7	70.6	-23.1*
High	nc	-	66.9	65.8	-1.1	5.9	8.0	2.2*	2614.0	1998.3	-615.7*
White pine blister rust (type 1)—											
Low	+	+	62.9	63.7	0.9*	7.8	9.8	2.0*	2451.0	2208.7	-242.3
Moderate	nc	-	35.3	35.9	0.6	8.0	9.7	1.7*	1277.6	1055.8	-221.8
High	-	-	1.9	0.3	-1.5*	1.1	0.6	-0.5	26.3	4.2	-22.1*
White pine blister rust (type 2)—											
Low	nc	+	87.7	87.5	-0.3	3.6	4.2	0.6*	4868.2	4894.0	25.8
Moderate	nc	-	12.3	12.5	0.2	6.4	9.0	2.6*	213.6	188.7	-24.9
High	nc	nc	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.0	1.7

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Rust-red stringy rot—											
Low	-	-	87.3	81.7	-5.6*	5.7	11.1	5.4*	3925.2	2290.7	-1634.5*
Moderate	+	nc	12.7	18.1	5.4*	9.8	20.0	10.2*	142.9	122.5	-20.4
High	+	+	0.0	0.2	0.2*	0.0	0.6	0.6*	1.1	5.9	4.8*
Snake Headwaters ERU:											
Western spruce budworm—											
Low	nc	nc	30.4	29.6	-0.8	29.4	35.4	5.9*	126.3	102.8	-23.5
Moderate	-	-	24.7	18.6	-6.0*	35.5	42.1	6.6*	79.5	60.6	-18.9*
High	+	+	45.0	51.8	6.8*	24.3	24.8	0.6	333.1	455.5	122.4*
Douglas-fir beetle—											
Low	-	-	82.0	78.3	-3.7*	12.6	15.3	2.7*	1751.3	1041.0	-710.3*
Moderate	nc	nc	15.9	17.9	2.0	16.5	22.0	5.5*	112.3	114.0	1.7
High	+	+	2.1	3.9	1.7*	5.1	7.1	2.0*	17.5	31.6	14.0*
Mountain pine beetle (type 1)—											
Low	nc	nc	48.6	48.4	-0.2	20.1	26.4	6.3*	451.2	358.1	-93.0
Moderate	+	+	16.8	22.3	5.6*	37.8	39.8	2.0	51.5	88.6	37.1*
High	-	nc	34.6	29.2	-5.4*	19.0	18.0	-1.0	238.3	216.4	-21.9
Fir engraver—											
Low	nc	nc	54.1	55.8	1.7	17.4	21.9	4.4	648.0	1392.0	744.0
Moderate	nc	nc	26.6	28.1	1.5	32.0	35.6	3.6	98.9	126.1	27.1
High	nc	-	19.3	16.1	-3.2	10.8	18.1	7.4*	211.3	131.9	-79.4*
Spruce beetle—											
Low	+	nc	52.4	57.1	4.7*	17.4	21.1	3.6	1325.1	958.3	-366.8
Moderate	-	-	39.2	35.3	-4.0*	21.9	23.1	1.3	276.5	207.9	-68.6*
High	-	nc	8.3	7.6	-0.7*	7.7	6.9	-0.8	63.3	60.2	-3.1
Douglas-fir dwarf mistletoe—											
Low	-	nc	79.3	71.8	-7.4*	13.6	13.7	0.1	835.8	1283.0	447.2
Moderate	nc	nc	16.6	21.8	5.1	20.6	20.4	-0.2	107.6	586.4	478.8
High	+	+	4.1	6.4	2.3*	9.0	10.6	1.6	19.2	49.6	30.4*
Lodgepole pine dwarf mistletoe—											
Low	+	nc	62.3	67.7	5.4*	15.1	15.6	0.5	1571.7	1585.0	13.3
Moderate	+	+	7.0	11.5	4.5*	20.6	19.6	-0.9	37.6	74.1	36.5*
High	-	-	30.8	20.9	-9.9*	15.9	15.4	-0.5	274.3	186.6	-87.8*
Armillaria root disease—											
Low	nc	nc	32.1	30.3	-1.8	28.1	33.8	5.6	145.1	116.4	-28.7
Moderate	-	-	47.4	38.1	-9.3*	30.2	36.1	5.9*	270.6	170.3	-100.3*
High	+	+	20.4	31.5	11.1*	24.7	26.4	1.8	106.6	205.4	98.8*
Laminated root rot—											
Low	nc	-	56.3	53.7	-2.6	19.6	24.6	5.0*	407.9	328.3	-79.6
Moderate	nc	nc	32.8	33.4	0.6	27.4	30.1	2.7	272.4	211.6	-60.8
High	+	+	10.9	12.8	2.0*	17.2	18.2	1.0	71.4	100.8	29.5*

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
S-group annosum root disease—											
Low	-	-	39.7	33.1	-6.6*	26.1	35.5	9.4*	220.3	118.7	-101.6*
Moderate	nc	nc	38.3	36.2	-2.1	31.9	34.9	3.0	190.6	149.8	-40.8
High	+	+	22.0	30.6	8.6*	23.3	26.6	3.3	141.1	204.0	62.9*
Tomentosus root and butt rot—											
Low	-	-	72.4	64.6	-7.7*	9.4	15.0	5.6*	1678.3	1311.6	-366.7
Moderate	+	+	14.3	20.3	6.0*	16.3	23.5	7.2*	90.9	119.7	28.8
High	nc	nc	13.3	15.1	1.7	8.7	9.9	1.3	194.4	137.8	-56.6
Schweinitzii root and butt rot—											
Low	nc	nc	37.9	35.8	-2.1	25.6	31.0	5.4	193.8	183.7	-10.1
Moderate	nc	+	12.2	15.6	3.3	34.9	37.8	2.9	45.3	65.9	20.6*
High	nc	nc	49.9	48.6	-1.3	22.4	22.4	0.0	442.2	351.7	-90.5
White pine blister rust (type 2)—											
Low	nc	-	52.5	52.3	-0.2	10.0	12.1	2.1*	1521.8	968.8	-553.0*
Moderate	+	nc	43.5	45.7	2.2*	17.5	16.8	-0.7	695.7	601.8	-93.9
High	nc	nc	4.0	2.0	-2.0	1.4	1.3	-0.1	59.4	16.0	-43.4
Southern Cascades ERU:											
Western spruce budworm—											
Low	nc	-	79.9	77.6	-2.4	7.3	20.4	13.2*	3892.6	3845.0	-47.6
Moderate	nc	-	10.0	10.1	0.2	5.6	15.1	9.6*	133.3	54.4	-78.9*
High	+	-	10.1	12.3	2.2*	4.1	6.0	1.9*	252.1	204.3	-47.8
Douglas-fir beetle—											
Low	nc	nc	96.2	96.9	0.7	4.8	5.9	1.1	7208.7	6289.7	-919.0
Moderate	nc	nc	2.1	3.0	1.0	1.4	2.1	0.6	56.9	75.9	19.0
High	-	nc	1.8	0.1	-1.7*	0.3	0.1	-0.1	186.8	9.1	-177.8
Western pine beetle (type 1)—											
Low	nc	nc	83.0	78.7	-4.3	4.6	8.4	3.8*	4860.6	3697.3	-1163.3
Moderate	nc	nc	11.8	16.2	4.5	4.8	6.8	2.1	235.0	355.9	120.9
High	nc	nc	5.2	5.1	-0.2	1.9	1.8	-0.1	134.8	189.7	54.8
Western pine beetle (type 2)—											
Low	nc	-	51.6	42.4	-9.1	12.3	30.8	18.6*	1581.7	219.0	-1362.7*
Moderate	nc	nc	27.9	33.2	5.3	10.1	14.2	4.1*	346.4	453.3	106.8
High	nc	nc	20.5	24.4	3.8	3.6	5.8	2.1*	1125.9	1294.7	168.9
Mountain pine beetle (type 1)—											
Low	nc	-	36.1	35.6	-0.5	17.9	43.3	25.4*	2281.2	680.8	-1600.4*
Moderate	+	-	34.9	39.5	4.6*	10.3	17.7	7.4*	469.1	428.6	-40.5
High	-	nc	29.0	24.9	-4.1	4.2	5.9	1.8	765.6	634.6	-131.0
Mountain pine beetle (type 2)—											
Low	nc	-	51.6	42.4	-9.1	12.3	30.8	18.6*	1581.7	219.0	-1362.7*
Moderate	nc	nc	27.9	33.2	5.3	10.1	14.2	4.1*	346.4	453.3	106.8
High	nc	nc	20.5	24.4	3.8	3.6	5.8	2.1*	1125.9	1294.7	168.9

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Fir engraver—											
Low	nc	-	86.1	85.0	-1.1	5.2	13.2	8.0*	6081.3	3561.2	-2520.0*
Moderate	nc	-	5.0	4.8	-0.1	3.0	7.9	4.9*	114.4	39.0	-75.4*
High	nc	nc	9.0	10.2	1.2	3.3	4.8	1.4*	166.3	207.9	41.7
Spruce beetle—											
Low	+	nc	91.6	93.1	1.5*	3.6	7.5	3.9*	6605.5	7422.3	816.8
Moderate	-	-	8.4	6.8	-1.6*	3.6	6.1	2.6*	152.7	68.4	-84.4*
High	nc	nc	0.1	0.1	0.1	0.4	0.3	-0.1	1.7	9.9	8.1
Douglas-fir dwarf mistletoe—											
Low	-	-	95.4	93.1	-2.4*	4.0	8.1	4.1	6743.6	4501.3	-2242.3*
Moderate	+	+	2.3	6.4	4.1*	2.6	4.5	1.9*	31.9	74.0	42.1*
High	-	-	2.3	0.5	-1.7*	0.5	0.4	-0.1	95.1	24.1	-71.0*
Western dwarf mistletoe—											
Low	nc	-	74.6	70.9	-3.8	3.9	8.3	4.3*	4673.0	2356.8	-2316.2*
Moderate	nc	nc	12.4	11.3	-1.2	6.4	11.9	5.5*	525.4	106.3	-419.1
High	nc	nc	12.9	17.9	5.0	2.9	5.1	2.1*	545.1	442.3	-102.9
Lodgepole pine dwarf mistletoe—											
Low	nc	+	76.9	74.4	-2.6	8.5	17.6	9.1*	2440.9	2892.8	451.9
Moderate	nc	-	12.9	13.7	0.8	7.4	14.8	7.4*	186.0	105.9	-80.1*
High	nc	nc	10.2	11.9	1.7	4.2	6.5	2.3*	164.8	115.6	-49.2
Armillaria root disease—											
Low	nc	-	32.8	34.5	1.6	18.9	49.6	30.7*	1231.4	523.4	-708.0
Moderate	nc	nc	56.3	52.7	-3.6	4.7	11.2	6.5*	1769.7	1114.4	-655.2
High	+	nc	10.9	12.8	1.9*	3.5	6.1	2.6*	230.0	171.4	-58.6
Laminated root rot—											
Low	nc	-	52.6	51.7	-0.9	13.6	31.7	18.1*	3220.0	2721.4	-498.6
Moderate	-	-	16.3	12.8	-3.4*	12.9	18.6	5.8*	109.0	63.1	-45.9*
High	+	nc	31.1	35.4	4.3*	4.6	5.2	0.6	754.9	945.3	190.4
S-group annosum root disease—											
Low	nc	-	56.3	56.4	0.1	13.3	26.0	12.8*	2713.4	2028.1	-685.4
Moderate	nc	-	6.6	5.3	-1.3	6.5	9.3	2.8*	83.9	40.6	-43.3*
High	nc	nc	37.1	38.3	1.2	4.7	5.9	1.3	1151.5	884.2	-267.3
P-group annosum root disease—											
Low	nc	-	75.2	69.4	-5.8	3.8	8.9	5.1*	4690.1	2318.5	-2371.6*
Moderate	nc	-	11.0	7.2	-3.8	6.1	13.8	7.6*	494.1	66.6	-427.5*
High	+	+	13.8	23.4	9.6*	3.6	5.8	2.2*	541.6	816.2	274.6
Tomentosus root and butt rot—											
Low	nc	nc	99.1	99.1	0.0	4.1	2.7	-1.4*	5427.1	6002.6	575.5
Moderate	nc	nc	0.1	0.1	0.1	0.3	0.7	0.4	3.5	4.8	1.2
High	nc	nc	0.8	0.8	0.0	1.6	2.4	0.8	27.1	18.2	-8.9

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Schweinitzii root and butt rot—											
Low	-	-	27.8	20.8	-7.0*	16.5	48.2	31.7*	1111.6	63.0	-1048.5*
Moderate	nc	nc	46.6	49.9	3.3	8.3	19.1	10.9*	836.3	530.3	-306.1
High	nc	nc	25.6	29.4	3.8	6.1	7.9	1.8*	775.3	574.2	-201.1
White pine blister rust (type 1)—											
Low	-	-	61.4	59.0	-2.3*	6.1	9.3	3.2*	5072.1	4551.8	-520.3
Moderate	+	+	38.5	40.7	2.2*	5.1	7.9	2.8*	1626.8	2098.8	472.0
High	nc	nc	0.2	0.3	0.1	0.3	0.8	0.5*	3.8	3.8	0.0
Rust-red stringy rot—											
Low	nc	-	59.2	57.0	-2.2	14.6	27.8	13.3*	4149.6	1796.8	-2352.8*
Moderate	nc	nc	39.7	41.4	1.7	4.6	5.9	1.4*	1486.4	915.3	-571.1
High	nc	nc	1.1	1.7	0.5	0.6	2.5	1.9*	34.5	41.1	6.7
Upper Clark Fork ERU:											
Western spruce budworm—											
Low	nc	-	20.4	21.5	1.1	19.3	25.2	5.9*	149.5	102.1	-47.4*
Moderate	nc	-	20.5	22.6	2.1	28.9	34.8	5.8*	86.0	72.9	-13.1
High	nc	nc	59.1	55.9	-3.2	11.4	11.2	-0.2	1318.4	982.5	-335.9
Douglas-fir beetle—											
Low	nc	+	61.6	62.6	1.0	14.3	21.7	7.4*	1472.4	1552.4	80.1
Moderate	nc	nc	30.4	32.6	2.2	13.5	14.9	1.5	446.1	275.1	-170.9
High	-	-	8.0	4.8	-3.2*	5.4	10.0	4.5*	114.6	44.4	-70.1*
Western pine beetle (type 1)—											
Low	+	-	90.6	93.4	2.8*	5.3	6.5	1.2*	4022.3	3727.7	-294.5
Moderate	nc	-	6.5	6.2	-0.4	6.4	6.5	0.1	85.8	54.7	-31.1*
High	-	nc	2.9	0.5	-2.4*	1.1	1.2	0.1	20.7	8.7	-12.1
Western pine beetle (type 2)—											
Low	nc	-	39.1	39.0	-0.1	22.8	32.6	9.8*	341.9	334.5	-7.4
Moderate	nc	nc	51.0	52.9	1.9	16.8	15.3	-1.5	889.2	835.0	-54.2
High	-	nc	9.9	8.1	-1.7*	6.0	5.3	-0.6	102.5	91.9	-10.6
Mountain pine beetle (type 1)—											
Low	nc	-	32.2	33.1	1.0	20.6	26.2	5.6*	338.7	195.0	-143.7
Moderate	nc	-	31.7	29.3	-2.4	26.3	32.3	6.0*	175.0	100.1	-74.9*
High	nc	nc	36.1	37.6	1.5	14.9	13.3	-1.7	549.1	551.1	2.1
Mountain pine beetle (type 2)—											
Low	nc	-	39.1	39.0	-0.1	22.8	32.6	9.8*	341.9	334.5	-7.4
Moderate	nc	nc	51.0	52.9	1.9	16.8	15.3	-1.5	889.2	835.0	-54.2
High	-	nc	9.9	8.1	-1.7*	6.0	5.3	-0.6	102.5	91.9	-10.6
Fir engraver—											
Low	nc	-	62.7	63.4	0.7	13.6	17.2	3.6*	1341.0	818.3	-522.8*
Moderate	nc	-	29.5	26.9	-2.6	23.0	28.3	5.3*	192.5	105.5	-87.0*
High	+	+	7.8	9.7	1.9*	6.4	8.7	2.3*	88.0	111.0	23.0

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Spruce beetle—											
Low	nc	-	64.0	65.1	1.1	13.1	16.6	3.5*	1313.2	1001.4	-311.8*
Moderate	nc	nc	29.2	29.3	0.2	20.8	21.9	1.1	200.9	160.1	-40.8
High	nc	nc	6.9	5.6	-1.3	4.3	5.9	1.6*	80.5	60.8	-19.7
Douglas-fir dwarf mistletoe—											
Low	nc	+	54.5	56.6	2.1	17.4	22.0	4.6*	747.1	1077.5	330.4*
Moderate	nc	nc	29.4	30.2	0.9	17.1	18.3	1.2	211.4	179.3	-32.1
High	-	-	16.2	13.2	-3.0*	12.3	15.4	3.1*	154.0	75.1	-78.9*
Western dwarf mistletoe—											
Low	+	+	87.4	89.4	2.0*	6.3	6.6	0.3	3389.7	4244.5	854.8*
Moderate	nc	nc	7.6	8.3	0.7	7.9	6.9	-1.0	76.4	85.3	8.9
High	-	-	5.0	2.3	-2.7*	3.2	4.2	1.1	50.2	20.4	-29.8*
Western larch dwarf mistletoe—											
Low	+	nc	87.0	89.1	2.1*	7.7	7.7	0.1	3067.0	2913.6	-153.3
Moderate	nc	-	10.2	9.7	-0.6	4.9	8.0	3.1*	83.3	70.7	-12.6
High	-	-	2.8	1.3	-1.6*	3.3	3.7	0.3	18.8	8.4	-10.4*
Lodgepole pine dwarf mistletoe—											
Low	+	+	45.2	50.4	5.2*	17.8	20.9	3.1*	530.6	628.8	98.2
Moderate	-	-	32.1	27.0	-5.1*	18.6	21.9	3.3*	500.8	146.6	-354.2*
High	nc	nc	22.6	22.5	-0.1	17.2	15.5	-1.7	199.5	190.8	-8.7
Armillaria root disease—											
Low	nc	-	19.3	20.6	1.3	20.4	28.3	7.9*	138.0	96.6	-41.4*
Moderate	nc	-	46.5	47.6	1.1	21.3	26.7	5.3*	589.4	391.8	-197.7*
High	nc	nc	34.2	31.8	-2.4	19.8	18.0	-1.8	337.1	234.1	-103.0
Laminated root rot—											
Low	+	-	40.9	44.3	3.4*	20.7	25.1	4.4*	558.9	541.8	-17.0
Moderate	nc	-	37.5	34.9	-2.6	20.9	25.8	4.9*	321.1	166.0	-155.1*
High	nc	nc	21.6	20.8	-0.8	18.5	18.3	-0.2	196.5	108.4	-88.1
S-group annosum root disease—											
Low	+	nc	30.0	33.8	3.8*	25.8	31.0	5.3*	161.4	161.8	0.4
Moderate	-	-	37.8	31.6	-6.2*	24.8	31.4	6.6*	365.0	197.7	-167.3*
High	nc	nc	32.2	34.6	2.3	18.9	17.3	-1.6	338.9	365.3	26.4
P-group annosum root disease—											
Low	+	nc	88.6	90.3	1.7*	6.2	6.2	0.0	3660.5	4077.6	417.1
Moderate	nc	nc	5.9	5.6	-0.3	8.3	7.3	-1.0	53.2	53.8	0.7
High	-	-	5.4	4.0	-1.4*	3.3	4.5	1.2*	51.8	39.4	-12.4
Tomentosus root and butt rot—											
Low	nc	nc	84.3	84.0	-0.3	7.0	7.8	0.9	3198.7	2900.6	-298.1
Moderate	nc	-	5.8	5.7	-0.1	10.4	12.6	2.2*	38.4	31.3	-7.1*
High	nc	nc	9.9	10.3	0.4	9.9	12.8	2.9*	89.1	73.1	-16.0

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Schweinitzii root and butt rot—											
Low	nc	-	18.0	18.6	0.6	16.9	22.9	6.0*	142.2	114.0	-28.2*
Moderate	nc	nc	21.4	22.4	1.1	26.3	31.2	4.9*	87.3	83.5	-3.7
High	nc	nc	60.6	59.0	-1.6	10.8	9.8	-1.0	1291.3	1249.4	-41.9
White pine blister rust (type 1)—											
Low	nc	-	80.0	79.8	-0.2	6.1	5.6	-0.5	3460.9	2650.9	-810.0*
Moderate	+	nc	17.5	18.2	0.8*	14.1	15.1	1.1	146.2	142.6	-3.5
High	nc	nc	2.5	1.4	-1.1	0.1	1.0	0.9	72.4	5.9	-66.5
White pine blister rust (type 2)—											
Low	nc	nc	63.0	62.6	-0.4	10.3	12.1	1.8	1147.9	1089.9	-58.0
Moderate	nc	-	34.1	34.6	0.5	15.3	18.0	2.8*	348.6	240.4	-108.2*
High	nc	nc	2.9	2.4	-0.6	3.0	2.6	-0.5	26.2	20.9	-5.4
Rust-red stringy rot—											
Low	-	nc	94.5	91.0	-3.5*	4.3	5.3	1.0	4918.9	4863.7	-55.2
Moderate	+	+	4.3	6.7	2.4*	7.7	12.5	4.9*	41.3	51.5	10.2*
High	nc	nc	1.2	2.3	1.1	0.8	2.3	1.5*	5.8	7.0	1.2
Upper Klamath ERU:											
Western spruce budworm—											
Low	nc	nc	78.7	78.2	-0.5	6.0	10.1	4.1*	3265.3	4022.6	757.3
Moderate	nc	nc	6.7	5.9	-0.8	8.1	11.9	3.7*	66.5	68.5	2.0
High	nc	nc	14.6	15.9	1.3	3.7	3.7	0.0	459.4	599.7	140.3
Douglas-fir beetle											
Low	nc	nc	94.2	93.2	-1.0	5.6	8.4	2.8	4785.6	4839.6	54.0
Moderate	nc	nc	5.7	6.8	1.0	1.6	2.3	0.6	185.0	135.5	-49.5
High	nc	nc	0.0	0.0	0.0	0.3	0.1	-0.2	0.8	1.2	0.4
Western pine beetle (type 1)—											
Low	+	+	72.1	75.9	3.9*	15.5	14.5	-1.0	3507.6	4916.7	1409.1*
Moderate	nc	-	22.3	19.6	-2.7	9.6	6.5	-3.1*	426.4	347.5	-78.8
High	nc	-	5.7	4.5	-1.2	3.5	4.9	1.4*	67.6	51.1	-16.5
Western pine beetle (type 2)—											
Low	nc	nc	61.7	59.9	-1.8	20.9	20.8	-0.1	1745.6	1380.0	-365.6
Moderate	nc	+	19.0	18.8	-0.2	20.6	10.2	-10.4*	172.1	259.8	87.8*
High	nc	nc	19.3	21.3	2.0	6.3	5.8	-0.5	322.7	273.1	-49.6
Mountain pine beetle (type 1)—											
Low	nc	nc	76.0	75.1	-0.8	10.1	11.9	1.7	5837.0	4452.9	-1384.1
Moderate	nc	nc	19.3	20.6	1.3	8.3	8.1	-0.1	242.7	305.7	62.9
High	nc	nc	4.7	4.3	-0.4	2.5	2.9	0.4	71.5	54.1	-17.4
Mountain pine beetle (type 2)—											
Low	nc	nc	61.7	59.9	-1.8	20.9	20.8	-0.1	1745.6	1380.0	-365.6
Moderate	nc	+	19.0	18.8	-0.2	20.6	10.2	-10.4*	172.1	259.8	87.8*
High	nc	nc	19.3	21.3	2.0	6.3	5.8	-0.5	322.7	273.1	-49.6

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Fir engraver—											
Low	nc	+	80.8	79.8	-1.1	6.1	9.9	3.9*	4330.2	4419.0	88.8
Moderate	nc	nc	2.1	2.2	0.1	5.2	5.9	0.6	25.9	48.7	22.8
High	+	+	17.1	18.0	1.0*	3.7	2.0	-1.7*	586.7	700.1	113.5
Douglas-fir dwarf mistletoe—											
Low	nc	nc	94.1	93.3	-0.8	5.3	7.1	1.8*	4520.0	4504.8	-15.2
Moderate	nc	nc	5.1	6.5	1.4	2.8	2.4	-0.4*	149.2	102.4	-46.8
High	nc	nc	0.8	0.2	-0.6	0.4	0.5	0.1	65.2	8.2	-57.0
Western dwarf mistletoe—											
Low	+	+	69.5	73.4	3.9*	17.4	14.4	-2.9*	2186.7	3866.1	1679.4*
Moderate	nc	-	12.7	11.1	-1.6	14.5	11.6	-2.9*	228.6	124.5	-104.1
High	nc	nc	17.8	15.5	-2.3	6.9	5.3	-1.6	196.7	215.1	18.4
Lodgepole pine dwarf mistletoe—											
Low	nc	nc	95.2	96.4	1.2	5.9	5.2	-0.7	3982.3	4218.8	236.5
Moderate	nc	nc	4.4	3.3	-1.1	3.3	3.2	-0.1	59.3	29.3	-30.0*
High	nc	nc	0.4	0.3	-0.1	0.7	0.9	0.1	7.7	6.0	-1.6
Armillaria root disease—											
Low	+	+	60.6	67.6	7.0*	15.9	13.9	-2.0	4661.8	5950.4	1288.6*
Moderate	-	-	26.2	18.9	-7.4*	11.1	14.9	3.7*	251.1	130.7	-120.4*
High	nc	nc	13.2	13.6	0.4	4.9	3.7	-1.2	474.5	355.1	-119.4
Laminated root rot—											
Low	nc	nc	73.9	73.7	-0.2	6.7	10.3	3.6*	3041.5	4142.1	1100.6
Moderate	nc	nc	7.6	8.6	1.0	5.4	9.4	4.1*	83.1	95.0	11.9
High	nc	nc	18.5	17.7	-0.7	4.9	2.9	-2.1*	668.8	808.5	139.7
S-group annosum root disease—											
Low	nc	nc	75.4	75.6	0.2	6.0	10.1	4.1*	4058.0	4518.7	460.7
Moderate	nc	nc	1.9	1.1	-0.7	5.2	2.9	-2.3*	20.9	30.5	9.6
High	nc	nc	22.8	23.3	0.5	4.1	2.4	-1.8*	1008.2	1243.0	234.9
P-group annosum root disease—											
Low	+	+	69.6	73.3	3.7*	17.4	14.6	-2.7*	2526.0	3855.7	1329.7*
Moderate	-	-	11.4	7.0	-4.5*	14.7	11.6	-3.1*	221.7	91.5	-130.2
High	nc	nc	19.0	19.8	0.8	5.8	5.4	-0.4	263.3	214.9	-48.4
Schweinitzii root and butt rot—											
Low	nc	+	52.4	54.1	1.7	17.4	19.2	1.9	1551.8	2746.9	1195.2*
Moderate	+	nc	21.2	28.0	6.9*	13.1	13.9	0.8	256.5	253.2	-3.3
High	-	nc	26.4	17.9	-8.6*	6.4	6.6	0.3	615.8	234.6	-381.2
White pine blister rust (type 1)—											
Low	nc	nc	93.6	93.6	0.0	2.8	2.6	-0.2	9352.5	9385.8	33.3
Moderate	nc	nc	6.4	6.4	0.0	1.3	1.1	-0.2	297.2	343.8	46.6
High	nc	nc	0.0	0.0	0.0	0.1	0.0	-0.1	0.2	0.0	-0.2

Table 33—(continued)

Ecological reporting unit	Trend[a] Area	Trend[a] Con.[b]	Area H[c]	Area C	Area MD[d]	Patch density H	Patch density C	Patch density MD[d]	Mean patch size H	Mean patch size C	Mean patch size MD[d]
			------- *Percent* -------			*No./10 000 ha*			------- *Hectares* -------		
Rust-red stringy rot—											
Low	nc	-	76.5	76.4	-0.1	7.8	11.2	3.4*	3923.1	3783.2	-139.8
Moderate	nc	+	18.7	19.5	0.8	6.0	4.0	-2.0*	301.6	334.6	33.0
High	nc	nc	4.8	4.1	-0.7	1.5	3.9	2.4*	66.6	26.8	-39.9*
Upper Snake ERU:											
Western spruce budworm—											
Low	-	nc	97.8	97.6	-0.2*	3.0	3.3	0.3	8642.0	8582.3	-59.7
Moderate	-	-	0.5	0.3	-0.3*	3.1	2.3	-0.8	8.3	3.1	-5.2*
High	+	+	1.6	2.1	0.5*	1.1	0.5	-0.6*	32.4	95.4	62.9*
Douglas-fir beetle—											
Low	-	nc	98.3	97.8	-0.5*	3.9	4.0	0.1	8180.8	7893.6	-287.1
Moderate	nc	nc	1.2	1.2	0.0	1.8	1.5	-0.3	9.5	48.9	39.4
High	nc	nc	0.5	1.0	0.5	1.9	1.4	-0.5	3.6	8.6	5.0
Mountain pine beetle (type 1)—											
Low	nc	nc	97.9	97.7	-0.2	3.8	3.3	-0.5	8536.7	10757.0	2220.3
Moderate	nc	nc	1.5	2.0	0.4	3.1	3.3	0.2	12.9	20.9	8.0
High	nc	nc	0.6	0.3	-0.2	1.2	0.5	-0.7	9.2	22.5	13.4
Douglas-fir dwarf mistletoe—											
Low	nc	nc	98.2	97.8	-0.5	3.7	3.8	0.1	8282.1	7903.6	-378.5
Moderate	nc	+	1.2	0.7	-0.5	2.7	1.9	-0.9*	9.7	23.3	13.6
High	nc	+	0.6	1.5	0.9	1.8	1.1	-0.7*	5.3	18.8	13.5
Lodgepole pine dwarf mistletoe—											
Low	nc	nc	99.6	99.6	0.1	3.8	3.8	0.0	10037.3	9835.6	-201.7
Moderate	nc	nc	0.1	0.0	-0.1	0.8	0.1	-0.7	1.7	4.3	2.6
High	nc	nc	0.3	0.3	0.0	0.6	0.3	-0.3	6.7	22.3	15.7
Armillaria root disease—											
Low	nc	nc	98.2	97.7	-0.5	3.2	3.7	0.5	10132.5	9762.1	-370.4
Moderate	nc	+	0.9	0.7	-0.2	3.0	2.1	-0.9*	6.7	20.0	13.2
High	nc	+	1.0	1.6	0.6	2.1	1.1	-1.1*	9.2	20.9	11.7
Laminated root rot—											
Low	nc	nc	98.2	97.7	-0.5	3.5	3.9	0.4	8290.6	7903.1	-387.6
Moderate	nc	+	0.9	0.7	-0.2	3.2	2.1	-1.1*	5.9	42.9	37.0
High	nc	nc	1.0	1.6	0.6	2.1	1.1	-1.0	9.2	21.0	11.8
S-group annosum root disease—											
Low	nc	nc	98.2	97.7	-0.5	3.5	3.9	0.4	8290.6	7903.1	-387.6
Moderate	nc	nc	0.8	0.6	-0.2	2.8	2.1	-0.7	5.4	22.6	17.2
High	nc	+	1.0	1.7	0.6	2.3	0.9	-1.4*	10.2	31.7	21.4

Table 33—(continued)

Ecological reporting unit	Trend[a]		Area			Patch density			Mean patch size		
	Area	Con.[b]	H[c]	C	MD[d]	H	C	MD[d]	H	C	MD[d]
			-------	*Percent*	-------		*No./10 000 ha*		-------	*Hectares*	-------
Schweinitzii root and butt rot—											
Low	nc	nc	98.2	97.7	-0.5	3.2	3.7	0.5	10132.5	9762.1	-370.4
Moderate	nc	nc	0.3	0.2	-0.1	2.7	1.5	-1.2*	1.8	2.1	0.2
High	+	+	1.5	2.1	0.6*	1.4	0.7	-0.7*	20.4	57.8	37.4*

[a] Choices for either field are (+) increase; (-) decrease; (nc) no ecologically significant change.

[b] Con. = connectivity change among patches in a patch type

[c] H = historical; C = current; MD = mean difference of pairwise comparisons of historical and current subwatersheds.

[d] * = statistically significant difference at P≤0.2; all values rounded to 1 decimal place.