

**Birds and Burns Network  
Prescribed Fire Vegetation Analysis 2002  
Ground Cover and Stem Densities**

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## INTRODUCTION

In 2002 we collected information on ground cover and stem densities following the Birds and Burns Network vegetation protocol in eight western states: Arizona, Colorado, Idaho, Montana, New Mexico, Oregon, South Dakota, and Washington. See our web site for details on vegetation sampling: <http://www.rmrs.nau.edu/lab/4251/birdsnburns/>. In this report we provide density estimates of sapling and shrub stems and percent cover estimates of 14 different habitat components plus their confidence intervals (90 percent), sample sizes, and standard errors. All these data represent estimates in both control and treatment units before prescribed burning has taken place.

## METHODS

At each random and nest tree point, we measured ground cover and stem densities within three 5-m radius subplots. For estimates of percent ground cover, we used the point-intercept method within each subplot. To do this we first established four transects oriented in the four cardinal directions, then took measurements at every 0.5 m interval, excluding the center point. At each interval, we recorded the total number of interceptions or “hits” with a vertically placed dowel in each of the categories listed below. Only components  $\leq 1$  m in height were recorded. Multiple “hits” at one location were possible for everything except bare ground and rock (see below). For example, the dowel may have intercepted a shrub  $\geq 20$  cm tall, a shrub  $< 20$  cm tall, a grass stem, a forb, and litter all at one point. A “hit” was simply the presence of a component; a miss was the absence of a component. A maximum of 40 “hits” was possible for any one subplot in each of the following categories:

1. Grass
2. Forb
3. Live shrub  $\geq 20$  cm tall ( list species by 4 letter abbreviation)
  - a. Species 1
  - b. Species 2
  - c. Species 3
  - d. Species 4
4. Live shrub  $< 20$  cm tall (list species by 4 letter abbreviation)
  - a. Species 1
  - b. Species 2
  - c. Species 3
  - d. Species 4
5. Dead shrub or seedling or dead portion of a shrub or seedling
6. Tree seedling (anything that is so small it does not have a diameter )
7. Bare ground (bare ground, rock and litter are mutually exclusive; i.e. can only have one or the other)
8. Rock ( $\geq 5$  cm) (bare ground, rock and litter are mutually exclusive; i.e. can only have one or the other)
9. Litter: bark, needles, leaves, twigs, scat (bare ground, rock and litter are mutually exclusive)
10. Stumps
11. CWD (Coarse woody debris): logs 7.6 to  $< 23$  cm Large End Diameter (LED)
12. Logs  $\geq 23$  cm LED
13. Weed(s): Noxious weeds for your given area listed by species acronym
14. Other: Live trees, bryophytes, water, constructed materials

We then calculated what percentage of our 40 points intercepted each of the components above and expressed this as the percent cover. We averaged values from each 5-m subplot to obtain an estimate for each point.

For our shrub and sapling stem density counts, the plant had to be  $\geq 50$  cm in height. For this procedure, we simply tallied the number of stems by plant species in four size classes within each 5-m radius subplot: 1)  $< 2.5$ ; 2) 2.5 to 5; 3) 5 to 8; and 4) 8 to 12 cm. Diameters were measured at 10 cm above the ground. In our report we also provide an overall stem density count.

We calculated ground cover and stem densities at four levels. The first level was the regional level. We had four regions: southern, northern, Colorado and South Dakota. Data from the states of Arizona and New Mexico represent the southern region. Data from Idaho, Montana, Oregon, and Washington make up the northern region. We treated Colorado and South Dakota as their own regions.

Our second level of analysis was at the state level. Our third level of analysis was at the unit level. Among the eight states, we collected information from 34 individual units. A unit was defined as a landscape approximately 250 to 400 hectares. Units within each state were paired as a treatment and control unit. That is one would undergo a mechanical and/or burning treatment, whereas the other would not. Our fourth level was stratified by canopy cover. For this analysis we combined all data from each state into one of two strata: 1) open ( $< 40$  percent canopy cover); and 2) closed ( $\geq 40$  percent canopy cover).

We calculated ground cover and stem densities within each of these four levels in three categories: 1) all points combined; 2) only nest points; and 3) only random points. We used t-tests within each level of inquiry to determine whether any differences existed for values of over story cover between nest tree and random points. All states collected both nest tree and random point data with the exception of Montana, which only collected random point data in 2002. Only trees that contained woodpeckers or bluebirds were included in these analyses. We report means followed by the 90 percent confidence interval.

## RESULTS

### Regional Level

#### Ground cover

In all four regions, litter was the most prevalent ground cover component. Litter values ranged from a high of 92.1 ( $\pm 1.4$ ) percent in Colorado to a low of 68.7 ( $\pm 2.6$ ) in the southern region (Table 1). Grass cover was the second most common habitat component in all four regions with values ranging from a high of 50 ( $\pm 7.2$ ) percent in South Dakota to a low of 23.3 ( $\pm 1.7$ ) percent in the northern region. Rock cover ranked third in the southern region (11.2 percent  $\pm 1.2$ ) and in South Dakota (7.4 percent  $\pm 3.5$ ). In Colorado tall shrubs ( $\geq 20$  cm height) were the third most common habitat component (15.5 percent  $\pm 2.8$ ). In the northern region it was forbs (9.9 percent  $\pm 1.1$ ).

In the southern region we observed higher percent cover of tall shrubs ( $\geq 20$  cm height) at random (1.2  $\pm 0.4$ ) points compared to nest points (0.4  $\pm 0.4$ ) (Table 1). By contrast, litter cover was higher at nest locations (77.1  $\pm 4.8$ ) compared to random points (66.9  $\pm 2.9$ ). Small fuel cover was also higher at nest locations (1.9  $\pm 0.7$ ) compared to random points (0.8  $\pm 0.2$ ). In the northern region we observed higher cover values for both tall (12.2  $\pm 2.1$  at random versus 9.6  $\pm 1.3$  at nests) and short shrubs (9.2  $\pm 1.3$  at

random versus  $5.1 \pm 1.1$  at nests) at random points compared to nest points. Percent bare ground cover was also higher at random points ( $19.6 \pm 3.9$ ) compared to nests ( $11.8 \pm 2$ ). As in the southern region, however, percent litter cover and small fuels was higher at nest locations compared to random points.

In Colorado litter cover was higher at random points ( $93.1 \pm 1.4$ ) compared to nests ( $88.5 \pm 4.2$ ) (Table 1). Tall shrub cover was also higher at random points ( $16.7 \pm 3.4$ ) compared to nest points ( $11 \pm 3.4$ ). By contrast, both small and large fuels were higher in cover at nest locations compared to random points. Differences in cover values between point types in South Dakota could not be analyzed because of small sample sizes for nests.

### Stem densities

Stem densities were not recorded for the Kaibab and Coconino locations in Arizona because the shrub understory is so sparse. Thus, stem densities for the southern region are based on data recorded for only the New Mexico location. Based on confidence intervals, stem densities for all size classes combined varied significantly among regions (Table 2). Stem densities were lowest in New Mexico with an estimated  $2256 (\pm 964)$  stems per hectare. South Dakota followed with  $4175 (\pm 1364)$  stems per hectare. The northern region supported  $7135$  stems per hectare. Colorado had the highest overall stem densities with  $19,880 (\pm 2451)$  stems per hectare.

Stems in the smallest diameter class ( $0$  to  $< 2.5$  cm) contributed the most to overall stem densities in all regions. This ranged from a low of  $86$  percent in South Dakota with  $3581 (\pm 1175)$  small stems per hectare to a high of  $96$  percent in Colorado where small stems were estimated to be  $19041 (\pm 2373)$  per hectare. New Mexico had but a trace of stems in the largest ( $8$  to  $< 12$  cm) size class ( $1 \pm 2$  stem per hectare). Colorado had the highest densities in this size class ( $132 \pm 95$  per hectare).

We observed no differences in stem densities between point types in any of the size classes except for in the northern region (Table 2). Here we observed that stems in the second smallest size class ( $2.5$  to  $< 5$  cm) were more abundant at random points ( $386 \pm 78$  stems per hectare) compared to nest locations ( $244 \pm 63$  stems per hectare).

## **State Level**

### Ground cover

As with regions, litter was the most common ground cover within all 8 states (Table 3). Estimates ranged from a low of  $63.3 (\pm 3.5)$  percent in Arizona to a high of  $92.1 (\pm 1.4)$  percent in Colorado. Grass was the second most common component in all states except Oregon. Secondary values ranged from a low of  $18 (\pm 4.1)$  percent grass cover in Montana to a high of  $50 (\pm 7.2)$  percent in South Dakota. In Oregon there was a higher percentage of bare ground ( $24.7 + 6.9$ ) showing compared to grass ( $12.1 + 3.1$ ). In Arizona, rock cover ranked third highest ( $14.1 + 1.8$ ). It also ranked third in South Dakota ( $7.4 + 3.5$ ). In Colorado, tall shrubs were the third most common cover type ( $15.5 + 2.8$ ). In both Idaho ( $21.4 + 1.9$ ) and New Mexico ( $13.6 + 2.8$ ), bare ground cover ranked third in abundance. In Montana ( $10.7 + 3.8$ ) and Washington ( $14.3 + 2$ ), forb cover was the third most abundant component.

In Arizona grass, forbs, tall shrubs, and bare ground cover were all higher at random points compared to nest trees (Table 3). By contrast, litter and small fuel cover was higher at nest locations compared to random points. In Colorado random points had higher cover values of tall shrubs and litter than nest

tree points, but both small and large fuels were more abundant at nest locations compared to random points. In Idaho, the only habitat component with different cover values between random points ( $22.7 \pm 3.8$ ) and nests ( $16.4 \pm 3.9$ ) was tall shrubs. In New Mexico tall shrubs and rock cover were both higher at random points compared to nest locations. In Oregon nest locations had higher cover values than random points of grass, forbs, litter, and both size classes of fuels. By contrast, bare ground cover was higher at random points. Washington had higher cover values of rock and dead stems at nest locations compared to random points, but lower cover of seedlings at nest locations.

### Stem densities

Overall stem densities varied from a low of 2190 ( $\pm 1286$ ) stems per hectare in Montana to a high of 19,880 ( $\pm 2451$ ) stems per hectare in Colorado (Table 4). Stems in the smallest size class contributed the most to overall stem densities in all states. This proportion ranged from a low of 81 percent in Washington to a high of 99 percent in Idaho. Stems in the other size classes comprised a relatively minor part of overall stem densities.

Idaho was the only other state, along with Colorado, with stem densities in the tens-of thousands with 12,023 ( $\pm 1955$ ) stems per hectare (Table 4). Oregon ( $5459 \pm 1192$ ) and Washington ( $5149 \pm 802$ ) had similar stem density estimates. South Dakota had 4175 ( $\pm 1364$ ) stems per hectare. New Mexico had the second lowest stem densities, after Montana, with an estimated 2556 ( $\pm 964$ ) stems per hectare.

We observed no differences in stem densities between point types among any of the states other than Oregon. Stem densities here were higher at nests ( $6223 \pm 1926$ ) in the smallest size class (0 to < 2.5 cm) compared to densities at random points ( $2503 \pm 881$ ). This also led to significant differences when all stems (< 12 cm) were combined. For stems in the 5 to < 8 and stems 8 to < 12 cm we saw the opposite pattern with higher stem densities at random points in Oregon.

## **Unit Level**

### Arizona

In 2002 Arizona had one treatment unit (KE) and two control units (MO and BE). Two nest locations were sampled on the MO unit, four on the BE unit, and 10 on the treatment unit identified as KE (Table 5). Forty random points were sampled on each of the KE and MO units. Ten random points were sampled on the BE unit. Ninety random points in all were sampled.

On all three units in Arizona we observed a similar order of abundance in habitat components (Table 5). Litter was the most abundant cover type ranging from a low of 61.8 ( $\pm 6$ ) percent on the KE unit to a high of 65 ( $\pm 4.8$ ) percent on the MO unit. Grass cover was the second highest cover type with a mean percentage among units of 34 percent. Rock cover was the third most abundant component with values ranging from 10.7 ( $\pm 2.2$ ) on the KE unit to 18 ( $\pm 3$ ) percent on the MO unit. All other cover types were in low abundance with values < 3 percent.

On the KE unit tall shrubs and bare ground cover were more abundant at random points compared to nest locations (Table 5). We observed the opposite pattern with litter and small fuels which were more abundant at nest locations. Stem densities were not recorded at the Arizona units.

### Colorado (Unit)

Colorado had four units in 2002. Pairing of treatment and control units has not been determined because of logistical concerns (G. Vos; pers. commun.). Three nest locations were sampled on the DC,

PB, and SCN units and four on the SCS unit for a total of 13 nest locations. Five random points were sampled on each of the DC and PB units, 19 on the SCN unit and 18 on the SCS unit for a total of 47 random points (Table 6).

Litter was the dominant ground cover type on all four units in Colorado. Percent cover values ranged from a low of 89.1 ( $\pm 5.7$ ) on the DC unit to a high of 93.5 ( $\pm 2$ ) on the SCS unit (Table 6). The second most common ground cover type was grass on all units with values ranging from a low of 27.8 ( $\pm 6.4$ ) on the SCS unit to a high of 50 ( $\pm 11.4$ ) on the DC unit. Tall shrubs were the third most common cover type on all units except the PB unit with values averaging around 17 percent. On the PB unit shrub cover was only 4.5 ( $\pm 3.4$ ) percent whereas forb cover was 12.1 ( $\pm 7.4$ ) percent.

Three of the Colorado units, DC, SCN, and SCS, had the highest stem densities we observed among the Birds and Burns sites (Table 7). On these units stem densities averaged over 22,000 stems per hectare. Only the PB unit had low estimates (8526  $\pm$  2930 stems per hectare). The majority ( $\geq 95$  percent) of stems were in the smallest size class (0 to  $< 2.5$  cm).

#### Idaho (Unit)

There were six units in Idaho in 2002. BH is the control unit for FC. DM is the control unit for PC and WM is the control unit for DO. Idaho had a total of 31 nests and 59 random points sampled. Table 8 shows how points were distributed among units.

Litter cover ranked first in abundance on all Idaho units ranging from a low 64.8 ( $\pm 6.8$ ) on the FC unit to a high of 80.4 ( $\pm 17.2$ ) on the WM unit (Table 8). Grass was the second most abundant cover type on all units except the PC unit where rock (19.4  $\pm$  8.1) and tall shrub cover (17.8  $\pm$  8) were more common than grass (16.7  $\pm$  5.1). Grass cover on other units ranged from a high of 36.4 ( $\pm 5.4$ ) on the BH unit to a low of 28.9 ( $\pm 3.5$ ) on the FC unit. Tall shrub cover ranked third in abundance on the PC (17.8  $\pm$  8) and WM (31.9  $\pm$  16.2) units, whereas bare ground cover ranked third on the BH (20.9  $\pm$  7.2), DM (18.2  $\pm$  12.8), DO (21.8  $\pm$  8.5), and FC (28.4  $\pm$  5.3) units. On each of these units where bare? ground cover ranked third, tall shrubs ranked fourth.

On the BH unit large fuels were more abundant at random points (1.7  $\pm$  1.1) compared to nest points (0.5  $\pm$  0.4). On the FC unit grass, tall and short shrubs, and dead stems were all more abundant at random points, whereas bare ground was more abundant at nest points (Table 8).

Next to Colorado, Idaho had the highest stem densities we observed among the Birds and Burns locations (Table 9). Overall stem densities ranged from a low of 7331 ( $\pm 2512$ ) stems per hectare on the PC unit to a high of 17698 ( $\pm 14425$ ) stems per hectare on the WM unit. The WM unit only had a sample size of four. This combined with high variance led to the very broad confidence interval on the WM unit. Small (0 to  $< 2.5$  cm) stems contributed 99 percent of overall stem densities on most units.

Small stems on the FC unit were more abundant at random points compared to nest locations (Table 9). This also led to higher overall stem densities at random points compared to nest locations on the FC unit.

#### Montana (Unit)

Only two units were sampled in Montana in 2002: Strawberry and Maupin. Twenty random points were sampled on each (Table 10). Only random point results are available because nest searching and monitoring did not begin until 2003.

Litter cover was similar on both the MT and ST units at 87 percent (Table 10). Grass ranked second on both the MT ( $24.7 \pm 5.9$ ) and ST ( $11.3 \pm 4.7$ ) units. Forbs ranked third on the MT unit ( $18.2 \pm 6.5$ ) whereas short shrubs ranked third on the ST unit ( $4.4 \pm 1.8$ ).

Overall stem densities on the ST unit were the lowest ( $522 \pm 5.9$  stems per hectare) of any units in the Birds and Burns states (Table 11). Overall stem densities on the MT unit were seven times higher at  $3858 (\pm 5.9)$  stems per hectare. Whereas small stems comprised 94 of the overall stem density on the MT unit, they only comprised 58 percent of the overall stem density on the ST unit. Stem densities in the larger size classes were similar.

#### New Mexico (Unit)

There were only two units in New Mexico in 2002. The CP unit had ten nests and the LJ unit had four for a total of 14 nests. Twenty-five random points were sampled on each of the units (Table 12).

Litter was the most abundant cover type on both the CP ( $77.2 \pm 4.1$ ) and LJ units ( $78.2 \pm 4.9$ ) in New Mexico (Table 12). This was followed by grass (mean = 34 percent) and then bare ground (mean = 14 percent) on both units. On the CP unit tall shrubs and rock cover were both more abundant at random points. On the LJ unit both grass and litter were more abundant at nest locations compared to random points; forbs, tall shrubs, and bare ground showed the opposite pattern.

Overall stem densities ( $3538 \pm 1589$  stems per hectare) on the CP unit were about 2.5 times higher than on the LJ unit ( $1370 \pm 882$  stems per hectare). Small (0 to < 2.5 cm) comprised the majority of stems on both units. The LJ unit did not have stems in the 8 to < 12 cm size class. The CP unit had but a trace of stems in this size class at random points ( $3 \pm 4$  stems per hectare). On the LJ unit random points had higher small (0 to < 2.5 cm) stem densities compared to nest points. This led to a difference in overall stem densities also.

#### Oregon (Unit)

Oregon had a total of 40 nests and 31 random points sampled on four units in 2002. CS is the control unit for TS, and CN is the control unit for TN. Table 8 shows how nests and points were distributed.

As in other states, litter was the most abundant cover type on all four Oregon units (Table 14). Percent cover values ranged from a low of  $49.5 (\pm 12.8)$  on the TN unit to a high of  $80.6 (\pm 12.8)$  on the CN unit. The second most abundant cover type was grass on the CS ( $16.4 \pm 18.2$ ), TS ( $18 \pm 8.7$ ), and CN ( $10.8 \pm 6.2$ ) units. Grass only ranked third on the TN unit ( $8 \pm 2.1$ ) where bare ground cover ( $42.3 \pm 13.6$ ) was more prevalent. Bare ground cover ranked third on the other three units (CS, TS, and CN) with values ranging from a low of  $9.6 (\pm 3.6)$  on the TS unit to a high of  $11.9 (\pm 6.6)$  on the CS unit.

Ground cover was higher at random points ( $61.5 \pm 16.4$ ) on the TN unit compared to nest locations ( $2 \pm 1.1$ ) (Table 14). Litter cover and both small and large fuels, however, were more abundant at nest locations on the TN unit compared to random points.

We observed a large amount of variation in stem densities on Oregon units ranging from a low of 2580 ( $\pm 896$ ) on the TS unit to a high of 11750 ( $\pm 4150$ ) stems per hectare on the CN unit (Table 15). Mean density among units was 5459 ( $\pm 1192$ ) stems per hectare (Table 4). Stems in the smallest (0 to < 2.5 cm) size class contributed the most ( $\geq 93$  percent) to overall stem densities on the CN and CS units (Table 15). By contrast, small (0 to < 2.5 cm) stems only contributed 68 per cent on the TS unit and 79

percent on the TN unit. Larger stems were more abundant on each of these units compared to the CN and CS units.

### South Dakota (Unit)

South Dakota had four units in 2002 (Table 9). The FC and RC units accounted for the two nests in 2002 where vegetation was sampled. The KH and RR units did not have any nest trees. The RC unit had the highest number ( $n = 8$ ) of random points sampled. The FC unit had five random points, the KH had two, and the RR had four, for a total of 19 random points. Only the FC and RC units had both nest and random points.

Litter was the most abundant cover type on all South Dakota units (Table 16). Grass was second most abundant with either small fuels, seedlings of rock cover ranking third. Overall stem densities on South Dakota units ranged from a low of 1210 ( $\pm 672$ ) stems per hectare on the KH unit to 5781 ( $\pm 2675$ ) on the RC unit (Table 17). The FC unit had no large (8 to  $< 12$  cm) stems recorded.

### Washington (Unit)

Washington had the highest number of nest locations sampled ( $n = 50$ ). These were distributed among seven units with a low of five nest trees on the HR unit and a high of nine on the ZR unit. Table 10 shows how the nests were distributed. Only 12 random points were sampled for vegetation. All units except for the MT unit had at least one random point sampled. The highest number was three.

As in all other states, litter was the most abundant cover type on the Washington units ranging from a low 73.4 ( $\pm 7.8$ ) on the TD unit to a high of 89.2 ( $\pm 8.1$ ) on the MT unit (Table 18). Grass was the second most abundant cover type on all units ranging from a low 18.8 ( $\pm 9.3$ ) on the TD unit to a high of 40.9 ( $\pm 7.6$ ) on the FY unit. Forbs were the third most abundant cover type on all units except the TD unit where bare ground ranked third.

Overall stem densities ranged from a low of 3094 ( $\pm 1385$ ) on the FY unit to a high of 7898 ( $\pm 3323$ ) stems per hectare on the RY unit (Table 19). The proportion of small stems (0 to  $< 2.5$  cm) in the overall stem densities ranged from a low of 64 percent on the MT unit to a high of 96 percent on the TD unit.

## **Stratum Level**

Sample sizes for strata based on canopy cover within each unit were extremely low or even non-existent in some cases. Therefore, all data within each state were used in this analysis. Estimates are for all points combined within each stratum and then separated by nest and random point within both the open and closed strata.

### Arizona (Stratum)

Arizona had 49 points in the open stratum and 57 within the closed stratum (Table 20). Within the open stratum, only three points were nest locations and 46 were random points. Within the closed stratum 13 points were nests and 44 were random.

Litter was the most abundant cover type in both the open ( $50.8 \pm 4.9$ ) and closed ( $74 \pm 3.6$ ) stratum in Arizona (Table 20). Grass was the next most abundant cover type in both strata. Rock ranked third in both strata. Grass, tall ( $\geq 20$  cm) shrubs, and bare ground cover all were more abundant in the open stratum, whereas litter and small fuels were more abundant in the closed stratum.

Within the open stratum bare ground and rock covers were more abundant at random points; small fuels, however, were more abundant at nest locations. Within the closed stratum forb cover was more abundant at random points. Small fuels were more abundant nest locations.

### Colorado (Stratum)

All points within Colorado were in the closed stratum (Tables 3 and 4).

### Idaho (Stratum)

Idaho had 50 points in the open stratum and 40 in the closed stratum (Table 21). Litter was the most abundant cover type in both the open ( $65.6 \pm 4.5$ ) and closed stratum ( $74.4 \pm 6.5$ ) in Idaho. Grass was the second most abundant component. Within the open stratum, bare ground was the third most common cover type, whereas in the closed stratum, tall shrubs ranked third.

Seven different habitat components were more abundant in the closed stratum in Idaho compared to the open stratum: grass, forbs, tall and short shrubs, litter, and small and large fuels (Table 21). By contrast, bare ground and rock cover were more abundant in the open stratum. Within the closed stratum dead stems were more abundant at random points compared to nest locations.

Overall stem densities were higher in the closed stratum ( $15,133 \pm 3344$ ) in Idaho compared to the open stratum ( $9949 \pm 2336$ ) (Table 22). The majority of these stems were in the smallest (0 to < 2.5 cm) size class. By contrast, large (8 to < 12 cm) stems were more abundant in the open stratum.

### Montana (Stratum)

All random points within Montana were in the closed stratum (Tables 3 and 4).

### New Mexico (Stratum)

New Mexico had eight points in the open stratum and 56 in the closed stratum (Table 23). The ranking of habitat components within the open stratum was unusual in that litter did not rank first; rather it ranked second ( $49.8 \pm 6.8$ ) after grass cover ( $55.5 \pm 6.6$ ). Within the closed stratum, litter ranked first ( $81.6 \pm 2.3$ ) followed by grass ( $30.8 \pm 3.6$ ). Bare ground cover ranked third in both strata.

Grass, forbs, bare ground and rock cover all were more abundant in the open stratum in New Mexico (Table 23). Only litter cover was more abundant in the closed stratum. Within the closed stratum tall shrubs and rock were more abundant at random points, whereas grass was more abundant at nests.

Overall stem densities, comprised mainly of small (0 to < 2.5 cm) stems, averaged 1971 ( $\pm 557$ ) stems per hectare in the closed stratum in New Mexico (Table 24). It was not possible to tell what stem densities were in the open stratum because of the high variance ( $6653 \pm 7377$  stems per hectare).

### Oregon (Stratum)

Oregon had 39 points in the open stratum and 31 in the closed stratum (Table 25). The open stratum ( $58.1 \pm 9.9$ ) in Oregon had significantly less litter cover compared to the closed stratum ( $73.2 \pm 9.1$ ). By contrast, there was more bare ground cover in the open stratum. Within the open stratum nest points had more grass, forbs, litter, and both small and large fuels at nest locations compared to random points. Only bare ground cover was more abundant at random points with the open stratum. Within the closed stratum both small and large fuels were more abundant at nest locations compared to random points.

Stem densities within each stratum in Oregon were similar (Table 26). Within the open stratum there were higher densities of large (8 to < 12 cm) stems at random points ( $218 \pm 74$ ) compared to nest locations ( $104 \pm 50$ ). Within the closed stratum small stems were more abundant at nests ( $7043 \pm 2489$ ) compared to random points ( $1974 \pm 1019$ ). We saw the opposite pattern with large (8 to < 12 cm) stems.

#### South Dakota (Stratum)

South Dakota had 3 points in the open stratum and 18 in the closed stratum (Table 27). There were too few sampling points in the open stratum in South Dakota to draw conclusions. In the closed stratum, however, litter ( $84.2 \pm 4.2$ ), then grass cover ( $48.5 \pm 8.1$ ), followed by rock cover ( $6.2 \pm 2.7$ ), were the top ranking ground components.

Estimates of overall stem densities in the open stratum were poor because of the small sample size ( $2320 \pm 4300$ ); in the closed stratum we estimated them to be 4485 stems per hectare ( $\pm 1533$ ). Owing to small sample sizes, we observed no differences between, or within, strata for any of the ground cover components (Table 27) or stem densities (Table 28).

#### Washington (Stratum)

Washington had 18 points in the open stratum and 44 in the closed stratum (Table 29). Litter and then grass ranked the highest in both strata in Washington. Within the open stratum, bare ground cover ranked third. Within the closed stratum, forbs ranked third. We observed no differences in percent cover between strata for any habitat components.

Overall stem densities in the open stratum in Washington averaged 6147 ( $\pm 1233$ ) stems per hectare: 4741 ( $\pm 1018$ ) in the closed stratum. The only difference we observed within strata was for small stems where nest locations ( $4305 \pm 1202$ ) had higher densities than random points ( $2283 \pm 1554$ ).

Table 1. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in four geographic regions. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

State	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Southern region: Arizona and New Mexico			Northern Region: Idaho, Montana, Oregon, and Washington		
	Combined (n=170)	Nest (n=30)	Random (n=140)	Combined (n=265)	Nest (n=121)	Random (n=144)
Grass	34.6 $\pm$ 2.4 (1.4)	31 $\pm$ 4.9 (2.9)	35.3 $\pm$ 2.7 (1.6)	23.3 $\pm$ 1.7 (1.1)	24.7 $\pm$ 2.6 (1.6)	22.2 $\pm$ 2.4 (1.4)
Forb	4.9 $\pm$ 1 (0.6)	4.9 $\pm$ 1.9 (1.1)	4.9 $\pm$ 1.2 (0.7)	9.9 $\pm$ 1.1 (0.6)	10.2 $\pm$ 1.5 (0.9)	9.7 $\pm$ 1.5 (0.9)
Tall shrubs ( $\geq 20$ cm)	1.1 $\pm$ 0.3 (0.2)	0.4 $\pm$ 0.4 <sup>a</sup> (0.2)	1.2 $\pm$ 0.4 <sup>a</sup> (0.2)	11 $\pm$ 1.3 (0.8)	9.6 $\pm$ 1.5 <sup>b</sup> (0.9)	12.2 $\pm$ 2.1 <sup>b</sup> (1.3)
Short shrubs (< 20 cm)	0.2 $\pm$ 0.1 (0.04)	0.3 $\pm$ 0.2 (0.14)	0.2 $\pm$ 0.1 (0.05)	7.3 $\pm$ 0.9 (0.5)	5.1 $\pm$ 1.1 <sup>a</sup> (0.7)	9.2 $\pm$ 1.3 <sup>a</sup> (0.8)
Dead stems	0.2 $\pm$ 0.1 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.2 (0.1)	3.1 $\pm$ 0.4 (0.3)	3.3 $\pm$ 0.6 (0.3)	2.9 $\pm$ 0.6 (0.4)
Seedlings	0.01 $\pm$ 0.01 (0.01)	0.03 $\pm$ 0.01 (0.03)	0.01 $\pm$ 0.01 (0.01)	0.4 $\pm$ 0.1 (0.06)	0.4 $\pm$ 0.1 (0.08)	0.4 $\pm$ 0.1 (0.09)
Bare ground	10.9 $\pm$ 1.6 (1)	8.2 $\pm$ 3.4 (2)	11.5 $\pm$ 1.8 (1.1)	16 $\pm$ 2.3 (1.4)	11.8 $\pm$ 2 <sup>a</sup> (1.2)	19.6 $\pm$ 3.9 <sup>a</sup> (2.4)
Rock	11.2 $\pm$ 1.2 (0.8)	8.8 $\pm$ 2.8 (1.7)	11.7 $\pm$ 1.4 (0.8)	3.2 $\pm$ 0.7 (0.4)	3.1 $\pm$ 0.8 (0.5)	3.3 $\pm$ 1 (0.6)
Litter	68.7 $\pm$ 2.6 (1.6)	77.1 $\pm$ 4.8 <sup>a</sup> (2.8)	66.9 $\pm$ 2.9 <sup>a</sup> (1.8)	73.8 $\pm$ 2.4 (1.5)	77.3 $\pm$ 2.5 <sup>a</sup> (1.5)	70.9 $\pm$ 3.9 <sup>a</sup> (2.4)
Stumps	0.1 $\pm$ 0.1 (0.05)	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.05)	0.8 $\pm$ 0.8 (0.5)	0.2 $\pm$ 0.1 (0.8)	1.3 $\pm$ 1.4 (0.9)
Small fuels (7.6 to 23 cm)	1 $\pm$ 0.2 (0.1)	1.9 $\pm$ 0.7 <sup>a</sup> (0.4)	0.8 $\pm$ 0.2 <sup>a</sup> (0.1)	1.7 $\pm$ 0.3 (0.2)	2.3 $\pm$ 0.5 <sup>a</sup> (0.3)	1.1 $\pm$ 0.2 <sup>a</sup> (0.1)
Large fuels ( $\geq 23$ cm LED)	0.3 $\pm$ 0.1 (0.06)	0.4 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.1 (0.07)	1.2 $\pm$ 0.2 (0.1)	1.4 $\pm$ 0.4 (0.2)	1 $\pm$ 0.3 (0.2)
Weeds	0.04 $\pm$ 0.1 (0.02)	0.08 $\pm$ 0.1 (0.06)	0.04 $\pm$ 0.1 (0.02)	0.09 $\pm$ 0.1 (0.04)	0.03 $\pm$ 0.01 (0.02)	0.1 $\pm$ 0.1 (0.07)
Other	1.3 $\pm$ 0.4 (0.2)	1.1 $\pm$ 0.6 (0.4)	1.4 $\pm$ 0.4 (0.3)	1.5 $\pm$ 0.3 (0.2)	1.7 $\pm$ 0.4 (0.3)	1.2 $\pm$ 0.3 (0.2)

<sup>a</sup> Mean densities within a region differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a region differ between nest and random values  $P < 0.10$ .

Table 1 (con't). Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in four geographic regions. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

State	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Colorado <sup>1</sup>			South Dakota <sup>1</sup>		
	Combined (n = 60)	Nest (n = 13)	Random (n = 47)	Combined (n = 21)	Nest (n = 2)	Random (n = 19)
Grass	34.2 $\pm$ 3.9 (2.3)	34.6 $\pm$ 10.3 (5.8)	34.1 $\pm$ 4.3 (2.5)	50 $\pm$ 7.2 (4.2)	46.3 $\pm$ 197 (31.3)	50.4 $\pm$ 6.9 (4)
Forb	10.2 $\pm$ 1.9 (1.1)	14.6 $\pm$ 6 (3.4)	9 $\pm$ 1.8 (1.1)	2.9 $\pm$ 0.7 (0.4)	4.6 $\pm$ 13.3 (2.1)	2.7 $\pm$ 0.7 (0.4)
Tall shrubs ( $\geq 20$ cm)	15.5 $\pm$ 2.8 (1.7)	11 $\pm$ 3.4 <sup>a</sup> (1.9)	16.7 $\pm$ 3.4 <sup>a</sup> (2.1)	4.9 $\pm$ 3.7 (2.1)	0	5.4 $\pm$ 4.1 (2.3)
Short shrubs (< 20 cm)	5.9 $\pm$ 2 (1.2)	4.4 $\pm$ 1.5 (0.9)	6.3 $\pm$ 2.6 (1.5)	1 $\pm$ 0.9 (0.5)	0.9 $\pm$ 5.4 (0.9)	1 $\pm$ 1 (0.6)
Dead stems	1.1 $\pm$ 0.4 (0.2)	1 $\pm$ 1.4 (0.8)	1.1 $\pm$ 0.4 (0.2)	0.1 $\pm$ 0.2 (0.1)	1.3 $\pm$ 7.9 (1.3)	0
Seedlings	1.7 $\pm$ 0.5 (0.3)	2.6 $\pm$ 1.3 (0.7)	1.5 $\pm$ 0.5 (0.3)	2.3 $\pm$ 1.4 (0.8)	0.4 $\pm$ 2.5 (0.4)	2.5 $\pm$ 1.5 (0.9)
Bare ground	1.9 $\pm$ 0.8 (0.5)	2.9 $\pm$ 2 (1.1)	1.7 $\pm$ 0.9 (0.5)	3.8 $\pm$ 1.9 (1.1)	11.7 $\pm$ 63.1 (10)	3 $\pm$ 1.2 (0.7)
Rock	1.1 $\pm$ 0.5 (0.3)	0.6 $\pm$ 0.7 (0.4)	1.2 $\pm$ 0.6 (0.3)	7.4 $\pm$ 3.5 (2.1)	5 $\pm$ 5.1 (0.8)	7.7 $\pm$ 3.9 (2.3)
Litter	92.1 $\pm$ 1.4 (0.8)	88.5 $\pm$ 4.2 <sup>a</sup> (2.4)	93.1 $\pm$ 1.4 <sup>a</sup> (0.8)	82.8 $\pm$ 4.5 (2.6)	75.8 $\pm$ 63.1 (10)	83.6 $\pm$ 4.7 (2.7)
Stumps	0.1 $\pm$ 0.2 (0.1)	0	0.2 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.3 (0.2)	1.3 $\pm$ 7.9 (1.3)	0.2 $\pm$ 0.2 (0.1)
Small fuels (7.6 to 23 cm)	3.2 $\pm$ 0.7 (0.4)	5.3 $\pm$ 2 <sup>a</sup> (1.1)	2.6 $\pm$ 0.7 <sup>a</sup> (0.4)	5.3 $\pm$ 1.5 (0.9)	3.4 $\pm$ 10.4 (1.7)	5.5 $\pm$ 1.6 (0.9)
Large fuels ( $\geq 23$ cm LED)	1.4 $\pm$ 0.5 (0.3)	3.5 $\pm$ 1.9 <sup>a</sup> (1.1)	0.9 $\pm$ 0.3 <sup>a</sup> (0.2)	1.3 $\pm$ 0.5 (0.3)	2.1 $\pm$ 2.5 (0.4)	1.2 $\pm$ 0.5 (0.3)
Weeds	0.2 $\pm$ 0.2 (0.1)	0.06 $\pm$ 0.1 (0.06)	0.2 $\pm$ 0.2 (0.1)	0.8 $\pm$ 0.5 (0.3)	0	0.9 $\pm$ 0.6 (0.3)
Other	0.3 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.3 (0.18)	0.3 $\pm$ 0.3 (0.2)	0.6 $\pm$ 0.4 (0.2)	1.7 $\pm$ 10.4 (1.7)	0.4 $\pm$ 0.3 (0.2)

<sup>1</sup> Colorado and South Dakota were considered their own regions.

Table 2. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in four geographic regions. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Southern region: New Mexico <sup>1</sup>			Northern Region: Idaho, Montana, Oregon, and Washington		
	Combined (n = 64)	Nest (n = 14)	Random (n = 50)	Combined (n = 263)	Nest (n = 142)	Random (n = 121)
0 to < 2.5	2256 $\pm$ 922 (553)	1252 $\pm$ 874 (493)	2537 $\pm$ 1158 (691)	6600 $\pm$ 873 (529)	6734 $\pm$ 1338 (808)	6443 $\pm$ 1081 (652)
2.5 to < 5	280 $\pm$ 70 (42)	300 $\pm$ 175 (99)	275 $\pm$ 77 (46)	309 $\pm$ 50 (30)	244 $\pm$ 63 <sup>a</sup> (38)	386 $\pm$ 78 <sup>a</sup> (47)
5 to < 8	18 $\pm$ 8 (5)	21 $\pm$ 17 (10)	17 $\pm$ 9 (5)	144 $\pm$ 25 (15)	124 $\pm$ 36 (21)	166 $\pm$ 35 (21)
8 to < 12	1 $\pm$ 2 (1)	0	2 $\pm$ 2 (1)	82 $\pm$ 14 (8)	79 $\pm$ 20 (12)	87 $\pm$ 19 (11)
All stems (< 12)	2556 $\pm$ 964 (577)	1573 $\pm$ 1005 (568)	2831 $\pm$ 1206 (719)	7135 $\pm$ 866 (525)	7180 $\pm$ 1330 (803)	7082 $\pm$ 1072 (647)

Table 2 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in four geographic regions. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Colorado <sup>2</sup>			South Dakota <sup>2</sup>		
	Combined (n = 60)	Nest (n = 13)	Random (n = 47)	Combined (n = 21)	Nest (n = 2)	Random (n = 19)
0 to < 2.5	19041 $\pm$ 2373 (1420)	17646 $\pm$ 3440 (1930)	19427 $\pm$ 2916 (1737)	3581 $\pm$ 1175 (681)	5687 $\pm$ 24119 (3820)	3360 $\pm$ 1171 (676)
2.5 to < 5	456 $\pm$ 106 (63)	304 $\pm$ 153 (86)	498 $\pm$ 128 (77)	467 $\pm$ 277 (161)	85 $\pm$ 537 (85)	507 $\pm$ 304 (175)
5 to < 8	250 $\pm$ 72 (43)	173 $\pm$ 114 (64)	272 $\pm$ 88 (52)	91 $\pm$ 71 (41)	43 $\pm$ 268 (43)	96 $\pm$ 78 (45)
8 to < 12	132 $\pm$ 95 (57)	36 $\pm$ 31 (17)	158 $\pm$ 121 (72)	36 $\pm$ 30 (17)	21 $\pm$ 133 (21)	38 $\pm$ 33 (19)
All stems (< 12)	19880 $\pm$ 2451 (1467)	18159 $\pm$ 3515 (1972)	20356 $\pm$ 3012 (1794)	4175 $\pm$ 1364 (791)	5836 $\pm$ 23983 (3799)	4001 $\pm$ 1415 (816)

<sup>1</sup> No stem data available from Arizona to contribute to southern region estimates.

<sup>2</sup> Colorado and South Dakota were considered their own regions.

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 3. Mean percent ground cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in eight states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm$ 90% confidence interval (SE)					
	Arizona			Colorado		
	Combined (n=106)	Nest (n=16)	Random (n=90)	Combined (n=60)	Nest (n=13)	Random (n=47)
Grass	35 $\pm$ 3.1 (1.9)	24.3 $\pm$ 6.7 <sup>a</sup> (3.8)	36.8 $\pm$ 3.4 <sup>a</sup> (2)	34.2 $\pm$ 3.9 (2.3)	34.6 $\pm$ 10.3 (5.8)	34.1 $\pm$ 4.3 (2.5)
Forb	1.3 $\pm$ 0.3 (0.2)	0.6 $\pm$ 0.4 <sup>a</sup> (0.2)	1.5 $\pm$ 0.4 <sup>a</sup> (0.2)	10.2 $\pm$ 1.9 (1.1)	14.6 $\pm$ 6 <sup>a</sup> (3.4)	9 $\pm$ 1.8 <sup>a</sup> (1.1)
Tall shrubs ( $\geq$ 20 cm)	0.5 $\pm$ 0.2 (0.1)	0.05 $\pm$ 0.1 <sup>a</sup> (0.05)	0.5 $\pm$ 0.2 <sup>a</sup> (0.1)	15.5 $\pm$ 2.8 (1.7)	11 $\pm$ 3.4 (1.9)	16.7 $\pm$ 3.4 (2.1)
Short shrubs (< 20 cm)	0.1 $\pm$ 0.1 (0.01)	0.05 $\pm$ 0.1 (0.05)	0.09 $\pm$ 0.1 (0.05)	5.9 $\pm$ 2 (1.2)	4.4 $\pm$ 1.5 (0.9)	6.3 $\pm$ 2.6 (1.5)
Dead stems	0.01 $\pm$ 0.01 (0.01)	0.05 $\pm$ 0.1 (0.05)	0.04 $\pm$ 0.01 (0.02)	1.1 $\pm$ 0.4 (0.2)	1 $\pm$ 1.4 (0.8)	1.1 $\pm$ 0.4 (0.2)
Seedlings	0.01 $\pm$ 0.01 (0.01)	0	0.01 $\pm$ 0.01 (0.01)	1.7 $\pm$ 0.5 (0.3)	2.6 $\pm$ 1.3 (0.7)	1.5 $\pm$ 0.5 (0.3)
Bare ground	9.4 $\pm$ 1.9 (1.1)	4.1 $\pm$ 2.4 <sup>a</sup> (1.4)	10.3 $\pm$ 2.2 <sup>a</sup> (1.3)	1.9 $\pm$ 0.8 (0.5)	2.9 $\pm$ 2 (1.1)	1.7 $\pm$ 0.9 (0.5)
Rock	14.1 $\pm$ 1.8 (1.1)	13.2 $\pm$ 4.6 (2.6)	14.3 $\pm$ 1.9 (1.2)	1.1 $\pm$ 0.5 (0.3)	0.6 $\pm$ 0.7 (0.4)	1.2 $\pm$ 0.6 (0.3)
Litter	63.3 $\pm$ 3.5 (2.1)	74 $\pm$ 7.3 <sup>a</sup> (4.2)	61.4 $\pm$ 3.8 <sup>a</sup> (2.3)	92.1 $\pm$ 1.4 (0.8)	88.5 $\pm$ 4.2 <sup>a</sup> (2.4)	93.1 $\pm$ 1.4 <sup>a</sup> (0.8)
Stumps	0.1 $\pm$ 0.1 (0.01)	0.1 $\pm$ 0.1 (0.07)	0.7 $\pm$ 0.1 (0.04)	0.1 $\pm$ 0.2 (0.1)	0	0.2 $\pm$ 0.3 (0.2)
Small fuels (7.6 to 23 cm)	0.8 $\pm$ 0.2 (0.1)	2.1 $\pm$ 1.1 <sup>a</sup> (0.6)	0.5 $\pm$ 0.2 <sup>a</sup> (0.1)	3.2 $\pm$ 0.7 (0.4)	5.3 $\pm$ 2 <sup>a</sup> (1.1)	2.6 $\pm$ 0.7 <sup>a</sup> (0.4)
Large fuels ( $\geq$ 23 cm LED)	0.2 $\pm$ 0.1 (0.1)	0.3 $\pm$ 0.3 (0.15)	0.2 $\pm$ 0.1 (0.08)	1.4 $\pm$ 0.5 (0.3)	3.5 $\pm$ 1.9 <sup>a</sup> (1.1)	0.9 $\pm$ 0.3 <sup>a</sup> (0.2)
Weeds	0	0	0	0.2 $\pm$ 0.2 (0.1)	0.06 $\pm$ 0.1 (0.06)	0.2 $\pm$ 0.2 (0.1)
Other	0	0	0	0.3 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.3 (0.18)	0.3 $\pm$ 0.3 (0.2)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 3 (con't). Mean percent ground cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in eight states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm$ 90% confidence interval (SE)					
	Idaho			Montana		
	Combined (n = 106)	Nest (n = 31)	Random (n = 59)	Combined (n = 40)	Nest (n = 0)	Random (n = 40)
Grass	30.4 $\pm$ 2.6 (1.6)	29.1 $\pm$ 4.9 (2.9)	32.3 $\pm$ 3.2 (2)	18 $\pm$ 4.1 (2.4)	N/A	18 $\pm$ 4.1 (2.4)
Forb	10.8 $\pm$ 1.7 (1)	9 $\pm$ 2.5 <sup>b</sup> (1.5)	10.1 $\pm$ 1.2 <sup>b</sup> (0.7)	10.7 $\pm$ 3.8 (2.3)	N/A	10.7 $\pm$ 3.8 (2.3)
Tall shrubs ( $\geq$ 20 cm)	20.3 $\pm$ 2.8 (1.7)	16.4 $\pm$ 3.9 (2.3)	22.7 $\pm$ 3.8 (2.3)	5.5 $\pm$ 2 (1.2)	N/A	5.5 $\pm$ 2 (1.2)
Short shrubs (< 20 cm)	11.7 $\pm$ 1.4 (0.8)	11.2 $\pm$ 2.6 (1.5)	11.9 $\pm$ 1.6 (0.9)	9.7 $\pm$ 2.6 (1.5)	N/A	9.7 $\pm$ 2.6 (1.5)
Dead stems	4.8 $\pm$ 0.9 (0.5)	4.4 $\pm$ 1.3 (0.7)	5.1 $\pm$ 1.2 (0.7)	1.2 $\pm$ 0.6 (0.4)	N/A	1.2 $\pm$ 0.6 (0.4)
Seedlings	0.4 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.3 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.2 (0.1)	N/A	0.3 $\pm$ 0.2 (0.1)
Bare ground	21.4 $\pm$ 1.9 (3.2)	21.4 $\pm$ 5.7 (3.3)	21.4 $\pm$ 3.8 (2.3)	0.3 $\pm$ 0.2 (0.1)	N/A	0.3 $\pm$ 0.2 (0.1)
Rock	4.4 $\pm$ 1.6 (0.9)	3.8 $\pm$ 2.2 (1.3)	4.5 $\pm$ 2.1 (1.3)	3.6 $\pm$ 1.5 (0.9)	N/A	3.6 $\pm$ 1.5 (0.9)
Litter	69.5 $\pm$ 3.8 (2.3)	70.8 $\pm$ 6 (3.5)	71.9 $\pm$ 4.1 (2.5)	87.3 $\pm$ 1.3 (0.8)	N/A	87.3 $\pm$ 1.3 (0.8)
Stumps	1.9 $\pm$ 2.2 (1.3)	0	0.1 $\pm$ 0.1 (0.1)	0.1 $\pm$ 0.1 (0.1)	N/A	0.1 $\pm$ 0.1 (0.1)
Small fuels (7.6 to 23 cm)	0.4 $\pm$ 0.1 (0.1)	0.4 $\pm$ 0.2 (0.1)	0.5 $\pm$ 0.2 (0.1)	1.8 $\pm$ 0.5 (0.3)	N/A	1.8 $\pm$ 0.5 (0.3)
Large fuels ( $\geq$ 23 cm LED)	1.6 $\pm$ 0.5 (0.3)	2 $\pm$ 1.1 (0.6)	1.4 $\pm$ 0.6 (0.4)	0.8 $\pm$ 0.4 (0.2)	N/A	0.8 $\pm$ 0.4 (0.2)
Weeds	0	0	0	0	N/A	0
Other	2.4 $\pm$ 0.6 (0.3)	2.2 $\pm$ 1 (0.6)	2.7 $\pm$ 0.7 (0.4)	0	N/A	0

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 3 (con't). Mean percent ground cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in eight states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm$ 90% confidence interval (SE)					
	New Mexico			Oregon		
	Combined (n = 64)	Nest (n = 14)	Random (n = 50)	Combined (n = 75)	Nest (n = 40)	Random (n = 35)
Grass	33.9 $\pm$ 3.7 (2.2)	38.6 $\pm$ 6.2 (3.5)	32.6 $\pm$ 4.4 (2.6)	12.1 $\pm$ 3.1 (1.9)	17.7 $\pm$ 5.3 <sup>a</sup> (3.1)	5.7 $\pm$ 1.9 <sup>a</sup> (1.1)
Forb	10.9 $\pm$ 2.3 (1.4)	9.8 $\pm$ 2.8 (1.6)	11.1 $\pm$ 2.8 (1.7)	4.3 $\pm$ 1.4 (0.8)	6.1 $\pm$ 2.3 <sup>a</sup> (1.4)	2.2 $\pm$ 1 <sup>a</sup> (0.6)
Tall shrubs ( $\geq$ 20 cm)	2.1 $\pm$ 0.8 (0.5)	0.8 $\pm$ 0.8 <sup>a</sup> (0.4)	2.4 $\pm$ 1 <sup>a</sup> (0.6)	3.1 $\pm$ 1 (0.6)	3.7 $\pm$ 1.6 (1)	2.4 $\pm$ 1.1 (0.7)
Short shrubs (< 20 cm)	0.4 $\pm$ 0.2 (0.1)	0.6 $\pm$ 0.5 (0.3)	0.3 $\pm$ 0.1 (0.1)	2.4 $\pm$ 0.8 (0.5)	2 $\pm$ 1 (0.6)	3 $\pm$ 1.4 (0.8)
Dead stems	0.5 $\pm$ 0.4 (0.2)	0.5 $\pm$ 0.3 (0.2)	0.5 $\pm$ 0.5 (0.3)	2.1 $\pm$ 0.6 (0.4)	2.6 $\pm$ 1 (0.6)	1.4 $\pm$ 0.8 (0.5)
Seedlings	0.01 $\pm$ 0.01 (0.01)	0.1 $\pm$ 0.1 (0.1)	0.01 $\pm$ 0.01 (0.01)	0.4 $\pm$ 0.2 (0.1)	0.5 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.2 (0.1)
Bare ground	13.6 $\pm$ 2.8 (1.7)	12.9 $\pm$ 6.5 (3.7)	13.7 $\pm$ 3.2 (1.9)	24.7 $\pm$ 6.9 (4.1)	7.1 $\pm$ 2.2 <sup>a</sup> (1.3)	44.8 $\pm$ 12.6 <sup>a</sup> (7.4)
Rock	6.3 $\pm$ 1 (0.6)	3.7 $\pm$ 1.1 <sup>a</sup> (0.6)	7.1 $\pm$ 1.2 <sup>a</sup> (0.7)	0.9 $\pm$ 0.6 (0.4)	1 $\pm$ 0.8 (0.5)	0.8 $\pm$ 0.8 (0.5)
Litter	77.6 $\pm$ 3.1 (1.8)	80.8 $\pm$ 6.5 (3.7)	76.8 $\pm$ 3.6 (2.1)	65.5 $\pm$ 6.7 (4)	80.3 $\pm$ 4.2 <sup>a</sup> (2.5)	48.6 $\pm$ 12.1 <sup>a</sup> (7.2)
Stumps	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.4 (0.2)	0.2 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.4 (0.2)	0.3 $\pm$ 0.3 (0.2)
Small fuels (7.6 to 23 cm)	1.4 $\pm$ 0.4 (0.2)	1.7 $\pm$ 0.9 (0.5)	1.3 $\pm$ 0.4 (0.2)	2.5 $\pm$ 0.7 (0.4)	4 $\pm$ 1.1 <sup>a</sup> (0.7)	0.8 $\pm$ 0.3 <sup>a</sup> (0.2)
Large fuels ( $\geq$ 23 cm LED)	0.5 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.3 (0.14)	0.5 $\pm$ 0.3 (0.2)	0.9 $\pm$ 0.3 (0.2)	1.4 $\pm$ 0.5 <sup>a</sup> (0.3)	0.3 $\pm$ 0.2 <sup>a</sup> (0.1)
Weeds	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.2 (0.1)	0	0.5 $\pm$ 0.4 (0.3)
Other	3.5 $\pm$ 0.8 (0.5)	2.4 $\pm$ 1.1 (0.6)	3.9 $\pm$ 1 (0.6)	0.8 $\pm$ 0.4 (0.3)	1.4 $\pm$ 0.8 (0.5)	0.2 $\pm$ 0.1 (0.1)

Table 3 (con't). Mean percent ground cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in eight states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Percent ground cover value $\pm$ 90% confidence interval (SE)						
State	South Dakota			Washington		
	Combined (n = 21)	Nest (n = 2)	Random (n = 19)	Combined (n = 62)	Nest (n = 50)	Random (n = 12)
Grass	50 $\pm$ 7.2 (4.2)	46.3 $\pm$ 19.7 (31.3)	50.4 $\pm$ 6.9 (4)	28.7 $\pm$ 3 (1.8)	27.5 $\pm$ 3.2 (1.9)	33.5 $\pm$ 7.8 (4.3)
Forb	2.9 $\pm$ 0.7 (0.4)	4.6 $\pm$ 13.3 (2.1)	2.7 $\pm$ 0.7 (0.4)	14.3 $\pm$ 2 (1.2)	14.2 $\pm$ 2.4 (1.4)	14.6 $\pm$ 3.7 (2.1)
Tall shrubs ( $\geq$ 20 cm)	4.9 $\pm$ 3.7 (2.1)	0	5.4 $\pm$ 4.1 (2.3)	9.7 $\pm$ 1.8 (1.1)	10 $\pm$ 1.9 (1.1)	8.1 $\pm$ 4.8 (2.7)
Short shrubs (< 20 cm)	1 $\pm$ 0.9 (0.5)	0.9 $\pm$ 5.4 (0.9)	1 $\pm$ 1 (0.6)	5 $\pm$ 2.1 (1.2)	3.9 $\pm$ 1.5 (0.9)	9.4 $\pm$ 9.3 (5.2)
Dead stems	0.1 $\pm$ 0.2 (0.1)	1.3 $\pm$ 7.9 (1.3)	0	2.9 $\pm$ 0.7 (0.4)	3.2 $\pm$ 0.8 <sup>b</sup> (0.5)	1.8 $\pm$ 1.1 <sup>b</sup> (0.6)
Seedlings	2.3 $\pm$ 1.4 (0.8)	0.4 $\pm$ 2.5 (0.4)	2.5 $\pm$ 1.5 (0.9)	0.5 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.1 <sup>a</sup> (0.1)	1.6 $\pm$ 1 <sup>a</sup> (0.6)
Bare ground	3.8 $\pm$ 1.9 (1.1)	11.7 $\pm$ 63.1 (10)	3 $\pm$ 1.2 (0.7)	9.8 $\pm$ 1.8 (1.1)	9.6 $\pm$ 2.1 (1.2)	10.4 $\pm$ 4.3 (2.4)
Rock	7.4 $\pm$ 3.5 (2.1)	5 $\pm$ 5.1 (0.8)	7.7 $\pm$ 3.9 (2.3)	3.8 $\pm$ 1 (0.6)	4.3 $\pm$ 1.1 <sup>a</sup> (0.7)	1.5 $\pm$ 0.8 <sup>a</sup> (0.5)
Litter	82.8 $\pm$ 4.5 (2.6)	75.8 $\pm$ 63.1 (10)	83.6 $\pm$ 4.7 (2.7)	79.4 $\pm$ 2.7 (1.6)	79 $\pm$ 3.2 (1.9)	81.3 $\pm$ 4.1 (2.3)
Stumps	0.3 $\pm$ 0.3 (0.2)	1.3 $\pm$ 7.9 (1.3)	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.3 (0.2)
Small fuels (7.6 to 23 cm)	5.3 $\pm$ 1.5 (0.9)	3.4 $\pm$ 10.4 (1.7)	5.5 $\pm$ 1.6 (0.9)	2.2 $\pm$ 0.4 (0.3)	2.1 $\pm$ 0.5 (0.3)	2.6 $\pm$ 1.1 (0.6)
Large fuels ( $\geq$ 23 cm LED)	1.3 $\pm$ 0.5 (0.3)	2.1 $\pm$ 2.5 (0.4)	1.2 $\pm$ 0.5 (0.3)	1.1 $\pm$ 0.3 (0.2)	0.9 $\pm$ 0.4 (0.2)	1.5 $\pm$ 0.5 (0.3)
Weeds	0.8 $\pm$ 0.5 (0.3)	0	0.9 $\pm$ 0.6 (0.3)	0.1 $\pm$ 0.1 (0.01)	0.1 $\pm$ 0.1 (0.05)	0.1 $\pm$ 0.3 (0.1)
Other	0.6 $\pm$ 0.4 (0.2)	1.7 $\pm$ 10.4 (1.7)	0.4 $\pm$ 0.3 (0.2)	1.7 $\pm$ 0.5 (0.3)	1.8 $\pm$ 0.7 (0.4)	1.4 $\pm$ 0.8 (0.4)

Table 4. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in seven<sup>1</sup> states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Colorado			Idaho		
	Combined (n = 60)	Nest (n = 13)	Random (n = 47)	Combined (n = 90)	Nest (n = 31)	Random (n = 59)
0 to < 2.5	19041 $\pm$ 2373 (1420)	17646 $\pm$ 3440 (1930)	19427 $\pm$ 2916 (1737)	11895 $\pm$ 1947 (1172)	9968 $\pm$ 2984 (1758)	12907 $\pm$ 2547 (1524)
2.5 to < 5	456 $\pm$ 106 (63)	304 $\pm$ 153 (86)	498 $\pm$ 128 (77)	113 $\pm$ 36 (21)	77 $\pm$ 46 (27)	132 $\pm$ 49 (29)
5 to < 8	250 $\pm$ 72 (43)	173 $\pm$ 114 (64)	272 $\pm$ 88 (52)	9 $\pm$ 6 (3)	10 $\pm$ 10 (6)	9 $\pm$ 7 (4)
8 to < 12	132 $\pm$ 95 (57)	36 $\pm$ 31 (17)	158 $\pm$ 121 (72)	5 $\pm$ 4 (2)	8 $\pm$ 10 (6)	4 $\pm$ 3 (2)
All stems (< 12)	19880 $\pm$ 2451 (1467)	18159 $\pm$ 3515 (1972)	20356 $\pm$ 3012 (1794)	12023 $\pm$ 1955 (1176)	10063 $\pm$ 2988 (1761)	13052 $\pm$ 2559 (1531)

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)			
	New Mexico			Montana
	Combined (n = 64)	Nest (n = 14)	Random (n = 50)	Random (n = 40)
0 to < 2.5	2256 $\pm$ 922 (553)	1252 $\pm$ 874 (493)	2537 $\pm$ 1158 (691)	1966 $\pm$ 1277 (758)
2.5 to < 5	280 $\pm$ 70 (42)	300 $\pm$ 175 (99)	275 $\pm$ 77 (46)	108 $\pm$ 55 (32)
5 to < 8	18 $\pm$ 8 (5)	21 $\pm$ 17 (10)	17 $\pm$ 9 (5)	59 $\pm$ 22 (13)
8 to < 12	1 $\pm$ 2 (1)	0	2 $\pm$ 2 (1)	56 $\pm$ 18 (11)
All stems (< 12)	2556 $\pm$ 964 (577)	1573 $\pm$ 1005 (568)	2831 $\pm$ 1206 (719)	2190 $\pm$ 1286 (763)

<sup>1</sup> No stem data available from Arizona.

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 4 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in seven<sup>1</sup> states. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Oregon			South Dakota		
	Combined (n = 71)	Nest (n = 40)	Random (n = 31)	Combined (n = 21)	Nest (n = 2)	Random (n = 19)
0 to < 2.5	4599 $\pm$ 1190 (714)	6223 $\pm$ 1926 <sup>a</sup> (1143)	2503 $\pm$ 881 <sup>a</sup> (519)	3581 $\pm$ 1175 (681)	5687 $\pm$ 24119 (3820)	3360 $\pm$ 1171 (676)
2.5 to < 5	427 $\pm$ 125 (75)	353 $\pm$ 144 (85)	523 $\pm$ 222 (131)	467 $\pm$ 277 (161)	85 $\pm$ 537 (85)	507 $\pm$ 304 (175)
5 to < 8	272 $\pm$ 64 (39)	189 $\pm$ 59 <sup>a</sup> (35)	379 $\pm$ 123 <sup>a</sup> (73)	91 $\pm$ 71 (41)	43 $\pm$ 268 (43)	96 $\pm$ 78 (45)
8 to < 12	161 $\pm$ 38 (23)	103 $\pm$ 39 <sup>a</sup> (23)	237 $\pm$ 67 <sup>a</sup> (40)	36 $\pm$ 30 (17)	21 $\pm$ 133 (21)	38 $\pm$ 33 (19)
All stems (< 12)	5459 $\pm$ 1192 (715)	6868 $\pm$ 1946 <sup>a</sup> (1155)	3642 $\pm$ 932 <sup>a</sup> (549)	4175 $\pm$ 1364 (791)	5836 $\pm$ 23983 (3799)	4001 $\pm$ 1415 (816)

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)		
	Washington		
	Combined (n = 62)	Nest (n = 50)	Random (n = 12)
0 to < 2.5	4196 $\pm$ 776 (465)	4433 $\pm$ 877 (523)	3204 $\pm$ 1794 (999)
2.5 to < 5	587 $\pm$ 119 (71)	604 $\pm$ 132 (79)	520 $\pm$ 317 (176)
5 to < 8	246 $\pm$ 57 (34)	245 $\pm$ 64 (38)	248 $\pm$ 146 (81)
8 to < 12	120 $\pm$ 25 (15)	122 $\pm$ 28 (17)	113 $\pm$ 58 (32)
All stems (< 12)	5149 $\pm$ 802 (480)	5405 $\pm$ 889 (530)	4085 $\pm$ 2019 (1124)

<sup>1</sup> No stem data available from Arizona.

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 5. Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Arizona. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm 90\%$ confidence interval (SE)					
	BE			KE		
	Combined (n = 14)	Nest (n = 4)	Random (n = 10)	Combined (n = 50)	Nest (n = 10)	Random (n = 40)
Grass	31.9 $\pm$ 10.4 (5.9)	13.5 $\pm$ 3.1 (1.3)	39.3 $\pm$ 12.8 (7)	36.6 $\pm$ 5.1 (3.0)	30.3 $\pm$ 9.4 (5.1)	38.2 $\pm$ 6 (3.5)
Forb	0.7 $\pm$ 0.6 (0.3)	0.2 $\pm$ 0.5 (0.2)	0.8 $\pm$ 0.8 (0.5)	0.4 $\pm$ 0.2 (0.1)	0.7 $\pm$ 0.6 (0.3)	0.3 $\pm$ 0.1 (0.1)
Tall shrubs ( $\geq 20$ cm)	0.2 $\pm$ 0.3 (0.2)	0	0.3 $\pm$ 0.5 (0.3)	0.5 $\pm$ 0.3 (0.2)	0.1 $\pm$ 0.1 <sup>a</sup> (0.1)	0.6 $\pm$ 0.4 <sup>a</sup> (0.2)
Short shrubs (< 20 cm)	0	0	0	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.2 (0.1)
Dead stems	0	0	0	0.01 $\pm$ 0.01 (0.01)	0.1 $\pm$ 0.1 (0.1)	0.01 $\pm$ 0.01 (0.01)
Seedlings	0	0	0	0	0	0
Bare ground	10.4 $\pm$ 5.4 (3.1)	2.1 $\pm$ 1.7 (0.7)	13.7 $\pm$ 7 (3.8)	8.7 $\pm$ 3.1 (1.8)	3.3 $\pm$ 2.1 <sup>a</sup> (1.2)	10.1 $\pm$ 3.7 <sup>a</sup> (2.2)
Rock	14.6 $\pm$ 5.0 (2.8)	22.1 $\pm$ 18.2 (7.7)	11.6 $\pm$ 3.9 (2.2)	10.7 $\pm$ 2.2 (1.3)	8.5 $\pm$ 3.3 (1.8)	11.3 $\pm$ 2.7 (1.6)
Litter	63.4 $\pm$ 7.7 (4.3)	75.2 $\pm$ 18.2 (7.7)	58.7 $\pm$ 8.5 (4.6)	61.8 $\pm$ 6.0 (3.6)	75.1 $\pm$ 9.2 <sup>a</sup> (5.0)	58.5 $\pm$ 7.1 <sup>a</sup> (4.2)
Stumps	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.5 (0.2)	0.1 $\pm$ 0.1 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.1 $\pm$ 0.1 (0.1)
Small fuels (7.6 to 23 cm)	0.9 $\pm$ 0.5 (0.3)	1.0 $\pm$ 1.8 (0.8)	0.8 $\pm$ 0.6 (0.3)	1.3 $\pm$ 0.4 (0.3)	2.8 $\pm$ 1.6 <sup>a</sup> (0.9)	0.9 $\pm$ 0.4 <sup>a</sup> (0.2)
Large fuels ( $\geq 23$ cm LED)	0.2 $\pm$ 0.2 (0.1)	0.6 $\pm$ 1.0 (0.4)	0.1 $\pm$ 0.1 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.3 (0.1)
Weeds	0	0	0	0	0	0
Other	0	0	0	0	0	0

Table 5 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Arizona. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)		
	MO		
	Combined (n = 42)	Nest (n = 2)	Random (n = 40)
Grass	34 $\pm$ 4 (2.4)	15.9 $\pm$ 52.7 (8.4)	34.9 $\pm$ 4 (2.4)
Forb	2.7 $\pm$ 0.6 (0.4)	0.9 $\pm$ 5.4 (0.9)	2.8 $\pm$ 0.6 (0.4)
Tall shrubs ( $\geq$ 20 cm)	0.5 $\pm$ 0.2 (0.1)	0	0.5 $\pm$ 0.2 (0.1)
Short shrubs (< 20 cm)	0.01 $\pm$ 0.01 (0.01)	0	0.01 $\pm$ 0.01 (0.01)
Dead stems	0.1 $\pm$ 0.1 (0.01)	0	0.1 $\pm$ 0.1 (0.01)
Seedlings	0.01 $\pm$ 0.01 (0.01)	0	0.01 $\pm$ 0.01 (0.01)
Bare ground	9.8 $\pm$ 2.8 (1.6)	12.1 $\pm$ 60.6 (9.6)	9.7 $\pm$ 2.8 (1.7)
Rock	18 $\pm$ 3 (1.8)	19.2 $\pm$ 15.8 (2.5)	18 $\pm$ 3.1 (1.9)
Litter	65 $\pm$ 4.8 (2.8)	65.9 $\pm$ 14.7 (23.4)	65 $\pm$ 4.8 (2.9)
Stumps	0.01 $\pm$ 0.01 (0.01)	0	0.01 $\pm$ 0.01 (0.01)
Small fuels ( 7.6 to 23 cm)	0.1 $\pm$ 0.1 (0.1)	0.9 $\pm$ 5.4 (0.9)	0.1 $\pm$ 0.1 (0.1)
Large fuels ( $\geq$ 23 cm LED)	0.1 $\pm$ 0.1 (0.1)	0	0.32 $\pm$ 0.28 (0.15)
Weeds	0	0	0
Other	0	0	0

Table 6. Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Colorado. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm 90\%$ confidence interval (SE)					
	DC			PB		
	Combined (n = 8)	Nest (n = 3)	Random (n = 5)	Combined (n = 8)	Nest (n = 3)	Random (n = 5)
Grass	50 $\pm$ 11.4 (6.0)	56.1 $\pm$ 16.3 (5.6)	46.3 $\pm$ 19.3 (9.1)	38.2 $\pm$ 11.6 (6.1)	41.1 $\pm$ 42.3 (14.5)	36.5 $\pm$ 13.6 (6.4)
Forb	10.9 $\pm$ 4.7 (2.5)	10.0 $\pm$ 7.8 (2.7)	11.5 $\pm$ 8.1 (3.8)	12.1 $\pm$ 7.4 (3.9)	14.5 $\pm$ 26.1 (8.9)	10.7 $\pm$ 8.8 (4.1)
Tall shrubs ( $\geq 20$ cm)	17.9 $\pm$ 5.8 (3)	10.0 $\pm$ 8.4 (2.9)	22.6 $\pm$ 6.2 (2.9)	4.5 $\pm$ 3.4 (1.8)	9.4 $\pm$ 8.6 (2.9)	1.5 $\pm$ 1.7 (0.8)
Short shrubs (< 20 cm)	3.3 $\pm$ 2.2 (1.2)	3.3 $\pm$ 2.8 (1.0)	3.3 $\pm$ 4 (1.9)	2.5 $\pm$ 1.5 (0.8)	3.9 $\pm$ 4.3 (1.5)	1.7 $\pm$ 1.6 (0.7)
Dead stems	0.7 $\pm$ 1 (0.5)	0	1.2 $\pm$ 1.7 (0.8)	0.8 $\pm$ 0.8 (0.4)	0	1.3 $\pm$ 1.3 (0.6)
Seedlings	0.9 $\pm$ 0.9 (0.5)	0.6 $\pm$ 1.7 (0.6)	1.2 $\pm$ 1.5 (0.7)	1 $\pm$ 1.1 (0.6)	1.9 $\pm$ 4.5 (1.6)	0.5 $\pm$ 0.7 (0.3)
Bare ground	5.2 $\pm$ 3.5 (1.9)	7.2 $\pm$ 9.3 (3.2)	4 $\pm$ 5.1 (2.4)	1 $\pm$ 1.1 (0.6)	0.8 $\pm$ 1.4 (0.5)	1.2 $\pm$ 2.1 (1.0)
Rock	1.3 $\pm$ 1.4 (0.7)	0	2 $\pm$ 2.3 (1.1)	2.7 $\pm$ 2.6 (1.3)	1.1 $\pm$ 2.2 (0.7)	3.7 $\pm$ 4.4 (2.1)
Litter	89.1 $\pm$ 5.7 (3)	86.1 $\pm$ 21.1 (7.2)	90.8 $\pm$ 6 (2.8)	91.9 $\pm$ 2.9 (1.5)	91.7 $\pm$ 7.5 (2.6)	92 $\pm$ 4.6 (2.1)
Stumps	0	0	0	0	0	0
Small fuels (7.6 to 23 cm)	3.1 $\pm$ 2.9 (1.6)	6.9 $\pm$ 9.4 (3.2)	0.8 $\pm$ 0.8 (0.4)	3.2 $\pm$ 2.1 (1.1)	6.1 $\pm$ 5.6 (1.9)	1.5 $\pm$ 1.4 (0.7)
Large fuels ( $\geq 23$ cm LED)	1.9 $\pm$ 1.3 (0.7)	0.8 $\pm$ 2.4 (0.8)	2.5 $\pm$ 1.9 (0.9)	0.9 $\pm$ 0.6 (0.3)	1.7 $\pm$ 1.4 (0.5)	0.5 $\pm$ 0.7 (0.3)
Weeds	0.1 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.8 (0.3)	0	1.2 $\pm$ 1.2 (0.6)	0	1.8 $\pm$ 1.8 (0.9)
Other	0.2 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.8 (0.3)	0.2 $\pm$ 0.3 (0.2)	0.7 $\pm$ 0.8 (0.4)	0.8 $\pm$ 1.4 (0.5)	0.7 $\pm$ 1.4 (0.7)

Table 6 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Colorado. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	SCN			SCS		
	Combined (n = 22)	Nest (n = 3)	Random (n = 19)	Combined (n = 22)	Nest (n = 4)	Random (n = 18)
Grass	33.3 $\pm$ 5.9 (3.4)	19.7 $\pm$ 19.5 (6.7)	35.5 $\pm$ 6.3 (3.7)	27.8 $\pm$ 6.4 (3.7)	24.6 $\pm$ 20 (8.5)	28.5 $\pm$ 7.4 (4.3)
Forb	10.6 $\pm$ 3.9 (2.3)	20.6 $\pm$ 34.9 (11.9)	9.1 $\pm$ 3.2 (1.9)	8.9 $\pm$ 2.5 (1.5)	13.7 $\pm$ 10.1 (4.3)	7.8 $\pm$ 2.5 (1.5)
Tall shrubs ( $\geq$ 20 cm)	16.6 $\pm$ 5.1 (3)	12.5 $\pm$ 12.9 (4.4)	17.3 $\pm$ 5.9 (3.4)	17.5 $\pm$ 5.1 (3.0)	11.9 $\pm$ 12.3 (5.2)	18.7 $\pm$ 6 (3.4)
Short shrubs (< 20 cm)	9.1 $\pm$ 4.9 (2.9)	5.3 $\pm$ 8.2 (2.8)	9.7 $\pm$ 5.7 (3.3)	4.8 $\pm$ 2.4 (1.4)	4.8 $\pm$ 4.4 (1.9)	4.8 $\pm$ 2.9 (1.7)
Dead stems	0.8 $\pm$ 0.4 (0.2)	0	0.9 $\pm$ 0.5 (0.3)	1.6 $\pm$ 0.9 (0.5)	3.3 $\pm$ 5.4 (2.3)	1.2 $\pm$ 0.8 (0.4)
Seedlings	1.4 $\pm$ 0.7 (0.4)	2.8 $\pm$ 6.9 (2.4)	1.2 $\pm$ 0.5 (0.3)	2.7 $\pm$ 1 (0.6)	4.4 $\pm$ 1 (0.4)	2.3 $\pm$ 1.1 (0.7)
Bare ground	2.1 $\pm$ 1.7 (1.0)	3.1 $\pm$ 9 (3.1)	2 $\pm$ 1.9 (1.1)	0.9 $\pm$ 0.4 (0.3)	1.3 $\pm$ 1.9 (0.8)	0.8 $\pm$ 0.5 (0.3)
Rock	0.9 $\pm$ 0.6 (0.4)	1.7 $\pm$ 4.9 (1.7)	0.7 $\pm$ 0.6 (0.4)	0.6 $\pm$ 0.6 (0.3)	0	0.8 $\pm$ 0.7 (0.4)
Litter	92.0 $\pm$ 2.7 (1.6)	80.0 $\pm$ 10.6 (3.6)	93.9 $\pm$ 2.3 (1.3)	93.5 $\pm$ 2 (1.1)	94.2 $\pm$ 4.6 (1.9)	93.3 $\pm$ 2.3 (1.3)
Stumps	0.4 $\pm$ 0.6 (0.4)	0	0.4 $\pm$ 0.8 (0.4)	0	0	0
Small fuels (7.6 to 23 cm)	3.5 $\pm$ 1.2 (0.7)	7.2 $\pm$ 7.1 (2.4)	2.9 $\pm$ 1.1 (0.6)	2.8 $\pm$ 1.1 (0.6)	1.9 $\pm$ 2 (0.9)	3 $\pm$ 1.3 (0.7)
Large fuels ( $\geq$ 23 cm LED)	1.9 $\pm$ 1.3 (0.8)	9.4 $\pm$ 5.6 (1.9)	0.7 $\pm$ 0.6 (0.4)	1 $\pm$ 0.4 (0.3)	2.3 $\pm$ 2 (0.9)	0.7 $\pm$ 0.4 (0.2)
Weeds	0.1 $\pm$ 0.2 (0.1)	0	0.1 $\pm$ 0.2 (0.1)	0	0	0
Other	0.1 $\pm$ 0.1 (0.1)	0.6 $\pm$ 1.7 (0.6)	0	0.5 $\pm$ 0.6 (0.3)	0	0.7 $\pm$ 0.7 (0.4)

Table 7. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Colorado. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	DC			PB		
	Combined (n = 8)	Nest (n = 5)	Random (n = 5)	Combined (n = 8)	Nest (n = 3)	Random (n = 5)
0 to < 2.5	24632 $\pm$ 11357 (5995)	13539 $\pm$ 8680 (2973)	31288 $\pm$ 17636 (8273)	8212 $\pm$ 4718 (2490)	16241 $\pm$ 5876 (2012)	3395 $\pm$ 1759 (825)
2.5 to < 5	504 $\pm$ 448 (237)	325 $\pm$ 950 (325)	611 $\pm$ 730 (342)	249 $\pm$ 181 (96)	453 $\pm$ 537 (184)	127 $\pm$ 159 (75)
5 to < 8	202 $\pm$ 175 (92)	254 $\pm$ 620 (212)	170 $\pm$ 208 (98)	53 $\pm$ 42 (22)	57 $\pm$ 165 (57)	51 $\pm$ 44 (21)
8 to < 12	154 $\pm$ 246 (130)	42 $\pm$ 72 (25)	221 $\pm$ 448 (210)	11 $\pm$ 20 (11)	28 $\pm$ 83 (28)	0
All stems (< 12)	25491 $\pm$ 11996 (6332)	14161 $\pm$ 10055 (3444)	32289 $\pm$ 18814 (8825)	8526 $\pm$ 4890 (2581)	16779 $\pm$ 6608 (2263)	3574 $\pm$ 1869 (877)

Table 7 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Colorado. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	SCN			SCS		
	Combined (n = 22)	Nest (n = 3)	Random (n = 19)	Combined (n = 22)	Nest (n = 4)	Random (n = 18)
0 to < 2.5	18728 $\pm$ 2852 (1657)	23809 $\pm$ 18939 (6486)	17926 $\pm$ 2855 (1646)	21259 $\pm$ 3762 (2186)	17157 $\pm$ 6069 (2579)	22171 $\pm$ 4499 (2586)
2.5 to < 5	579 $\pm$ 216 (125)	212 $\pm$ 312 (107)	637 $\pm$ 243 (140)	392 $\pm$ 126 (73)	244 $\pm$ 256 (109)	424 $\pm$ 149 (86)
5 to < 8	421 $\pm$ 158 (92)	99 $\pm$ 180 (62)	471 $\pm$ 176 (102)	170 $\pm$ 85 (49)	255 $\pm$ 324 (138)	151 $\pm$ 93 (53)
8 to < 12	87 $\pm$ 51 (30)	0	100 $\pm$ 58 (33)	212 $\pm$ 250 (145)	64 $\pm$ 119 (50)	245 $\pm$ 308 (177)
All stems (< 12)	19814 $\pm$ 2930 (1703)	24121 $\pm$ 18885 (6468)	19134 $\pm$ 3001 (1731)	22033 $\pm$ 3816 (2218)	17720 $\pm$ 6547 (2782)	22991 $\pm$ 4545 (2612)

Table 8. Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm 90\%$ confidence interval (SE)					
	BH			DM		
	Combined (n = 26)	Nest (n = 5)	Random (n = 21)	Combined (n = 9)	Nest (n = 3)	Random (n = 6)
Grass	36.4 $\pm$ 5.4 (3.2)	43 $\pm$ 13.1 (6.2)	34.9 $\pm$ 6.2 (3.6)	32.4 $\pm$ 11.2 (6)	40 $\pm$ 34 (11.7)	28.6 $\pm$ 14.5 (7.2)
Forb	11.7 $\pm$ 3.3 (2)	7.5 $\pm$ 4 (1.9)	12.6 $\pm$ 4 (2.3)	8.2 $\pm$ 2.9 (1.5)	7.5 $\pm$ 12 (4.1)	8.6 $\pm$ 3 (1.5)
Tall shrubs ( $\geq 20$ cm)	17.3 $\pm$ 5.7 (3.3)	12.2 $\pm$ 7.3 (3.4)	18.5 $\pm$ 7 (4)	17.6 $\pm$ 9.6 (5.1)	17.2 $\pm$ 39.5 (13.5)	17.8 $\pm$ 10.5 (5.2)
Short shrubs (< 20 cm)	8.3 $\pm$ 2.3 (1.3)	7.5 $\pm$ 4.8 (2.2)	8.5 $\pm$ 2.7 (1.6)	14 $\pm$ 5.6 (3.0)	10.5 $\pm$ 22.8 (7.8)	15.7 $\pm$ 5.5 (2.8)
Dead stems	2.8 $\pm$ 1.1 (0.7)	3.5 $\pm$ 2.9 (1.4)	2.6 $\pm$ 1.3 (0.8)	3.8 $\pm$ 3.6 (1.9)	1.4 $\pm$ 4.1 (1.4)	5 $\pm$ 5.5 (2.8)
Seedlings	0.1 $\pm$ 0.2 (0.1)	0	0.2 $\pm$ 0.2 (0.1)	0.6 $\pm$ 0.8 (0.4)	1.1 $\pm$ 3.2 (1.1)	0.4 $\pm$ 0.8 (0.4)
Bare ground	20.9 $\pm$ 7.2 (4.2)	25.3 $\pm$ 16.2 (7.6)	19.9 $\pm$ 8.6 (5)	18.2 $\pm$ 12.8 (6.9)	10 $\pm$ 14.7 (5)	22.4 $\pm$ 20.1 (10)
Rock	2.5 $\pm$ 1.5 (0.9)	4 $\pm$ 3.8 (1.8)	2.1 $\pm$ 1.7 (1)	2.7 $\pm$ 2.4 (1.3)	2.5 $\pm$ 7.3 (2.5)	2.8 $\pm$ 3.3 (1.6)
Litter	71 $\pm$ 8.5 (5.0)	67.7 $\pm$ 19.1 (9)	71.8 $\pm$ 10 (5.8)	76.2 $\pm$ 14 (7.5)	83.9 $\pm$ 21.3 (7.3)	72.4 $\pm$ 21.7 (10.8)
Stumps	3.1 $\pm$ 4.9 (2.9)	0	3.8 $\pm$ 6.2 (3.6)	0	0	0
Small fuels (7.6 to 23 cm)	0.4 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.3 (0.2)	0.4 $\pm$ 0.3 (0.2)	0.5 $\pm$ 0.5 (0.3)	0.3 $\pm$ 0.8 (0.3)	0.6 $\pm$ 0.8 (0.4)
Large fuels ( $\geq 23$ cm LED)	1.5 $\pm$ 0.9 (0.5)	0.5 $\pm$ 0.4 <sup>b</sup> (0.2)	1.7 $\pm$ 1.1 <sup>b</sup> (0.6)	1.5 $\pm$ 0.8 (0.4)	2.5 $\pm$ 2.9 (1)	1 $\pm$ 0.7 (0.3)
Weeds	0	0	0	0	0	0
Other	1.7 $\pm$ 0.9 (0.5)	1.8 $\pm$ 1 (0.5)	1.7 $\pm$ 1.1 (0.6)	3.9 $\pm$ 2.6 (1.4)	0.6 $\pm$ 1.7 (0.6)	5.6 $\pm$ 3.4 (1.7)

Table 8 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	DO			FC		
	Combined (n = 13)	Nest (n = 7)	Random (n = 6)	Combined (n = 29)	Nest (n = 8)	Random (n = 21)
Grass	30.6 $\pm$ 7.9 (4.4)	30.5 $\pm$ 10.9 (5.6)	30.7 $\pm$ 15.2 (7.5)	28.9 $\pm$ 3.5 (2.1)	21.8 $\pm$ 6.6 <sup>a</sup> (3.5)	31.6 $\pm$ 4 <sup>a</sup> (2.3)
Forb	11.5 $\pm$ 4.4 (2.5)	15.5 $\pm$ 7 (3.6)	6.8 $\pm$ 4.5 (2.2)	14 $\pm$ 3.8 (2.2)	11.1 $\pm$ 6.4 (3.4)	15.2 $\pm$ 4.9 (2.8)
Tall shrubs ( $\geq$ 20 cm)	17.7 $\pm$ 6.1 (3.4)	16.3 $\pm$ 7.5 (3.9)	19.3 $\pm$ 12.5 (6.2)	24.2 $\pm$ 5.5 (3.3)	10.7 $\pm$ 7.7 <sup>a</sup> (4.1)	29.3 $\pm$ 6.3 <sup>a</sup> (3.7)
Short shrubs (< 20 cm)	11.1 $\pm$ 3.8 (2.1)	11.5 $\pm$ 5.7 (3)	10.6 $\pm$ 6.7 (3.3)	12.9 $\pm$ 2.2 (1.3)	8.1 $\pm$ 4.1 <sup>a</sup> (2.2)	14.7 $\pm$ 2.5 <sup>a</sup> (1.4)
Dead stems	5.7 $\pm$ 3.1 (1.7)	3.9 $\pm$ 1.3 (0.7)	7.8 $\pm$ 7.4 (3.7)	6.2 $\pm$ 1.5 (0.9)	3.8 $\pm$ 1.9 <sup>a</sup> (1)	7.1 $\pm$ 1.9 <sup>a</sup> (1.1)
Seedlings	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.6 (0.3)	0.4 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.4 (0.2)	0.4 $\pm$ 0.5 (0.3)
Bare ground	21.8 $\pm$ 8.5 (4.8)	18.6 $\pm$ 15 (7.7)	25.6 $\pm$ 10.9 (5.4)	28.4 $\pm$ 5.3 (3.1)	38.8 $\pm$ 11.2 <sup>a</sup> (5.9)	24.4 $\pm$ 5.7 <sup>a</sup> (3.3)
Rock	5.3 $\pm$ 5.5 (3.1)	0.5 $\pm$ 0.7 (0.4)	11.0 $\pm$ 12.3 (6.1)	0.9 $\pm$ 0.7 (0.4)	0.7 $\pm$ 0.6 (0.3)	0.9 $\pm$ 0.9 (0.5)
Litter	70.8 $\pm$ 10.8 (6.1)	78.6 $\pm$ 14.2 (7.3)	61.8 $\pm$ 18.6 (9.2)	64.8 $\pm$ 6.8 (4)	56.1 $\pm$ 12.7 (6.7)	68.2 $\pm$ 8.3 (4.8)
Stumps	0	0	0	3.4 $\pm$ 5.7 (3.4)	0	4.6 $\pm$ 8 (4.6)
Small fuels (7.6 to 23 cm)	0.2 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.3 (0.1)	0.3 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.3 (0.1)	0.3 $\pm$ 0.2 (0.1)
Large fuels ( $\geq$ 23 cm LED)	1.9 $\pm$ 1.5 (0.9)	2.6 $\pm$ 2.9 (1.5)	1 $\pm$ 1.1 (0.5)	1.6 $\pm$ 1 (0.6)	1.8 $\pm$ 2.1 (1.1)	1.5 $\pm$ 1.3 (0.7)
Weeds	0	0	0	0	0	0
Other	1.8 $\pm$ 1.6 (0.9)	2 $\pm$ 2.9 (1.5)	1.5 $\pm$ 2.2 (1.1)	3 $\pm$ 1.2 (0.7)	3.6 $\pm$ 3.5 (1.8)	2.8 $\pm$ 1.2 (0.7)

Table 8 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	PC			WM		
	Combined (n = 11)	Nest (n = 5)	Random (n = 6)	Combined (n = 4)	Nest (n = 3)	Random (n = 1)
Grass	16.7 $\pm$ 5.1 (2.8)	16.3 $\pm$ 5.9 (2.8)	17.1 $\pm$ 9.9 (4.9)	35.8 $\pm$ 26.1 (11.1)	32.5 $\pm$ 47.3 (14.9)	45.8
Forb	4.2 $\pm$ 2.3 (1.3)	1.8 $\pm$ 1.4 (0.7)	6.1 $\pm$ 4.1 (2)	4.6 $\pm$ 2.6 (1.1)	4.2 $\pm$ 4.2 (1.4)	5.8
Tall shrubs ( $\geq$ 20 cm)	17.8 $\pm$ 8 (4.4)	16.5 $\pm$ 4.6 (2.2)	18.9 $\pm$ 16.5 (8.2)	31.9 $\pm$ 16.2 (6.9)	37.8 $\pm$ 14.8 (5.1)	14.2
Short shrubs (< 20 cm)	12 $\pm$ 4.1 (2.2)	12.8 $\pm$ 5.6 (2.6)	11.4 $\pm$ 7.4 (3.7)	21.3 $\pm$ 12.9 (5.5)	22.8 $\pm$ 21.8 (7.4)	16.7
Dead stems	3.2 $\pm$ 1.3 (0.7)	3.7 $\pm$ 2.3 (1.1)	2.8 $\pm$ 2.1 (1.1)	12.7 $\pm$ 6.7 (2.8)	13.3 $\pm$ 11.5 (3.9)	10.8
Seedlings	0.8 $\pm$ 0.7 (0.4)	0.8 $\pm$ 0.5 (1.1)	0.8 $\pm$ 1.1 (0.6)	0.8 $\pm$ 0.01 (0.01)	0.8 $\pm$ 0.01 (0.01)	0.8
Bare ground	8.9 $\pm$ 4.8 (2.6)	9.5 $\pm$ 8.3 (3.9)	8.3 $\pm$ 7.9 (3.9)	13.6 $\pm$ 16.5 (7)	6.7 $\pm$ 5.1 (1.7)	34.2
Rock	19.4 $\pm$ 8.1 (4.5)	15.2 $\pm$ 12.3 (5.8)	22.9 $\pm$ 13.6 (6.8)	1.7 $\pm$ 3.9 (1.7)	2.2 $\pm$ 6.5 (2.2)	0
Litter	67.4 $\pm$ 9.5 (5.3)	69.0 $\pm$ 16.1 (7.5)	66.1 $\pm$ 15.9 (7.9)	80.4 $\pm$ 17.2 (7.3)	86.7 $\pm$ 15.6 (5.3)	61.7
Stumps	0	0	0	0	0	0
Small fuels (7.6 to 23 cm)	0.9 $\pm$ 0.7 (0.4)	0.7 $\pm$ 1 (0.5)	1.1 $\pm$ 1.1 (0.6)	1 $\pm$ 0.5 (0.2)	0.8 $\pm$ 0.01 (0.01)	1.7
Large fuels ( $\geq$ 23 cm LED)	2.3 $\pm$ 2.4 (1.3)	4 $\pm$ 6 (2.8)	1 $\pm$ 1.3 (0.7)	0.4 $\pm$ 0.5 (0.2)	0.3 $\pm$ 0.8 (0.3)	0.8
Weeds	0	0	0	0	0	0
Other	2.7 $\pm$ 1.8 (1)	2.2 $\pm$ 0.9 (0.4)	3.1 $\pm$ 3.8 (1.9)	1.5 $\pm$ 2 (0.9)	1.1 $\pm$ 3.2 (1.1)	2.5

Table 9. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)								
	BH			DM			DO		
	Combined (n = 25)	Nest (n = 5)	Random (n = 20)	Combined (n = 9)	Nest (n = 3)	Random (n = 6)	Combined (n = 7)	Nest (n = 1)	Random (n = 6)
0 to < 2.5	9103 $\pm$ 3129 (1829)	7291 $\pm$ 6291 (2951)	9556 $\pm$ 3776 (2184)	11204 $\pm$ 7846 (4219)	13369 $\pm$ 36129 (12373)	10122 $\pm$ 6806 (3377)	11320 $\pm$ 5374 (2766)	31288 $\pm$ 17636 (8273)	9627 $\pm$ 6499 (3225)
2.5 to < 5	58 $\pm$ 32 (18)	68 $\pm$ 102 (48)	55 $\pm$ 35 (20)	28 $\pm$ 37 (20)	0	43 $\pm$ 59 (29)	127 $\pm$ 151 (78)	0.32 $\pm$ 0.28 (0.15)	142 $\pm$ 144 (72)
5 to < 8	12 $\pm$ 15 (9)	0	15 $\pm$ 19 (11)	0	0	0	6 $\pm$ 12 (6)	0.32 $\pm$ 0.28 (0.15)	14 $\pm$ 29 (14)
8 to < 12	0	0	0	0	0	0	0	0.32 $\pm$ 0.28 (0.15)	14 $\pm$ 29 (14)
All stems (< 12)	9172 $\pm$ 3131 (1830)	7359 $\pm$ 6284 (2948)	9626 $\pm$ 3779 (2186)	11233 $\pm$ 7852 (4223)	13369 $\pm$ 36129 (12373)	10165 $\pm$ 6831 (3390)	11453 $\pm$ 5303 (2729)	0.32 $\pm$ 0.28 (0.15)	9797 $\pm$ 6528 (3240)

Table 9 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)								
	FC			PC			WM		
	Combined (n = 28)	Nest (n = 8)	Random (n = 20)	Combined (n = 11)	Nest (n = 5)	Random (n = 6)	Combined (n = 4)	Nest (n = 3)	Random (n = 1)
0 to < 2.5	16319 $\pm$ 4506 (2646)	7146 $\pm$ 6033 (3185)	19988 $\pm$ 5455 (3154)	7134 $\pm$ 2382 (1314)	6723 $\pm$ 2970 (1393)	7477 $\pm$ 4499 (2233)	17433 $\pm$ 14239 (6051)	20810 $\pm$ 20731 (7100)	7300
2.5 to < 5	138 $\pm$ 64 (38)	69 $\pm$ 101 (53)	165 $\pm$ 82 (47)	193 $\pm$ 215 (119)	25 $\pm$ 36 (17)	333 $\pm$ 417 (207)	191 $\pm$ 272 (116)	156 $\pm$ 455 (156)	297
5 to < 8	6 $\pm$ 6 (4)	11 $\pm$ 20 (11)	4 $\pm$ 5 (3)	4 $\pm$ 7 (4)	0	7 $\pm$ 14 (7)	53 $\pm$ 95 (40)	57 $\pm$ 165 (57)	42
8 to < 12	11 $\pm$ 11 (6)	21 $\pm$ 40 (21)	6 $\pm$ 6 (3)	0	0	0	21 $\pm$ 50 (21)	28 $\pm$ 83 (28)	0
All stems (< 12)	16473 $\pm$ 4525 (2657)	7247 $\pm$ 5988 (3161)	20164 $\pm$ 5485 (3172)	7331 $\pm$ 2512 (1386)	6748 $\pm$ 2964 (1390)	7816 $\pm$ 4790 (2377)	17698 $\pm$ 14425 (6130)	21051 $\pm$ 21190 (7257)	7639

Table 10. Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Montana. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)	
	MT	ST
	Random (n = 20)	Random (n = 20)
Grass	24.7 $\pm$ 5.9 (3.4)	11.3 $\pm$ 4.7 (2.7)
Forb	18.2 $\pm$ 6.5 (3.8)	3.2 $\pm$ 1.4 (0.8)
Tall shrubs ( $\geq$ 20 cm)	8.5 $\pm$ 3.5 (2.0)	2.5 $\pm$ 1.4 (0.8)
Short shrubs (< 20 cm)	15.1 $\pm$ 4 (2.3)	4.4 $\pm$ 1.8 (1.0)
Dead stems	2.2 $\pm$ 1.2 (0.7)	0.3 $\pm$ 0.2 (0.1)
Seedlings	0.3 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.4 (0.3)
Bare ground	0.5 $\pm$ 0.4 (0.2)	0.2 $\pm$ 0.2 (0.1)
Rock	4.3 $\pm$ 2.7 (1.5)	3 $\pm$ 1.5 (0.9)
Litter	87.4 $\pm$ 2.4 (1.4)	87.2 $\pm$ 1.3 (0.8)
Stumps	0	0.1 $\pm$ 0.1 (0.1)
Small fuels (7.6 to 23 cm)	2.2 $\pm$ 0.9 (0.5)	1.4 $\pm$ 0.6 (0.3)
Large fuels ( $\geq$ 23 cm LED)	0.5 $\pm$ 0.5 (0.3)	1.2 $\pm$ 0.5 (0.3)
Weeds	0	0
Other	0	0

Table 11. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in Montana. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)	
	MT	ST
	Random (n = 20)	Random (n = 20)
0 to < 2.5	3631 $\pm$ 2479 (1434)	301 $\pm$ 184 (106)
2.5 to < 5	110 $\pm$ 87 (50)	106 $\pm$ 74 (43)
5 to < 8	59 $\pm$ 31 (18)	59 $\pm$ 33 (19)
8 to < 12	57 $\pm$ 14 (8)	55 $\pm$ 34 (20)
All stems (< 12)	3858 $\pm$ 2494 (1442)	522 $\pm$ 228 (132)

Table 12. Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in New Mexico. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	CP			LJ		
	Combined (n=35)	Nest (n=10)	Random (n=25)	Combined (n=29)	Nest (n=4)	Random (n=25)
Grass	32.5 $\pm$ 5.3 (3.1)	37.1 $\pm$ 8.7 (4.8)	30.7 $\pm$ 6.7 (3.9)	35.6 $\pm$ 5.3 (3.1)	42.5 $\pm$ 6.6 <sup>a</sup> (2.8)	34.5 $\pm$ 6 <sup>a</sup> (3.5)
Forb	9.4 $\pm$ 2.9 (1.7)	10.9 $\pm$ 4 (2.2)	8.9 $\pm$ 3.8 (2.2)	12.6 $\pm$ 3.7 (2.1)	7.3 $\pm$ 2.3 <sup>a</sup> (1)	13.4 $\pm$ 4.2 <sup>a</sup> (2.5)
Tall shrubs ( $\geq$ 20 cm)	3.2 $\pm$ 1.4 (0.8)	1.1 $\pm$ 1.1 <sup>a</sup> (0.6)	4 $\pm$ 1.9 <sup>a</sup> (1.1)	0.8 $\pm$ 0.4 (0.2)	0.2 $\pm$ 0.5 <sup>a</sup> (0.2)	0.9 $\pm$ 0.4 <sup>a</sup> (0.2)
Short shrubs (< 20 cm)	0.6 $\pm$ 0.3 (0.2)	0.8 $\pm$ 0.7 (0.4)	0.5 $\pm$ 0.3 (0.2)	0.1 $\pm$ 0.1 (0.01)	0	0.1 $\pm$ 0.1 (0.1)
Dead stems	0.8 $\pm$ 0.7 (0.4)	0.8 $\pm$ 0.4 (0.2)	0.8 $\pm$ 1 (0.6)	0.2 $\pm$ 0.2 (0.1)	0	0.2 $\pm$ 0.3 (0.1)
Seedlings	0.01 $\pm$ 0.01 (0.01)	0.1 $\pm$ 0.1 (0.1)	0	0.01 $\pm$ 0.01 (0.01)	0	0.01 $\pm$ 0.1 (0.01)
Bare ground	12.6 $\pm$ 3.6 (2.1)	15.2 $\pm$ 9 (4.9)	11.5 $\pm$ 3.9 (2.3)	14.7 $\pm$ 4.7 (2.8)	7.1 $\pm$ 5.7 <sup>a</sup> (2.4)	16 $\pm$ 5.3 <sup>a</sup> (3.1)
Rock	7.2 $\pm$ 1.5 (0.9)	4 $\pm$ 1.5 <sup>a</sup> (0.8)	8.4 $\pm$ 1.8 <sup>a</sup> (1.1)	5.3 $\pm$ 1.4 (0.8)	3.1 $\pm$ 2.8 (1.2)	5.7 $\pm$ 1.6 (0.9)
Litter	77.2 $\pm$ 4.1 (2.4)	78.4 $\pm$ 8.9 (4.9)	76.7 $\pm$ 4.8 (2.8)	78.2 $\pm$ 4.9 (2.9)	86.7 $\pm$ 7 <sup>a</sup> (3)	76.8 $\pm$ 5.6 <sup>a</sup> (3.2)
Stumps	0.4 $\pm$ 0.3 (0.2)	0.4 $\pm$ 0.6 (0.3)	0.4 $\pm$ 0.4 (0.2)	0.1 $\pm$ 0.1 (0.01)	0	0.1 $\pm$ 0.1 (0.1)
Small fuels (7.6 to 23 cm)	1.8 $\pm$ 0.5 (0.3)	1.2 $\pm$ 0.6 (0.3)	2 $\pm$ 0.7 (0.4)	1 $\pm$ 0.5 (0.3)	2.9 $\pm$ 4 (1.7)	0.6 $\pm$ 0.3 (0.2)
Large fuels ( $\geq$ 23 cm LED)	0.6 $\pm$ 0.3 (0.2)	0.4 $\pm$ 0.3 (0.2)	0.7 $\pm$ 0.4 (0.2)	0.3 $\pm$ 0.3 (0.2)	0.4 $\pm$ 0.5 (0.2)	0.3 $\pm$ 0.4 (0.2)
Weeds	0.01 $\pm$ 0.1 (0.01)	0.2 $\pm$ 0.3 (0.2)	0	0.2 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.5 (0.2)	0.2 $\pm$ 0.2 (0.1)
Other	3.6 $\pm$ 1.1 (0.7)	2.8 $\pm$ 1.4 (0.8)	3.9 $\pm$ 1.5 (0.9)	3.4 $\pm$ 1.2 (0.7)	1.2 $\pm$ 1 (0.4)	3.8 $\pm$ 1.3 (0.8)

Table 13. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in New Mexico. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	CP			LJ		
	Combined (n = 35)	Nest (n = 10)	Random (n = 25)	Combined (n = 29)	Nest (n = 4)	Random (n = 25)
0 to < 2.5	3137 $\pm$ 1516 (896)	1677 $\pm$ 1190 (649)	3721 $\pm$ 2081 (1217)	1193 $\pm$ 875 (515)	191 $\pm$ 206 <sup>b</sup> (88)	1353 $\pm$ 1013 <sup>b</sup> (592)
2.5 to < 5	384 $\pm$ 107 (64)	361 $\pm$ 240 (131)	394 $\pm$ 126 (74)	155 $\pm$ 69 (41)	149 $\pm$ 221 (94)	156 $\pm$ 78 (46)
5 to < 8	14 $\pm$ 6 (4)	17 $\pm$ 13 (7)	13 $\pm$ 8 (5)	22 $\pm$ 15 (9)	32 $\pm$ 75 (32)	20 $\pm$ 16 (9)
8 to < 12	2 $\pm$ 3 (2)	0	3 $\pm$ 4 (2)	0	0	0
All stems (< 12)	3538 $\pm$ 1589 (940)	2054 $\pm$ 1369 (747)	4132 $\pm$ 2175 (1272)	1370 $\pm$ 882 (518)	372 $\pm$ 411 <sup>b</sup> (174)	1530 $\pm$ 1020 <sup>b</sup> (596)

Table 14. Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Oregon. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	CN			TN		
	Combined (n = 13)	Nest (n = 12)	Random (n = 1)	Combined (n = 31)	Nest (n = 11)	Random (n = 20)
Grass	10.8 $\pm$ 6.2 (3.5)	10.4 $\pm$ 6.8 (3.8)	15	8 $\pm$ 2.1 (1.2)	9.8 $\pm$ 3.9 (2.1)	7.2 $\pm$ 2.6 (1.5)
Forb	4.3 $\pm$ 5.5 (3.1)	4.7 $\pm$ 6 (3.3)	0	3.1 $\pm$ 1.2 (0.7)	3.4 $\pm$ 2.9 (1.6)	3 $\pm$ 1.4 (0.8)
Tall shrubs ( $\geq$ 20 cm)	7.9 $\pm$ 3.3 (1.8)	7.5 $\pm$ 3.5 (1.9)	12.5	3.4 $\pm$ 1.5 (0.9)	4.4 $\pm$ 3.8 (2.1)	3 $\pm$ 1.5 (0.8)
Short shrubs (< 20 cm)	2 $\pm$ 1.9 (1.1)	1.9 $\pm$ 2.1 (1.2)	3.3	4.4 $\pm$ 1.6 (0.9)	4.4 $\pm$ 2.9 (1.6)	4.4 $\pm$ 2 (1.2)
Dead stems	6 $\pm$ 2.4 (1.3)	6 $\pm$ 2.6 (1.5)	5.8	1.9 $\pm$ 0.8 (0.4)	1.8 $\pm$ 0.9 (0.5)	1.9 $\pm$ 1.1 (0.6)
Seedlings	0.6 $\pm$ 0.6 (0.3)	0.6 $\pm$ 0.7 (0.4)	1.7	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.3 (0.2)
Bare ground	9.9 $\pm$ 4.6 (2.6)	8.2 $\pm$ 3.8 (2.1)	30	42.3 $\pm$ 13.6 (8.0)	2 $\pm$ 1.1 (0.6)	61.5 $\pm$ 16.4 (9.5)
Rock	0.7 $\pm$ 1.3 (0.7)	0.8 $\pm$ 1.4 (0.8)	0	1.3 $\pm$ 1 (0.6)	1.4 $\pm$ 1.5 (0.9)	1.2 $\pm$ 1.3 (0.7)
Litter	80.6 $\pm$ 6.2 (3.5)	82.3 $\pm$ 6 (3.3)	60.8	49.5 $\pm$ 12.8 (7.6)	90.2 $\pm$ 4.2 (2.3)	30.1 $\pm$ 14.6 (8.5)
Stumps	0.3 $\pm$ 0.4 (0.2)	0.3 $\pm$ 0.4 (0.2)	0	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.3 (0.2)
Small fuels (7.6 to 23 cm)	3.5 $\pm$ 2 (1.1)	3.5 $\pm$ 2.2 (1.2)	2.5	1 $\pm$ 0.5 (0.3)	2 $\pm$ 1.4 (0.8)	0.5 $\pm$ 0.3 (0.2)
Large fuels ( $\geq$ 23 cm LED)	1.3 $\pm$ 0.9 (0.5)	1.5 $\pm$ 1 (0.5)	0	0.5 $\pm$ 0.3 (0.2)	1.1 $\pm$ 0.7 (0.4)	0.2 $\pm$ 0.2 (0.1)
Weeds	0	0	0	0.5 $\pm$ 0.4 (0.3)	0	0.8 $\pm$ 0.7 (0.4)
Other	1 $\pm$ 1.1 (0.6)	1 $\pm$ 1.2 (0.7)	0	0.4 $\pm$ 0.2 (0.1)	0.7 $\pm$ 0.4 (0.2)	0.3 $\pm$ 0.2 (0.1)

Table 14 (con't). Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Oregon. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm 90\%$ confidence interval (SE)					
	CS			TS		
	Combined (n = 7)	Nest (n = 5)	Random (n = 2)	Combined (n = 21)	Nest (n = 12)	Random (n = 9)
Grass	16.4 $\pm$ 18.2 (9.4)	22.7 $\pm$ 26.1 (12.3)	0.8 $\pm$ 0.01 (0.01)	18 $\pm$ 8.7 (5)	30.1 $\pm$ 12.7 (7.1)	1.9 $\pm$ 1.4 (0.8)
Forb	2.7 $\pm$ 4.1 (2.1)	3.8 $\pm$ 6.2 (2.9)	0	6.7 $\pm$ 3 (1.7)	11.1 $\pm$ 4.1 (2.3)	0.8 $\pm$ 0.5 (0.3)
Tall shrubs ( $\geq 20$ cm)	1.6 $\pm$ 2.5 (1.3)	1.8 $\pm$ 3.9 (1.8)	0.9 $\pm$ 0.01 (0.01)	0	0	0
Short shrubs (< 20 cm)	0.4 $\pm$ 0.5 (0.3)	0.3 $\pm$ 0.7 (0.3)	0.4 $\pm$ 5.4 (0.9)	0.3 $\pm$ 0.3 (0.2)	0.5 $\pm$ 0.6 (0.3)	0
Dead stems	0.7 $\pm$ 1.4 (0.7)	1 $\pm$ 2.1 (1.0)	0	0.4 $\pm$ 0.5 (0.3)	0.6 $\pm$ 0.9 (0.5)	0.1 $\pm$ 0.2 (0.1)
Seedlings	0.2 $\pm$ 0.3 (0.1)	0.2 $\pm$ 0.3 (0.2)	0.4 $\pm$ 2.5 (0.4)	0.5 $\pm$ 0.4 (0.2)	0.8 $\pm$ 0.7 (0.4)	0.1 $\pm$ 0.2 (0.1)
Bare ground	11.9 $\pm$ 6.6 (3.4)	7.2 $\pm$ 3.6 (1.7)	23.8 $\pm$ 23.7 (3.8)	9.6 $\pm$ 3.6 (2.1)	10.6 $\pm$ 5.9 (3.3)	8.4 $\pm$ 4.3 (2.3)
Rock	0.1 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.3 (0.2)	0	0.8 $\pm$ 1.3 (0.8)	1.3 $\pm$ 2.4 (1.3)	0
Litter	75.5 $\pm$ 11.5 (5.9)	74.7 $\pm$ 18.1 (8.5)	77.5 $\pm$ 15.8 (2.5)	78.7 $\pm$ 6.5 (3.8)	71.5 $\pm$ 10.1 (5.7)	88.2 $\pm$ 4.3 (2.3)
Stumps	1.2 $\pm$ 2.3 (1.2)	1.7 $\pm$ 3.5 (1.7)	0	0.4 $\pm$ 0.5 (0.3)	0.1 $\pm$ 0.1 (0.1)	0.7 $\pm$ 1.2 (0.6)
Small fuels (7.6 to 23 cm)	2.5 $\pm$ 2.9 (1.5)	3.5 $\pm$ 4.2 (2.0)	0	4.6 $\pm$ 1.6 (0.9)	6.6 $\pm$ 2.4 (1.3)	1.9 $\pm$ 0.7 (0.4)
Large fuels ( $\geq 23$ cm LED)	0.1 $\pm$ 0.2 (0.1)	0	0.4 $\pm$ 2.5 (0.4)	1.5 $\pm$ 0.7 (0.4)	2.4 $\pm$ 0.9 (0.5)	0.4 $\pm$ 0.5 (0.3)
Weeds	0	0	0	0	0	0
Other	0.8 $\pm$ 0.6 (0.3)	1.2 $\pm$ 0.7 (0.3)	0	1.3 $\pm$ 1.4 (0.8)	2.4 $\pm$ 2.5 (1.4)	0

Table 15. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in Oregon. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	CN			CS		
	Combined (n = 25)	Nest (n = 12)	Random (n = 1)	Combined (n = 7)	Nest (n = 5)	Random (n = 2)
0 to < 2.5	11051 $\pm$ 4119 (2311)	11484 $\pm$ 4432 (2468)	5857	2880 $\pm$ 2795 (1439)	3735 $\pm$ 4101 (1924)	743 $\pm$ 1474 (234)
2.5 to < 5	385 $\pm$ 282 (158)	410 $\pm$ 305 (170)	85	79 $\pm$ 64 (33)	76 $\pm$ 101 (47)	85
5 to < 8	186 $\pm$ 110 (62)	198 $\pm$ 118 (66)	42	73 $\pm$ 91 (47)	17 $\pm$ 36 (17)	213 $\pm$ 805 (128)
8 to < 12	127 $\pm$ 104 (58)	131 $\pm$ 113 (63)	85	73 $\pm$ 93 (48)	8 $\pm$ 18 (8)	234 $\pm$ 672 (107)
All stems (< 12)	11750 $\pm$ 4150 (2328)	12223 $\pm$ 4451 (2478)	6069	3104 $\pm$ 2705 (1392)	3837 $\pm$ 4045 (1897)	1273

Table 15 (con't). Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in Oregon. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	TN			TS		
	Combined (n = 31)	Nest (n = 11)	Random (n = 20)	Combined (n = 20)	Nest (n = 12)	Random (n = 8)
0 to < 2.5	4110 $\pm$ 1579 (931)	5606 $\pm$ 4156 (2293)	3287 $\pm$ 1218 (704)	1763 $\pm$ 772 (446)	2564 $\pm$ 1156 (644)	562 $\pm$ 333 (176)
2.5 to < 5	553 $\pm$ 226 (133)	340 $\pm$ 211 (116)	671 $\pm$ 334 (193)	382 $\pm$ 216 (125)	424 $\pm$ 367 (204)	318 $\pm$ 153 (81)
5 to < 8	356 $\pm$ 120 (71)	259 $\pm$ 102 (56)	410 $\pm$ 181 (105)	267 $\pm$ 108 (63)	188 $\pm$ 138 (77)	387 $\pm$ 181 (96)
8 to < 12	192 $\pm$ 59 (35)	143 $\pm$ 56 (31)	219 $\pm$ 88 (51)	168 $\pm$ 78 (45)	78 $\pm$ 57 (32)	302 $\pm$ 158 (84)
All stems (< 12)	5211 $\pm$ 1568 (924)	6347 $\pm$ 4115 (2270)	4586 $\pm$ 1268 (733)	2580 $\pm$ 896 (518)	3254 $\pm$ 1411 (786)	1570 $\pm$ 667 (352)

Table 16. Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in South Dakota. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent cover + 90 % confidence interval (SE)							
	FC			KH		RC		RR
	Combined (n = 6)	Nest (n = 1)	Random (n = 5)	Random (n = 2)	Combined (n = 9)	Nest (n = 1)	Random (n = 8)	Random (n = 4)
Grass	46.7 $\pm$ 14.8 (7.3)	77.5	40.5 $\pm$ 10.4 (4.9)	50.9 $\pm$ 84.3 (13.4)	52.4 $\pm$ 12.3 (6.6)	15	57.1 $\pm$ 10 (5.3)	49.2 $\pm$ 31.3 (13.3)
Forb	3.1 $\pm$ 1.4 (0.7)	2.5	3.2 $\pm$ 1.7 (0.8)	0.9 $\pm$ 5.4 (0.9)	3.7 $\pm$ 1.3 (0.7)	6.7	3.3 $\pm$ 1.2 (0.6)	1.9 $\pm$ 1.5 (0.6)
Tall shrubs ( $\geq 20$ cm)	0.8 $\pm$ 1.4 (0.7)	0	1 $\pm$ 1.7 (0.8)	2.1 $\pm$ 7.9 (1.3)	10.3 $\pm$ 8.4 (4.5)	0	11.6 $\pm$ 9.3 (4.9)	0.2 $\pm$ 0.5 (0.2)
Short shrubs (< 20 cm)	0.4 $\pm$ 0.6 (0.3)	1.7	0.2 $\pm$ 0.3 (0.2)	0.4 $\pm$ 2.5 (0.4)	1.8 $\pm$ 2.1 (1.1)	0	2 $\pm$ 2.4 (1.3)	0.4 $\pm$ 1 (0.4)
Dead stems	0	0	0	0	0.3 $\pm$ 0.5 (0.3)	2.5	0	0
Seedlings	3.1 $\pm$ 4.6 (2.3)	0	3.7 $\pm$ 5.8 (2.7)	5.9 $\pm$ 10.4 (1.7)	1.8 $\pm$ 1.6 (0.9)	0.8	2 $\pm$ 1.9 (1)	0.2 $\pm$ 0.5 (0.2)
Bare ground	4.9 $\pm$ 6.9 (3.4)	21.7	1.5 $\pm$ 1.3 (0.6)	0.9 $\pm$ 5.4 (0.9)	3.7 $\pm$ 2.2 (1.2)	1.7	4 $\pm$ 2.5 (1.3)	4.2 $\pm$ 3.1 (1.3)
Rock	2.9 $\pm$ 2.0 (1.0)	5.8	2.3 $\pm$ 2 (1)	2.5 $\pm$ 10.7 (1.7)	11.7 $\pm$ 7.9 (4.3)	4.2	12.6 $\pm$ 8.9 (4.7)	7.1 $\pm$ 6.5 (2.7)
Litter	82.8 $\pm$ 7.8 (3.9)	65.8	86.2 $\pm$ 4.9 (2.3)	90.9 $\pm$ 57.8 (9.2)	81.3 $\pm$ 9.5 (5.1)	85.8	80.7 $\pm$ 10.9 (5.8)	82.3 $\pm$ 9.9 (4.2)
Stumps	0.3 $\pm$ 0.6 (0.3)	0	0.3 $\pm$ 0.7 (0.3)	0	0.4 $\pm$ 0.5 (0.3)	2.5	0.1 $\pm$ 0.2 (0.1)	0.4 $\pm$ 1 (0.4)
Small fuels (7.6 to 23 cm)	6.5 $\pm$ 4.6 (2.3)	1.7	7.5 $\pm$ 5.4 (2.6)	5 $\pm$ 26.5 (4.2)	3.8 $\pm$ 1.4 (0.8)	5	3.6 $\pm$ 1.6 (0.8)	7.1 $\pm$ 3.6 (1.5)
Large fuels ( $\geq 23$ cm LED)	1.8 $\pm$ 1.3 (0.7)	1.7	1.8 $\pm$ 1.7 (0.8)	1.7 $\pm$ 10.4 (1.7)	1.2 $\pm$ 0.5 (0.3)	2.5	1 $\pm$ 0.4 (0.2)	0.6 $\pm$ 1 (0.4)
Weeds	1.5 $\pm$ 1.6 (0.8)	0	1.8 $\pm$ 2 (0.9)	1.3 $\pm$ 7.9 (1.3)	0.3 $\pm$ 0.4 (0.2)	0	0.3 $\pm$ 0.4 (0.2)	0.8 $\pm$ 1.9 (0.8)
Other	0.1 $\pm$ 0.3 (0.1)	0	0.2 $\pm$ 0.3 (0.2)	1.3 $\pm$ 7.9 (1.3)	0.9 $\pm$ 0.8 (0.4)	3.3	0.6 $\pm$ 0.7 (0.3)	0

Table 17. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in South Dakota. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)							
	FC			RC			KH	RR
	Combined (n = 6)	Nest (n = 1)	Random (n = 5)	Combined (n = 9)	Nest (n = 1)	Random (n = 5)	Random (n = 2)	Random (n = 4)
0 to < 2.5	3601 $\pm$ 2435 (1209)	1867	3947 $\pm$ 3023 (1418)	4904 $\pm$ 2186 (1176)	9507	4329 $\pm$ 2202 (1162)	552 $\pm$ 3217 (510)	2090 $\pm$ 1946 (827)
2.5 to < 5	226 $\pm$ 190 (94)	170	237 $\pm$ 244 (114)	731 $\pm$ 658 (354)	0	822 $\pm$ 734 (387)	297 $\pm$ 537 (85)	318 $\pm$ 451 (192)
5 to < 8	50 $\pm$ 71 (35)	0	59 $\pm$ 89 (42)	118 $\pm$ 162 (87)	85	122 $\pm$ 187 (99)	191 $\pm$ 1206 (191)	42 $\pm$ 41 (17)
8 to < 12	0	0	0	28 $\pm$ 44 (23)	42	27 $\pm$ 50 (27)	170 $\pm$ 805 (128)	42 $\pm$ 70 (30)
All stems (< 12)	3876 $\pm$ 2566 (1273)	2037	4244 $\pm$ 3183 (1493)	5781 $\pm$ 2675 (1438)	9634	5300 $\pm$ 2912 (1537)	1210 $\pm$ 672 (107)	2494 $\pm$ 2392 (1016)

Table 18. Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	FY			HR		
	Combined (n = 9)	Nest (n = 6)	Random (n = 3)	Combined (n = 7)	Nest (n = 5)	Random (n = 2)
Grass	40.9 $\pm$ 7.6 (4.1)	38.6 $\pm$ 10.5 (5.2)	45.6 $\pm$ 20.2 (6.9)	29.6 $\pm$ 11.3 (5.8)	28 $\pm$ 17.5 (8.2)	33.8 $\pm$ 23.7 (3.8)
Forb	13.6 $\pm$ 3.2 (1.7)	15 $\pm$ 4.7 (2.3)	10.9 $\pm$ 4.9 (1.7)	14 $\pm$ 7.7 (4)	11.7 $\pm$ 10.4 (4.9)	20 $\pm$ 42.3 (6.7)
Tall shrubs ( $\geq$ 20 cm)	7.5 $\pm$ 4.9 (2.6)	11.1 $\pm$ 6 (3)	0.3 $\pm$ 0.8 (0.3)	6.6 $\pm$ 4.4 (2.3)	8 $\pm$ 6.3 (3)	2.9 $\pm$ 2.5 (0.4)
Short shrubs (< 20 cm)	0.5 $\pm$ 0.7 (0.4)	0.1 $\pm$ 0.3 (0.1)	1.1 $\pm$ 3.2 (1.1)	12.7 $\pm$ 14 (7.2)	4.8 $\pm$ 3.9 (1.8)	32.5 $\pm$ 142.1 (22.5)
Dead stems	1.2 $\pm$ 0.8 (0.4)	1.7 $\pm$ 1.2 (0.6)	0.3 $\pm$ 0.8 (0.3)	2.7 $\pm$ 2.1 (1.1)	3.6 $\pm$ 2.8 (1.3)	0.4 $\pm$ 2.5 (0.4)
Seedlings	0.8 $\pm$ 1 (0.6)	0.3 $\pm$ 0.6 (0.3)	1.9 $\pm$ 4.5 (1.6)	0.7 $\pm$ 1.4 (0.7)	0	2.5 $\pm$ 15.8 (2.5)
Bare ground	9.4 $\pm$ 2 (1.1)	9.3 $\pm$ 2.3 (1.1)	9.5 $\pm$ 7.7 (2.6)	9.5 $\pm$ 7.1 (3.6)	13 $\pm$ 8.9 (4.2)	0.9 $\pm$ 5.4 (0.9)
Rock	3.5 $\pm$ 3.7 (2)	5 $\pm$ 5.7 (2.8)	0.6 $\pm$ 1.7 (0.6)	7 $\pm$ 4.5 (2.3)	9 $\pm$ 5.8 (2.7)	2.1 $\pm$ 7.9 (1.3)
Litter	75.7 $\pm$ 5.8 (3.1)	73.3 $\pm$ 9 (4.5)	80.3 $\pm$ 4.1 (1.4)	76.9 $\pm$ 10.6 (5.5)	72.5 $\pm$ 14.4 (6.7)	87.9 $\pm$ 13.3 (2.1)
Stumps	0.6 $\pm$ 0.7 (0.4)	0.6 $\pm$ 1.1 (0.6)	0.6 $\pm$ 1.7 (0.6)	0	0	0
Small fuels (7.6 to 23 cm)	2.8 $\pm$ 1.1 (0.6)	2.5 $\pm$ 1.5 (0.7)	3.3 $\pm$ 3.7 (1.3)	2 $\pm$ 1.1 (0.5)	2.2 $\pm$ 1.5 (0.7)	1.7 $\pm$ 5.4 (0.9)
Large fuels ( $\geq$ 23 cm LED)	1.7 $\pm$ 1 (0.5)	1.7 $\pm$ 1.6 (0.8)	1.7 $\pm$ 1.4 (0.5)	0.7 $\pm$ 0.7 (0.4)	0.7 $\pm$ 1 (0.5)	0.9 $\pm$ 5.4 (0.9)
Weeds	0	0	0	0	0	0
Other	0.7 $\pm$ 0.5 (0.3)	0.7 $\pm$ 0.8 (0.4)	0.8 $\pm$ 1.4 (0.5)	1.7 $\pm$ 1.5 (0.7)	1.7 $\pm$ 2 (1)	1.7 $\pm$ 10.4 (1.7)

Table 18 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)			
	LK			MT
	Combined (n = 10)	Nest (n = 7)	Random (n = 3)	Nest (n = 8)
Grass	30.5 $\pm$ 6.8 (3.7)	26.4 $\pm$ 6 (3.1)	40 $\pm$ 25 (8.6)	26.3 $\pm$ 11.1 (5.8)
Forb	15.4 $\pm$ 3.7 (2)	14 $\pm$ 4.7 (2.4)	18.6 $\pm$ 10.6 (3.6)	15.6 $\pm$ 5.8 (3.1)
Tall shrubs ( $\geq$ 20 cm)	7.6 $\pm$ 3.5 (1.9)	6.1 $\pm$ 4 (2.1)	11.1 $\pm$ 11.4 (3.9)	8.6 $\pm$ 5 (2.6)
Short shrubs (< 20 cm)	3.2 $\pm$ 2.9 (1.6)	4.4 $\pm$ 4.2 (2.1)	0.3 $\pm$ 0.8 (0.3)	0.8 $\pm$ 1.2 (0.6)
Dead stems	3.3 $\pm$ 1.5 (0.8)	3 $\pm$ 2 (1)	3.9 $\pm$ 4.3 (1.5)	4.8 $\pm$ 3.6 (1.9)
Seedlings	0.3 $\pm$ 0.5 (0.3)	0	0.8 $\pm$ 2.4 (0.8)	0.3 $\pm$ 0.4 (0.2)
Bare ground	9.8 $\pm$ 5.3 (2.9)	6.5 $\pm$ 5.2 (2.7)	17.2 $\pm$ 17.8 (6.1)	8.1 $\pm$ 8.1 (4.3)
Rock	4.6 $\pm$ 2 (1.1)	5.7 $\pm$ 2.5 (1.3)	2 $\pm$ 3.6 (1.2)	0.6 $\pm$ 0.5 (0.3)
Litter	78.4 $\pm$ 8.6 (4.7)	78.2 $\pm$ 11.8 (6.1)	78.9 $\pm$ 24.5 (8.4)	89.2 $\pm$ 8.1 (4.2)
Stumps	0.2 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.5 (0.2)	0	0
Small fuels (7.6 to 23 cm)	2 $\pm$ 0.9 (0.5)	2.3 $\pm$ 1.1 (0.6)	1.4 $\pm$ 2.9 (1)	1.6 $\pm$ 1.7 (0.9)
Large fuels ( $\geq$ 23 cm LED)	0.8 $\pm$ 0.6 (0.3)	0.8 $\pm$ 0.8 (0.4)	0.8 $\pm$ 1.4 (0.5)	0.9 $\pm$ 1.3 (0.7)
Weeds	0	0	0	0
Other	1.7 $\pm$ 1.1 (0.6)	1.8 $\pm$ 1.5 (0.8)	1.4 $\pm$ 2.9 (1)	1.1 $\pm$ 0.8 (0.4)

Table 18 (con't). Mean percent cover of 14 different habitat components ( $\pm$  90 % confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm$ 90% confidence interval (SE)					
	RY			TD		
	Combined (n = 10)	Nest (n = 8)	Random (n = 2)	Combined (n = 8)	Nest (n = 7)	Random (n = 1)
Grass	19.8 $\pm$ 3.9 (2.1)	20.3 $\pm$ 5.1 (2.7)	17.5 $\pm$ 5.1 (0.8)	18.8 $\pm$ 9.3 (4.9)	20.2 $\pm$ 10.5 (5.4)	8.3
Forb	10.5 $\pm$ 6.5 (3.6)	12 $\pm$ 8.2 (4.3)	4.6 $\pm$ 2.5 (0.4)	8.5 $\pm$ 6 (3.1)	7.3 $\pm$ 6.4 (3.3)	17.5
Tall shrubs ( $\geq$ 20 cm)	13.5 $\pm$ 6.9 (3.8)	12.4 $\pm$ 8.3 (4.4)	18 $\pm$ 55.2 (8.8)	9.6 $\pm$ 6.6 (3.5)	11 $\pm$ 7.2 (3.7)	0
Short shrubs (< 20 cm)	8.4 $\pm$ 6.8 (3.7)	5 $\pm$ 3.8 (2)	22.1 $\pm$ 102.6 (16.3)	11.2 $\pm$ 7 (3.7)	12.8 $\pm$ 7.5 (3.9)	0
Dead stems	0.9 $\pm$ 0.8 (0.4)	0.4 $\pm$ 0.4 (0.2)	3 $\pm$ 7.9 (1.3)	2.6 $\pm$ 1.9 (1)	3 $\pm$ 2 (1.1)	0
Seedlings	0.7 $\pm$ 0.7 (0.4)	0.5 $\pm$ 0.6 (0.3)	1.7 $\pm$ 10.4 (1.7)	0.6 $\pm$ 0.6 (0.3)	0.5 $\pm$ 0.6 (0.3)	1.7
Bare ground	13.3 $\pm$ 5.8 (3.2)	13.8 $\pm$ 7.3 (3.8)	11.3 $\pm$ 34.4 (5.5)	11.1 $\pm$ 5.9 (3.1)	12.2 $\pm$ 6.5 (3.4)	3.3
Rock	1.6 $\pm$ 1.2 (0.7)	1.9 $\pm$ 1.5 (0.8)	0.4 $\pm$ 2.5 (0.4)	6.8 $\pm$ 3.9 (2)	7.5 $\pm$ 4.3 (2.2)	1.7
Litter	81.3 $\pm$ 6.6 (3.6)	80.9 $\pm$ 8.2 (4.3)	82.9 $\pm$ 44.8 (7.1)	73.4 $\pm$ 7.8 (4.1)	72.4 $\pm$ 8.9 (4.6)	80.8
Stumps	0.1 $\pm$ 0.1 (0.1)	0	0.4 $\pm$ 2.5 (0.4)	0.2 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.3 (0.1)	0
Small fuels (7.6 to 23 cm)	1.7 $\pm$ 0.6 (0.3)	1.6 $\pm$ 0.6 (0.3)	2.1 $\pm$ 7.9 (1.3)	3.2 $\pm$ 1.9 (1)	2.6 $\pm$ 1.7 (0.9)	7.5
Large fuels ( $\geq$ 23 cm LED)	0.5 $\pm$ 0.5 (0.3)	0.1 $\pm$ 0.2 (0.1)	2.1 $\pm$ 2.5 (0.4)	2.1 $\pm$ 2 (1)	2 $\pm$ 2.3 (1.2)	2.5
Weeds	0.2 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.4 (0.2)	0	0	0	0
Other	1.3 $\pm$ 0.9 (0.5)	0.8 $\pm$ 0.8 (0.4)	3 $\pm$ 7.9 (1.3)	1.9 $\pm$ 1.9 (1)	2 $\pm$ 2.2 (1.1)	0.8

Table 18 (con't). Mean percent cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Estimated value $\pm 90\%$ confidence interval (SE)		
	ZR		
	Combined (n = 10)	Nest (n = 9)	Random (n = 1)
Grass	34 $\pm$ 6.5 (3.5)	33.8 $\pm$ 7.4 (4)	35
Forb	21.2 $\pm$ 6.6 (3.6)	21.3 $\pm$ 7.5 (4)	20
Tall shrubs ( $\geq 20$ cm)	12.9 $\pm$ 3.9 (2.1)	11.9 $\pm$ 4 (2.1)	21.7
Short shrubs (< 20 cm)	0.3 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.4 (0.2)	0
Dead stems	5.1 $\pm$ 2 (1.1)	5.4 $\pm$ 2.2 (1.2)	2.5
Seedlings	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.8
Bare ground	7.2 $\pm$ 4.1 (2.2)	6 $\pm$ 4 (2.1)	17.5
Rock	3.1 $\pm$ 1.6 (0.9)	3 $\pm$ 1.8 (1)	4.2
Litter	80.7 $\pm$ 6.9 (3.8)	81.3 $\pm$ 7.7 (4.2)	75.0
Stumps	0	0	0
Small fuels (7.6 to 23 cm)	2.4 $\pm$ 1.7 (0.9)	2.5 $\pm$ 1.9 (1)	1.7
Large fuels ( $\geq 23$ cm LED)	0.8 $\pm$ 0.6 (0.3)	0.6 $\pm$ 0.6 (0.3)	2.5
Weeds	0.3 $\pm$ 0.4 (0.2)	0.2 $\pm$ 0.4 (0.2)	1.7
Other	3.3 $\pm$ 2.8 (1.5)	3.7 $\pm$ 3.1 (1.7)	0

Table 19. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)								
	FY			HR			LK		
	Combined (n=9)	Nest (n=6)	Random (n=3)	Combined (n=7)	Nest (n=5)	Random (n=2)	Combined (n=10)	Nest (n=7)	Random (n=3)
0 to < 2.5	2410 $\pm$ 1132 (598)	3431 $\pm$ 931 (462)	368 $\pm$ 889 (304)	4020 $\pm$ 2668 (1373)	5186 $\pm$ 3548 (1664)	1104 $\pm$ 268 (43)	2721 $\pm$ 785 (428)	2419 $\pm$ 914 (471)	3424 $\pm$ 2687 (920)
2.5 to < 5	514 $\pm$ 377 (203)	708 $\pm$ 557 (276)	127 $\pm$ 72 (25)	540 $\pm$ 309 (159)	611 $\pm$ 403 (189)	361 $\pm$ 2279 (361)	565 $\pm$ 309 (169)	412 $\pm$ 358 (184)	920 $\pm$ 920 (315)
5 to < 8	118 $\pm$ 98 (53)	99 $\pm$ 126 (63)	155 $\pm$ 331 (113)	206 $\pm$ 193 (100)	229 $\pm$ 287 (135)	149 $\pm$ 938 (149)	191 $\pm$ 162 (88)	103 $\pm$ 133 (69)	396 $\pm$ 676 (232)
8 to < 12	52 $\pm$ 41 (22)	49 $\pm$ 68 (34)	56 $\pm$ 42 (14)	133 $\pm$ 63 (33)	153 $\pm$ 74 (35)	85 $\pm$ 537 (85)	76 $\pm$ 53 (29)	60 $\pm$ 40 (20)	113 $\pm$ 271 (93)
All stems (< 12)	3094 $\pm$ 1385 (745)	4287 $\pm$ 1332 (661)	708 $\pm$ 1322 (453)	4899 $\pm$ 2879 (1481)	6179 $\pm$ 3774 (1770)	1698 $\pm$ 4019 (637)	3552 $\pm$ 1111 (606)	2995 $\pm$ 1171 (603)	4852 $\pm$ 3876 (1327)

Table 19 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)						
	MT	RY			TD		
	Nest (n = 8)	Combined (n = 10)	Nest (n = 8)	Random (n = 2)	Combined (n = 8)	Nest (n = 7)	Random (n = 1)
0 to < 2.5	3348 $\pm$ 1727 (911)	7410 $\pm$ 3409 (1860)	7013 $\pm$ 4381 (2312)	8998 $\pm$ 10452 (1656)	4191 $\pm$ 2920 (1541)	4753 $\pm$ 3220 (1657)	255
2.5 to < 5	1019 $\pm$ 428 (226)	263 $\pm$ 114 (62)	270 $\pm$ 139 (74)	234 $\pm$ 938 (149)	111 $\pm$ 53 (28)	121 $\pm$ 58 (30)	42
5 to < 8	578 $\pm$ 174 (92)	127 $\pm$ 48 (26)	122 $\pm$ 58 (31)	149 $\pm$ 401 (64)	37 $\pm$ 32 (17)	42 $\pm$ 36 (18)	0
8 to < 12	281 $\pm$ 77 (41)	98 $\pm$ 48 (26)	80 $\pm$ 47 (25)	170 $\pm$ 537 (85)	32 $\pm$ 20 (11)	30 $\pm$ 24 (12)	42
All stems (< 12)	5226 $\pm$ 1828 (965)	7898 $\pm$ 3323 (1813)	7486 $\pm$ 4276 (2257)	9549 $\pm$ 8574 (1358)	4372 $\pm$ 2939 (1551)	4948 $\pm$ 3231 (1663)	340

Table 19 (con't). Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE) ZR		
	Combined (n = 10)	Nest (n = 9)	Random (n = 1)
0 to < 2.5	4868 $\pm$ 1236 (674)	4673 $\pm$ 1342 (722)	6621
2.5 to < 5	1069 $\pm$ 317 (173)	981 $\pm$ 308 (166)	1867
5 to < 8	463 $\pm$ 145 (79)	434 $\pm$ 153 (82)	722
8 to < 12	183 $\pm$ 71 (39)	170 $\pm$ 76 (41)	297
All stems (< 12)	6583 $\pm$ 1501 (819)	6258 $\pm$ 1562 (840)	9507

Table 20. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in Arizona. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 49)	Closed (n = 57)	Nest (n = 3)	Random (n = 46)	Nest (n = 13)	Random (n = 44)
Grass	44.9 $\pm$ 4.5 <sup>a</sup> (2.7)	26.4 $\pm$ 3.3 <sup>a</sup> (2)	35.3 $\pm$ 24 (8.2)	45.5 $\pm$ 4.7 (2.8)	21.8 $\pm$ 7.3 (4.1)	27.8 $\pm$ 3.8 (2.3)
Forb	1.6 $\pm$ 0.4 (0.3)	1.1 $\pm$ 0.4 (0.3)	1.7 $\pm$ 1.4 (0.5)	1.6 $\pm$ 0.5 (0.3)	0.3 $\pm$ 0.3 <sup>a</sup> (0.2)	1.4 $\pm$ 0.6 <sup>a</sup> (0.3)
Tall shrubs ( $\geq 20$ cm)	0.7 $\pm$ 0.3 <sup>a</sup> (0.2)	0.2 $\pm$ 0.1 <sup>a</sup> (0.08)	0.3 $\pm$ 0.8 (0.3)	0.8 $\pm$ 0.4 (0.2)	0	0.3 $\pm$ 0.2 (0.1)
Short shrubs (< 20 cm)	0.2 $\pm$ 0.2 (0.1)	0	0.3 $\pm$ 0.8 (0.3)	0.2 $\pm$ 0.2 (0.1)	0	0
Dead stems	0.05 $\pm$ 0.05 (0.03)	0.03 $\pm$ 0.01 (0.02)	0	0.05 $\pm$ 0.1 (0.03)	0.1 $\pm$ 0.1 (0.1)	0.02 $\pm$ 0.01 (0.01)
Seedlings	0.02 $\pm$ 0.03 (0.02)	0	0	0.02 $\pm$ 0.01 (0.02)	0	0
Bare ground	13.7 $\pm$ 3.1 <sup>a</sup> (1.9)	5.6 $\pm$ 2 <sup>a</sup> (1.2)	3.6 $\pm$ 5 <sup>a</sup> (1.7)	14.4 $\pm$ 3.3 <sup>a</sup> (1.9)	4.2 $\pm$ 3 (1.7)	6.1 $\pm$ 2.5 (1.5)
Rock	14.5 $\pm$ 2.6 (1.5)	13.8 $\pm$ 2.5 (1.5)	9.7 $\pm$ 3 <sup>a</sup> (1)	14.8 $\pm$ 2.7 <sup>a</sup> (1.6)	14 $\pm$ 5.7 (3.2)	13.8 $\pm$ 2.8 (1.7)
Litter	50.8 $\pm$ 4.9 <sup>a</sup> (2.9)	74 $\pm$ 3.6 <sup>a</sup> (2.1)	67.8 $\pm$ 29.6 (10.2)	49.7 $\pm$ 5.1 (3)	75.4 $\pm$ 8.4 (4.7)	73.6 $\pm$ 4.1 (2.4)
Stumps	0.1 $\pm$ 0.1 (0.07)	0.04 $\pm$ 0.01 (0.02)	0.3 $\pm$ 0.8 (0.3)	0.1 $\pm$ 0.1 (0.08)	0.06 $\pm$ 0.1 (0.1)	0.04 $\pm$ 0.01 (0.03)
Small fuels (7.6 to 23 cm)	0.4 $\pm$ 0.2 <sup>a</sup> (0.13)	1.1 $\pm$ 0.4 <sup>a</sup> (0.2)	1.1 $\pm$ 3.2 <sup>a</sup> (1.1)	0.4 $\pm$ 0.2 <sup>a</sup> (0.12)	2.4 $\pm$ 1.2 <sup>a</sup> (0.7)	0.7 $\pm$ 0.3 <sup>a</sup> (0.2)
Large fuels ( $\geq 23$ cm LED)	0.1 $\pm$ 0.1 (0.06)	0.3 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.8 (0.3)	0.1 $\pm$ 0.1 (0.06)	0.3 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.2 (0.2)
Weeds	0	0	0	0	0	0
Other	0	0	0	0	0	0

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 21. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in Idaho. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 50)	Closed (n = 40)	Nest (n = 22)	Random (n = 28)	Nest (n = 10)	Random (n = 30)
Grass	27.5 $\pm$ 3.3 <sup>a</sup> (1.9)	34.2 $\pm$ 4.3 <sup>a</sup> (2.5)	28.8 $\pm$ 5.8 (3.3)	26.5 $\pm$ 3.9 (2.3)	29.9 $\pm$ 11 (5.9)	38 $\pm$ 4.6 (2.7)
Forb	8.4 $\pm$ 1.5 <sup>a</sup> (0.9)	13.9 $\pm$ 3.3 <sup>a</sup> (1.9)	9.3 $\pm$ 3 (1.8)	7.7 $\pm$ 1.5 (0.9)	8.2 $\pm$ 5.4 (2.9)	12.5 $\pm$ 1.7 (1)
Tall shrubs ( $\geq 20$ cm)	15.8 $\pm$ 2.9 <sup>a</sup> (1.7)	25.8 $\pm$ 4.9 <sup>a</sup> (2.9)	15.5 $\pm$ 4.8 (2.8)	16.1 $\pm$ 3.9 (2.3)	18.6 $\pm$ 7.6 (4.1)	29 $\pm$ 6.1 (3.6)
Short shrubs (< 20 cm)	10.2 $\pm$ 1.7 <sup>a</sup> (1)	13.6 $\pm$ 2.2 <sup>a</sup> (1.3)	9.7 $\pm$ 3.1 (1.8)	10.6 $\pm$ 2 (1.2)	15 $\pm$ 4.6 (2.5)	13 $\pm$ 2.5 (1.5)
Dead stems	4.6 $\pm$ 1 (0.6)	5.2 $\pm$ 1.5 (0.9)	5 $\pm$ 1.7 (1)	4.3 $\pm$ 1.3 (0.8)	3.1 $\pm$ 1.6 <sup>b</sup> (0.9)	5.9 $\pm$ 2 <sup>b</sup> (1.2)
Seedlings	0.3 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.3 (0.2)	0.6 $\pm$ 0.6 (0.3)	0.2 $\pm$ 0.2 (0.1)
Bare ground	26.6 $\pm$ 4.1 <sup>a</sup> (2.5)	14.8 $\pm$ 4.7 <sup>a</sup> (2.8)	24.2 $\pm$ 6.5 (3.8)	28.5 $\pm$ 5.5 (3.3)	14.7 $\pm$ 12.5 (6.7)	14.5 $\pm$ 4.5 (2.6)
Rock	6 $\pm$ 2.6 <sup>a</sup> (1.6)	2.3 $\pm$ 1.2 <sup>a</sup> (0.7)	3.6 $\pm$ 3 (1.7)	7.9 $\pm$ 4.1 (2.4)	4.3 $\pm$ 3.2 (1.7)	1.2 $\pm$ 1 (0.6)
Litter	65.6 $\pm$ 4.5 <sup>b</sup> (2.7)	74.4 $\pm$ 6.5 <sup>b</sup> (3.8)	69.1 $\pm$ 7 (4.1)	63 $\pm$ 6 (3.5)	74.9 $\pm$ 13.1 (7.1)	80.4 $\pm$ 4.7 (2.5)
Stumps	0.1 $\pm$ 0.2 (0.1)	4.2 $\pm$ 5 (3)	0	0.2 $\pm$ 0.3 (0.2)	0	0
Small fuels (7.6 to 23 cm)	0.3 $\pm$ 0.1 <sup>b</sup> (0.1)	0.6 $\pm$ 0.2 <sup>b</sup> (0.1)	0.4 $\pm$ 0.1 (0.9)	0.3 $\pm$ 0.2 (0.1)	0.4 $\pm$ 0.5 (0.3)	0.7 $\pm$ 0.3 (0.2)
Large fuels ( $\geq 23$ cm LED)	1 $\pm$ 0.5 <sup>b</sup> (0.3)	2.3 $\pm$ 1 <sup>b</sup> (0.6)	1.4 $\pm$ 1 (0.6)	0.7 $\pm$ 0.4 (0.2)	3.6 $\pm$ 3 (1.6)	2 $\pm$ 1.1 (0.6)
Weeds	0	0	0	0	0	0
Other	2.6 $\pm$ 0.8 (0.5)	2.2 $\pm$ 0.8 (0.5)	2.6 $\pm$ 1.4 (0.8)	2.6 $\pm$ 1.1 (0.7)	1.2 $\pm$ 0.6 (0.3)	2.7 $\pm$ 1 (0.6)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 22. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in Idaho. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 54)	Closed (n = 36)	Nest (n = 22)	Random (n = 32)	Nest (n = 9)	Random (n = 27)
0 to < 2.5	9808 $\pm$ 2323 <sup>a</sup> (1388)	15025 $\pm$ 3331 <sup>a</sup> (1971)	9324 $\pm$ 3391 (1971)	10141 $\pm$ 3278 (1933)	11544 $\pm$ 7101 (3819)	16186 $\pm$ 3917 (2296)
2.5 to < 5	119 $\pm$ 40 (24)	105 $\pm$ 67 (40)	81 $\pm$ 59 (34)	145 $\pm$ 56 (33)	66 $\pm$ 79 (43)	118 $\pm$ 88 (51)
5 to < 8	15 $\pm$ 9 (6)	1 $\pm$ 2 (1)	14 $\pm$ 15 (9)	16 $\pm$ 12 (7)	0	2 $\pm$ 3 (2)
8 to < 12	8 $\pm$ 7 <sup>a</sup> (4)	1 $\pm$ 2 <sup>a</sup> (1)	12 $\pm$ 15 (8)	5 $\pm$ 5 (3)	0	2 $\pm$ 3 (2)
All stems (< 12)	9949 $\pm$ 2336 <sup>a</sup> (1395)	15133 $\pm$ 3344 <sup>a</sup> (1979)	9430 $\pm$ 3405 (1979)	10307 $\pm$ 3297 (1945)	11610 $\pm$ 7078 (3806)	16307 $\pm$ 3938 (2309)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 23. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in New Mexico. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 8)	Closed (n = 56)	Nest (n = 0)	Random (n = 8)	Nest (n = 14)	Random (n = 42)
Grass	55.5 $\pm$ 6.6 (3.5)	30.8 $\pm$ 3.6 (2.2)	N/A	55.5 $\pm$ 6.6 (3.5)	38.6 $\pm$ 6.2 (3.5)	28.2 $\pm$ 4.3 (2.5)
Forb	28.2 $\pm$ 6.4 (3.4)	8.4 $\pm$ 1.9 (1.1)	N/A	28.2 $\pm$ 6.4 (3.4)	9.8 $\pm$ 2.8 (1.6)	7.9 $\pm$ 2.4 (1.4)
Tall shrubs ( $\geq 20$ cm)	2.5 $\pm$ 2.7 (1.4)	2 $\pm$ 0.9 (0.5)	N/A	2.5 $\pm$ 2.7 (1.4)	0.8 $\pm$ 0.8 (0.4)	2.4 $\pm$ 1.1 (0.7)
Short shrubs (< 20 cm)	0	0.4 $\pm$ 0.2 (0.1)	N/A	0	0.6 $\pm$ 0.5 (0.3)	0.3 $\pm$ 0.2 (0.1)
Dead stems	1.8 $\pm$ 3.4 (1.8)	0.3 $\pm$ 0.2 (0.1)	N/A	1.8 $\pm$ 3.4 (1.8)	0.5 $\pm$ 0.3 (0.2)	0.3 $\pm$ 0.2 (0.1)
Seedlings	0	0.03 $\pm$ 0.01 (0.02)	N/A	0	0.06 $\pm$ 0.1 (0.06)	0.02 $\pm$ 0.01 (0.02)
Bare ground	36.6 $\pm$ 7.5 (4)	10.3 $\pm$ 2.3 (1.4)	N/A	36.6 $\pm$ 7.5 (4)	12.9 $\pm$ 6.5 (3.7)	9.4 $\pm$ 2.4 (1.4)
Rock	14.5 $\pm$ 3.4 (1.8)	5.2 $\pm$ 0.8 (0.5)	N/A	14.5 $\pm$ 3.4 (1.8)	3.7 $\pm$ 1.1 (0.6)	5.7 $\pm$ 1 (0.6)
Litter	49.8 $\pm$ 6.8 (3.6)	81.6 $\pm$ 2.3 (1.4)	N/A	49.8 $\pm$ 6.8 (3.6)	80.8 $\pm$ 6.5 (3.7)	81.9 $\pm$ 2.4 (1.4)
Stumps	0	0.3 $\pm$ 0.2 (0.1)	N/A	0	0.3 $\pm$ 0.4 (0.2)	0.3 $\pm$ 0.2 (0.14)
Small fuels (7.6 to 23 cm)	0	1.6 $\pm$ 0.4 (0.2)	N/A	0	1.7 $\pm$ 0.9 (0.5)	1.6 $\pm$ 0.5 (0.3)
Large fuels ( $\geq 23$ cm LED)	0	0.6 $\pm$ 0.2 (0.1)	N/A	0	0.4 $\pm$ 0.3 (0.14)	0.6 $\pm$ 0.3 (0.2)
Weeds	0.3 $\pm$ 0.6 (0.3)	0.1 $\pm$ 0.1 (0.04)	N/A	0.3 $\pm$ 0.6 (0.3)	0.2 $\pm$ 0.2 (0.13)	0.06 $\pm$ 0.1 (0.03)
Other	5 $\pm$ 4.1 (2.2)	3.3 $\pm$ 0.8 (0.4)	N/A	5 $\pm$ 4.1 (2.2)	2.4 $\pm$ 1.1 (0.6)	3.6 $\pm$ 0.9 (0.6)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 24. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in New Mexico. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 8)	Closed (n = 56)	Nest (n = 0)	Open (n = 8)	Nest (n = 14)	Random (n = 42)
0 to < 2.5	6244 $\pm$ 7102 (3749)	1686 $\pm$ 521 (311)	N/A	6244 $\pm$ 7102 (3749)	1252 $\pm$ 874 (493)	1831 $\pm$ 642 (381)
2.5 to < 5	387 $\pm$ 438 (231)	265 $\pm$ 59 (36)	N/A	387 $\pm$ 438 (231)	300 $\pm$ 175 (99)	254 $\pm$ 59 (35)
5 to < 8	21 $\pm$ 21 (11)	17 $\pm$ 8 (5)	N/A	21 $\pm$ 21 (11)	21 $\pm$ 17 (10)	16 $\pm$ 10 (6)
8 to < 12	0	2 $\pm$ 2 (1)	N/A	0	0	2 $\pm$ 2 (1)
All stems (< 12)	6653 $\pm$ 7377 (3894)	1971 $\pm$ 557 (333)	N/A	6653 $\pm$ 7377 (3894)	1573 $\pm$ 1005 (568)	2103 $\pm$ 678 (403)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 25. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in Oregon. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 39)	Closed (n = 31)	Nest (n = 18)	Random (n = 21)	Nest (n = 21)	Random (n = 10)
Grass	12.5 $\pm$ 4.5 (2.6)	9.9 $\pm$ 3.6 (2.1)	21 $\pm$ 8.4 <sup>a</sup> (4.8)	5.1 $\pm$ 2.4 <sup>a</sup> (1.4)	12.2 $\pm$ 5.6 (3.2)	6.5 $\pm$ 4.1 (2.2)
Forb	3.6 $\pm$ 1.6 (0.9)	4.7 $\pm$ 2.3 (1.4)	6.3 $\pm$ 3.1 <sup>a</sup> (1.8)	1.1 $\pm$ 0.5 <sup>a</sup> (0.3)	5.4 $\pm$ 3.7 (2.1)	4.7 $\pm$ 2.8 (1.6)
Tall shrubs ( $\geq 20$ cm)	3.4 $\pm$ 1.7 (1)	2.8 $\pm$ 1.1 (0.7)	4.4 $\pm$ 3.3 (1.9)	2.9 $\pm$ 1.4 (0.8)	3.3 $\pm$ 1.4 (0.8)	1.7 $\pm$ 2.4 (1.3)
Short shrubs (< 20 cm)	2.5 $\pm$ 1.1 (0.7)	2.5 $\pm$ 1.3 (0.8)	2 $\pm$ 1.8 (1)	3.2 $\pm$ 1.8 (1)	2 $\pm$ 1.4 (0.8)	2 $\pm$ 1.6 (0.9)
Dead stems	1.9 $\pm$ 0.8 (0.5)	2.3 $\pm$ 1.1 (0.6)	2.2 $\pm$ 1.3 (0.8)	1.4 $\pm$ 1 (0.6)	3.1 $\pm$ 1.6 (0.9)	1.4 $\pm$ 1.7 (0.9)
Seedlings	0.3 $\pm$ 0.2 (0.1)	0.5 $\pm$ 0.3 (0.2)	0.2 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.2 (0.1)	0.8 $\pm$ 0.5 (0.3)	0
Bare ground	31.5 $\pm$ 10.3 <sup>a</sup> (6.1)	17.7 $\pm$ 9.3 <sup>a</sup> (5.5)	8.9 $\pm$ 3.8 <sup>a</sup> (2.2)	51.3 $\pm$ 16.1 <sup>a</sup> (9.4)	5.6 $\pm$ 2.6 (1.5)	29.8 $\pm$ 25.4 (13.9)
Rock	0.7 $\pm$ 0.8 (0.5)	1.2 $\pm$ 0.9 (0.5)	1.4 $\pm$ 1.7 (1)	0	0.8 $\pm$ 0.8 (0.5)	2.7 $\pm$ 3 (1.6)
Litter	58.1 $\pm$ 9.9 <sup>a</sup> (5.9)	73.2 $\pm$ 9.1 <sup>a</sup> (5.4)	74.3 $\pm$ 8.1 <sup>a</sup> (4.6)	43.4 $\pm$ 15.8 <sup>a</sup> (9.1)	85.2 $\pm$ 3.9 (2.3)	62.8 $\pm$ 24.6 (13.4)
Stumps	0.5 $\pm$ 0.5 (0.3)	0.1 $\pm$ 0.1 (0.1)	0.6 $\pm$ 0.8 (0.5)	0.5 $\pm$ 0.5 (0.3)	0.2 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.08)
Small fuels (7.6 to 23 cm)	2.7 $\pm$ 1.1 (0.6)	2.3 $\pm$ 0.8 (0.5)	5 $\pm$ 2 <sup>a</sup> (1.2)	0.7 $\pm$ 0.4 <sup>a</sup> (0.2)	3.1 $\pm$ 1.3 <sup>a</sup> (0.7)	1.3 $\pm$ 0.8 <sup>a</sup> (0.4)
Large fuels ( $\geq 23$ cm LED)	0.7 $\pm$ 0.3 (0.2)	1 $\pm$ 0.5 (0.3)	1.2 $\pm$ 0.7 <sup>a</sup> (0.4)	0.2 $\pm$ 0.1 <sup>a</sup> (0.08)	1.5 $\pm$ 0.7 <sup>a</sup> (0.4)	0.4 $\pm$ 0.5 <sup>a</sup> (0.3)
Weeds	0.4 $\pm$ 0.4 (0.2)	0	0	0.8 $\pm$ 0.7 (0.4)	0	0
Other	1 $\pm$ 0.7 (0.4)	0.6 $\pm$ 0.4 (0.2)	1.9 $\pm$ 1.6 (0.9)	0.2 $\pm$ 0.2 (0.1)	1 $\pm$ 0.7 (0.4)	0.2 $\pm$ 0.2 (0.1)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 26. Mean densities ( $\pm$  90 % confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Oregon. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 39)	Closed (n = 31)	Nest (n = 18)	Random (n = 21)	Nest (n = 21)	Random (n = 10)
0 to < 2.5	4058 $\pm$ 1642 (974)	5408 $\pm$ 1826 (1076)	5579 $\pm$ 3314 (1905)	2755 $\pm$ 1244 (721)	7043 $\pm$ 2489 <sup>a</sup> (1443)	1974 $\pm$ 1019 <sup>a</sup> (556)
2.5 to < 5	446 $\pm$ 167 (99)	411 $\pm$ 202 (119)	391 $\pm$ 249 (143)	493 $\pm$ 240 (139)	327 $\pm$ 189 (109)	586 $\pm$ 538 (293)
5 to < 8	308 $\pm$ 103 (61)	234 $\pm$ 73 (43)	212 $\pm$ 107 (61)	390 $\pm$ 170 (99)	176 $\pm$ 72 (41)	356 $\pm$ 172 (94)
8 to < 12	165 $\pm$ 47 (28)	161 $\pm$ 66 (39)	104 $\pm$ 50 <sup>a</sup> (29)	218 $\pm$ 74 <sup>a</sup> (43)	107 $\pm$ 64 <sup>b</sup> (37)	276 $\pm$ 156 <sup>b</sup> (85)
All stems (< 12)	4978 $\pm$ 1660 (984)	6214 $\pm$ 1811 (1067)	6286 $\pm$ 3388 (1947)	3856 $\pm$ 1244 (721)	7654 $\pm$ 2475 <sup>a</sup> (1435)	3192 $\pm$ 1484 <sup>a</sup> (809)

<sup>a</sup> Mean densities within a state differ between nest and random values  $P < 0.05$ .

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .

Table 27. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in South Dakota. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 3)	Closed (n = 18)	Nest (n = 0)	Random (n = 3)	Nest (n = 2)	Random (n = 16)
Grass	58.9 $\pm$ 23.2 (7.9)	48.5 $\pm$ 8.1 (4.7)	N/A	58.9 $\pm$ 23.2 (7.9)	46.3 $\pm$ 19.7 (31)	48.8 $\pm$ 7.8 (4.4)
Forb	3.1 $\pm$ 4.5 (1.6)	2.9 $\pm$ 0.8 (0.4)	N/A	3.1 $\pm$ 4.5 (1.6)	4.6 $\pm$ 13.3 (2.1)	2.7 $\pm$ 0.7 (0.4)
Tall shrubs ( $\geq 20$ cm)	4.7 $\pm$ 9.3 (3.2)	4.9 $\pm$ 4.3 (2.5)	N/A	4.7 $\pm$ 9.3 (3.2)	0	5.5 $\pm$ 4.8 (2.8)
Short shrubs (< 20 cm)	0.3 $\pm$ 0.8 (0.3)	1.1 $\pm$ 1 (0.6)	N/A	0.3 $\pm$ 0.8 (0.3)	0.9 $\pm$ 5.4 (0.9)	1.1 $\pm$ 1.1 (0.7)
Dead stems	0	0.1 $\pm$ 0.2 (0.1)	N/A	0	1.3 $\pm$ 7.9 (1.3)	0
Seedlings	1.4 $\pm$ 4.1 (1.4)	2.4 $\pm$ 1.6 (0.9)	N/A	1.4 $\pm$ 4.1 (1.4)	0.4 $\pm$ 2.5 (0.4)	2.7 $\pm$ 1.8 (1)
Bare ground	3.1 $\pm$ 4 (1.4)	4 $\pm$ 2.2 (1.3)	N/A	3.1 $\pm$ 4 (1.4)	11.7 $\pm$ 6.3 (10)	3 $\pm$ 1.4 (0.8)
Rock	15 $\pm$ 34 (11.7)	6.2 $\pm$ 2.7 (1.6)	N/A	15 $\pm$ 34 (11.7)	5 $\pm$ 5.1 (0.8)	6.3 $\pm$ 3.1 (1.8)
Litter	74.5 $\pm$ 34 (11.6)	84.2 $\pm$ 4.2 (2.4)	N/A	74.5 $\pm$ 34 (11.6)	75.8 $\pm$ 63.1 (10)	85.3 $\pm$ 4.3 (2.5)
Stumps	0	0.4 $\pm$ 0.3 (0.2)	N/A	0	1.3 $\pm$ 7.9 (1.3)	0.3 $\pm$ 0.3 (0.15)
Small fuels (7.6 to 23 cm)	7.5 $\pm$ 3.7 (1.3)	5 $\pm$ 1.7 (1)	N/A	7.5 $\pm$ 3.7 (1.3)	3.4 $\pm$ 10.4 (1.7)	5.2 $\pm$ 1.9 (1.1)
Large fuels ( $\geq 23$ cm LED)	1.9 $\pm$ 2.1 (0.7)	1.2 $\pm$ 0.5 (0.3)	N/A	1.9 $\pm$ 2.1 (0.7)	2.1 $\pm$ 2.5 (0.4)	1.1 $\pm$ 0.5 (0.3)
Weeds	1.4 $\pm$ 2.2 (0.7)	0.7 $\pm$ 0.6 (0.3)	N/A	1.4 $\pm$ 2.2 (0.7)	0	0.8 $\pm$ 0.7 (0.4)
Other	0.8 $\pm$ 2.4 (0.8)	0.5 $\pm$ 0.4 (0.2)	N/A	0.8 $\pm$ 2.4 (0.8)	1.7 $\pm$ 10.4 (1.7)	0.4 $\pm$ 0.3 (0.2)

Table 28. Mean densities ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) of stems ( $\geq 50$  cm height) in 5 different size classes found on Birds and Burns study units located in South Dakota. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 3)	Closed (n = 18)	Nest (n = 0)	Random (n = 3)	Nest (n = 2)	Random (n = 16)
0 to < 2.5	2009 $\pm$ 3937 (1348)	3843 $\pm$ 1317 (757)	N/A	2009 $\pm$ 3937 (1348)	5687 $\pm$ 24119 (3820)	3613 $\pm$ 1332 (760)
2.5 to < 5	297 $\pm$ 379 (130)	495 $\pm$ 325 (187)	N/A	297 $\pm$ 379 (130)	85 $\pm$ 537 (85)	546 $\pm$ 362 (207)
5 to < 8	0	106 $\pm$ 82 (47)	N/A	0	43 $\pm$ 268 (43)	114 $\pm$ 92 (53)
8 to < 12	14 $\pm$ 41 (14)	40 $\pm$ 35 (20)	N/A	14 $\pm$ 41 (14)	21 $\pm$ 133 (21)	42 $\pm$ 40 (23)
All stems (< 12)	2320 $\pm$ 4300 (1473)	4485 $\pm$ 1533 (881)	N/A	2320 $\pm$ 4300 (1473)	5836 $\pm$ 23983 (3799)	4316 $\pm$ 1619 (923)

Table 29. Mean percent ground cover of 14 different habitat components ( $\pm 90\%$  confidence interval, standard errors, and sample sizes) found within each of two strata on Birds and Burns study units located in Washington. Values given for each stratum with all points combined, and separated by nest tree and random points within each stratum. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

	Percent ground cover value $\pm 90\%$ confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 18)	Closed (n = 44)	Nest (n = 16)	Random (n = 2)	Nest (n = 34)	Random (n = 10)
Grass	29.9 $\pm$ 4.9 (2.8)	28.2 $\pm$ 3.8 (2.2)	29.3 $\pm$ 4.8 (2.8)	35 $\pm$ 105 (16.7)	26.7 $\pm$ 4.3 (2.5)	33.3 $\pm$ 8.4 (4.6)
Forb	11.1 $\pm$ 2.8 (1.6)	15.7 $\pm$ 2.6 (1.5)	10.6 $\pm$ 2.6 (1.5)	15.4 $\pm$ 65.7 (10.4)	15.9 $\pm$ 3.3 (1.9)	14.4 $\pm$ 3.6 (2)
Tall shrubs ( $\geq 20$ cm)	12.1 $\pm$ 2.9 (1.6)	8.7 $\pm$ 2.2 (1.3)	11 $\pm$ 2.7 (1.6)	20.9 $\pm$ 36.9 (5.9)	9.6 $\pm$ 2.6 (1.5)	5.6 $\pm$ 4.3 (2.4)
Short shrubs (< 20 cm)	4.5 $\pm$ 2.4 (1.4)	5.1 $\pm$ 2.8 (1.7)	4.7 $\pm$ 2.6 (1.5)	2.9 $\pm$ 18.3 (2.9)	3.5 $\pm$ 1.9 (1.1)	10.7 $\pm$ 11 (6.2)
Dead stems	4.4 $\pm$ 1.3 (0.8)	2.3 $\pm$ 0.8 (0.5)	4.4 $\pm$ 1.5 (0.8)	4.2 $\pm$ 15.8 (2.5)	2.6 $\pm$ 1 (0.6)	1.3 $\pm$ 0.9 (0.5)
Seedlings	0.1 $\pm$ 0.2 (0.1)	0.7 $\pm$ 0.3 (0.2)	0.1 $\pm$ 0.2 (0.1)	0	0.4 $\pm$ 0.2 (0.1)	1.9 $\pm$ 1.1 (0.6)
Bare ground	13.6 $\pm$ 3.4 (2)	8.2 $\pm$ 2.1 (1.3)	12.4 $\pm$ 3.4 (1.9)	23 $\pm$ 39.5 (6.3)	8.3 $\pm$ 2.6 (1.6)	7.9 $\pm$ 3.3 (1.8)
Rock	5.3 $\pm$ 1.9 (1.1)	3.1 $\pm$ 1.1 (0.7)	5.7 $\pm$ 2 (1.1)	2.1 $\pm$ 13.3 (2.1)	3.6 $\pm$ 1.4 (0.8)	1.4 $\pm$ 0.8 (0.5)
Litter	71.4 $\pm$ 5 (2.9)	82.7 $\pm$ 2.9 (1.7)	71.6 $\pm$ 5.6 (3.2)	70 $\pm$ 36.6 (5.8)	82.4 $\pm$ 3.6 (2.1)	83.5 $\pm$ 3.5 (1.9)
Stumps	0.1 $\pm$ 0.2 (0.1)	0.2 $\pm$ 0.1 (0.1)	0.2 $\pm$ 0.2 (0.1)	0	0.1 $\pm$ 0.2 (0.1)	0.3 $\pm$ 0.3 (0.2)
Small fuels (7.6 to 23 cm)	2.8 $\pm$ 1.1 (0.6)	2 $\pm$ 0.5 (0.3)	3 $\pm$ 1.2 (0.7)	1.7 $\pm$ 10.4 (1.7)	1.8 $\pm$ 0.5 (0.3)	2.7 $\pm$ 1.3 (0.7)
Large fuels ( $\geq 23$ cm LED)	1.2 $\pm$ 0.9 (0.5)	1 $\pm$ 0.4 (0.2)	1.2 $\pm$ 1 (0.5)	1.3 $\pm$ 7.9 (1.3)	0.8 $\pm$ 0.4 (0.3)	1.6 $\pm$ 0.5 (0.3)
Weeds	0.1 $\pm$ 0.2 (0.1)	0.1 $\pm$ 0.1 (0.05)	0.1 $\pm$ 0.2 (0.1)	0	0.05 $\pm$ 0.1 (0.05)	0.2 $\pm$ 0.3 (0.2)
Other	1.8 $\pm$ 0.9 (0.5)	1.6 $\pm$ 0.7 (0.4)	1.9 $\pm$ 1 (0.6)	1.3 $\pm$ 2.8 (0.5)	1.7 $\pm$ 0.9 (0.5)	1.4 $\pm$ 0.9 (0.5)

Table 30. Mean densities ( $\pm$  90% confidence interval, standard errors, and sample sizes) of stems ( $\geq$  50 cm height) in 5 different size classes found on Birds and Burns study units located in Washington. Values given for all points combined, and separated by nest tree and random points. Nest tree information only for woodpecker and bluebird species. Data collected in 2002.

Size class (cm)	Stems per hectare $\pm$ 90% confidence interval (SE)					
	Stratum		Open		Closed	
	Open (n = 18)	Closed (n = 44)	Nest (n = 16)	Random (n = 2)	Nest (n = 34)	Random (n = 10)
0 to < 2.5	5051 $\pm$ 1163 (668)	3846 $\pm$ 994 (592)	4706 $\pm$ 1151 (657)	7810 $\pm$ 17953 (2844)	4305 $\pm$ 1202 <sup>b</sup> (710)	2283 $\pm$ 1554 <sup>b</sup> (848)
2.5 to < 5	757 $\pm$ 248 (142)	518 $\pm$ 136 (81)	775 $\pm$ 268 (153)	616 $\pm$ 3349 (531)	523 $\pm$ 150 (89)	501 $\pm$ 362 (198)
5 to < 8	240 $\pm$ 112 (65)	248 $\pm$ 69 (41)	249 $\pm$ 127 (72)	170 $\pm$ 537 (85)	243 $\pm$ 77 (46)	263 $\pm$ 177 (97)
8 to < 12	99 $\pm$ 42 (24)	129 $\pm$ 31 (18)	106 $\pm$ 46 (26)	43 $\pm$ 268 (43)	130 $\pm$ 36 (21)	127 $\pm$ 68 (37)
All stems (< 12)	6147 $\pm$ 1233 (709)	4741 $\pm$ 1018 (606)	5836 $\pm$ 1288 (735)	8637 $\pm$ 14335 (2271)	5202 $\pm$ 1191 (704)	3175 $\pm$ 1997 (1089)

<sup>b</sup> Mean densities within a state differ between nest and random values  $P < 0.10$ .