

Table. Range of variation in landscape structure for Spruce-Fir-Aspen Forest (67,500 ha) under the simulated HRV disturbance scenario on the San Juan National Forest, Colorado, and the degree of departure of the current landscape from the simulated range of variation (see text for details).

| Landscape Metric | Condition Class (seral stage) | Current Landscape ¹ | | Percentiles of Simulated Distribution | | | | | | | HRV Departure | |
|---|-------------------------------|--------------------------------|-------------------|---------------------------------------|---------|---------|---------|---------|---------|----------|-----------------|--------------------|
| | | Metric Value | Percentile of HRV | 0 | 5 | 25 | 50 | 75 | 95 | 100 | CV ² | Index ³ |
| <i>Seral Stage Composition</i> ⁴ | | | | | | | | | | | | |
| PLAND | Stand Initiation | 0.074 | 5 | 0.008 | 0.074 | 0.240 | 0.470 | 0.801 | 1.727 | 2.604 | 352 | 92 |
| | Stem Exclusion | 0.599 | 3 | 0.376 | 0.707 | 1.177 | 1.662 | 2.169 | 3.035 | 3.744 | 140 | |
| | Understory Reinitiation | 7.253 | 100 | 1.901 | 2.432 | 3.053 | 3.519 | 4.021 | 4.856 | 5.666 | 69 | |
| | Shifting Mosaic | 0.037 | 0 | 0.818 | 1.257 | 1.629 | 1.916 | 2.516 | 3.096 | 3.658 | 96 | |
| <i>Class Configuration</i> ⁵ | | | | | | | | | | | | |
| PD | Stand Initiation | 0.028 | 2 | 0.013 | 0.041 | 0.070 | 0.098 | 0.132 | 0.183 | 0.231 | 146 | 98 |
| | Stem Exclusion | 0.029 | 0 | 0.154 | 0.191 | 0.242 | 0.281 | 0.316 | 0.368 | 0.419 | 63 | |
| | Understory Reinitiation | 0.159 | 0 | 0.447 | 0.501 | 0.596 | 0.675 | 0.753 | 0.912 | 1.166 | 61 | |
| | Shifting Mosaic | 0.001 | 0 | 0.287 | 0.401 | 0.687 | 0.744 | 0.806 | 0.903 | 1.033 | 67 | |
| ED | Stand Initiation | 0.210 | 4 | 0.055 | 0.286 | 0.629 | 0.997 | 1.642 | 2.983 | 4.032 | 270 | 85 |
| | Stem Exclusion | 0.855 | 0 | 1.112 | 1.744 | 2.591 | 3.334 | 4.066 | 5.145 | 6.715 | 102 | |
| | Understory Reinitiation | 8.038 | 88 | 4.115 | 5.269 | 6.035 | 6.847 | 7.447 | 8.356 | 9.513 | 45 | |
| | Shifting Mosaic | 0.054 | 0 | 2.869 | 3.575 | 4.239 | 4.733 | 5.511 | 6.354 | 8.216 | 59 | |
| AREA_MN | Stand Initiation | 2.649 | 16 | 0.342 | 1.444 | 3.165 | 5.019 | 7.107 | 10.785 | 16.625 | 186 | 84 |
| | Stem Exclusion | 20.981 | 100 | 2.136 | 3.192 | 4.555 | 5.610 | 7.377 | 9.824 | 12.384 | 118 | |
| | Understory Reinitiation | 45.743 | 100 | 2.341 | 3.235 | 4.250 | 5.126 | 6.415 | 8.224 | 10.462 | 97 | |
| | Shifting Mosaic | 26.109 | 100 | 1.190 | 1.588 | 2.148 | 2.676 | 3.419 | 5.362 | 8.500 | 141 | |
| AREA_AM | Stand Initiation | 69.652 | 27 | 1.957 | 24.141 | 66.515 | 134.086 | 223.669 | 394.012 | 696.654 | 276 | 53 |
| | Stem Exclusion | 126.427 | 20 | 43.208 | 84.214 | 135.056 | 189.366 | 261.520 | 381.383 | 691.743 | 157 | |
| | Understory Reinitiation | 470.852 | 99 | 133.002 | 156.656 | 203.204 | 246.401 | 302.595 | 393.857 | 491.723 | 96 | |
| | Shifting Mosaic | 51.090 | 1 | 42.349 | 68.590 | 115.848 | 177.851 | 238.098 | 386.696 | 624.134 | 179 | |
| GYRATE_AM | Stand Initiation | 331.417 | 18 | 54.780 | 225.181 | 354.600 | 486.972 | 633.045 | 854.768 | 1260.713 | 129 | 40 |
| | Stem Exclusion | 527.526 | 34 | 282.665 | 406.890 | 495.948 | 580.977 | 684.156 | 834.000 | 1127.522 | 74 | |
| | Understory Reinitiation | 960.413 | 100 | 489.481 | 536.367 | 600.074 | 662.141 | 731.130 | 827.433 | 904.985 | 44 | |
| | Shifting Mosaic | 417.527 | 17 | 287.377 | 348.688 | 449.980 | 553.179 | 628.262 | 821.835 | 1060.526 | 86 | |
| SHAPE_MN | Stand Initiation | 1.287 | 6 | 1.152 | 1.284 | 1.340 | 1.391 | 1.433 | 1.491 | 1.532 | 15 | 94 |

| | | | | | | | | | | | | |
|----------|-------------------------|---------|-----|---------|---------|---------|---------|---------|---------|---------|-----|----|
| | Stem Exclusion | 1.740 | 100 | 1.301 | 1.323 | 1.368 | 1.398 | 1.433 | 1.476 | 1.525 | 11 | |
| | Understory Reinitiation | 1.939 | 100 | 1.245 | 1.289 | 1.316 | 1.344 | 1.377 | 1.413 | 1.476 | 9 | |
| | Shifting Mosaic | 1.968 | 100 | 1.209 | 1.237 | 1.254 | 1.269 | 1.297 | 1.434 | 1.647 | 15 | |
| SHAPE_AM | Stand Initiation | 3.160 | 28 | 1.561 | 2.612 | 3.109 | 3.550 | 4.154 | 5.331 | 9.953 | 77 | 50 |
| | Stem Exclusion | 2.568 | 0 | 2.757 | 3.165 | 3.511 | 3.831 | 4.258 | 4.974 | 6.124 | 47 | |
| | Understory Reinitiation | 3.779 | 41 | 3.130 | 3.398 | 3.625 | 3.859 | 4.143 | 4.500 | 5.589 | 29 | |
| | Shifting Mosaic | 2.253 | 0 | 2.545 | 2.812 | 3.217 | 3.459 | 3.863 | 4.581 | 5.556 | 51 | |
| CPLAND | Stand Initiation | 0.038 | 7 | 0.001 | 0.029 | 0.127 | 0.307 | 0.549 | 1.233 | 1.933 | 391 | 88 |
| | Stem Exclusion | 0.464 | 6 | 0.232 | 0.457 | 0.813 | 1.167 | 1.592 | 2.292 | 2.800 | 157 | |
| | Understory Reinitiation | 5.938 | 100 | 1.472 | 1.887 | 2.368 | 2.791 | 3.282 | 3.979 | 4.720 | 75 | |
| | Shifting Mosaic | 0.029 | 0 | 0.493 | 0.919 | 1.217 | 1.479 | 1.933 | 2.455 | 2.916 | 104 | |
| CORE_MN | Stand Initiation | 1.346 | 15 | 0.021 | 0.533 | 1.804 | 3.211 | 4.822 | 7.695 | 13.175 | 223 | 85 |
| | Stem Exclusion | 16.254 | 100 | 1.277 | 2.002 | 3.124 | 3.997 | 5.442 | 7.439 | 9.602 | 136 | |
| | Understory Reinitiation | 37.450 | 100 | 1.753 | 2.518 | 3.292 | 4.038 | 5.160 | 6.796 | 8.543 | 106 | |
| | Shifting Mosaic | 20.490 | 100 | 0.717 | 1.174 | 1.602 | 2.066 | 2.661 | 4.115 | 6.831 | 142 | |
| CORE_AM | Stand Initiation | 45.321 | 26 | 0.224 | 13.727 | 44.900 | 97.527 | 164.654 | 320.213 | 616.907 | 314 | 47 |
| | Stem Exclusion | 109.814 | 28 | 31.383 | 62.431 | 106.791 | 152.730 | 215.803 | 318.776 | 586.688 | 168 | |
| | Understory Reinitiation | 415.888 | 97 | 116.370 | 135.650 | 180.827 | 220.538 | 269.503 | 358.680 | 445.340 | 101 | |
| | Shifting Mosaic | 44.170 | 1 | 31.948 | 56.336 | 98.499 | 155.079 | 212.438 | 347.666 | 571.901 | 188 | |
| CAI_MN | Stand Initiation | 12.606 | 18 | 1.698 | 8.417 | 14.303 | 18.159 | 23.008 | 30.787 | 42.675 | 123 | 57 |
| | Stem Exclusion | 54.197 | 100 | 10.150 | 13.190 | 16.634 | 20.195 | 23.857 | 33.290 | 48.343 | 100 | |
| | Understory Reinitiation | 62.231 | 100 | 13.483 | 24.715 | 29.975 | 34.899 | 40.483 | 50.949 | 60.186 | 75 | |
| | Shifting Mosaic | 49.372 | 38 | 26.276 | 35.963 | 46.121 | 52.149 | 58.767 | 65.940 | 69.459 | 57 | |
| CAI_AM | Stand Initiation | 50.808 | 17 | 5.750 | 34.847 | 56.486 | 64.150 | 68.637 | 75.222 | 81.036 | 63 | 47 |
| | Stem Exclusion | 77.470 | 97 | 56.357 | 63.435 | 68.549 | 70.821 | 73.731 | 76.790 | 79.507 | 19 | |
| | Understory Reinitiation | 81.871 | 87 | 70.307 | 75.284 | 78.114 | 79.769 | 81.147 | 82.668 | 83.623 | 9 | |
| | Shifting Mosaic | 78.476 | 79 | 60.231 | 70.323 | 74.457 | 76.397 | 78.050 | 80.241 | 82.291 | 13 | |
| PROX_MN | Stand Initiation | 30.819 | 39 | 0.340 | 6.092 | 19.842 | 43.663 | 88.595 | 168.206 | 424.714 | 371 | 71 |
| | Stem Exclusion | 19.400 | 4 | 12.073 | 21.435 | 43.751 | 69.454 | 97.756 | 156.482 | 250.034 | 194 | |
| | Understory Reinitiation | 187.988 | 100 | 27.009 | 39.318 | 55.453 | 75.232 | 98.991 | 132.887 | 170.989 | 124 | |
| | Shifting Mosaic | 10.568 | 0 | 10.224 | 16.586 | 26.496 | 39.773 | 50.596 | 83.001 | 114.452 | 167 | |
| PROX_AM | Stand Initiation | 84.064 | 57 | 0.126 | 5.887 | 25.173 | 71.285 | 160.235 | 412.523 | 878.760 | 570 | 69 |

| | | | | | | | | | | | | |
|--------|-------------------------|---------|-----|--------|--------|---------|---------|---------|---------|---------|-----|----|
| | Stem Exclusion | 17.759 | 0 | 12.056 | 31.737 | 87.033 | 139.298 | 212.021 | 488.999 | 799.365 | 328 | |
| | Understory Reinitiation | 342.945 | 94 | 72.915 | 93.175 | 139.159 | 181.331 | 236.180 | 355.691 | 417.785 | 145 | |
| | Shifting Mosaic | 0.984 | 0 | 18.050 | 30.405 | 72.579 | 100.173 | 155.920 | 241.825 | 429.147 | 211 | |
| CWED | Stand Initiation | 0.073 | 3 | 0.020 | 0.097 | 0.218 | 0.335 | 0.519 | 0.927 | 1.307 | 248 | 97 |
| | Stem Exclusion | 0.248 | 0 | 0.311 | 0.487 | 0.727 | 0.944 | 1.127 | 1.429 | 1.882 | 100 | |
| | Understory Reinitiation | 2.286 | 100 | 0.804 | 1.061 | 1.229 | 1.386 | 1.543 | 1.786 | 1.924 | 52 | |
| | Shifting Mosaic | 0.013 | 0 | 0.511 | 0.615 | 0.745 | 0.878 | 1.055 | 1.214 | 1.546 | 68 | |
| TECI | Stand Initiation | 34.862 | 73 | 26.058 | 28.582 | 31.249 | 32.988 | 35.013 | 38.828 | 45.807 | 31 | 56 |
| | Stem Exclusion | 28.895 | 82 | 25.370 | 26.557 | 27.469 | 28.065 | 28.652 | 29.532 | 30.318 | 11 | |
| | Understory Reinitiation | 28.359 | 100 | 14.536 | 17.118 | 19.196 | 20.422 | 21.861 | 24.344 | 28.728 | 35 | |
| | Shifting Mosaic | 24.441 | 100 | 11.697 | 14.354 | 16.600 | 18.489 | 20.147 | 22.379 | 24.993 | 43 | |
| CLUMPY | Stand Initiation | 0.832 | 20 | 0.521 | 0.757 | 0.840 | 0.866 | 0.883 | 0.900 | 0.917 | 16 | 81 |
| | Stem Exclusion | 0.913 | 100 | 0.803 | 0.836 | 0.860 | 0.873 | 0.884 | 0.896 | 0.907 | 7 | |
| | Understory Reinitiation | 0.926 | 100 | 0.821 | 0.855 | 0.869 | 0.878 | 0.885 | 0.894 | 0.900 | 4 | |
| | Shifting Mosaic | 0.921 | 100 | 0.778 | 0.800 | 0.831 | 0.848 | 0.860 | 0.878 | 0.895 | 9 | |
| IJI | Stand Initiation | 38.776 | 0 | 39.765 | 53.493 | 59.416 | 61.488 | 63.216 | 65.236 | 66.923 | 19 | 70 |
| | Stem Exclusion | 60.547 | 25 | 52.918 | 57.065 | 60.579 | 63.182 | 64.432 | 66.435 | 67.803 | 15 | |
| | Understory Reinitiation | 64.124 | 95 | 49.790 | 56.655 | 59.618 | 60.999 | 62.290 | 64.111 | 65.485 | 12 | |
| | Shifting Mosaic | 58.434 | 99 | 41.855 | 45.726 | 49.555 | 51.783 | 54.129 | 57.079 | 60.166 | 22 | |

Summary Indices⁶:

| | |
|--|----|
| <i>Seral-Stage Departure Index</i> | 92 |
| <i>Class Configuration Departure Index</i> | 70 |
| <i>Cover Type Departure Index</i> | 81 |

¹Some stand conditions are not represented in the current landscape. Certain metrics are logically zero if the class is absent, while others are undefined (indicated by missing data). HRV departure index is undefined if the current landscape condition is undefined.

²CV = coefficient of variation in the simulated distribution, computed as the difference between the 5 and 95 percentiles divided by the median and multiplied by 100 to convert to a percentage. n/d = not defined (division by zero).

³HRV departure index represents the degree of departure of the current landscape condition from the historic range of variability and is given here specifically as the degree of departure from the 25-75 percentile range of variation, where a 0 represents no departure (i.e., within the 25-75 percentiles of variation) and 100 represents complete departure (i.e., outside the 0-100 percentiles of variation).

⁴Landscape composition here represents the distribution of area among seral stages for the corresponding cover type. PLAND = the percent of the landscape encompassed by the corresponding seral stage. Note, PLAND = the percentage of the entire landscape, not as a percent of the corresponding cover type.

⁵Landscape configuration here represents the spatial character, distribution, and arrangement of the corresponding cover type. The landscape metrics listed here are described in detail in the FRAGSTATS methods section. PD = patch density; ED = edge density; AREA_MN = mean patch size; AREA_AM = area-weighted mean patch size; GYRATE_AM = area-weighted mean patch radius of gyration (correlation length); SHAPE_MN = mean patch shape index; SHAPE_AM = area-weighted mean patch shape index; CPLAND = core area percent of landscape; CORE_MN = mean patch core area; CORE_AM = area-weighted mean patch core area; CAI_MN = mean patch core area index; CAI_AM = area-weighted mean patch core area index; PROX_MN = mean proximity index; PROX_AM = area-weighted mean proximity index; CWED = contrast-weighted edge density; TECI = total edge contrast index; CLUMPY = clumpiness index; IJI = interspersion and juxtaposition index.

⁶Seral-stage departure index is based on the distribution of area (percentage of landscape) among seral stages and is computed as the mean departure across seral stages. Class configuration departure index is based on several landscape metrics that quantify different aspects of the spatial distribution of the cover type and is computed as the mean departure across metrics. Cover type departure index is computed as the mean of the seral-stage and class configuration departure indices.