Grizzly bear habitat and management in the Rattlesnake National Recreation Area and Wilderness

Debra A. Tirmenstein
The University of Montana

Follow this and additional works at: https://scholarworks.umt.edu/etd
Let us know how access to this document benefits you.

Recommended Citation
https://scholarworks.umt.edu/etd/7256

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
COPYRIGHT ACT OF 1976

THIS IS AN UNPUBLISHED MANUSCRIPT IN WHICH COPYRIGHT SUBSISTS. ANY FURTHER REPRINTING OF ITS CONTENTS MUST BE APPROVED BY THE AUTHOR.

MANSFIELD LIBRARY
UNIVERSITY OF MONTANA
DATE: 1984
The Rattlesnake National Recreation Area and Wilderness (RNRAW), lies at the southern edge of the Northern Continental Divide Grizzly Bear Ecosystem. Grizzly densities in the RNRAW are low, but small numbers of bears do use this area at least intermittently.

The identification of key sites is an important step in any area-wide grizzly bear management plan. Border Grizzly Project researchers (Mealey et al., 1976), and others have developed a system of identifying sites of particular importance to the bear on the basis of vegetation, topography, and known food habits. Later refinements in this system were made by biologists with the Kootenai National Forest (Madel, 1982). This component mapping system was used to evaluate potential grizzly habitat within the RNRAW.

Color air photos were used for initial identification of grizzly bear habitat components (GBHCs). Components thus identified were evaluated through on-the-ground field checks. Sample plots were taken in selected components, the vegetation analyzed, and habitat type determined. The following GBHCs were identified, mapped, and described, in the RNRAW: Timbered Shrubfield, Mixed Shrubfield, Mixed Shrubfield - Cutting Unit, Mixed Shrubfield - Burn, Mixed Shrubfield - Snowchute, Huckleberry Shrubfield, Riparian Streambottom, Dry Meadow, Wet Meadow, Drainage Forbfield, Beargrass Sidehill Park, Graminoid Sidehill Park, and Terrace Rock Sidehill Park.

Past grizzly food habit studies have provided a general means of predicting GBHC use by season. Acreage totals and potential season of use were determined for each GBHC within the RNRAW. Although components of actual or potential value were identified and mapped, it is not known if the Rattlesnake Area can support a population of grizzlies. Low grizzly densities may be related to geographic location or to habitat quality. Fall and spring components were found to be the most limited. Apart from consideration as resident habitat, the Rattlesnake may be valuable as a travel corridor permitting migration from the Mission Mountains to the southwest.

Mapped components are used to examine present and projected recreational use and other impacts and to generate recommendations for minimizing human impacts on the grizzly. Forest Service RNRAW grizzly bear management alternatives and monitoring plans are reviewed.

Flexibility and periodic review are important in developing a grizzly bear management plan. Recreational closures could be considered if monitoring reveals a high risk of Man/grizzly conflict. Close cooperation between tribal and BIA biologists, officials with Region 2 of the Montana Department of Fish, Wildlife, and Parks, and with Lolo National Forest, is essential for effective grizzly management in the RNRAW and Mission Mountains.
ACKNOWLEDGEMENTS

This research could not have been completed without the help of many very special people. First I would like to thank the members of my committee: Dr. Ron Erickson, Dr. Les Marcum, Mike Hillis, and Dr. Chuck Jonkel, for their valuable advice. Alan Christensen, Mike Madel, and others associated with Kootenai National Forest gave me an excellent and enthusiastic introduction to habitat component mapping.

Lolo National Forest provided maps, air photos, and some financial help. A Marie Lucas Grant also gave me much-needed funds at a crucial time. Marc Cline and Jane Frost provided some very able assistance in the field, and Jeff Lonn generously loaned me necessary equipment.

Bill Thomlinson (and his friend "Bleep"), spent long hours teaching me how to word process and provided many helpful suggestions. My friends Danny Parker and Lisa Shepperd gave advice and encouragement when I needed it most. My parents also deserve special thanks for their continuous support. Finally, I would like to thank my dog Otter who followed along throughout all of the fieldwork without complaint.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>x</td>
</tr>
<tr>
<td>PART I. HABITAT COMPONENT MAPPING.</td>
<td>1</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Goals</td>
<td>2</td>
</tr>
<tr>
<td>Objectives</td>
<td>3</td>
</tr>
<tr>
<td>II. THE STUDY AREA</td>
<td>4</td>
</tr>
<tr>
<td>Background</td>
<td>4</td>
</tr>
<tr>
<td>Land ownership</td>
<td>5</td>
</tr>
<tr>
<td>Climate</td>
<td>7</td>
</tr>
<tr>
<td>Geology</td>
<td>9</td>
</tr>
<tr>
<td>Hydrology</td>
<td>10</td>
</tr>
<tr>
<td>Soils</td>
<td>10</td>
</tr>
<tr>
<td>Vegetation</td>
<td>11</td>
</tr>
<tr>
<td>Wildlife</td>
<td>12</td>
</tr>
<tr>
<td>Human History of the Area</td>
<td>15</td>
</tr>
<tr>
<td>Fire</td>
<td>15</td>
</tr>
<tr>
<td>Logging</td>
<td>15</td>
</tr>
<tr>
<td>Mining</td>
<td>17</td>
</tr>
<tr>
<td>Agriculture</td>
<td>19</td>
</tr>
<tr>
<td>Watershed</td>
<td>20</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Records of Grizzlies in the Rattlesnake</td>
<td>23</td>
</tr>
<tr>
<td>Grizzly Reports from Adjacent Areas</td>
<td>26</td>
</tr>
<tr>
<td>The Bitterroots</td>
<td>29</td>
</tr>
<tr>
<td>III. METHODS</td>
<td>30</td>
</tr>
<tr>
<td>Ground Reconnaissance</td>
<td>32</td>
</tr>
<tr>
<td>Sample Plots</td>
<td>33</td>
</tr>
<tr>
<td>Habitat Types</td>
<td>35</td>
</tr>
<tr>
<td>IV. RESULTS</td>
<td>35</td>
</tr>
<tr>
<td>Closed Timber</td>
<td>36</td>
</tr>
<tr>
<td>Open Timber</td>
<td>44</td>
</tr>
<tr>
<td>Timbered Shrubfield</td>
<td>44</td>
</tr>
<tr>
<td>Shrubfield Components</td>
<td>45</td>
</tr>
<tr>
<td>Mixed Shrubfield</td>
<td>46</td>
</tr>
<tr>
<td>Mixed Shrubfield - Cutting Unit</td>
<td>47</td>
</tr>
<tr>
<td>Mixed Shrubfield - Burn</td>
<td>50</td>
</tr>
<tr>
<td>Mixed Shrubfield - Snowchute</td>
<td>50</td>
</tr>
<tr>
<td>Huckleberry Shrubfield</td>
<td>53</td>
</tr>
<tr>
<td>Riparian Streambottom</td>
<td>53</td>
</tr>
<tr>
<td>Dry Meadow</td>
<td>56</td>
</tr>
<tr>
<td>Wet Meadow</td>
<td>58</td>
</tr>
<tr>
<td>Drainage Forbfield</td>
<td>60</td>
</tr>
<tr>
<td>Sidehill Park Components</td>
<td>62</td>
</tr>
<tr>
<td>Beargrass Sidehill Park</td>
<td>64</td>
</tr>
<tr>
<td>Graminoid Sidehill Park</td>
<td>66</td>
</tr>
<tr>
<td>Terrace Rock Sidehill Park</td>
<td>67</td>
</tr>
<tr>
<td>Slabrock</td>
<td>69</td>
</tr>
<tr>
<td>Scree/Talus/Rock</td>
<td>71</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>V. DISCUSSION</td>
<td>73</td>
</tr>
<tr>
<td>Use of Components</td>
<td>73</td>
</tr>
<tr>
<td>Value of Components by Season</td>
<td>75</td>
</tr>
<tr>
<td>Closed Timber</td>
<td>75</td>
</tr>
<tr>
<td>Open Timber</td>
<td>76</td>
</tr>
<tr>
<td>Timbered Shrubfield</td>
<td>76</td>
</tr>
<tr>
<td>Mixed Shrubfield</td>
<td>78</td>
</tr>
<tr>
<td>Mixed Shrubfield - Cutting Unit</td>
<td>78</td>
</tr>
<tr>
<td>Mixed Shrubfield - Burn</td>
<td>80</td>
</tr>
<tr>
<td>Mixed Shrubfield - Snowchute</td>
<td>80</td>
</tr>
<tr>
<td>Huckleberry Shrubfield</td>
<td>81</td>
</tr>
<tr>
<td>Riparian Streambottom</td>
<td>82</td>
</tr>
<tr>
<td>Dry Meadow</td>
<td>83</td>
</tr>
<tr>
<td>Wet Meadow</td>
<td>84</td>
</tr>
<tr>
<td>Drainage Forbfield</td>
<td>84</td>
</tr>
<tr>
<td>Beargrass Sidehill Park</td>
<td>85</td>
</tr>
<tr>
<td>Graminoid Sidehill Park</td>
<td>87</td>
</tr>
<tr>
<td>Terrace Rock Sidehill Park</td>
<td>88</td>
</tr>
<tr>
<td>Slabrock</td>
<td>88</td>
</tr>
<tr>
<td>Scree/Talus/Rock</td>
<td>89</td>
</tr>
<tr>
<td>VI. CONCLUSIONS</td>
<td>90</td>
</tr>
<tr>
<td>PART II. MANAGEMENT IMPLICATIONS</td>
<td>92</td>
</tr>
<tr>
<td>VII. INTRODUCTION</td>
<td>92</td>
</tr>
<tr>
<td>Management Objectives and options</td>
<td>93</td>
</tr>
<tr>
<td>Potential Value of the Rattlesnake to the Grizzly</td>
<td>93</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>VIII. METHODS</td>
<td>94</td>
</tr>
<tr>
<td>Management Parameters</td>
<td>94</td>
</tr>
<tr>
<td>Management Alternatives</td>
<td>95</td>
</tr>
<tr>
<td>IX. RESULTS</td>
<td>97</td>
</tr>
<tr>
<td>Impacts of Recreation in the Rattlesnake</td>
<td>97</td>
</tr>
<tr>
<td>Hiking and camping</td>
<td>104</td>
</tr>
<tr>
<td>Motorized travel</td>
<td>104</td>
</tr>
<tr>
<td>Fishing</td>
<td>105</td>
</tr>
<tr>
<td>Horse travel - horsepacking</td>
<td>105</td>
</tr>
<tr>
<td>Hunting</td>
<td>106</td>
</tr>
<tr>
<td>Grizzly/People Management</td>
<td>107</td>
</tr>
<tr>
<td>The Grizzly, Grizzly Habitat, and Recreation Management</td>
<td>109</td>
</tr>
<tr>
<td>Potential for Man/Grizzly Conflicts or Confrontations</td>
<td>112</td>
</tr>
<tr>
<td>X. DISCUSSION</td>
<td>114</td>
</tr>
<tr>
<td>Monitoring</td>
<td>114</td>
</tr>
<tr>
<td>Grizzly bears</td>
<td>114</td>
</tr>
<tr>
<td>Vegetation</td>
<td>119</td>
</tr>
<tr>
<td>Potential Problem Areas</td>
<td>120</td>
</tr>
<tr>
<td>Problem Bears</td>
<td>121</td>
</tr>
<tr>
<td>Fire</td>
<td>122</td>
</tr>
<tr>
<td>Logging</td>
<td>122</td>
</tr>
<tr>
<td>Considerations on Adjacent Lands</td>
<td>123</td>
</tr>
<tr>
<td>Other Development</td>
<td>123</td>
</tr>
<tr>
<td>XI. CONCLUSIONS</td>
<td>124</td>
</tr>
<tr>
<td>REFERENCES CITED</td>
<td>127</td>
</tr>
</tbody>
</table>
APPENDICES ............................................................... 135

A. DATA SHEETS .................................................... 135

Habitat Type Field Form ........................................ 136

Rattlesnake Habitat Component Field Form ................... 137

B. PERCENT SPECIES OCCURRENCE BY COMPONENT .......... 139

C. COMPLETE SPECIES LIST ........................................ 171

D. KEY TO HABITAT TYPES ......................................... 199

E. HABITAT TYPES OF COMPONENTS ............................ 201

GRIZZLY HABITAT COMPONENT OVERLAYS Front Pocket

RECREATION OVERLAYS Back Pocket
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Acres of Habitat Components</td>
<td>37</td>
</tr>
<tr>
<td>2. Seasonal Bear Use of Habitat Components</td>
<td>74</td>
</tr>
<tr>
<td>3. Lolo National Forest Grizzly Management Alternatives</td>
<td>96</td>
</tr>
<tr>
<td>4. Suggested Response to Reports of Grizzly Activity</td>
<td>118</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The Study Area</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>Land Ownership</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Location and Extent of Fires</td>
<td>16</td>
</tr>
<tr>
<td>4.</td>
<td>Location and Extent of Timber Harvesting</td>
<td>18</td>
</tr>
<tr>
<td>5.</td>
<td>Grizzly Occurrence</td>
<td>24</td>
</tr>
<tr>
<td>6.</td>
<td>Grizzly Distribution in the Border Grizzly Area</td>
<td>27</td>
</tr>
<tr>
<td>7.</td>
<td>Area Map</td>
<td>28</td>
</tr>
<tr>
<td>8.</td>
<td>Key to Habitat Components</td>
<td>38</td>
</tr>
<tr>
<td>9.</td>
<td>Key to Rattlesnake Drainage Component Maps</td>
<td>39</td>
</tr>
<tr>
<td>10.</td>
<td>Northeast Missoula Quad. - Grizzly Habitat Component Base Map</td>
<td>40</td>
</tr>
<tr>
<td>11.</td>
<td>Stuart Peak Quad. - Grizzly Habitat Component Base Map</td>
<td>41</td>
</tr>
<tr>
<td>12.</td>
<td>Wapiti Lake Quad. - Grizzly Habitat Component Base Map</td>
<td>42</td>
</tr>
<tr>
<td>13.</td>
<td>Blue Point Quad. - Grizzly Habitat Component Base Map</td>
<td>43</td>
</tr>
<tr>
<td>14.</td>
<td>Mixed Shrubfield Cutting Unit Habitat Component Showing Shrub/Overstory Relationship</td>
<td>48</td>
</tr>
<tr>
<td>15.</td>
<td>Productive Mixed Shrubfield Cutting Unit Habitat Component at Lake Creek.</td>
<td>49</td>
</tr>
<tr>
<td>16.</td>
<td>Mixed Shrubfield Snowchute Habitat Component Showing Extensive Vertically Stratified Shrub Growth</td>
<td>52</td>
</tr>
<tr>
<td>17.</td>
<td>Riparian Streambottom Habitat Component Providing Diverse Bear Foods and Excellent Cover</td>
<td>55</td>
</tr>
<tr>
<td>18.</td>
<td>Dry Meadow Habitat Component Along Lower Rattlesnake Creek Produced by Agricultural Activities</td>
<td>57</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>19. Low-elevation Dry Meadow Habitat Component Surrounded by Wet Meadow Component</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>20. High-elevation Wet Meadow Habitat Component Dominated by Perennial Graminoids</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>21. Large High-elevation Wet Meadow Component in Grant Basin</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>22. Drainage Forbfield Habitat Component Showing Extensive Forb Growth</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>23. Typical High-elevation Beargrass Sidehill Park Component</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>24. Small High-elevation Graminoid Sidehill Park Components Interspersed with Slabrock</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>25. Low-elevation Graminoid Sidehill Park Component ShowingAbrupt Ecotonal Boundary with Adjacent Timber</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>26. View of Terrace Rock Sidehill Park Components Showing Moist-to-Wet Benches Alternating with Slabrock</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>27. Unvegetated Talus Below McLeod Peak</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>28. Key to Recreation Maps</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>29. Northeast Missoula Quad. - Recreation Base Map</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>30. Stuart Peak Quad. - Recreation Base Map</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>31. Wapiti Lake Quad. - Recreation Base Map</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>32. Blue Point Quad. - Recreation Base Map</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>33. Bear Management Zones</td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>
PART I. HABITAT COMPONENT MAPPING

Chapter I

INTRODUCTION

The grizzly bear (Ursus arctos horribilis Ord) formerly occupied a variety of habitats throughout most of western North America. Since the coming of the Europeans in the eighteenth and nineteenth centuries, grizzly bear populations have been greatly reduced. The extent of occupied grizzly range has continued to decline through the 1900s, with further human encroachments into grizzly habitat (Craighead et al., 1973). Grizzlies, south of Canada, now appear to be restricted to portions of northwestern Wyoming, northern Idaho, northeastern Washington, and western Montana. They are still abundant in western Canada and Alaska (Joslin et al., 1976).

Within Montana, grizzlies are now centered in the Northern Continental Divide Ecosystem of northwestern Montana and in the area surrounding Yellowstone National Park (Joslin et al., 1976). Grizzlies still occur in the Mission, Swan, and Rattlesnake or Jocko mountains which adjoin the Rattlesnake Wilderness (Joslin and McMurray, 1976). Grizzlies have been reported in the Rattlesnake Wilderness Area, but their densities are thought to be low (Servheen, 1978). Nevertheless, the Rattlesnake area may still be important as a grizzly travel corridor or have potential resident habitat value.

Although grizzlies are known to use a wide range of habitats,
certain sites or habitat components (Zager et al., 1980) are particularly important to the grizzly. These components may be identified and mapped as critical sites, and integrated into management frameworks used by federal, state, or local agencies.

Goals

The long-term purpose of this study was to map key habitat sites in the Rattlesnake Wilderness and in certain surrounding areas. Habitat components thus delineated may serve as a basis for developing a management plan for the Rattlesnake National Recreation Area and Wilderness, and can be used to predict areas of seasonal grizzly use. They may be monitored over time to detect changes in size or species composition and may also be useful in locating areas of potential conflict between Man and the grizzly. Identification and mapping of these components represent an important first step in developing an area-wide grizzly bear management plan for the Rattlesnake National Recreation Area and Wilderness.

Part I, below, includes an examination of grizzly habitat components within the Rattlesnake Wilderness and adjacent areas, and provides basic information on key grizzly habitat. Research results thus collected were analyzed and used to suggest ways in which human impacts on bear habitat can be minimized. These suggestions, as well as other management implications, are discussed in Part II.
Objectives

Studies of this unique grizzly habitat adjacent to a major population center of western Montana may provide insights for zoning, mitigation, and management in the Rattlesnake, as well as other high-use grizzly habitat areas. Specific research objectives were as follows:

1) Locate, describe, and map key Grizzly Habitat Components (GBHCs), of Rattlesnake Wilderness Area sites:
   a) map the habitat components of adjacent areas as possible.
   b) prepare precise transparency maps, with Grizzly Habitat Components delineated and measured.

2) Examine the present and projected recreational use patterns and other impacts in the Rattlesnake Wilderness Area as they relate to important grizzly habitat components:
   a) generate recommendations as to how human impacts on bears resulting from recreational activities may be minimized. Document past, and projected impacts relative to season and year.

This research will correlate with parallel Border Grizzly Project studies of grizzly habitat and land ownership patterns of the Mission Valley and Jocko areas. These studies will, in turn, permit analyses of cumulative impacts and grizzly habitat use patterns over a broad area of western Montana, which may be essential for the survival of
the grizzly in the Mission and Swan mountains and adjacent areas.

Chapter II

THE STUDY AREA

Background

The Rattlesnake Wilderness is a unique classified wilderness which lies approximately 17 miles (27 km), northeast of Missoula, Montana, a population center of more than 50,000 people (Conklin, 1972). The Rattlesnake Wilderness forms part of the 61,000 acre Rattlesnake National Recreation Area and Wilderness (RNRAW), (Missoula Ranger District, 1982). Of this amount, 33,000 acres are to be managed as a Wilderness Area, with the remainder to be managed as a National Recreation Area, according to the Rattlesnake Wilderness Act of 1980, and the Wilderness Act of 1964. The Rattlesnake is bordered by the Flathead Reservation to the north, Grant and Butler creeks to the west, and the Gold-Twin Creek drainage to the east. The wilderness boundary is approximately 6.2 miles (10 km), south of the Mission Mountains across the Jocko Divide (Servheen, 1981).

Elevation in the Rattlesnake National Recreation Area and Wilderness ranges from 3,400 ft (1,036 m), near the southern border to 8,600 ft (2,621 m), at McLeod Peak on the northwest boundary. The upper Rattlesnake is characterized by rugged mountains and steep, narrow, glaciated valleys (Mahoney, 1973). This northern portion of
the Rattlesnake is, for the most part, alpine or subalpine (Conklin, 1972). Numerous lakes are located in the high cirque basins. Most of the lower Rattlesnake is timbered and exhibits a more gentle topographic profile. Areas to the east of Rattlesnake Creek are generally somewhat less rugged than ridges located west of the creek. Some ridges to the west rise from 3,000 to 4,000 ft (914 to 1,219 m), above the well-drained valley floors (White, 1958) (Fig. 1).

Land ownership

Legislation was signed on October 16, 1980 creating the RNRAW (Missoula Ranger District, 1983). This legislation directed the United States Government to acquire ownership of private lands located within the boundary. Negotiations are currently being conducted between private land owners and the federal government. Arrangements to transfer ownerships are expected to be completed in the near future.

The bulk of the ownership in the Rattlesnake is currently divided between the federal government (48%), and the Montana Power Company (37%), (Wall et al., 1978). Burlington Northern has ownership of several sections located at the western edge of the Rattlesnake, (Grant Creek), and near the eastern border (Gold Creek). Negotiations for the transfer of these lands have recently been completed (M. Hillis, pers. comm.). In addition to the tracts owned by Montana Power Company and Burlington Northern, only a few small portions of the Rattlesnake are in private ownership. Peterson Lake (Sec. 5, T14N
Rattlesnake National Recreation Area and Wilderness
(as approved in Bill (S.3072) on October 19, 1980)

Figure 1. The Study Area
R18W), was owned by J. E. Peterson until 1980 when the federal
government acquired ownership. The Rattlesnake Valley Irrigation
Company, which is currently inactive, still retains ownership of a
half-section near Twin Lakes (Sec. 31, T14N R18W), (Hartse, 1976).

The majority of the lands directly to the north of the Rattlesnake
Wilderness form part of the Flathead Reservation which is managed by
the Bureau of Indian Affairs and the Confederated Kootenai-Salish
Tribes. The state of Montana owns several sections of land to the
north and west of the Rattlesnake (Sec. 36, T16N R18W; Sec. 36, T16N
R19W; and Sec. 16, T15N R19W). Lands to the south of the Rattlesnake
Recreation Area are mostly in various private ownerships. Several
sections to the west and southwest are owned by the federal government
(U.S. Forest Service), Champion International, or Burlington Northern,
with the remainder divided among numerous private owners. In the
Gold-Twin Creek area to the east of the Rattlesnake, Champion
International, Burlington Northern, the state of Montana, and the
federal government are the main land owners. The United States
government, Champion International, Burlington Northern, Montana Power
Company, the State of Montana, and numerous private individuals own
lands to the southeast of the Rattlesnake extending to the Blackfoot
and Clark Fork rivers (Fig. 2).

Climate

Precipitation in the semi-arid Rattlesnake varies considerably
according to elevation, with most precipitation occurring in the
Figure 2. Land Ownership

- Federal - USFS
- Montana Power
- Champion
- Private
- Burlington Northern
- State of Montana
winter months (Conklin, 1972). High basin lakes typically remain snow-covered from late October through early July (Wall et al., 1978).

The Rattlesnake is, overall, much drier than the west slope of the Mission Mountains to the north. Average annual precipitation is less than 20 in (51 cm), on lower slopes, although higher elevations may receive an average of 50 in (127 cm), (Fichtler, 1980). This compares with an annual average of 40 in (102 cm), for lower elevation sites along the western slope of the Mission Mountains and 100 in (254 cm), at Mission Mountain sites above 7,000 ft (2,134 m), (Fichtler, 1980). The average low elevation maximum for Rattlesnake sites is 13.3 degrees C with -0.8 degrees C as an average minimum temperature (Adelman, 1979). Extremes of 40.5 degrees C and -34.4 degrees C have been reported (Knoche, 1968).

Geology

Argillites, quartzites, and limestones of the Precambrian Belt Series form the dominant rock units of the Rattlesnake area, although some Cambrian limestones and shales are also present (Adelman, 1979). These ancient sedimentary rock units were complexly folded and faulted during the main mountain-building period of the Rockies.

Glaciation has also played a prominent role in the Rattlesnake. Several waves of mountain glaciation during the Pleistocene produced the hanging valleys and cirque basins characteristic of the upper Rattlesnake (Fichtler, 1980). Lower portions of the Rattlesnake drainage contain glacial moraines, outwash deposits, and show evidence

Hydrology

Rattlesnake Creek, which is 59.6 miles (37 km), in length, originates at the northern wilderness boundary between McLeod and Triangle peaks, and flows into the Clark Fork River at Missoula, Montana (Adelman, 1979). Wrangle, High Falls, Lake, Porcupine, East Fork, Pilcher, Fraser, and Spring creeks are main tributaries of Rattlesnake Creek. The Rattlesnake watershed contains more than 40 ponds or lakes, with Boulder Lake (Sec. 11, T15N R18W), the largest in size. Many of the larger lakes have been dammed as a result of the use of the drainage as a municipal watershed. Overall, the Rattlesnake has a high peak discharge per unit area, a disproportionately large amount of which originates at upper elevations (Van der Poel, 1979). Van der Poel (1979), reviewed the hydrology of the Rattlesnake Drainage in detail.

Soils

Fichtler, (1980), described the soils of the Rattlesnake as finely textured mineral soil derived from volcanic loess, and varying from a loam to a silty loam. Soils of the valley bottoms tend to be deep to
moderately deep and shallow to deep in forested areas (Conklin, 1972).
Soils of the Rattlesnake are generally similar in texture and composition to those of the western slope of the Mission Mountains (Fichtler, 1980).

Vegetation

Vegetation in the Rattlesnake varies with topo-edaphic factors as well as with past human disturbances. Much of the lower Rattlesnake is characterized by the PSME-PHMA, (Pseudotsuga menziesii-Physocarpos malvaceus), vegetation type of Daubenmire (1952), (White, 1958). Rattlesnake habitat types corresponding with those developed by Pfister et al. (1977), for Western Montana include: PIPO/FEID; PSME/PHMA,PHMA; PSME/PHMA,CARU; PSME/VAGL,ARUV; PSME/VAGL,XETE; PSME/VAGL,VAGL; PSME/LIBO,SYAL; PSME/SYAL,CARU; PSME/SYAL,SYAL; PSME/CARU,CARU; and ABGR/CLUN,CLUN (Adelman, 1979; and present study). Appendix D lists the full name of each habitat type.

Vegetation common to spruce-fir zones dominates the upper Rattlesnake (White, 1958). Habitat types occurring in this area include: PIAL-ABLA; ABLA/MEFE; ABLA/XETE,VASC; ABLA/XETE,VAGL; ABLA/CACA,CACA; ABLA/LUHI,MEFE; ABLA/GATR; and ABLA/LUHI,VASC (Adelman, 1979; Fichtler, 1980). Specific topo-edaphic requirements and occurrences of these habitat types are discussed in Pfister et al. (1977). Vegetative assemblages associated with alpine tundra, streambottoms, wet bluejoint-sedge meadows, dry meadows, scree, and clearcuts, are all found within the Rattlesnake National Recreation
and Wilderness Area.


Wildlife

Adelman (1979), reviewed the abundance and distribution of non-game wildlife found within the Rattlesnake National Recreation
The following species are known to occur within the Rattlesnake: bushy-tailed woodrat (*Neotoma cinerea*), muskrat (*Ondatra zibethicus*), red-tailed chipmunk (*Eutamias ruficaudus*), yellow pine chipmunk (*Eutamias amoenus*), red squirrel (*Tamiasciurus hudsonicus*), northern flying squirrel (*Glaucomys sabrinus*), Columbian ground squirrel (*Spermophilus columbianus*), hoary marmot (*Marmota caligata*), yellow-bellied marmot (*M. flaviventris*), northern pocket gopher (*Thomomys talpoides*), beaver (*Castor canadensis*), porcupine (*Erethizon dorsatum*), snowshoe hare (*Lepus americanus*), pika (*Ochotona princeps*), long and short-tailed weasels (*Mustela frenata*, and *M. erminea*), mink (*Mustela vison*), marten (*Martes americana*), badger (*Taxidea taxus*), wolverine (*Gulo gulo*), striped skunk (*Mephitis mephitis*), lynx (*Lynx rufus*), bobcat (*L. canadensis*), mountain lion (*Felis concolor*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*), (Adelman, 1979). A number of species of shrews, voles, and mice have also been reported.

Populations of hoary marmots, a known grizzly food source (Mace and Jonkel, 1980), are found near Mc Leod Peak, along the Lake Creek road, at the main Rattlesnake road below Porcupine Creek, and at Sanders Lake (Adelman, 1979). Other sciurids, microtines, and lagomorphs, are also known to be eaten by grizzlies (Husby et al., 1977; Mace and Jonkel, 1980; and Servheen, 1981), and have been described as abundant throughout the Rattlesnake area (Adelman, 1979).

Elk (*Cervus elaphus*), whitetail deer (*Odocoileus virginianus*), and mule deer (*O. hemionus*), occur in the Rattlesnake Drainage.
Although few intensive studies have concentrated on wildlife species within the area, these ungulates have been the focus of a number of research efforts (White, 1958; Bailey, 1960; Fairman, 1966; and Knoche, 1968).

These studies have indicated that the Wallman or Strawberry Ridge area, which is located 5 miles (8 km), southwest of Stuart Peak (Secs. 23, 24, 25, and 26, T14N R19W), serves as a traditional winter range for ungulates in the Rattlesnake Drainage. Fairly heavy concentrations of ungulates use this area during February and March (Fairman, 1966). Winter-killed ungulates are known to be a significant grizzly food source in certain areas (Husby et al., 1977; Mealey and Jonkel, 1977; Servheen and Lee, 1979; and Mace and Jonkel, 1980), and research has indicated that starvation or coyote predation frequently contributes to winter ungulate mortality in the lower Rattlesnake Valley (Bailey, 1960).

The black bear, *(Ursus americanus)*, is abundant throughout the area. Lake Creek, Wrangle Creek, portions of the Gold Creek drainage (Secs. 19, 20, and 29, T14N R17W), and an area west of the main Rattlesnake road at the junction of the East Fork all appear to be favored black bear areas at various times of the year. Specific information on the grizzly bear in the Rattlesnake will be discussed in a later section of this chapter.
Human History of the Rattlesnake

Fire

Fire data for the Rattlesnake are somewhat incomplete (Adelman, 1979), but it is known that a number of fires have occurred here in the past century. Several fires burned small areas in 1914 and 1917, and in 1919 fires burned a large part of the lower Rattlesnake extending from Grant Creek across Spring Gulch and eastward. Another fire the same season burned a portion of the East Fork drainage and the Shoo Fly Meadows area (Hartse, 1976). This fire did not extend into the upper reaches of the Rattlesnake (White, 1958).

Fires burned smaller areas in or near the Rattlesnake boundary in 1931, 1944, 1979, and 1982 (Adelman, 1979; Bailey, 1982). At least 50 small fires were recorded within the NRA between 1915 and 1981, with an average of one fire per year (Bailey, 1982). This compares with a total of 35 fires during the same period within the Rattlesnake Wilderness, or an average of less than 1 fire every 2 years (Bailey, 1982) (see Fig. 3).

Logging

Some agricultural clearing and small scale logging took place in the lower Rattlesnake prior to 1930 (White, 1958). Areas logged were those most accessible to the growing town of Missoula, and included Woods, Sawmill, Dry, and Spring gulches, and a portion of the
Figure 3. Location and extent of fires. after Adelman, 1979.

Between 1956 and 1964, several logging operations took place on lands owned by the Montana Power Company (Fig. 4). Timber on the east side of upper Strawberry Ridge was cut in 1956 (Bailey, 1960), and between 1956 and 1957, ridges on both sides of Rattlesnake Creek at Pilcher Creek were logged, yielding a combined total of 3.5 million board ft (8,167 cu m) (Hartse, 1976). Between 1958 and 1964, 19 million board ft (44,333 cu m), were removed from Montana Power lands at Lake, Wrangle, and Upper Rattlesnake creeks in clearcut and selection cut operations (Adelman, 1979). The Forest Service removed 1,028,571 board ft (2,400 cubic m), from two small salvage cuts and a road right-of-way along Lake Creek between 1958 and 1964 (Reardon, 1975). No additional logging has occurred on Montana Power Company or National Forest lands in the Rattlesnake since 1964.

Burlington Northern and Champion International lands to the north and east of the Rattlesnake in the Gold-Twin Creek drainages have been the site of intensive logging activity. The Gold Creek and West Fork of Gold Creek timber sales involved clearcut, selection cut, and shelterwood removal on Forest Service lands to the east of the wilderness boundary. Logging to the east and northeast of the Rattlesnake is continuing.

Mining

Mining activities have never been significant in the Rattlesnake Drainage. A few early, small-scale, hard rock mining operations
Figure 4. Location and extent of timber harvesting.

centered around a diabase dike extending between Spring Gulch and the
main Rattlesnake Valley (Hartse, 1976). In the early 1900s a small
mine was established at the head of Spring Gulch. However, these
mining efforts were quickly abandoned.

Mineral claims within the Rattlesnake National Recreation Area and
Wilderness are subject to the Mining Act of 1872, the Multiple Use
Mining Act of 1955, and the Federal Land Policy and Management Act of
1976. Regulations regarding oil and gas leasing are contained in the
Mineral Lands Leasing Act of 1920 and the Wilderness Act of 1964
(Missoula Ranger District, 1983). As in other National Forest
wilderness areas, the U.S. Forest Service is responsible for
processing environmental analyses if oil and gas or mineral leases are
filed.

Agriculture

Lewis and Clark were the first whites to view and describe
Rattlesnake Creek in 1805. By the late 1800s settlers, trappers, and
prospectors had forced Native Americans out of the Rattlesnake
Drainage (Adelman, 1979). Before this time, Native Americans had
used the upper portion of the Rattlesnake for hunting and for
spiritual quests which centered around Mc Leod Peak (Fichtler, 1980).

By 1915-1920, at least 20 families had constructed homesteads in
the Rattlesnake Creek, Spring Gulch, and East Fork (White, 1958). The
rugged topography of the Rattlesnake limited grazing to these areas.
After acquiring ownership of the Missoula water system, the Montana
Power Company began buying homesteads. By 1936 all landowners had been bought out and agricultural activity virtually ceased (Adelman, 1979). Limited grazing continued along Spring Creek until 1968. Although the homesteads are no longer visible, large meadows along Rattlesnake and Spring Creeks remain as evidence of past human occupancy.

Watershed

The Rattlesnake Drainage has been important as a municipal water source for Missoula since 1872 and has been managed as a watershed since 1929 (Fichtler, 1980). A number of dams were constructed in the upper Rattlesnake as early as 1902 (Hartse, 1976). The watershed continues to supply a substantial amount of Missoula's water. The legislation which created the Rattlesnake National Recreation and Wilderness Area emphasized the importance of managing this area as a watershed, and directed the Mountain Water Company, to continue to operate and maintain water facilities in the drainage (Missoula Ranger District, 1983).

Recreation

The Rattlesnake National Recreation and Wilderness Area provides various types of recreational opportunities for large numbers of people. Past studies have documented patterns of recreational use in the Rattlesnake Drainage since 1972 (Conklin, 1972; Mahoney, 1973;
McCool et al., 1978a; 1978b; 1978c; and Kelley, 1979). Survey results indicate that most recreational activity is in the form of day use and occurs within 2 or 3 miles (3 or 4 km), of the main gate. It is estimated that more than 80 percent of all visits are restricted to within 3 miles (5 km) of the main gate (Adelman, 1979). Motorcyclists and snowmobiles tend to penetrate farther into the Rattlesnake than do hikers, skiers, or horseback riders (McCool, 1978c). However, McCool (1978b), concluded that overall, motorized recreation is not a major use of the Rattlesnake, and should decrease even more with time (McCool, pers. comm., 1983). Motorcycle use declined from 17.2% of all entries into the Rattlesnake in 1977, to 7.3% in 1981 (Corti et al., 1982).

The main gate at Sawmill Gulch was first closed to vehicle traffic in 1970 (Kelley, 1979), with the use of motorcycles and snowmobiles restricted to the main road. Current regulations permit the operation of motorcycles and snowmobiles along a 13 mile (21 km), long corridor which bisects the lower Rattlesnake.

The average size of groups using the Rattlesnake tends to be smaller than is typical of most other wilderness areas (McCool, 1978b; Corti et al., 1982). Fichtler (1980), found no significant difference in the level and type of recreation use in the upper Rattlesnake and the Mission mountains. Levels of use in both areas were much lower than in many other Wilderness Areas. Fichtler (1980), concluded that campers in both the Mission and Rattlesnake mountains generally travel in groups of 2 or 3 on weekends or holidays and rarely stay for more than two nights (Fichtler, 1980). The most frequently used campsites
are clustered around the larger high mountain lakes to the west of the main Rattlesnake road (Wall et al., 1978). Comparatively few visitors actually camp overnight in the Rattlesnake, however.

Recreational use in the area, primarily in the form of day-use, increased prior to 1977 and should continue to increase gradually. In 1974-1975, annual visits to the Rattlesnake numbered 22,700, with 12 percent resulting in an overnight stay (Kelley, 1979). By 1977-1978, the annual total reached 30,500 with 7 percent camping overnight (Kelley, 1979). Backpacking and camping near the high lake basins accounted for 1000 visitor use days in 1981, as compared with 700 visitor use days in 1977.

The types as well as levels of recreational use have changed dramatically during the past 15 years. Road closures have made the high country less accessible to the casual day-user. In 1967, an average of 105 automobiles traveled up the main Rattlesnake road above Franklin Bridge every day, with average weekend totals of 177 vehicles per day (Conklin, 1972). As many as 50 vehicles commonly passed through the entrance every hour.

Hunting pressures were also quite heavy during the 1950s and 1960s. According to Fairman (1966), a large proportion of hunters were road hunters who drove through the area every evening after work. More recently, hunters comprise approximately 10-15 percent of all fall visitors to the Rattlesnake (McCool, 1978c; Adelman, 1979). More than 50 percent of the area's hunters use motorcycles and most travel primarily on the main road (McCool, 1978c).
Records of Grizzlies in the Rattlesnake

The Rattlesnake (Jocko) Mountains lie at the southern edge of the occupied grizzly range within the Northern Continental Divide Grizzly Bear Ecosystem (Servheen, 1981). Recent observations have confirmed that some grizzly bears do use this area at least intermittently (Jonkel, pers. comm., 1982). The extent or scope of this use is not known and further research is needed to provide specific information on occurrence and habitat use.

A map of sightings and suspected sightings within the Rattlesnake has been compiled by the Border Grizzly Project, and illustrates that reports of grizzlies have been received from nearly all parts of the area (Fig. 5). Historical information for the Rattlesnake is limited, but grizzlies were reported at Keen Gulch in 1905, at Keen Gulch and at Little Lake in the 1920s, near Stuart Peak in 1950, and in the Snowbowl area from 1963 to 1965 (Servheen, 1978). Scattered reports from hikers, backpackers, and hunters continue. Undoubtedly many of these more recent sightings can be attributed to cases of mistaken identity involving large or unusually colored black bears, and/or inexperienced observers. Still, some reports are difficult to dismiss. Five reports were received from the upper Rattlesnake from 1974 to 1976 (Joslin and McMurray, 1976). In 1982, unverified sightings were noted at Mosquito Peak, at the East Fork, and along the lower part of Rattlesnake Creek during the early spring.

A Burlington Northern contractor reported a grizzly in July, 1982, near Boulder Lake just east of the wilderness boundary (Sec. 19, T15N
Figure 5
Grizzly Occurrence
verified after Serveen, 1978

- Verified Grizzly Occurrence
- Possible Grizzly Occurrence
Burlington Northern biologist Lorin Hicks had observed large, suspicious tracks in the same area during the summer of 1981. Diggings and large diameter scats suggest that a grizzly may have been present in a clearcut to the east along Rattlesnake Creek in late August of 1982 (Sec. 9, T15N R18W). Several years earlier Border Grizzly Project Researcher Harry Carriles followed a radio-collared adult male grizzly into the East Fork of the Rattlesnake (H. Carriles, pers. comm., 1982). Reports of grizzlies had previously been received to the south in the Gold-Twin Creek drainage (Sec. 34, T14N R17W), during the spring of 1976 (Servheen, 1978). A large diameter scat believed to be grizzly was found in the same location in the fall of 1976 (Servheen, 1978).

Some scattered grizzly sightings have also been received from areas to the north or northwest of the Rattlesnake. A member of the Dodd family killed a grizzly which had been harassing sheep in the upper Butler Creek Area in the early 1960s. Servheen (1978), noted grizzly scats along the East Fork of Findley Creek (Sec. 20, T15N R19W), in September of 1977, and grizzly activity was reported here during the following spring as well. Bureau of Indian Affairs biologist R. Klaver (pers. comm., 1982), observed grizzly sign in an area to the southeast of Evaro Hill during the spring of 1982, indicating grizzly activity to within a few miles of the upper Grant Creek Basin.

Two orphan grizzly cubs were transplanted from the west slope of the Mission Mountains into the South Fork of the Jocko during the fall of 1976. They denned together near McLeod Peak two years, but one and
possibly both were killed the following year on the Flathead Reservation (Servheen, 1978). Other grizzlies have also apparently denned inside of the Rattlesnake Wilderness boundary within the past 10 years. Servheen and Lee (1979), reported finding 4 grizzly dens in the upper Rattlesnake near McLeod Peak. Adelman (1979), also noted a grizzly den and diggings near McLeod Peak in 1978. No dens were observed during the summer of 1982, but denning activity in the Rattlesnake Mountains should probably not be ruled out. The steep talus slopes and rough topography of McLeod Basin could provide excellent denning sites which would be difficult to detect in an on-the-ground search.

**Grizzly Reports from Adjacent Areas**

The Rattlesnake Wilderness is separated from the occupied habitat of the Mission Mountains to the north by the South Fork of the Jocko River. Although this area is used to some extent, grizzly density is believed to be low (Servheen and Lee, 1979). The southern Mission Mountains are connected to the Clearwater/Gold Creek area to the southeast by a 3 mile (4 km), wide strip of timbered habitat which is cut only by the Jocko, Liberty Meadows-Boles Meadow Loop road and the BPA powerline right-of-way (Figs. 6 and 7).

The Rattlesnake area is separated from the Garnet Range and more extensive mountainous areas to the south primarily by federal and state lands and lands owned by Burlington Northern and Champion International. The Rattlesnake also adjoins reservation lands to the
Figure 6

Grizzly Distribution in Border Grizzly Area

after Servheen, 1978
west near Evaro Hill, providing a potential corridor to the Reservation Divide/Ninemile region.

Scattered grizzly reports were received from the Edith Peak/Reservation Divide area in the late 1960s (Joslin and McMurray, 1976), and a grizzly was killed near Edith Peak (Sec. 27, T16N R17W), in 1968 (Servheen, 1978). Servheen (1981), noted that little information is available on possible grizzly occupancy of the Ninemile/Flathead Divide. The Forest Service has recognized the potential for grizzly occupancy in some areas adjacent to, or near the Rattlesnake National Recreation Area and Wilderness.

The Bitterroots

The grizzly was formerly abundant in the Selway-Bitterroots during the earliest part of this century (Craighead et al., 1974). A very small remnant grizzly population still remains in the vast Selway-Bitterroots (Jonkel, 1981). Periodic, unconfirmed reports including one at Big Creek in 1974, have been received (Willard and Herman, 1977; Joslin and McMurray, 1977). However, the Craigheads (1974), and a number of other researchers believe that a viable population no longer exists.

Results of a study conducted by Scaggs (1979), in the Selway-Bitterroots suggest that suitable grizzly habitat is present. Future reintroduction of the grizzly to the Selway-Bitterroots remains a management option. If the rugged 1,243,659 acre Selway-Bitterroot Wilderness encompassing both sides of the Bitterroot
Range (Ranz, 1979), is to be repopulated by the grizzly, current fringe areas such as the Rattlesnake could prove to be of key importance. The Rattlesnake Mountains could provide a travel corridor for individuals from grizzly population centers located along the Mission Mountains and areas to the north and east. Grizzly management plans for the Rattlesnake National Recreation and Wilderness Areas should reflect the possible significance of the area as a relatively unrestricted travel corridor, apart from considerations of the wilderness as occupiable habitat. Figure 7 illustrates the relationship of the Rattlesnake, Bitterroots, Mission mountains, and adjacent areas.

Chapter III

METHODS

Grizzly food and denning preferences in western Montana and elsewhere have been well-studied. Past research has demonstrated intensive grizzly use in certain types of areas such as riparian streambottoms, beargrass sidehill parks, or cutting units. These areas typically possess an abundance of known bear foods or represent favorable denning sites, and can be mapped as "grizzly habitat components" to reflect special vegetative and topographic characteristics of potential value to the grizzly.

The idea for a grizzly component mapping system was first developed by Border Grizzly Project researchers (Mealey et al., 1976),
and adapted or applied by Joslin et al., 1977; Servheen and Lee (1979); Zager et al., (1980); Zager and Jonkel, (1983); and others. Alterations and improvements have continued since the inception of this system. The habitat component system was expanded and refined by Madel (1982), to fit with management objectives of the Kootenai National Forest. However, the basic idea of identifying sites with key bear foods or denning areas has remained unchanged.

Certain problems began to develop as researchers attempted to define components using earlier classification systems based on several different criteria such as site modification, (ie. burn, cutting unit, road), topographic features, (ie. ridgetops), and vegetative assemblages, (ie. shrubfield, closed timber, etc.), (Madel, 1982). An abandoned road seeded in native or introduced grasses, for example, could be mapped as "dry meadow" to reflect vegetative characteristics or as "road" to account for site history.

In an attempt to clarify this situation, Madel made vegetation the primary criteria and incorporated site history secondarily (ie. mixed - shrubfield - cutting unit), so that areas could be mapped more readily as separate and distinct ecological entities. This component mapping refinement was followed in locating and evaluating real or potential grizzly habitat in the Rattlesnake. This system provides a useful and workable means of identifying, quantifying, and monitoring habitat, as well as predicting the seasonal importance of particular areas.

Habitat components were first identified and mapped from air photos. Sample plots from each type of component were then
inventoried to provide a more detailed record of the plant species present. The habitat type for each plot was determined according to Pfister et al., (1977), to more completely describe the forest community. Habitat types are useful in classifying forest ecosystems, but do not reflect the abundance or type of many bear foods and thus do not always identify areas of potential importance to the grizzly.

Color aerial photographs (1:24,000), obtained from Lolo National Forest were used to make preliminary locations of grizzly habitat components such as wet meadows, drainage forbfields, and shrubfields. Ecotonal boundaries of components could be identified by differences in color, tone, and texture, and through differences in elevation, aspect, slope, size, and shape. Components were marked on the aerial photographs by a color-code and letter system.

Ground reconnaissance

GBHCs were analyzed in detail through field checks of most components from June through September, 1982. Ground reconnaissance was essential for the accurate classification and description of habitat components.

Comprehensive, on-the-ground work is especially vital during the preliminary stages of habitat component mapping (Madel, 1982). Through practice in actual field checks, the ability to differentiate habitat components on aerial photographs improves rapidly. Although most components were visited in the field, ground reconnaissance of every component in an area as large as the Rattlesnake would not be
practical. Careful extrapolations from aerial photographs can prove useful when based on extensive field work in the same area.

Accurate topographic maps were essential in planning routes between components. Some mapping was accomplished through the use of binoculars from high open ridges as described by Madel (1982). After ground-truthing an area, component boundaries were transferred from the color aerial photographs to black and white orthophotos on a scale of 1:24,000 which were obtained from Lolo National Forest. Orthophotos have been corrected for horizontal distortion and correspond precisely with U.S.G.S. topographic quads in scale and coverage. All components were then identified by color and letters, and transferred to clear mylar overlays to facilitate the examination of cumulative impacts and recreational activity patterns. Total acreage amounts were established for each component by the use of a modified dot grid system.

Sample plots

Vegetation was sampled in numerous plots in each type of mapable GBHC. Each plot represented a 1/10 acre circular area as described by Lee (1979), and Zager (1980). Approximate plot locations in relatively large, homogeneous components such as shrubfields and dry meadows, were selected through the use of computer-generated random numbers corresponding to a clear, numbered overlay grid. An attempt was made to sample plots at intervals along rough transects in components which might be expected to show gradational changes in
vegetative assemblages with elevation. These included snowchutes, drainage forbfields, and riparian streambottom components.

Aspect, elevation, slope, topography, rock coverage, distance to visual cover, and horizontal configuration data were recorded for each plot. A complete species list indicating coverage and plant phenology, was compiled for each plot. Color photographs were taken to record the appearance of the sites and any bear signs were noted. Sample data sheets are included in Appendix A.

Most plant species were identified at least to the genus level as the plot was sampled (Appendices B and C). Certain specimens which were more difficult to classify, were collected and identified at a later time. These specimens rarely represented a coverage of greater than 5 percent. A general exception was noted in a number of grasses which were not identified to genus. These were simply designated as 'Graminae'. Taxonomic designations and nomenclature followed Hitchcock and Cronquist (1973).

Sampling and ground reconnaissance revealed that mixed shrubfields and riparian streambottoms showed more variation in plant composition than did other types of habitat components. Consequently, attempts were made to ground truth these more variable components whenever possible. Sample plots were invaluable in characterizing the vegetative composition of GBHCs in the Rattlesnake. Extensive sampling is particularly important in areas which have not been previously mapped according to the component system (Madel, pers. comm., 1982).
Habitat Types

Each sample habitat component plot was classified according to habitat type following the Daubenmire (1952), method which has been adapted to Western Montana forests by Pfister et al. (1977), (see Habitat Type data sheet, Appendix A). The Pfister habitat typing system provides a useful frame of reference for the description of forest ecosystems in western Montana and has been widely accepted by management agencies throughout the area. This system is based on the existing or potential climax vegetation at a particular site (Pfister et al., 1977). Habitat type determination for most seral or atypical sites is possible because successional trends in undergrowth species occur at a much more rapid pace than in the forest canopy (Mealey et al., 1976). Nevertheless, habitat type determination of certain disturbed component sites was frequently very difficult. Habitat type determination is in itself, not sufficient to describe the seral, or non-forested sites which are important to the grizzly, but when combined with the habitat component system, a meaningful description begins to emerge (Zager et al., 1980).

Chapter IV

RESULTS

Habitat components designated in the Rattlesnake National Recreation and Wilderness Area, closely approximated those described
by Madel (1982), although some differences were noted. The following GBHCs were found to occur in the Rattlesnake: 1) Closed Timber, 2) Open Timber, 3) Timbered Shrubfield, 4) Mixed Shrubfield, 5) Mixed Shrubfield - Cutting Unit, 6) Mixed Shrubfield - Burn, 7) Huckleberry Shrubfield, 8) Mixed Shrubfield - Snowchute, 9) Riparian Streambottom, 10) Dry Meadow, 11) Wet Meadow, 12) Drainage Forbfield, 13) Beargrass (Xerophyllum tenax), Sidehill Park, 14) Graminoid Sidehill Park, 15) Terrace Rock Sidehill Park, 16) Slabrock, and 17) Scree/Talus/Rock. Total acreages of each mapped component are listed in Table 1. Expanses of closed timber, open timber, slabrock and scree, were noted but were not mapped as discrete components following Madel, (1982). GBHCs are shown in figs. 8-13. A complete list of species found in sample plots for each component category is found in Appendices B and C. Habitat types according to component, elevation, and aspect, are summarized in Appendix E.

Description of components

Closed Timber

Forested areas of a variable understory and dense, primarily coniferous tree canopy (greater than or equal to 60%), were described as "closed timber" (Zager, 1980; and Madel, 1982). This component was abundant throughout the area, and was particularly common in the lower reaches of the Rattlesnake Drainage. The limited scope of past timber harvests and few fires in the area have contributed to the widespread
<table>
<thead>
<tr>
<th>Habitat Component</th>
<th>Rattlesnake Wilderness Area (33,000)</th>
<th>Rattlesnake Recreation Area (28,000)</th>
<th>Surrounding Areas (20,000)</th>
<th>Total Acres (90,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>red Huckleberry Shrubfield</td>
<td>225.4</td>
<td>65.0</td>
<td>0.0</td>
<td>290.4</td>
</tr>
<tr>
<td>d Shrubfield</td>
<td>184.9</td>
<td>549.1</td>
<td>73.7</td>
<td>807.7</td>
</tr>
<tr>
<td>d Shrubfield</td>
<td>161.8</td>
<td>0.0</td>
<td>0.0</td>
<td>161.8</td>
</tr>
<tr>
<td>d Shrubfield</td>
<td>391.2</td>
<td>372.7</td>
<td>3376.3</td>
<td>4140.2</td>
</tr>
<tr>
<td>red Shrubfield</td>
<td>142.4</td>
<td>43.3</td>
<td>0.0</td>
<td>185.7</td>
</tr>
<tr>
<td>xleberry Shrubfield</td>
<td>260.1</td>
<td>95.4</td>
<td>101.1</td>
<td>456.5</td>
</tr>
<tr>
<td>arian Shrubbottom</td>
<td>231.5</td>
<td>286.1</td>
<td>94.9</td>
<td>612.4</td>
</tr>
<tr>
<td>Meadow</td>
<td>5.8</td>
<td>260.1</td>
<td>0.0</td>
<td>265.8</td>
</tr>
<tr>
<td>t Meadow</td>
<td>414.5</td>
<td>132.9</td>
<td>154.6</td>
<td>701.9</td>
</tr>
<tr>
<td>ainage rbfield</td>
<td>993.6</td>
<td>131.5</td>
<td>210.9</td>
<td>1336.0</td>
</tr>
<tr>
<td>argarass idehill Park</td>
<td>319.3</td>
<td>67.9</td>
<td>47.7</td>
<td>434.9</td>
</tr>
<tr>
<td>raminoid idehill Park</td>
<td>940.6</td>
<td>446.4</td>
<td>332.3</td>
<td>1719.3</td>
</tr>
<tr>
<td>errace Rock idehill Park</td>
<td>343.8</td>
<td>0.0</td>
<td>0.0</td>
<td>434.9</td>
</tr>
<tr>
<td>Total</td>
<td>4614.8</td>
<td>2450.3</td>
<td>4391.4</td>
<td>11456.5</td>
</tr>
</tbody>
</table>
KEY TO HABITAT COMPONENTS

Timbered shrubfield
Mixed shrubfield
Mixed shrubfield - cutting unit
Huckleberry shrubfield
Mixed shrubfield - snowchute
Mixed shrubfield - burn
Wet meadow
Dry meadow
Drainage forbfield
Riparian streambottom
Graminoid sidehill park
Beargrass sidehill park
Terrace rock
Figure 9. Key to Component Maps - Rattlesnake Drainage
Figure 10. Northeast Missoula Quad. - Habitat Component Base Map
Figure 13. Blue Point Quad. - Habitat Component Base Map
occurrence of this component. Due to the extensive nature of the closed components, and the comparatively low utility to the grizzly bear, these units were not mapped.

**Open Timber**

Timbered areas with a tree canopy of between 30 and 60% were designated as "open timber." This component is well represented in the Rattlesnake, particularly on colder or drier exposures. PSME/CARU or PIAL-ABLA habitat types are often classified as Open Timber Components (Madel, 1982).

**Timbered Shrubfield**

Areas with a tree canopy coverage ranging from 30 to 60% and with a fruiting shrub understory of 40% or more, were classified as Timbered Shrubfield Components. Fruiting shrub species found in the Rattlesnake area and of known significance as bear foods include the globe huckleberry, dwarf huckleberry (*Vaccinium caespitosum*), grouse whortleberry, serviceberry, mountain ash, buffaloberry, and gooseberry. The dominant understory shrub in this component was generally a member of the genus *Vaccinium*.

The graminoid forb layer of Timbered Shrubfield Components was typically quite sparse with beargrass, and elk sedge (*Carex geyerii*), as common constituents. Habitat types of timbered shrubfields in the Rattlesnake include: PIAL-ABLA and ABLA/XETE,VAGL
at higher elevation sites and PSME/VAGL, VAGL and PSME/VAGL, XETE at lower elevations.

Identification and categorization of Timbered Shrubfield Components from aerial photographs alone is extremely difficult if not impossible (Christensen, 1982). A shrub understory is rarely clearly discernible from this level. Therefore, acreage determination for this component category should be viewed as very conservative.

**Shrubfield Components**

Shrubfields represent non-timbered sites (overstory canopy less than 30%), which are dominated by an extensive growth of various shrub species. These seral communities may be created or maintained by heavy snowpack or snowslides, wildfire, timber harvest, or other human disturbances, or may be due to topo-edaphic factors (Zager, 1980). Topo-edaphic conditions are variable in these relatively large habitat components. In the Rattlesnake, dry, low-elevation toe slopes support shrubfields, as do well-drained, rocky, higher elevation snowchutes. A diverse graminoid-forb layer is often characteristic of the Shrubfield Component, and scattered trees may also be present.

The shrubfield category has been subdivided to more accurately reflect vegetation structure and detectable past site modifications. Five main types of shrubfield components have been recognized and mapped for the Rattlesnake: 1) Mixed Shrubfield, 2) Mixed Shrubfield - Cutting Unit, 3) Mixed Shrubfield - Burn, 4) Mixed Shrubfield - Snowchute, and 5) Huckleberry (Vaccinium spp.), Shrubfields. The
Alder Shrubfield Component described for the Cabinet Mountains of northwestern Montana (Madel, 1982), was not found in mappable quantities in the Rattlesnake or surrounding areas.

Variable, naturally occurring shrubfield communities were grouped into the Mixed Shrubfield Component. These communities may reflect topo-edaphic conditions or past habitat disturbance of an undetermined nature. In the Rattlesnake, this component was most frequently noted on south or west facing slopes at lower elevations along Grant, Spring, and Rattlesnake creeks. Servheen and Lee (1979), observed apparently similar shrubfield components on lower slopes below snowchutes in higher valley floors of the Mission Mountains.

Although bear food species were present at all locations sampled, many of these shrubfields were very decadent (Madel, 1980, and present study). Characteristic shrub species include: Rocky Mountain maple, chokecherry, ninebark, snowbrush, Oregon grape, snowberry, serviceberry, willow, and ocean spray (Holodiscus discolor). The graminoid - forb structure was variable, but perennial graminoids were abundant at many sites. Spotted knapweed (*Centaurea maculosa*), yarrow (*Achillea millefolium*), strawberry (*Fragaria* spp.), and penstemon (*Penstemon* spp.), were common forbs. PSME/PHMA,PHMA; PSME/PHMA,CARU; and PSME/CARU,CARU; were the most frequently indicated habitat types.
Mixed shrubfield - cutting units were some of the largest, most diverse and productive habitat components in the Rattlesnake (Figs. 14 and 15). Species composition of this shrub-dominated component is known to vary according to the method of timber harvest, site treatment, and seral stage represented (Madel, 1982). This variation was reflected in Rattlesnake cutting units. A number of the larger clearcuts along Lake, Wrangle, and upper Rattlesnake creeks contain ribbons of riparian habitat or small patches of wet meadows which probably serve to increase species diversity and the potential value of these units to the grizzly.

Younger clearcuts and selection cuts to the east and northeast of the Rattlesnake Wilderness provide some key bear foods, but in general, these sites are drier, and lush forb growth is lacking in many components. Some cutting units on Champion International and Burlington Northern lands are in very early successional stages with logging operations underway as of August, 1982. Future huckleberry production should increase at many sites, particularly on southern aspects at lower elevations. Cutting units to the north along the Jocko River were not sampled.

Shrub species with high overall coverage values at sample plots include: gooseberry, thimbleberry (*Rubus parviflorus*), spirea, mountain ash huckleberry, menziesia, elderberry, Sitka alder, and red twinberry. The graminoid - forb layer was typically extensive and diverse, and included beargrass, pinegrass (*Calamagrostis*
Figure 14. Mixed Shrubfield - Cutting Unit showing shrub/overstory relationship.
Figure 15. Mixed Shrubfield - Cutting Unit at Lake Creek.
rubescens), elk sedge, false hellebore (Veratrum viride), fireweed (Epilobium spp.), and bracken fern (Pteridium aquilinum).

Common habitat types of the Mixed Shrubfield - Cutting Unit Components included ABLA/MEFE; ABLA/XETE,VAGL; PSME/VAGL,XETE; PSME/VAGL,VAGL; and PICEA/CLUN,CLUN.

**Mixed Shrubfield - Burn**

This component may be described as an early seral plant community created or maintained by fire (Zager et al., 1980). Site history is usually evident with charred downfall or snags common. At present the extent of burns in the Rattlesnake is not significant. However several small mixed shrubfield - burns were mapped in the Grant Creek drainage. These areas which burned in 1979, remain in an early successional stage with fireweed (Epilobium angustifolium), the dominant species in most locations. Huckleberries were present in or near the fringes of most burns, and in time, these relatively small components could become productive huckleberry shrubfields. No plots were sampled in these areas due to their limited extent and early seral stage.

**Mixed Shrubfield - Snowchute**

Most if not all of the snowchutes examined in the Rattlesnake exhibited extensive shrub cover. This component can thus be most accurately described as a "Mixed Shrubfield - Snowchute". Development
of a tree canopy is precluded at these sites by frequent snowslides. These steep, non-timbered sites are concave and occur at mid-montane to higher elevations (Zager et al., 1980). Servheen and Lee (1979), noted that in the Mission Mountains, these sites often represented the uppermost ephemeral stream channels of major drainage systems.

Vegetation within Mixed Shrubfield - Snowchute Components is commonly vertically stratified, with an understory shrub growth of 2 m or less, beneath a taller shrub layer of 2-3 m composed of such species as Sitka alder, Rocky Mountain maple, mountain ash, and serviceberry. Huckleberry, gooseberry, menziesia, raspberry, (Rubus idaeus), elderberry, and thimbleberry, are common understory shrubs. The graminoid - forb layer is typically well-represented although variable. Common herbaceous species include: false hellebore, cow-parsnip (Heracleum lanatum), arrowleaf groundsel (Senecio triangularis), baneberry (Actea rubra), and bedstraw (Gallium spp.).

A number of narrow snowchutes are present in the Rattlesnake in the Wrangle, Lake, and High Falls creek drainages and above several of the high mountain lakes (Fig. 16). Important bear foods were present at most locations sampled.

Vegetation of Mixed Shrubfield - Snowchute Components showed considerable variation according to elevation and aspect and along the length of the snowchute itself. Menziesia, for example, was a more common constituent of north-facing snowchutes, whereas huckleberry, tended to be more abundant on southern exposures.

A number of habitat types were identified for this component
Figure 16. Mixed Shrubfield Snowchute Component showing extensive vertically stratified shrub growth.
reflecting the aforementioned variability. Snowchutes with southern aspects were most often typed as ABLA/CACA, CACA; ABLA/ALSI; or ABLA/XETE, VAGL. Snowchutes which faced north or northeast were identified as ABLA/GATR; SCREE/ or ABLA/MEFE.

**Huckleberry Shrubfield**

Shrubfields were described as Huckleberry Shrubfields when globe huckleberry, dwarf huckleberry, or grouse whortleberry, together comprised 40% or more of the shrub layer. Huckleberry Shrubfield Components were most often found on south- or west-facing slopes. Many higher elevation sites in the Rattlesnake consisted of subalpine fir, beargrass, grouse whortleberry, and often globe huckleberry, in more sheltered locations.

Huckleberry Shrubfield Components represent transitional stages and are not abundant in the Rattlesnake area, reflecting the lack of fires and limited scope of past timber harvests. Huckleberries are common in the Rattlesnake Mountains, but occur most frequently as the dominant shrub of timbered shrubfields or of mixed shrubfield-cutting units. PIAL-ABLA; ABLA/XETE, VAGL; and ABLA/LUHI, VASC habitat types were noted at sample plots.

**Riparian Streambottom**

Riparian plant communities occur in hydrologically active areas exhibiting elevated soil moisture levels (Zager et al., 1980;
Madel, 1982). According to Zager (1980), and others, stream or river channels, old stream beds, cut benches, seeps, sidehill bogs, lake and pond shores, glades, and marshes may all be considered riparian habitat. Riparian associations are very diverse and may range from closed timber to an open canopy.

Bluejoint (*Calamagrostis canadensis*), sedges (*Carex* spp.), willows, Sitka alder, gooseberry, red-osier dogwood, Rocky Mountain maple, arrowleaf groundsel, and horsetails (*Equisetum* spp.), are typically well-represented in Western Montana. Servheen and Lee (1979), reported that the following species were abundant in riparian habitat in the Mission Mountains: brook saxifrage (*Saxifraga arguta*), twisted stalk (*Streptopus amplexifolius*), bedstraw (*Gallium triflorum*), cow-parsnip, horsetails, thinleaf alder (*Alnus tenuifolia*), mountain alder (*Alnus incana*), red-osier dogwood, birch (*Betula occidentalis*), willows, bluejoint, and sedges.

Riparian areas in the Rattlesnake generally produce a variety of important bear foods. Beaver activity has created excellent riparian habitat rich in graminoids in a least 3 areas along Rattlesnake Creek, the largest of which comprises 38 acres of productive habitat (Sec. 11, T14N R18W), (Madel, 1980). In addition to Rattlesnake Creek, patches or stringers of riparian habitat have been identified along portions of Wrangle, Lake, Spring and Grant creeks, (Fig. 17). Habitat diversity along Rattlesnake Creek is particularly high, with spruce-fir forests, shrubfields, and dry or wet meadows bordering the creek (Madel, 1980). Habitat type determination of riparian areas was particularly difficult. PICEA/EQAR; ABLA/MEFE; ABLA/CACA,GATR;
Figure 17. Riparian Streambottom Component providing diverse bear foods and excellent cover.
Dry Meadow

Dry Meadow Components are open, level, or slightly sloping sites dominated by graminoids (Figs. 18 and 19). Although portions of some dry meadows may be ephemerally moist during the early spring, this component is typically xeric (Madel, 1982).

Species which were abundant in Dry Meadow Components in the Rattlesnake include: timothy (Phleum pratense), fescue (Festuca spp.), wheatgrass (Agropyron spp.), strawberry, spotted knapweed, yarrow, cinquefoil (Potentilla spp.), clover (Trifolium spp.), daisy (Erigeron spp.), Eriogonum (Eriogonum spp.), koeleria (Koeleria cristata), bluegrass (Poa spp.), and orchard-grass, (Dactylis glomerata), (Madel, 1980, and present study).

Trees and shrubs were occasionally present as scattered individuals or at the component borders. Species present in sample plots included: snowberry, kinnikinnick, Oregon grape, ponderosa pine, and Douglas fir. Habitat typing was difficult in these seral communities, but PSME/PHMA,PHMA; PSME/SYAL,AGSP; PSME/PHMA,CARU; PSME/SYAL,CARU; and PSME/VAGL,ARUV types were noted.

Madel (1982), noted that the vegetative composition of this primarily low-elevation component varies with past site history and topographic features. All dry meadow components in the Rattlesnake may be attributed to past human activities such as logging or
Figure 18. Dry Meadow Component along lower Rattlesnake Creek produced by past agricultural activities.

Figure 19. Low-elevation wet meadow surrounded by Dry Meadow Component.
agriculture (Madel, 1980). These components are for the most part, concentrated along the lower reaches of Rattlesnake or Spring Creeks. Several of these dry meadows grade into wet meadows in moist, low areas or into dry shrubfields. Older roaded areas may produce Dry Meadow Components when seeded with native or introduced grasses (Madel, 1980; 1982). This has occurred along Rattlesnake Creek north of the Wrangle Creek junction (Secs. 16 and 21, T15N R18W).

**Wet Meadow**

Mesic areas dominated by associations of perennial graminoids were classified as Wet Meadow Components (Zager et al., 1980; Madel, 1982). Wet meadows range from open, level, low elevation sites along streams, to slightly concave, moist sites at higher elevations. Servheen and Lee (1979), described the Wet Meadow Component as exhibiting a definite floristic composition "in relatively uniform habitat conditions within specified elevation ranges." According to Madel (1982), high elevation wet meadows represent distinct physiographic climax communities. Both high and low elevation wet meadows are present in the Rattlesnake (Figs. 19 and 20).

The following species were abundant in most wet meadow plots sampled in the Rattlesnake: bluejoint, sedges, arrowleaf groundsel, elephanthead (*Pedicularis groenlandica*), shooting-star (*Dodecatheon paui flam*), false hellebore, and horsetails. Extensive forb growth is generally restricted to the margins of wet meadows, but licorice root (*Ligusticum* spp.) and angelica (*Angelica arguta*), known
Figure 20. High-elevation Wet Meadow Component dominated by perennial graminoids.
grizzly foods, were found in a number of plots. Trees and shrubs usually occurred as isolated individuals or at the component borders. Willows, Sitka alder, grouse whortleberry, or mountain heath (Phyllodoce empetriformis), were sometimes present as small elevated clumps or islands within wet meadows dominated by horsetails, sedges, or rushes. ABLA/CACA,CACA was the most common habitat type. ABLA/MEFE; PSME/VAGL;ARUV; PIAL-ABLA; and PICEA/EQAR were also identified.

Numerous Wet Meadow Components occur at high elevations in the Rattlesnake. One of the largest wet meadow complexes is located in the upper Grant Creek Basin (Fig. 21). Bluejoint, sedges, and horsetails, all potentially important bear food species, are particularly well-represented here. Other large wet meadows are located in the vicinity of Shoo Fly Meadows near Gold Creek at the eastern edge of the Rattlesnake. Smaller wet meadows are scattered through the higher basins of the upper Rattlesnake Wilderness Area. Low-elevation wet meadows are present adjacent to Rattlesnake Creek.

Drainage Forbfield

The Drainage Forbfield Component was first used by Madel (1982), to describe certain high-elevation sites known to produce key bear foods. Drainage forbfields occur most often as small, irregular components at the base of talus slopes or rock headwalls in high cirque basins, along moraines, or below alpine ridgetops (Madel, 1982). The topography is gradual to steeply sloping, with shallow
Figure 21. Large, high-elevation Wet Meadow Component in Grant Basin.
rocky soils. Water is often supplied to drainage forbfields by semi-permanent snowbanks, contributing to the relatively late phenological development normally observed in this habitat component.

Tree coverage is generally minimal or non-existent in the Drainage Forbfield Component and shrub coverage is variable. Huckleberry, grouse whortleberry, or menziesia (*Menziesia ferruginea*), is sometimes present, but the forb layer is always dominant. The graminoid-forb layer varies from low, to tall and extensive (Madel, 1982). Common graminoids and forbs identified within Rattlesnake forbfields include: sedges, woodrush (*Luzula hitchcockii*), bluejoint, beargrass, arrowleaf groundsel, false hellebore, meadowrue (*Thalictrum occidentale*), Sitka valerian (*Valeriana sitchensis*), and figwort (*Pedicularis* spp.) (Fig. 22).

Small Drainage Forbfield Components are scattered throughout the higher elevations of the Rattlesnake, and frequently form habitat mosaics with wet meadows or terrace rock sidehill parks. Umbels and other succulent forbs of potential value to the grizzly bear were abundant in all drainage forbfield plots sampled. Habitat types associated with drainage forbfield plots include: ABLA/CACA,CACA; ABLA/CACA,GATR; ABLA/LUHI,MEFE; ABLA/VAGL,XETE; PIAL-ABLA; and ABLA/LUHI,VASC.

**Sidehill Park Components**

Sidehill Park Components of various types usually occur from mid-montane to higher elevations on moderate to steep slopes, and are
Figure 22. Drainage Forbfield Component showing extensive forb growth.
variable in size and plant composition. These components are open or sparsely timbered (less than 30% canopy), and generally resemble sloping meadows with straight, convex, or undulating configurations (Servheen and Lee, 1979; Zager et al., 1980). Species variation may result from topo-edaphic or zootic influences (Zager, 1980). The component subcategories graminoid, beargrass, and terrace rock sidehill parks, reflect variations in floristic composition and potential patterns of habitat use, but all are of high value to the grizzly.

Beargrass Sidehill Park

Beargrass Sidehill Park Components were inventoried and mapped as potential denning sites. As such, all had to have isolation, deep soil, a surface root system, and a highly steepened slope. Actual food items tend to be low in this component. Beargrass, typically occurs in rhizomatous clumps in well-drained soils at high elevations. Sites are designated as Beargrass Sidehill Parks when Xerophyllum tenax comprised 40 percent or more of the graminoid forb layer (Fig. 23).

Within the Rattlesnake, Beargrass Sidehill Park Components were usually found along ridges or upper slopes interspersed with areas of slabrock or graminoid sidehill parks. Ecotonal boundaries with adjoining components such as Timber, or Timbered Shrubfield tend to be somewhat gradual with subalpine fir, or whitebark pine scattered sparsely through the Beargrass Sidehill Park Component.
Figure 23. Typical high-elevation Beargrass Sidehill Park Component.
At sample plots, species diversity was found to be low. Beargrass, was by far the most abundant species present. Elk sedge, Idaho fescue (Festuca idahoensis), and hawkweed (Hieracium spp.), were abundant, and grouse whortleberry, mountain heath, sandwort (Arenaria spp.), and arnica (Arnica spp.), were also common at most locations. ABLA/PIAL,VASC; ABLA/XETE,VASC; PIAL-ABLA; and SCREE were the habitat types indicated in this component.

Graminoid Sidehill Park

Open sidehill parks dominated by native or introduced grasses were classified as Graminoid Sidehill Park Components. These small, irregular sites are generally located along higher ridges or open slopes, and often alternate with areas of slabrock to form expanses of cliffs, short benches, or steep slopes. The percentage of rock coverage is often very high, and shallow, rocky soils are common.

Extensive amounts of slabrock were noted at many locations in the Rattlesnake and some components may be more properly described as Graminoid Sidehill Park/Slabrock Components. Graminoid sidehill parks, interspersed with slabrock, were found to occur on both the east and west-facing slopes above Rattlesnake Creek past Franklin Bridge.

Graminoid sidehills may also occur as larger parklands on well-developed soils on certain south or southwestern slopes at lower elevations (Madel, 1982). These larger graminoid sidehill parks were identified near the eastern border of the Rattlesnake National
Recreation and Wilderness Area on lower slopes near Mineral Peak. Ecotone boundaries with timbered areas at both types of graminoid sidehill parks were generally abrupt (Figs. 24 and 25).

Characteristic species include: elk sedge, Idaho fescue, beargrass, bluebunch wheatgrass (*Agropyron spicatum*), koeleria, penstemon, hawkweed, sandwort, biscuit root (*Lomatium* spp.), eriogonum, glacier lily (*Erythronium grandiflorum*), and springbeauty (*Claytonia lanceolata*). Trees and shrubs found most often along ecotone boundaries were: subalpine fir, whitebark pine, dwarf juniper (*Juniper communis*), and grouse whortleberry. ABLA/LUHI,VASC; PIAL-ABLA; ABLA/XETE,VAGL; and SCREE were the most common habitat types of sample plots. ABLA/XETE,VAGL; and ABLA/LUHI,VASC were found to be well-represented habitat types in Graminoid Sidehill Park Components in the Mission Mountains (Servheen and Lee, 1979).

Terrace Rock-Sidehill Park

Researchers have noted that plant associations found in graminoid sidehill parks vary according to moisture availability. According to Madel (1982), sedges are common on terraced benches that receive a continuous supply of snowmelt from cliffs or rocky terrain above. These benches may sometimes resemble Wet Meadow Components. They may be very small (e.g. several meters square), but still very important to grizzlies (C. Jonkel, pers. comm., 1983).

Areas of moist to wet benches were also noted in the Rattlesnake Wilderness north of Sanders Lake, southeast of McLeod Peak, and in
Figure 24. Small, high-elevation Graminoid Sidehill Park Components interspersed with slabrock.

Figure 25. Low-elevation Graminoid Sidehill Park Component showing abrupt ecotonal boundary with adjacent timber.
Grant Basin. The term "terrace rock" was used to describe these terraced benches. This designation had previously been used by John Almack (pers. comm., 1982), to describe similar areas along the North Fork of the Flathead in northwestern Montana.

Terrace Rock - Sidehill Park Components often alternate with extensive areas of slabrock, and are often bordered by graminoid sidehill parks or timbered shrubfields. Tree cover is variable, ranging from open or non-timbered, to a canopy cover of 30-60 percent (Fig. 26). Subalpine fir, and whitebark pine, were the most common trees in Rattlesnake Terrace Rock Components. Elk sedge, was the most abundant species at all sample plots. Grouse whortleberry, glacier lily, springbeauty, penstemon, arnica, monkeyflower (Mimulus spp.), and biscuit root, were also common. PIAL-ABLA was the habitat type of all sample plots.

Slabrock

The Slabrock Habitat Component includes "...exposed blocks of fractured, glacially scoured bedrock" and occurs on steep to gentle slopes of all aspects at higher elevations (Zager et al., 1980). Vegetation between rock slabs is succulent and abundant locally, but is highly variable depending on the season, porosity of the rock surface, local drainage patterns, and soil development. Due to this variation in vegetation structure, and because of the difficulties in separating and mapping slabrock as a distinct component, this component was not mapped in the Rattlesnake. The term "slabrock" may
Figure 26. View of Terrace Rock - Sidehill Park Components showing moist to wet benches alternating with slabrock.
best be used to secondarily describe an associated component (ie. Graminoid Sidehill Park/Slabrock Component), (Zager, 1980).
Vegetation in the slabrock component is very sparse and the potential bear use in a slabrock mosaic is determined primarily by the availability of important bear foods between the slabrock (Madel, 1982).

**Scree/talus/rock**

This component follows the description of scree/talus of Pfister and others (1977), and is considered to be a topo-edaphic climax community. Some sites are treeless, whereas others made up of fine rock fragments, support an open forest cover (0-30% canopy coverage) (Zager et al., 1980). Scree/talus/rock habitats are prominent features of the rugged Rattlesnake Range (Fig. 27). Talus formation and creep are still active processes in the Rattlesnake (Adelman, 1979).

Vegetation is typically sparse, but scattered shrubs including Rocky Mountain maple, gooseberry, and alder, were present in some locations. Scree/Talus/Rock Components were not mapped as distinct units in this study, but their overall abundance in the Rattlesnake should be noted.
Figure 27. Unvegetated talus below McLeod Peak.
Chapter V
DISCUSSION

Use of Components

Grizzly food habits have been well-studied by Border Grizzly Project Researchers and others (Mealey and Jonkel, 1975; Craighead et al., 1976; Husby et al., 1977; Husby and McMurray, 1978; Sumner and Craighead, 1973; Servheen and Lee, 1979; Mace and Jonkel, 1980; Sizemore, 1980; Zager et al., 1980; and Servheen, 1981; and others). Research has indicated that food use varies seasonally, annually, and geographically (Mace and Jonkel, 1980). Individual variation in foraging habits has also been well-documented (Sizemore, 1980). Despite this diversity, valid generalizations can be made about overall patterns of habitat use by the grizzly. Habitat components mapped in the Rattlesnake represent potentially important grizzly use areas based on vegetation of known importance to grizzlies. Table 2, illustrates the projected value of components by season.

Selection of foraging sites depends largely on the abundance, nutritional value, and distribution of plant species found within the habitat components (Sizemore, 1980). However, other factors must be considered in addition to plant food distribution. The grizzly bear is a highly mobile species capable of traveling long distances. Most individuals exhibit seasonal altitudinal migration (Mace and Jonkel, 1980; Servheen, 1981), and travel corridors are needed to allow individuals to fully exploit available habitat or to move to new
<table>
<thead>
<tr>
<th>Component</th>
<th>Season of Bear Use</th>
<th>Type of Use</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed Timber</td>
<td>spring - fall</td>
<td>daybed sites, travel corridors</td>
<td>Willard and Herman (1979)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zager (1980)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Madel (1982)</td>
</tr>
<tr>
<td>Open Timber</td>
<td>spring - fall -</td>
<td>bedding sites, denning sites</td>
<td>Mealey et al. (1976)</td>
</tr>
<tr>
<td></td>
<td>winter</td>
<td></td>
<td>Gillespie and Jonkel (1980)</td>
</tr>
<tr>
<td>Timbered Shrubfield</td>
<td>late summer - fall</td>
<td>feeding area, denning sites</td>
<td>Gillespie and Jonkel (1980)</td>
</tr>
<tr>
<td></td>
<td>late summer - fall</td>
<td></td>
<td>Madel (1982)</td>
</tr>
<tr>
<td>Mixed Shrubfield</td>
<td>summer - fall</td>
<td>feeding area</td>
<td>Mealey et al. (1976)</td>
</tr>
<tr>
<td>Mixed Shrubfield -</td>
<td>summer - fall</td>
<td>feeding area</td>
<td>Mealey et al. (1976)</td>
</tr>
<tr>
<td>Cutting Unit</td>
<td></td>
<td></td>
<td>McLellan and Jonkel (1980)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zager (1980)</td>
</tr>
<tr>
<td>Mixed Shrubfield -</td>
<td>late summer - fall</td>
<td>feeding area</td>
<td>McLellan and Jonkel (1980)</td>
</tr>
<tr>
<td>Burn</td>
<td></td>
<td></td>
<td>Zager (1980)</td>
</tr>
<tr>
<td>Mixed Shrubfield -</td>
<td>spring, summer,</td>
<td>feeding areas, daybed sites,</td>
<td>Sizemore and Jonkel (1980)</td>
</tr>
<tr>
<td>Snowchute</td>
<td>fall, possibly</td>
<td>denning sites</td>
<td></td>
</tr>
<tr>
<td></td>
<td>winter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Seasonal bear use of habitat components, continued.

<table>
<thead>
<tr>
<th>Component</th>
<th>Season of Bear Use</th>
<th>Type of Use</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beerry Shrubfield</td>
<td>late summer - fall</td>
<td>feeding area</td>
<td>Mealey et al. (1976)</td>
</tr>
<tr>
<td>Riparian Streambottom</td>
<td>spring, summer, fall</td>
<td>feeding area, travel corridor</td>
<td>Madel (1982)</td>
</tr>
<tr>
<td>Dry Meadow</td>
<td>spring</td>
<td>feeding area</td>
<td>Madel (1980), (1982)</td>
</tr>
<tr>
<td>Wet Meadow</td>
<td>summer, fall</td>
<td>feeding area</td>
<td>Mealey et al. (1976) Servheen (1981)</td>
</tr>
<tr>
<td>Drainage Forbfield</td>
<td>summer</td>
<td>feeding area</td>
<td>Madel (1982)</td>
</tr>
<tr>
<td>Sidehill Park</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrace Rock Sidehill</td>
<td>summer</td>
<td>feeding area</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2. Seasonal bear use of habitat components, continued.

<table>
<thead>
<tr>
<th>Component</th>
<th>Season of Bear Use</th>
<th>Type of Use</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slabrock</td>
<td>summer</td>
<td>feeding area</td>
<td>Sizemore (1980)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zager (1980)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Servheen (1981)</td>
</tr>
<tr>
<td>Talus/Scree/Rock</td>
<td>mid to late summer,</td>
<td>feeding area,</td>
<td>Zager (1980)</td>
</tr>
<tr>
<td></td>
<td>winter</td>
<td>denning area</td>
<td>Servheen (1981)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Madel (1982)</td>
</tr>
</tbody>
</table>
ranges. In addition to travel routes, space, security, bedding and denning sites, and breeding areas, are all important in the consideration of grizzly range requirements (Mealey et al., 1976). Comparatively little information is available on these requirements for the Rattlesnake, and additional research is needed.

Value of Components by Season

A GBHC may be important for a combination of reasons (e.g., feeding site, travel corridor, denning site, etc.). Feeding is keyed to the great abundance of a particular food, and so the diversity of bear food species is not in itself an indicator of an important GBHC (Jonkel pers comm., 1983). Important GBHCs are nonetheless the key to grizzly survival.

Closed Timber

Dense timber is in general, not favored by grizzlies (Mealey et al., 1976). Food sources are limited in the Closed Timber Component, although in some areas, seeds of the whitebark pine, may be used in years of cone abundance (Hornocker, 1962), and cambium feeding may be significant. The whitebark pine is found at higher elevations in the Rattlesnake, but as in the Mission Mountains to the north, blister rust has killed or weakened many of the once abundant stands (Mace and Jonkel, 1980). Whitebark pine is therefore, not an important food source at present. Stringers of timber are used as travel corridors
or for daybed sites. However, closed timber may provide escape areas (Jonkel, pers. comm., 1983), or "space and solitude necessary for home range preservation" (Madel, 1982). In certain years, such as the drought year of 1979, the north slopes of Closed Timber Components may become important feeding areas (Jonkel, 1982).

Open Timber

Important food sources are also very limited in most open timbered areas. However, open timber may be used as travel corridors or for daybed sites, particularly in locations adjacent to feeding areas (Mealey, 1977). Some researchers believe that understory vegetation present in this component may make open timber less suitable for these activities than more densely timbered areas which lack a shrub understory. Evidence suggests that certain high elevation Open Timber Components on upper slopes may be used as denning sites (Gillespie and Jonkel, 1980). Whitebark pine still provides some cones, and cambium feeding occurs here as well. Both Closed and Open Timber Components are well-represented in the Rattlesnake, especially at lower elevations. Although these areas appear to provide little food, they may nevertheless be important in providing grizzlies with security and cover.

Timbered Shrubfield

Grizzlies use timbered shrubfields as feeding areas from late
summer (August), through fall (October), (Servheen, 1981). It has been documented that during this period, huckleberries are used as a primary food source by the grizzly in most areas of northwestern Montana (Mace and Jonkel, 1980). Huckleberry production within Timbered Shrubfield Components varies with slope, elevation, and topography (Martin, 1979), but in most instances, huckleberries are the most significant bear food present.

In some timbered shrubfields in the Rattlesnake, serviceberry, twinberry, red-osier dogwood, mountain ash, buffaloberry, rose, elderberry, Oregon grape, snowberry, and kinnikinnick, are present and may be used as fall foods in addition to huckleberry. Small quantities of such forbs as strawberry, glacier lily, springbeauty, or sweetroot, may be minor food sources prior to the onset of berry production.

In addition to serving as an important source of nutrient-rich huckleberries, timbered shrubfields also provide essential cover and bedding locations (Servheen, 1981). High elevation timbered shrubfields may also be used as denning sites (Gillespie and Jonkel, 1980).

Because of the difficulty in distinguishing Timbered Shrubfield Components based on aerial photos, acreage values of this component are underestimated in this study. An improved means of measuring this component would be highly desirable, as would a reliable and efficient means of determining relative productivity.
Mixed Shrubfield

Non-forested areas are generally most important in terms of grizzly food production (Mealey et al., 1976). Mixed Shrubfields are primarily valuable as fall berry sources. The value of mixed shrubfields in the Rattlesnake is variable. Chokecherry, kinnikinnick, Oregon grape, serviceberry, and huckleberry, are all potential grizzly fall foods present in Rattlesnake mixed shrubfields. Madel (1980), examined a number of talus shrubfield communities along the lower portion of the Rattlesnake corridor and found that overall, fruit production was low, with bear foods limited to serviceberry. Many low elevation mixed shrubfields inventoried in 1982 were found to be decadent.

Graminoids are well-represented in many of the more open south or west-facing shrubfields and could represent a valuable spring food source. Strawberry, biscuit root, and hawkweed, could also provide additional spring-summer foods at certain locations.

Mixed Shrubfield - Cutting Unit

Cutting units often provide significant amounts of high quality bear foods and grizzly use of this component has been well-documented in many areas (Mealey et al., 1976; and Zager, 1980). Productivity varies according to elevation, aspect, and site treatment. Mealey et al. (1976), noted that cool, moist, and less disturbed selection cuts
tend to produce the greatest quantity and variety of grizzly food. Zager (1980), found that harvested units not scarified, or those which have been broadcast burned, often regenerate with a more vigorous shrub canopy, made up of species typically found in adjacent, undisturbed timbered stands. In lower, mesic ABLA/CLUN and PSME habitat types, unscarified clearcuts typically develop a dense mixture of shrubs, including mountain ash, globe huckleberry, menziesia, thimbleberry, Utah honeysuckle, and willow.

Cutting units located along Wrangle, Lake, and upper Rattlesnake creeks support key berry species and lush forb growth, providing both summer and fall foods (See figs. 14 and 15). Huckleberries are common, interspersed with patches or stringers of riparian habitat. These components were logged 20 to 25 years ago, and evidence suggests that black bear use of these areas is high during the late summer and fall. Martin (1979), and Zager (1980), have shown that the elevation, aspect, type of logging, and post-logging treatment, all influence the length of time that a cutting unit provides an abundance of high quality bear foods. Black bears, however, are generally thought to prefer cutting units from 15 to 25 years after timber removal, while avoiding 7 to 12 year old clearcuts (Lindzey and Meslow, 1977). These Rattlesnake Cutting Unit Components may now be at peak productivity, and should become less productive with time. Cutting units to the east of the Rattlesnake are variable but in general, less diverse and productive. Many of these components are in very early successional stages and cover is still limited. Productivity of many of the lower elevation units should increase within the next 10 to 20 years.
Gooseberry, thimbleberry, mountain ash, huckleberry, elderberry, and red twinberry, are all fall berry sources found in Rattlesnake Cutting Units. Forbs of potential value to the grizzly include: arrowleaf groundsel, false hellebore, cow-parsnip, lady fern, angelica, horsetails, and sweetroot.

Mixed Shrubfield - Burn

Mixed Shrubfield - Burn Components provide high quality bear foods in many areas, with huckleberry production from late summer though early fall (Mealey et al., 1976; and McLellan and Jonkel, 1980). This component does not at present represent an important food source in the Rattlesnake. Burns in the Grant Creek area are small and of recent occurrence. Extensive burns elsewhere in the lower Rattlesnake occurred more than 60 years ago, and these areas are no longer valuable in terms of berry production, except perhaps where they extended to high elevations.

Mixed Shrubfield - Snowchute

Mixed Shrubfield - Snowchute Components are known to provide key bear foods during the spring and summer when alternate feeding sites are scarce or absent due to snow cover (Zager, 1980; and Sizemore, 1980). False hellebore, cow-parsnip, arrowleaf groundsel, angelica, glacier lily, and springbeauty, were present in Rattlesnake snowchutes. Typically, snowchutes are also important sources of berry
producing shrubs (Zager, 1980). Key shrub species found in Rattlesnake plots include: mountain ash, raspberry, serviceberry, gooseberry, red twinberry, elderberry, and chokecherry.

Snowchutes have high importance values as grizzly food production sites elsewhere in western Montana (Mealey et al., 1976), and are considered to be the single most important habitat component in the Cabinet Mountains (Madel, 1982). Although key bear foods were present at shrubfield - snowchutes sampled in the Rattlesnake, this component is uncommon. The narrow snowchutes present in the Lake, Wrangle, and High Falls drainages, and above several of the higher lakes, do not compare in size or distribution to those of the Cabinet Mountains.

Huckleberry Shrubfield

Huckleberry Shrubfield Components are, in many areas, of key importance as sources of summer-fall foods (Sizemore, 1980; and Sizemore and Jonkel, 1980). Huckleberry shrubfields in the Rattlesnake are for the most part, small and relatively uncommon. Many higher elevation shrubfields are composed primarily of grouse whortleberry. Few graminoids or forbs of value to the grizzly were noted in Huckleberry Shrubfield Components within the Rattlesnake. Wherever they occur, the high energy/productivity value of huckleberry shrubfields make them of great value to grizzlies.
In many areas, riparian streambottoms are among the most important grizzly habitat components and provide quality spring food when few other sources are available (Mealey et al., 1976; and Sizemore, 1980). Low-elevation streambottoms are among the first sites to provide graminoids and wet site forbs. From May to June, grizzly bears are under considerable physiological stress and require secure habitat in which to forage (Servheen, 1981). Riparian habitat generally provides excellent cover, and may be used as bedding areas or travel corridors. Servheen and Lee, (1979), noted that drainage bottoms in the Mission Mountains often serve as corridors linking high and low elevation grizzly-use areas. Along Rattlesnake Creek, riparian shrubfields border herbaceous meadows, providing excellent security, and contributing to plant diversity.

Riparian zones are also important sources of fall grizzly foods (Sizemore, 1980). These areas may be particularly important to the grizzly in years of low huckleberry productivity. Horsetails, succulent forbs, and fruits may be key alternate food sources (Sizemore, 1980).

Fruits of the red-osier dogwood, thimbleberry, gooseberry, elderberry, raspberry, serviceberry, chokecherry, rose, hawthorn, buffaloberry, red twinberry, and mountain ash, are all potential late summer-fall food sources in the Rattlesnake. Herbaceous spring-fall food sources present in Riparian Streambottom Components include: cow-parsnip, dandelion (*Taraxacum* spp.), false hellebore, starry
Solomon's seal (*Smilacina stellata*), strawberry, lady fern, Sitka valerian (*Valeriana sitchensis*), horsetails, sweetroot, angelica, clover, licorice root, and sweet vetch (*Hedysarum* spp.). Winter-killed ungulates may be an additional and potentially important spring grizzly food source along riparian streambottoms, or adjacent to the low-elevation sites.

**Dry Meadow**

Dry meadows provide an early (April-May), source of native and introduced graminoids (April-May), as well as forbs which may also be used by the grizzly throughout the spring. Idaho fescue, timothy, rough fescue (*Festuca scabrella*), bentgrass (*Agrostis* spp.), orchard-grass, and bluebunch wheatgrass (*Agropyron spicatum*), and common graminoids found in Dry Meadow Components in the Rattlesnake. Strawberry, dandelion, and clover, are known bear foods present in significant quantities. Although spotted knapweed is a prominent constituent of most Dry Meadow Components in the Rattlesnake, its phenological development is delayed and should not preclude the use of graminoids in the early spring (Madel, pers. comm., 1982).

Many of the larger Dry Meadow Components in the Rattlesnake lack adjacent cover or are found in congested areas near the entrance to the Rattlesnake National Recreation Area, or along the first few miles of the corridor. These factors limit the potential value of these components to the grizzly.
Wet Meadow

Wet meadows are primarily valuable as a source of perennial graminoids in the summer and early fall. High elevation wet meadows often continue to receive moisture from melting snow until late in the season and remain green long after graminoids and forbs in other areas have dried up (Mealey et al., 1976). In many areas, grizzlies move to such high elevation sites in mid-summer and feed on sedges, prior to the onset of berry production (Mealey et al., 1976).

At some sites in the Rattlesnake, glacier lily, and springbeauty, were abundant in addition to bluejoint, sedges, and other graminoids. Taller forbs such as false hellebore, angelica, cow-parsnip, valerian (Valeriana spp.), licorice root, were found along the borders of many wet meadows, or in productive Drainage Forbfield - Wet Meadow Component mosaics. Although most high elevation wet meadows in the Rattlesnake are small, they may still be important to the grizzly. Studies elsewhere have indicated that individual grizzlies may key in on small but productive habitat components (Mace and Jonkel, 1980). Low elevation wet meadows along Rattlesnake Creek could be used earlier in the season than the higher elevation sites.

Drainage Forbfield

Because of the comparatively late phenological development brought about by snowmelt, forbfields provide an excellent source of summer bear foods. Grizzlies are known to use the corms or roots of plants
such as the glacier lily, and various umbels during July and August in high cirque basin forbfields of the Cabinet Mountains (Madel, 1982).

Succulent forbs are well-represented in Drainage Forbfield Components of the Rattlesnake Mountains. Sweetroot, angelica, licorice root, cow-parsnip, false hellebore, Sitka valerian, starry Solomon’s seal, glacier lily, and springbeauty, were all potentially important bear foods found in sample plots.

Small but productive drainage forbfields are scattered throughout the higher elevations of the Rattlesnake Wilderness Area. In many high basins, forbfields adjoin Wet Meadow, Graminoid Sidehill Park, or Terrace Rock Sidehill Park Components, providing a variety of potential grizzly feeding sites. Together, these components contain diverse food sources which may be exploited from spring through fall.

Beargrass Sidehill Park

The characteristics of grizzly denning sites are known to vary according to geographic area and individual preference (Jonkel, 1976). However, within the Border Grizzly Project area of northwestern Montana, most dens have been found in isolated, high elevation sites (6,000-7,500 ft., 1,829-2,286 m), with deep soils, a slope of around 30 degrees, and heavy winter snow cover (Zager et al., 1980). Aspect ranged from 45 to 277 degrees (Servheen, 1981). Denning habitat may be open or open-timbered, and tends to be dominated by beargrass (Gillepsie and Jonkel, 1980).

Most grizzly dens which have been located in the Swan, Mission,
Cabinet, and Whitefish mountains were found in Sidehill Park Components dominated by beargrass (Werner and Jonkel, 1977; Werner et al., 1978) Beargrass Sidehill Park Components were mapped as denning habitat to reflect this preference. Soil depth is an important consideration, in addition to slope and beargrass coverage, and is not always readily discernable. Some beargrass sidehills are not suitable as denning sites due to shallow soil conditions.

Few bear foods are available in beargrass sidehill parks in the Rattlesnake area, although small amounts of glacier lily, biscuit root, and springbeauty were found in some components, and may provide a minimal amount of spring food. Many Beargrass Sidehill Park Components were interspersed with small huckleberry shrubfields or graminoid sidehill parks which could be used as feeding sites.

Servheen (1981), described 4 grizzly dens from the Rattlesnake Mountains which were excavated on steep slopes (28-35 degrees), 6,726-8,208 ft. (2,050-2,500 m), with aspects ranging from 45-277 degrees. These den sites, found near McLeod Peak at the rugged northern border of the Rattlesnake Wilderness, fit the general pattern of preferred denning habitat. The upper McLeod Basin is sparsely timbered, dominated by beargrass, and characterized by steep talus slopes. Comparatively few recreationalists visit this remote, trailless area. As noted in Chapter III, no dens were found during the summer of 1982, but past use of this portion of the upper Rattlesnake has been well-documented. Beargrass sidehill parks are distributed throughout most of the higher basins, and denning habitat does not appear to be lacking in the Rattlesnake Wilderness Area.
Graminoid Sidehill Park

Grizzly bears use graminoid sidehill parks as feeding areas in the spring and summer (April-June), (Mealey et al., 1976). The snow on south-facing graminoid sidehill parks often melts early in the spring, providing a food source in April or May when many other types of components are still snow-covered. During this time, graminoids represent a low-nutrient but readily accessible and thus important, food source (Sizemore, 1980). According to Mace and Jonkel (1980), graminoids may make up the bulk of a grizzly bear's diet during this critical period immediately following emergence from the dens.

Graminoid Sidehill Park/Slabrock Components are also used in the late summer, as grizzlies feed on biscuit root, or ground squirrels (Spermophilus spp.), (Mace and Jonkel, 1980).

Graminoids of potential value present in the Rattlesnake include: bluebunch wheatgrass, Idaho fescue, and elk sedge, in addition to numerous unidentified grasses. In some locations ants (Formicidae), were common and numerous ladybugs (Coccinellidae), were observed along a ridge to the east of Mosquito Peak. Both are potential grizzly foods. Bear use of many Graminoid Sidehill Park Components was evidenced by the presence of scats and overturned rocks. It generally was not possible to distinguish between black bear or grizzly use, and no conclusive evidence of grizzly activity in these components was obtained.
Terrace Rock - Sidehill Park

Terrace Rock - Sidehill Park Components are primarily late spring or summer feeding sites dominated by elk sedge. Snow melt supplies moisture, which allows these bench-like areas to remain green later than corresponding, drier Graminoid Sidehill Park Components. Smaller amounts of glacier lily, biscuit root, and springbeauty are present as potential bear foods in Terrace Rock Components in the Rattlesnake.

Terrace rock in the Rattlesnake oftens borders small, Wet Meadow, Drainage Forbfield, Huckleberry Shrubfield, or Slabrock components. Together, these components form a diverse habitat area which may be used over a range of seasons and conditions to provide a variety of food types. Most Terrace Rock Components are small, irregular units, and although the components and acreage totals are small, these unique areas may nevertheless represent important feeding areas because of the succulence and abundance of key foods.

Slabrock

Slabrock, alone, generally contains few bear foods, but adjacent components may represent important feeding sites. Ants (Formicidae), or marmots, both known grizzly foods, may be a potential food source in many slabrock areas within the Northern Continental Divide Grizzly Grizzly Bear Ecosystem, and a few plants species important to bears may grow very succulently between the rocks. Slabrock is most often used by grizzlies during the late summer (Zager, 1980). According to
Zager et al. (1982), the use of slabrock is largely dependent on adjacent vegetation. In some well-drained areas, succulent forbs may persist because of the shading, nutrient-shedding, or heat-holding capacity of the rocks.

Scree/Talus/Rock

Vegetation of this component is also sparse, but summer use of these components has been documented by Servheen (1981), who observed grizzlies feeding on army cutworm moths (Chorizagostis auxiliaris), in the Mission Mountains. No similar insect concentrations have been documented for the Rattlesnake Mountains, but their presence should probably not be ruled out due to the close proximity of these areas. Lady bug concentrations (Coccinellidae) may also be a potential food source in Scree/Talus/Rock components.

Grizzlies are known to feed on small mammals such as ground squirrels, pikas, and marmots which commonly inhabit these areas (Willard and Herman, 1977; and Mace and Jonkel, 1980). Ground squirrels are abundant throughout the Rattlesnake, and pikas and hoary marmots, are common throughout many of the higher elevation Scree/Talus/Rock Components of the Rattlesnake (Adelman, 1979). Scree or talus may sometimes be used as denning areas. Servheen (1981), reported that grizzly dens may be found in talus or scree components in which large boulders are oriented to form natural cavities.
Chapter VI

CONCLUSIONS

An exact determination of the square miles necessary to support a grizzly population is beyond the scope of present knowledge. Generalizations about habitat requirements are particularly difficult with the grizzly, a species which exhibits remarkably diverse foraging strategies and habitat use patterns (Mace and Jonkel, 1980). It is also difficult if not impossible, to apply values objectively from one geographic area to another in an attempt to rate potential habitat (Scaggs, pers. comm., 1983). Heretofore unknown sources of food may be used in some areas, and additional research is necessary to provide answers to questions of this sort.

Does the Rattlesnake contain habitat components of sufficient size and quality to support the grizzly? The Rattlesnake Mountains form the southwestern-most fringe of currently occupied grizzly habitat in the Northern Continental Divide Ecosystem (Joslin et al., 1975; Servheen, 1981). Servheen (1981), contends that low grizzly densities in the Rattlesnake may be related to geographic location, rather than the quality of habitat. This study demonstrates the occurrence of a range of mappable grizzly habitat components in the Rattlesnake National Recreation Area and Wilderness. Recent possible grizzly sightings and historic records provide additional evidence for the potential occupancy of this area.

As illustrated in Table 1, spring and fall food sources are the most limited, and thus are the most restrictive in terms of potential
Nevertheless, some spring and fall foods are available within the Rattlesnake boundary, and in certain adjacent areas to the north and east. Information obtained from radio-collared bears could reveal additional sites of value to the grizzly, as well as patterns of seasonal movements throughout the area.

The presence of identifiable habitat components does not guarantee availability or use by the grizzly. In some areas, human activity may prevent the use of otherwise valuable habitat components (Schallenberger and Jonkel, 1979). These circumstances must be considered in an area such as the Rattlesnake, which adjoins an area of high human population. However, if grizzlies can or are adapting to the human presence here, there may be cause for optimism about grizzly recovery in western Montana and elsewhere. Human activities within the Rattlesnake National Recreation and Wilderness Area will be considered with management implications, in Part II of this thesis.
PART II
MANAGEMENT IMPLICATIONS

Chapter VII
INTRODUCTION

To many, the grizzly bear is synonymous with wilderness. The very presence of the grizzly may be used to define wilderness or to measure its quality (Schoenfeld and Hendee, 1978). The relationship between wilderness and the grizzly was noted by Aldo Leopold (1949), who wrote: "Permanent grizzly ranges and permanent wilderness areas are, of course, two names for one problem. Enthusiasm about either requires a long view of conservation, and a historical perspective. Only those able to see the pageant of evolution can be expected to value its theater, the wilderness, or its outstanding achievement, the grizzly." The loss of a grizzly population could diminish the esthetic appreciation and enjoyment of these areas for many wilderness users.

Wilderness as defined under the Wilderness Act of 1964, is probably essential for the survival of the grizzly bear. Craighead (1979), observed that "although the grizzly bear is essentially a wilderness species, it can and does adapt to the presence of Man; however, it has not and cannot adapt to Man's intensive use and modification of habitat."
Management objectives and options

Management agencies are currently faced with decisions concerning the future of the Rattlesnake National Recreation Area and Wilderness and the grizzly bear. How will demands for varying, and often conflicting uses be reconciled? What priority will be given to the protection or management of the grizzly in the Rattlesnake Wilderness or surrounding areas?

Although logging and many other types of development are no longer viable use options in the core wilderness area, and because mineral exploration seems unlikely, demands for recreation are increasing and will no doubt continue to do so. Certain types and levels of recreational use may prove to be incompatible with grizzly recovery in the area. It is important to note that the Rattlesnake is not an ecological island. Impacts at the fringes, or in adjacent areas, must be considered should management agencies opt to give priority to protecting the grizzly. Cumulative impacts are particularly important in grizzly management because the bears are wide-ranging and long-lived. Wildlife management in Wilderness Areas has traditionally been thought of as controversial and difficult (Schoenfeld and Hendee, 1978), and the Rattlesnake/grizzly issue is no exception.

Potential value of the Rattlesnake to the grizzly

The distribution, value, and extent of grizzly habitat components mapped within the Rattlesnake National Recreation Area and Wilderness
were discussed in Chapters IV, V, and VI. Consideration was given to past grizzly observations in Chapter II. As noted in Chapter IV, some identifiable spring, summer, and fall habitat components are present in addition to suitable denning sites (Figs. 8-13; Table 1). Evidence based on vegetation and topography suggests that the Rattlesnake Wilderness and surrounding areas is suitable grizzly habitat. Additional data indicate that it is currently being used at least intermittently, by a small number of grizzly bears. The Rattlesnake may also be potentially valuable as a travel corridor linking occupied grizzly habitat to the north in the Mission Mountains with the vast, unoccupied Selway-Bitterroot Wilderness to the southeast (Chapter II), (Fig. 7).

Chapter VIII

METHODS

Management Parameters

Mapped locations of components in Figures 8-13 may be used as a basis for management decisions when combined with information on grizzly seasonal habitat use patterns reviewed in Chapter V, (Table 2), and the overall availability of specific components within the Rattlesnake as summarized in Table 1. Key components may thus be managed to maximize grizzly use of these areas. Although individual Rattlesnake GBHCs have not yet been tested regarding habitat use,
certain general conclusions were sought from the mapped units. A review of Table 1, for example, was used to determine whether important spring and fall habitat components, because they are the most limited in the Rattlesnake, are therefore of relatively greater value.

Management Alternatives

Consideration of the level of protection afforded grizzly components hinges on the overall management framework chosen for the Rattlesnake. On February 7, 1983, a range of detailed management options was presented to the public by the Lolo National Forest, Missoula, Montana. Comments generated in response to these options indicate widespread public support for maintenance of the Rattlesnake in a "natural" state (Hillis, pers. comm., 1983). A majority of respondents, in principle, place a higher priority on the preservation of the area's wildlife rather than on recreation; this paper is an attempt to clarify the management needs of one wildlife species.

Several alternatives have been proposed by Lolo National Forest for grizzly management in the Rattlesnake. These alternatives are integrated into broader management objectives, and are summarized in Table 3. Specific grizzly and grizzly habitat management options will be considered within the framework of these alternatives.
**TABLE 3**

Lolo National Forest Grizzly Management Alternatives.

<table>
<thead>
<tr>
<th></th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor bear use and Habitat Components to identify potential problems with recreationists or habitat degradation.</td>
<td>Monitor bear use and Habitat Components to identify potential problems with recreationists or habitat degradation.</td>
<td></td>
</tr>
<tr>
<td>Site-specific restrictions could be imposed at a future date if monitoring indicates a significant risk of Man/grizzly conflict.</td>
<td>No restrictions on recreation.</td>
<td></td>
</tr>
<tr>
<td>Monitoring results available to the public.</td>
<td>Monitoring results available to the public.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter IX

RESULTS

Impacts of Recreation in the Rattlesnake

Recreational activities often tend to concentrate people in areas of high grizzly use (Servheen, 1981). Both humans and grizzlies may frequent high-elevation areas (e.g. panoramic vistas and grizzly foods) or lower elevation streambottoms providing easy travel and grizzly foods. Sparsely timbered ridges may serve as easy access to remote high country lakes for hikers or as grizzly travel corridors. Unfortunately the impact of recreational activities on the grizzly or on any wildlife species, is poorly understood (Schoenfeld and Hendee, 1978; and Shecter and Lucas, 1978). Opinions of researchers vary, and more research will be necessary before specific conclusions can be reached. It is likely, however, that the effect of recreation varies seasonally, or with the mode and intensity of use. As with almost every aspect of grizzly behavior, individual bear responses probably differ greatly.

Recreational activities in the Rattlesnake are varied and include: jogging, day-hiking, bicycling, motorcycling, cross-country skiing, snowmobiling, hunting, backpacking, or horse travel. Specific recreational trends were noted in Chapter II, but several seem particularly pertinent to a consideration of management options. These include: 1) the average group size is smaller than typical of other wilderness areas, 2) there is a tendency for recreationists to
remain within a few miles of the main gate, and 3) there is a high percentage of day-users (McCool et al., 1978a; 1978b; 1978c; and Kelley, 1979; Corti et al., 1982). Unlike most wilderness areas (Shecter and Lucas, 1978), motorized use in the form of motorcycles and snowmobiles is permitted along a corridor passing into the Wilderness Area, allowing relatively easy access to high country lakes. The proximity of the Rattlesnake National Recreation Area and Wilderness to Missoula, Montana, also presents an urban/wildland interface uncommon in other Wilderness Areas (Wall et al., 1977).

A number of comprehensive recreation inventories have been conducted in the Rattlesnake (Wall et al., 1977; McCool, 1978a; 1978b; and 1978c; Corti et al., 1982). A summary in the form of a code-a-site system as developed by Hendee et al. (1976), is on file at the Missoula Ranger District, Missoula, Montana, and includes up-to-date descriptions of trails and campsites within the Rattlesnake.

Numerous trails suitable for hikers or horse travel are present within the Rattlesnake National Recreation Area and Wilderness, and more have been proposed. Trail conditions vary from well-marked, maintained trails receiving heavy use, to obscure, brushy paths which are only infrequently used. Trail conditions, as well as the locations of proposed and existing trails, are illustrated in Figures 28-32. Studies indicate that most overnight use is concentrated around a number of high mountain lakes. No developed campsites or facilities are present, but undeveloped campsite locations have been identified along with information on past use levels and site
Figure 28.

Key to Recreation Maps

Trails

- - - Existing
- - - Proposed

Informal Campsites

\[
\begin{array}{l}
\checkmark \\
\triangle \\
\triangleleft \\
\end{array}
\]

Infrequent Use
Moderate Use
Frequent Use
conditions (Missoula Ranger District, 1982). (Figs. 28-32). The addition of developed campsites or other facilities seems unlikely in view of public preferences for a natural, undeveloped setting.

Hiking and camping

What are the impacts of camping and hiking on the grizzly? There is no definite answer to this question. For example, the Kootenai National Forest, when performing a cumulative effects analysis, considers hiker use of trails to have an ephemeral effect on the grizzly which "cannot be accounted for" (Christensen, 1982). High levels of camping activity are considered to have a definite negative impact on the grizzly. Grizzlies are known to avoid trailheads (Schallenberger and Jonkel, 1979), and many researchers believe that under certain conditions even moderate hiker use may be detrimental (Sizemore, 1980; and Servheen, 1981). It seems reasonable to assume that the presence of hikers could alter the way in which the grizzly, a secretive and seldom-viewed animal, uses its habitat.

Motorized travel

Research elsewhere has demonstrated that grizzly bears generally avoid roads (Schallenberger and Jonkel, 1979; Duff, 1980; and Mace and Jonkel, 1980). Due to the intensive use of the main road (Trail 30), by bicyclists, hikers, and motorcyclists, it is reasonable to assume similar patterns of avoidance along this corridor. Thus, high levels
of use, including motorized travel, could prohibit day use of otherwise productive habitat components along the main road.

Fishing

In the Rattlesnake, fishing is currently permitted only in high mountain lakes, around which other forms of recreation such as camping and hiking, are already concentrated. Additional impacts from fishing are probably slight. However, opening the entire length of Rattlesnake Creek to fishing, as has been proposed, could adversely impact grizzly use of this area. Large numbers of people would be concentrated along a narrow, riparian zone which represents valuable or perhaps even critical spring and fall habitat, which is limited in the Rattlesnake. Stream fishing in other areas is believed to result in an increased risk of direct Man-grizzly confrontation (U.S. National Park Service, 1974).

Horse travel-horsepacking

No data are available on the direct impact of horses on grizzlies or grizzly habitat, but it is likely that the effects vary greatly with levels of use, and the individual bear concerned. Current levels of use probably do not significantly impact the grizzly. Evidence suggests that most horseback riders do not travel far into the wilderness, but rather use only the first 3 to 5 miles (4.8 to 8 km), of the National Recreation Area (McCool, 1978).
A dramatic increase in the number of horses and riders in the Rattlesnake National Recreation Area and Wilderness could limit the grizzly's ability to feed or travel, and introduce attractants. Forage in the upper Rattlesnake is limited, and some direct competition for food could occur if feed is not packed in. The use of supplemental feed could minimize these effects, but would add to the attractant problem.

Hunting

The hunting of grizzlies is controversial, to say the least, but it is not currently allowed in the Rattlesnake. Some managers and researchers believe that hunting may be beneficial in making grizzlies more wary of humans (Jonkel, pers. comm., 1983), but all professionals agree that hunting should not be permitted when population numbers are low.

Other hunting can also impact the grizzly. The number of hunters using the Rattlesnake is probably less than in many other areas of western Montana. McCool et al. (1978c), found that only 10% of those entering the Rattlesnake during the fall of 1977 carried firearms. The limited number of access points, and the lack of roads open to 4-wheel travel, discourages many hunters.

Black bears are numerous throughout the Rattlesnake National Recreation Area and Wilderness, and are hunted from April 1 to November 27, (J. Firebaugh, pers. comm., 1983). Whenever black bears are hunted in areas supporting grizzly populations, some grizzly
mortality due to mistaken identity is possible. Grizzly deaths may be
decreased through hunter education, decreasing the black bear harvest
by shortening the season, additional road closures, or by closing
areas of known, concentrated grizzly use to black bear hunting.

Grizzly mortality brought about by mistaken identity is not known
to be a problem in the Rattlesnake. If evidence to the contrary is
found, drastic steps should be taken to prevent this problem. Such
steps could begin with increased efforts to educate hunters, since
many area residents are unaware of the possibility of encountering a
grizzly in the Rattlesnake Wilderness.

Grizzly/People Management

Management aims of a grizzly recovery plan should include
minimizing the possibility of bear-human conflicts and the protection
of key grizzly habitat as primary goals. Use of the Rattlesnake
Wilderness Area by grizzlies could be encouraged through the
protection of existing habitat to allow maximum grizzly use of
important GBHCs. In many areas of Western Montana where grizzly use
or occupancy has been documented, recreation patterns are sometimes
altered for the protection of both bears and recreationists such as in
the Mission Mountains, and Glacier National Park. Although current
levels of recreation in the Rattlesnake, in combination with low
grizzly densities, may seem to argue against area closures at this
time, possible future restrictions nevertheless, represent a
potentially valuable management option. Seasonal, site-specific
closures could be imposed if monitoring should reveal a significant potential for Man-grizzly conflicts.

Portions of trails, roads, or campsites within the Rattlesnake, could be closed whenever human activity would be likely to adversely impact the grizzly or lead to direct conflict. Any new trails, campsites, or other facilities could be constructed so as to avoid important GBHCs whenever possible or, to at least be situated so that adverse impacts are minimized. If monitoring should reveal grizzly activity, other forms of recreation such as fishing, hunting, horseback riding, and motorcycling, could also be managed to lessen negative impacts on the bear.

Attempts to modify recreational patterns to benefit wildlife are becoming increasingly common as more and more people make use of wilderness areas. According to Martinka (1976), projected bear management needs generally include additional control of human activities as a major objective. Ranz (1979), noted that "wildlife conflicts" were reported as a primary reason for campsite closures in at least 13% of all Forest Service facilities surveyed in the Northern Region. Such restrictions have not previously been implemented in the Rattlesnake National Recreation Area and Wilderness. However, recreation closures or restrictions are common in Glacier and Yellowstone national parks and in the Mission Mountains.

Public cooperation would be necessary for any recreation restrictions to be effective. According to Schoenfeld and Hendee (1978), the public has, in general, demonstrated a strong willingness to honor travel restrictions imposed due to wildlife conflicts when
adequate explanations are given for the closure. They contend that the public is "more willing to yield their rights to wildlife benefits than most managers realize." Public compliance with road closures in Western Montana has improved greatly since 1978 (Mike Aderhold, pers. comm., 1983). Historical records confirm that the grizzly represents an aspect of the natural environment of the Rattlesnake as discussed in Chapter II. At this point, it is difficult to speculate as to whether further restrictions aimed at protecting the grizzly would meet with widespread public support. However, the high priority assigned to the protection of wildlife within the area, as indicated by a majority of respondents to the Rattlesnake Plan, may suggest a general acceptance of at least some seasonal closures. Specific circumstances under which restrictions might be implemented, will be discussed in Chapter X. A valuable by-product of improved grizzly habitat management is that in maintaining a high quality of grizzly habitat, the essence of wilderness is automatically maintained as well. Animal and plant species at all elevations and aspects are simultaneously benefited (Jonkel, 1981).

The Grizzly, Grizzly Habitat, and Recreation Management

The potential for grizzly recovery in the Rattlesnake Wilderness ultimately depends on such factors as 1) the quality of habitat, 2) the speed and ease of natural immigration, which is in turn dependent upon population densities and habitat quality in adjacent occupied areas, and 3) the level of any adverse human impacts within the
Rattlesnake or on neighboring lands. As noted in Chapter VI, the question of habitat quality is difficult to address. There is still insufficient information to provide a definite, overall, quantitative formula relating the GBHC acreages necessary for the survival of specific numbers of grizzlies (J. Almack, pers. comm., 1983; G. Scaggs, pers. comm., 1983). Moreover, grizzly use patterns may be too varied to allow an objective assessment of the quality of components in an area such as the Rattlesnake for which there are no records of historical use or food preferences. By and large, such data can be gathered only by intensive food habit studies, and by the radio-tracking of marked, local bears.

Is the Rattlesnake National Recreation Area and Wilderness large enough, with sufficient amounts and variety of habitat to support a population of grizzlies? Evidence is inconclusive, but as discussed in Chapter VI, some indications suggest that the area could support at least a few grizzlies. Even if the Rattlesnake should prove to be too small to support more than several grizzlies, the area could conceivably be viewed as an integral part of a larger bear management area, perhaps including the Mission Mountains, the South Fork of the Jocko, Twin and Gold creeks, Bonner Mountain East, and perhaps the Reservation Divide. The Rattlesnake could, in this context add an important dimension to these areas by increasing habitat diversity and "living space," by supporting a viable "fringe area population," or by serving as a buffer between these locations and more developed lands which do not appear suitable for grizzly occupancy.

High grizzly densities in the Mission Mountains would promote
immigration into the Rattlesnake, whereas low densities would lessen the likelihood of migration into the area. Research conducted by Servheen (1981), suggests that grizzly food sources within the Mission Mountain Study Area, are both diverse and abundant. Moreover, evidence suggests that the Mission Mountain grizzly subpopulation has been decreasing in recent years. These factors may seem to argue against the restablishment of a viable grizzly population in the Rattlesnake. However, it should be noted that a series of "chance" wanderings into the Rattlesnake by only a few members of the Mission Mountain subpopulation (events which now occur at least occasionally), could ultimately lead to the re-population of the area.

Lolo Forest biologists should be aware of any changes in grizzly population densities within the Mission Mountains. Close cooperation between enforcement officers and biologists with the Flathead Reservation (Tribal or Bureau of Indian Affairs), Lolo National Forest, and Region 2 of the Montana Department of Fish, Wildlife, and Parks, is essential for the exchange of up-to-date information on the status of the Mission and Swan/Clearwater Area grizzly population. A significant increase in the Mission subpopulation should signal the need for increased monitoring within the Rattlesnake Wilderness and adjacent areas. Specific monitoring plans, and possible physical barriers to immigration will be discussed in Chapter X.
Potential for Man-Grizzly Conflicts or Confrontation

Regardless of the management alternative selected, the possibility of direct human-grizzly conflict is low. Confrontations resulting in human injury are extremely rare, even in national parks supporting large populations of both grizzlies and human visitors (Herrero, 1970; and Craighead and Craighead, 1971). Bear-caused injuries or deaths are even more uncommon in Wilderness Areas with grizzly populations. According to Schneider (1977), only one known fatality has been attributed to grizzlies in all wilderness areas - a hunter who wounded a grizzly in Montana's Bob Marshall Wilderness.

Lack of reliable information on bear densities prohibits an accurate, statistical evaluation of risk factors in the Rattlesnake at this time. However, it is undoubtably, significantly lower than rates given for national parks and other Montana areas (Jonkel, 1981). According to Servheen (1978), "The extreme situation of Glacier National Park, where a dense and unhunted grizzly population has to share the habitat with a more dense and mobile population of recreationists, is in no way similar to the Rattlesnake situation. It seems improbable at this point that the Rattlesnake grizzly population will ever reach a sufficient density to pose a serious threat to recreation."

Studies based on park data suggest that visitor densities may be important determinants in the number of bear-caused injuries sustained in parks by humans (Herrero, 1970).

As discussed in Chapters II and IX, most recreational use in the
RNRAW is concentrated within the first 3 miles (4.8 km), of the entrance. Recreational use within the upper Rattlesnake is low when compared with many other wilderness areas. Both the Selway-Bitterroot and Bob Marshall wilderness areas average 0.1 visitor days per acre, as compared with a national average of 0.5 visitor days per acre in wilderness areas (Shecter and Lucas, 1978), and approximately .03 visitor days per acre for the Rattlesnake Wilderness. During the summer of 1979, Fichtler (1980), recorded 936 visitor use days at 24 campsites within the Rattlesnake and 1203 visitor use days at 19 comparable sites in the Mission Mountains. In another study conducted three years later, Corti et al. (1982), reported 1000 visitor use days in the high lake basins of the Rattlesnake Wilderness. Recreational use in the upper Rattlesnake is low when compared with many other wilderness areas.

Currently, grizzly densities are very low, and most if not all grizzly activity would be expected to take place well above the first several miles of the Rattlesnake National Recreation Area. These factors make encounters even more unlikely. In addition, the Rattlesnake is primarily a day-use area (McCool, 1978a; 1978b; and 1978c; Corti et al., 1982) Studies have indicated that grizzlies may be more active at night during the spring and summer months (Sizemore and Jonkel, 1980). This raises the possibility of increased grizzly activity when human presence and activity is at a minimum. The careful monitoring of grizzlies, of area closures, or of restrictions aimed at protecting grizzly habitat, could also serve to minimize the number of encounters between recreationists and bears. Risks of human
injury can also be lessened, perhaps, by providing appropriate
literature or posting warning signs.

Chapter X
DISCUSSION

Monitoring

A detailed, accurate log of confirmed and suspected grizzly
sightings would provide a useful and inexpensive means of identifying
areas which may be seasonally important. A more intensive monitoring
program should be implemented if confirmed grizzly reports are
received. An effective system of monitoring is essential for the
implementation of any management plan dealing with the grizzly in the
Rattlesnake and represents an integral part of both management options
outlined by Lolo National Forest (See Table 3). Monitoring can
provide valuable information on population densities, distribution,
and habitat preferences of grizzlies in or near the Rattlesnake, as
well as helping to protect and separate grizzlies and recreationists.
Any areas of suspected grizzly use within the Wilderness boundary
could be identified and if necessary, protected.

Grizzly bears

All potential grizzly sightings within the Grant Creek, Gold-Twin
Creek, and Rattlesnake creek drainages should be reported to the
Missoula Fish, Wildlife, and Parks Office, the Missoula Ranger District or Lolo National Forest headquarters. Any incidents involving bears and humans should receive special emphasis.

The public should be informed through appropriate signs at access points or trailheads, and should be encouraged to report grizzly sightings or sign to appropriate officials. If verified reports of grizzlies are received, literature or signs outlining appropriate steps to take when camping in grizzly country, should be made available at entry points. Agency personnel working in the area should be instructed to recognize grizzly sign in the field, and should be encouraged to report evidence of grizzly activity, e.g., tracks, any suspicious hair or tooth marks when trail signs are checked in the spring. Verification of hair or tooth marks should be undertaken when questionable sign is noted.

An annual spring survey of low-elevation Graminoid Sidehill Park Components could provide a good means of documenting grizzly use in the Rattlesnake (C. Jonkel, pers. comm., 1983). Likely graminoid sidehill parks may include those above Rattlesnake Creek past the junction of the East Fork, or in the vicinity of Sheep Mountain. Such investigations should be routine (by Forest Service biologists or independent researchers).

A concept of zoning may be useful in developing a workable monitoring program involving a "wilderness species" such as the grizzly. According to Craighead (1979), "zoning of one kind or another can... do more to reduce bear-man confrontations, injuries, and human deaths than any other single management procedure, and [can]
reduce the need for control activities which so often result in grizzly mortality." Bear zones may be designated for the Rattlesnake as a management tool, and in many respects the Rattlesnake is especially conducive to zoning.

A core area composed of good quality habitat, and exhibiting wilderness characteristics, may be designated as suitable for intensive grizzly use. Ideally, a core area should provide a variety of habitat components, denning sites, and sufficient "living space" to accommodate the needs of the grizzly. Within the Rattlesnake, the area centered around the McLeod and Grant basins represents a logical core area. As illustrated in Figure 29, recreational use in this area is now slight. There are no developed campsites, or trails, and no new trails or facilities have been proposed. Outside of this core area, managers could integrate the needs of the bear with the demands of recreationists. Barriers to grizzly activity in outlying areas could include a closed timber canopy (Schoenfeld and Hendee, 1978), or interference brought about by higher levels of recreational use toward the southern periphery of the Rattlesnake National Recreation Area and Wilderness. With the notable exception of riparian streambottom, there are few attractive GBHCs within the first few miles of the Rattlesnake corridor. Much of the lower Rattlesnake is timbered, as discussed in Chapter IV.

Figure 33 represents one possible approach to a system of bear management by zones within the Rattlesnake. These zones may be integrated into a bear monitoring scheme, as shown in Table 4. Individual circumstances vary greatly, and managers must be prepared
Figure 33. Bear Management Zones
TABLE 4. Suggested response to reports of grizzly activity.

<table>
<thead>
<tr>
<th>ZONE #</th>
<th>LOCATION</th>
<th>CRITERIA</th>
<th>MONITORING</th>
<th>OTHER RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>McLeod - Grant Basin Core Area</td>
<td>2-3 + confirmed observations</td>
<td>initiate den survey</td>
<td>post signs or literature at trailheads</td>
</tr>
<tr>
<td></td>
<td>(Figure 33)</td>
<td>3-4 + unverified reports</td>
<td>attempt to verify</td>
<td>appropriate signs at trailheads</td>
</tr>
<tr>
<td>2</td>
<td>Intermediate Area</td>
<td>2+ confirmed reports</td>
<td>initiate den survey</td>
<td>post lit. or signs where necessary</td>
</tr>
<tr>
<td></td>
<td>(Figure 33)</td>
<td>2-3+ unverified reports</td>
<td>attempt to verify (check for tracks, hair, scats, etc.)</td>
<td>appropriate signs or literature</td>
</tr>
<tr>
<td>3</td>
<td>Peripheral Areas</td>
<td>1+ confirmed observations</td>
<td>additional monitoring</td>
<td>take steps to alert but not alarm the public</td>
</tr>
<tr>
<td></td>
<td>(Figure 33)</td>
<td></td>
<td>consider den survey</td>
<td>post signs or literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-2 + unconfirmed reports</td>
<td>high priority to verification, monitoring</td>
<td>post appropriate signs or literature</td>
</tr>
</tbody>
</table>
to alter plans as additional facts become available. For example, a single grizzly seen traveling through the wild, undeveloped area near McLeod Peak should not elicit the same response as a grizzly female with cubs observed along lower Rattlesnake Creek. Grizzly activity in Zones 2 or 3 are relatively more significant, and should necessitate a stronger, more direct response by managers, including possible restrictions on recreation. Grizzlies in Zone 3, in particular, may be attempting to exploit a scarce seasonal food source such as riparian vegetation during years of berry failure, and are in a position to be more adversely impacted due to high levels of recreational use. The possibility of Man-grizzly encounters also increases within Zone 3. If monitoring reveals that several grizzlies are using McLeod Basin, restrictions on recreation would probably be unnecessary unless human use increases significantly over current levels.

Vegetation

If grizzly activity is documented in the lower Rattlesnake, a program of vegetation monitoring should be considered. Summer monitoring of selected huckleberry shrubfields could predict the relative abundance of this key summer-fall grizzly food. Permanent plots could be established and monitored annually by Lolo Forest personnel, or by independent researchers following the methods of Martin (1979), and others. Berry counts along established transects would require a minimal amount of training, and should give an
accurate indication of fall huckleberry availability. Likely locations for sample plots could include Timbered Shrubfield Components in the Gold-Twin Creek area adjacent to the Rattlesnake Wilderness (Sec. 32, T15N R17W), or in the Grant Creek area (Sec. 35, T15N R19W). Both locations are readily accessible, and huckleberries are common.

During years in which huckleberry failure is indicated, special attention could be given to protecting alternative fall food sources in such components as Riparian Streambottoms, Mixed Shrubfield Cutting Units, Mixed Shrubfield Snowchutes, or Wet Meadows. Special trail closures or other restrictions could become important during these years. Vegetation monitoring could thus help to separate grizzlies and recreationists by predicting areas of potential grizzly use during years of low huckleberry production.

**Potential Problem Areas**

A number of potential problem areas have been identified on the basis of mapped component locations and on sites of recreational activity. If low elevation grizzly activity is documented in the Rattlesnake, closures or restrictions should be considered along Rattlesnake Creek during the early spring, or in the fall, during years of suspected berry failure. Other large components, including the productive mixed shrubfield cutting units on Lake and Wrangle creeks could also represent potential problem areas during the late summer and fall.
Flexibility is important in any management plan. For example, monitoring could reveal persistent grizzly activity in a small Wet Meadow or Drainage Forbfield Component. Seasonal restrictions could be necessary in such situations (Figs. 8-13, and 28-32).

Periodic review of the grizzly situation is essential. A committee composed of biologists from Lolo National Forest, Bureau of Indian Affairs, Region 2 of the Montana Department of Fish, Wildlife, and Parks, or the Border Grizzly Project should periodically review any significant changes in the status of the Rattlesnake grizzlies.

Problem bears

The Yellowstone Guidelines suggest ways in which "problem bears" may be identified and removed, and could be applied to the Rattlesnake National Recreation Area and Wilderness. Accordingly, "no bear will be captured or destroyed in a backcountry area unless it has become unnaturally aggressive and other alternative methods of providing for human safety cannot be employed" (U.S.F.S. et al., 1979). The Guidelines suggest that no bear should be destroyed for exhibiting natural behaviors, such as the defense of cub, itself, or food. Bears which show persistent, unwarranted, aggressive behaviors, or which habitually frequent populous peripheral areas in or near the boundary of the Lower Rattlesnake, should be removed after careful review of each situation. Live animals so identified should be transplanted according to the interagency guidelines, donated to zoos, or used for research purposes, if suitable transplant locations cannot be found.
Fire

Numerous studies have documented the importance of fire in creating or maintaining seral plant communities of potential value to the grizzly. Some researchers believe that fire control may have contributed significantly to the elimination of the grizzly in a number of wilderness areas, including the Selway-Bitterroot (Schneider, 1977; Willard and Herman, 1977). In keeping with these findings, a "let-burn" policy should be considered for portions of the Rattlesnake and certain surrounding areas whenever possible. Fire-created shrubfields could provide additional fall food sources, thereby significantly improving the overall quality of grizzly habitat in the Rattlesnake.

Logging

Management of logged sites for grizzly use should be encouraged in peripheral sites with potential for grizzly occupancy. The impacts of various logging methods have been presented and reviewed by Zager (1978, 1980). In general, timber harvests which minimize soil disturbance favor shrub growth of potential value to the grizzly. Travel corridors which provide cover should be maintained through and around large clearcuts. Logging activity should be coordinated with any additional development so as to minimize simultaneous impacts in the same location. Logging roads should be managed to lessen post-logging use pressures. Other road closures in the Gold
Creek-Twin Creek area could be considered, if grizzly use is documented in previously logged areas to the east or northeast of the Rattlesnake. Such closures could be particularly important during the early spring (April-June), and fall (September-November).

Considerations on adjacent lands

The potential for grizzly occupancy of the Rattlesnake can be greatly influenced by human activities in adjacent areas. Any management plan for the Rattlesnake should consider these peripheral areas as well.

Other development

Construction of new trails or other facilities in upper Grant Basin or near McLeod Peak could discourage grizzly activity in the Rattlesnake. Grizzlies use both high and low elevation feeding areas, and any increase in recreational activity along Rattlesnake Creek could also be detrimental to the bear.

The possible scope of future development in peripheral areas is unknown at this time. Future, large-scale timber harvests or increases in recreational activity to the north of the Rattlesnake on the Flathead Reservation, could discourage natural grizzly immigration into the Rattlesnake across the Jocko Divide. Current levels of recreation along the South Fork of the Jocko appear to be less than in the Mission Mountains, which is occupied grizzly habitat. No
additional timber harvests or other developments on the Reservation are anticipated in the foreseeable future (J. Claar, pers. comm., 1982). Much of the area to the north of the Rattlesnake boundary near McLeod Peak, is considered sacred to many Kootenai-Salish people, and extensive development here is unlikely.

What happens in Gold and Twin creeks, on Bonner Mountain and in similar peripheral areas, could be crucial. Logging, roads, and other development should be closely monitored; restrictions on use within the RNRAW should be considered or increased as area impacts increase (e.g. cumulative effects monitoring).

Chapter XI
CONCLUSIONS

In addition to habitat considerations reviewed in Part I, the Rattlesnake area is potentially valuable to the grizzly as a travel corridor, permitting migration from occupied habitat to the north in the Mission Mountains to sparsely populated areas to the south and west. The Rattlesnake area lies at the southern boundary of the Northern Continental Divide Grizzly Bear Ecosystem, and forms a buffer zone between occupied habitat and more populous areas unsuitable for grizzly occupancy. If it is lost, the Missions become the buffer, and the total occupied area will be reduced.

Currently, recreation is the human activity most likely to impact the grizzly within the Rattlesnake Wilderness. Consideration of mapped GBHCs and areas of recreational use reveals potential problem
sites as shown in Figures 8-13 and 28-32. The low elevation Riparian Streambottom Component probably represents the most serious potential conflict area. Low elevation riparian habitat may be of key importance to the grizzly in the spring or in the fall, especially in years of berry failure.

Both management options presented by Lolo National Forest for the Rattlesnake emphasize the importance of monitoring bear use without promoting grizzly occupancy through reintroduction. Alternative A differs from Alternative B in allowing consideration of site-specific closures or restrictions on recreation. No restrictions would be imposed unless monitoring reveals good evidence of grizzly activity. Public comment received with review of the Rattlesnake Plan showed support for the protection of the grizzly. Alternative A allows this support to be realized. Alternative B does not permit as much flexibility in allowing managers to respond to situations which might warrant the protection of bears and/or recreationists.

An initial monitoring program should include all verified or suspected grizzly observations kept on file with the Missoula Ranger District, Lolo National Forest. Unconfirmed sightings should be verified when possible by a thorough check of scats, tracks, hair, or other evidence. Den surveys should be conducted if confirmed grizzly reports are received.

The Rattlesnake grizzly management plan should emphasize flexibility, with a periodic review of the status of the bear. Open lines of communication and data exchange between Lolo National Forest, the Bureau of Indian Affairs, Missoula County, Burlington Northern,
Montana Department of Fish, Wildlife, and Parks, and the Border Grizzly Project, would allow, for effective mitigation of impacts within the Wilderness and in peripheral areas, and for consideration of broader, regional management goals.

In some respects, the Rattlesnake is more open to grizzly occupancy now than it was 10 to 15 years ago. Homesteads and livestock grazing activities which once flourished within the boundaries are now gone. Hunters and sightseers can no longer drive into the Wrangle or Lake creek drainages within the Rattlesnake. Recreational use has not increased significantly since surveys were first conducted in 1977, and the levels of recreation, overall, actually decreased from 1977 to 1981 (Corti et al., 1982). Perhaps most hopeful of all is the attitude of respondents to the Rattlesnake Plan. Their comments seem to indicate that the grizzly bear is perceived not as a predator to be eliminated, but rather, as an integral part of the natural ecosystem of the Rattlesnake Wilderness.
REFERENCES CITED


-129-


APPENDIX A

Data Sheets
## Montana habitat type field form (for 3 plots)

<table>
<thead>
<tr>
<th>NAME</th>
<th>(CODE DESCRIPTION)</th>
<th>DATE</th>
<th>Plot No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>T. B. S</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TOPOGRAPHY

<table>
<thead>
<tr>
<th>HORIZONTAL CONFIGURATION:</th>
<th>CANOPY COVERAGE CLASS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ridge</td>
<td>1-Convex (dry)</td>
</tr>
<tr>
<td>2. Upper slope</td>
<td>2-Straight</td>
</tr>
<tr>
<td>3. Mid slope</td>
<td>3-Concave (wet)</td>
</tr>
<tr>
<td>4. Lower slope</td>
<td>4-Undulating</td>
</tr>
<tr>
<td>5. Bench or flat</td>
<td>5-Flat</td>
</tr>
<tr>
<td>6. Stream bottom</td>
<td>6-Stream</td>
</tr>
</tbody>
</table>

### PLOT No.

<table>
<thead>
<tr>
<th>Location</th>
<th>R. S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slope</th>
<th>Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Configuration</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CANOPY COVERAGE CLASS:

- **Absent**
- **Rare to 25%**
- **25 to 50%**
- **50 to 75%**
- **75 to 95%**
- **95 to 100%**

### Scientific Name | Common Name
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abies grandis</strong></td>
<td>Grand fir</td>
</tr>
<tr>
<td><strong>Abies lasiocarpa</strong></td>
<td>Subalpine fir</td>
</tr>
<tr>
<td><strong>Abies lasiocarpa</strong></td>
<td>Subalpine fir</td>
</tr>
<tr>
<td><strong>Alnus rubra</strong></td>
<td>Red alder</td>
</tr>
<tr>
<td><strong>Alnus sinuata</strong></td>
<td>Sitka alder</td>
</tr>
<tr>
<td><strong>Alnus spp.</strong></td>
<td>Alder</td>
</tr>
<tr>
<td><strong>Andropogon spp.</strong></td>
<td>Bluebunch wheatgrass</td>
</tr>
<tr>
<td><strong>Andropogon virginicus</strong></td>
<td>Bluestem</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
<tr>
<td><strong>Arctostaphylos uva-ursi</strong></td>
<td>Bearberry</td>
</tr>
</tbody>
</table>
| **Arctostaphylo
### Rattlesnake Field Form

**Date**

**Plot Number**

**Major Drainage:**

**Elevation:** (ft.) (m)  

**Aspect**

**Slope**%

**Topography**

**Specific Location:**

**Horizontal Configuration**

**Habitat Type**

**Habitat Component**

**Photo#** / 

**Rock Coverage**%

---

**Grass/Rush/Sedge Coverage:**

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

**Coverage:**

---

**Shrub/Sub-shrub Coverage and Height:**

<table>
<thead>
<tr>
<th>0-3ft</th>
<th>3-7ft</th>
<th>&gt;7ft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coverage Code:**

0 = absent  
T = rare to 1%

---

**Topography:**

1. ridge  
2. upper slope  
3. middle slope  
4. lower slope  
5. bench or flat  
6. stream bottom

**Horizontal Configuration:**

1. convex-dry  
2. straight  
3. concave-wet  
4. undulating

**Distance to visual cover:**

1. in cover  
2. 0-25 yds.  
3. 25-50 yds.  
4. 50-100 yds.  
5. >100 yds.
<table>
<thead>
<tr>
<th>Trees</th>
<th>Canopy Coverage</th>
<th># of trees/height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-3'</td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Forb/Fern</th>
<th>Coverage</th>
<th>Phenology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>1. leaf emerge</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>2. leaf unfold</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>3. leaf mature</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>4. leaf color change</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>5. leaf drop/cure</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>6. flower stem elong.</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>7. flower bloom</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>8. flower wilt/drop</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>9. ovary swell</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>10. ovary color change</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>11. fruit/seed ripe</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>12. plant cure</td>
</tr>
<tr>
<td>13.</td>
<td></td>
<td>1. bud burst</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td>2. leaf unfolding</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td>3. leaf mature</td>
</tr>
<tr>
<td>16.</td>
<td></td>
<td>4. leaf color change</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td>5. leaf drop</td>
</tr>
<tr>
<td>18.</td>
<td></td>
<td>6. flower in bud</td>
</tr>
<tr>
<td>19.</td>
<td></td>
<td>7. flower in bloom</td>
</tr>
<tr>
<td>20.</td>
<td></td>
<td>8. flower wilt/drop</td>
</tr>
<tr>
<td>21.</td>
<td></td>
<td>9. ovary swell</td>
</tr>
<tr>
<td>22.</td>
<td></td>
<td>10. ovary color change</td>
</tr>
<tr>
<td>23.</td>
<td></td>
<td>11. fruit ripe</td>
</tr>
<tr>
<td>24.</td>
<td></td>
<td>12. fruit over ripe/dry</td>
</tr>
</tbody>
</table>

Comments:
Timbered ___________
(30% coverage)
Non-timbered ___________
APPENDIX B

Percent Species Occurrence by Component
Habitat Component: Timbered Vaccinium, (Huckleberry), Shrubfield

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>-</td>
<td>-</td>
<td>29%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>12%</td>
<td>41%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>-</td>
<td>12%</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub: sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>-</td>
<td>18%</td>
<td>12%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berberis repens</td>
<td>-</td>
<td>-</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Linnaea borealis</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>-</td>
<td>-</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pachistima myrsinites</td>
<td>-</td>
<td>6%</td>
<td>29%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Shepherdia canadensis</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>-</td>
<td>24%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium caespitosum</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>-</td>
<td>-</td>
<td>24%</td>
<td>6%</td>
<td>12%</td>
<td>29%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>-</td>
<td>-</td>
<td>12%</td>
<td>35%</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>forb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antennaria racemosa</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>-</td>
<td>-</td>
<td>24%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aster spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Timbered Vaccinium, (Huckleberry), Shrubfield, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to 1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>forb, continued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Claytonia lanceolata</strong></td>
<td>-</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Clintonia uniflora</strong></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Epilobium spp.</strong></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Fragaria spp.</strong></td>
<td>-</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hieracium spp.</strong></td>
<td>6%</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Lomatium spp.</strong></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Osmorhiza chilensis</strong></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pedicularis bracteosa</strong></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Penstemon spp.</strong></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pyrola spp.</strong></td>
<td>-</td>
<td>12%</td>
<td>29%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Smilacina racemosa</strong></td>
<td>-</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Thalictrum occidentale</strong></td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Trifolium spp.</strong></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Valeriana spp.</strong></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Xerophyllum tenax</strong></td>
<td>-</td>
<td>-</td>
<td>35%</td>
<td>35%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>tree</strong> (overstory:understory)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Abies lasiocarpa</strong></td>
<td>-</td>
<td>(0%:24%)</td>
<td>(24%:12%)</td>
<td>(24%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Larix occidentalis</strong></td>
<td>-</td>
<td>(0%:6%)</td>
<td>(6%:0%)</td>
<td>(29%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pinus albicaulis</strong></td>
<td>-</td>
<td>(0%:29%)</td>
<td>(0%:24%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pinus contorta</strong></td>
<td>-</td>
<td>(0%:12%)</td>
<td>(18%:12%)</td>
<td>(24%:0%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pseudotsuga menziesii</strong></td>
<td>-</td>
<td>(12%:0%)</td>
<td>(6%:6%)</td>
<td>(18%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Habitat Component: Mixed Shrubfield

<table>
<thead>
<tr>
<th>grass:rush:sedge</th>
<th>Species Coverage (percent of plots)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare to</td>
<td>1%</td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>13%</td>
</tr>
<tr>
<td>Andropogon spp.</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>-</td>
</tr>
<tr>
<td>Festuca scabrella</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Graminae</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>shrub:sub-shrub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer glabrum</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
</tr>
<tr>
<td>Berberis repens</td>
</tr>
<tr>
<td>Ceanothus velutinus</td>
</tr>
<tr>
<td>Lonicera involucrata</td>
</tr>
<tr>
<td>Physocarpus malvaceus</td>
</tr>
<tr>
<td>Prunus virginiana</td>
</tr>
<tr>
<td>Salix spp.</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
</tr>
<tr>
<td>Rosa spp.</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>forb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillea millefolium</td>
</tr>
<tr>
<td>Antennaria racemosa</td>
</tr>
<tr>
<td>Arnica spp.</td>
</tr>
<tr>
<td>Arnica cordifolia</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Balsamorhiza sagittata</td>
</tr>
<tr>
<td>Bidens spp.</td>
</tr>
<tr>
<td>Calochortus nuttallii</td>
</tr>
<tr>
<td>Campanula spp.</td>
</tr>
<tr>
<td>Castilleja spp.</td>
</tr>
<tr>
<td>Clematis tenuiloba</td>
</tr>
<tr>
<td>Collinsia parviflora</td>
</tr>
<tr>
<td>Collomia spp.</td>
</tr>
<tr>
<td>Epilobium spp.</td>
</tr>
<tr>
<td>Erigeron spp.</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
</tr>
<tr>
<td>Fragaria spp.</td>
</tr>
<tr>
<td>Gnaphalium chilense</td>
</tr>
<tr>
<td>Hieracium spp.</td>
</tr>
<tr>
<td>Lomatium dissectum</td>
</tr>
<tr>
<td>Penstemon spp.</td>
</tr>
<tr>
<td>Perideridia gairdneri</td>
</tr>
<tr>
<td>Potentilla spp.</td>
</tr>
<tr>
<td>Sedum spp.</td>
</tr>
<tr>
<td>Senecio spp.</td>
</tr>
<tr>
<td>Tragopogon pratensis</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
</tr>
<tr>
<td>Unidentified</td>
</tr>
<tr>
<td>tree</td>
</tr>
<tr>
<td>(overstory:understory)</td>
</tr>
<tr>
<td>Pinus contorta</td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
</tr>
</tbody>
</table>
### Habitat Component: Mixed Shrubfield - Cutting Unit

#### Species Coverage (percent of plots)

<table>
<thead>
<tr>
<th>Species</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grass:Rush:Sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>7%</td>
<td>39%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phleum spp.</td>
<td>7%</td>
<td>7%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Gramineae</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Shrub:Sub-Shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>-</td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td>-</td>
<td>15%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>-</td>
<td>15%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berberis repens</td>
<td>-</td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ceanothus velutinus</td>
<td>-</td>
<td>7%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td>-</td>
<td>7%</td>
<td>31%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>-</td>
<td>7%</td>
<td>23%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pachistima myrsinites</td>
<td>-</td>
<td>7%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ribes spp.</td>
<td>-</td>
<td>-</td>
<td>31%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ribes montigenenum</td>
<td>-</td>
<td>31%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rubus parviflorus</td>
<td>-</td>
<td>-</td>
<td>46%</td>
<td>23%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>-</td>
<td>7%</td>
<td>15%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>-</td>
<td>15%</td>
<td>23%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>-</td>
<td>-</td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium caespitosum</td>
<td>-</td>
<td>-</td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>-</td>
<td>-</td>
<td>46%</td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Mixed Shrubfield - Cutting Unit continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillea millefolium</td>
<td></td>
<td></td>
<td>23%</td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actaea rubra</td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angelica spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antennaria spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antennaria racemosa</td>
<td></td>
<td></td>
<td>7%</td>
<td>23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td></td>
<td></td>
<td>7%</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td></td>
<td></td>
<td>7%</td>
<td>23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirsium spp.</td>
<td></td>
<td></td>
<td></td>
<td>23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td>54%</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Erionema spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td>39%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Galium triflorum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geranium spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hedysarum spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osmorhiza chilensis</td>
<td></td>
<td>15%</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td></td>
<td>7%</td>
<td>7%</td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pteridium aquilinum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td></td>
<td></td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mixed Shrubfield - Cutting Unit continued.

<table>
<thead>
<tr>
<th>Species</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saxifraga spp.</td>
<td></td>
<td>7%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td></td>
<td>39%</td>
<td>15%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Solidago spp.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td></td>
<td>7%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Smilacina racemosa</td>
<td></td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td></td>
<td>31%</td>
<td>31%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Veratrum viride</td>
<td></td>
<td>-</td>
<td>39%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Viola spp.</td>
<td></td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Viola orbiculata</td>
<td></td>
<td>-</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td></td>
<td>7%</td>
<td>31%</td>
<td>54%</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified</td>
<td></td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(tree
(overstory:understory)

<table>
<thead>
<tr>
<th>Species</th>
<th>Rare to</th>
<th>1%</th>
<th>5%</th>
<th>10%</th>
<th>20%</th>
<th>50%</th>
<th>75%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>(7%;7%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Larix occidentalis</td>
<td>(0%;7%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Picea engelmannii</td>
<td>(0%;7%)</td>
<td>(7%;0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>(0%;7%)</td>
<td>(0%;7%)</td>
<td>(7%;0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td>(7%;7%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Habitat Component: Mixed Shrubfield - Snowchute

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass; rush; sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td></td>
<td></td>
<td></td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carex geyeri</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luzula spp.</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>shrub; sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td></td>
<td></td>
<td>9%</td>
<td>27%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td></td>
<td></td>
<td>9%</td>
<td>9%</td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td>36%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td></td>
<td></td>
<td>9%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ribes spp.</td>
<td></td>
<td></td>
<td>9%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ribes montigenum</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td></td>
<td></td>
<td>9%</td>
<td>18%</td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubus parviflorus</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td>18%</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td></td>
<td></td>
<td>9%</td>
<td>9%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td></td>
<td></td>
<td>18%</td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>forb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td></td>
<td></td>
<td>18%</td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actaea rubra</td>
<td></td>
<td></td>
<td>9%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angelica arquata</td>
<td></td>
<td></td>
<td>9%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td></td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mixed Shrubfield Snowchute continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clematis columbiana</td>
<td>-</td>
<td>-</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>-</td>
<td>-</td>
<td>18%</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>-</td>
<td>9%</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Galium boreale</td>
<td>-</td>
<td>-</td>
<td>18%</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>-</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Geranium spp.</td>
<td>-</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>-</td>
<td>9%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mitella spp.</td>
<td>-</td>
<td>9%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>-</td>
<td>-</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>-</td>
<td>9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td>-</td>
<td>-</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td>-</td>
<td>9%</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Veratum viride</td>
<td>-</td>
<td>-</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>-</td>
<td>-</td>
<td>55%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Filicineae</td>
<td>-</td>
<td>0%</td>
<td>27%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>tree (overstory:understory)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>-</td>
<td>(0%:9%)</td>
<td>(18%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Picea engelmannii</td>
<td>-</td>
<td>-</td>
<td>(9%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td>-</td>
<td>-</td>
<td>(9%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Habitat Component: Vaccinium spp. (Huckleberry) Shrubfield

#### Species Coverage (percent of plots)

<table>
<thead>
<tr>
<th>Species</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>forb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arnica latitolia</td>
<td>-</td>
<td>20%</td>
<td>60%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>-</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phyllodoce empetriformis</td>
<td>-</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>-</td>
<td>40%</td>
<td>60%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>tree</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abies lasiocarpa</td>
<td>-</td>
<td>-</td>
<td>(20%:0%)</td>
<td>(0%:20%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Species Coverage (percent of plots)</td>
<td>Rare to 1%</td>
<td>1-5%</td>
<td>5-25%</td>
<td>25-50%</td>
<td>50-75%</td>
<td>75-95%</td>
<td>95-100%</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
<td>------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Picea engelmannii</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pinus albicaulis</td>
<td>(20%:20%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Component: Riparian Streambottom

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>sh: sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td></td>
<td>-</td>
<td>-</td>
<td>50%</td>
<td>13%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>19%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>13%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula parviflora</td>
<td></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phleum spp.</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Graminae</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>31%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub: sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td></td>
<td>-</td>
<td>-</td>
<td>25%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alnus tenuifolia</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>31%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Artemisia ludoviciana</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berberis repens</td>
<td></td>
<td>-</td>
<td>-</td>
<td>13%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Betula occidentalis</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cornus stolonifera</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>19%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Crataegus douglasii</td>
<td></td>
<td>6%</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ledum glandulosum</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td></td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Philadelphus lewisii</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Physocarpus malvaceus</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prunella vulgaris</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td></td>
<td>-</td>
<td>6%</td>
<td>19%</td>
<td>-</td>
<td>13%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Riparian Streambottom, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare to 1%</td>
</tr>
<tr>
<td>shrub:sub-shrub, continued.</td>
</tr>
<tr>
<td>Ribes spp.</td>
</tr>
<tr>
<td>Rosa spp.</td>
</tr>
<tr>
<td>Rubus idaeus</td>
</tr>
<tr>
<td>Rubus parviflorus</td>
</tr>
<tr>
<td>Salix spp.</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
</tr>
<tr>
<td>Shepherdia canadensis</td>
</tr>
<tr>
<td>Spirea spp.</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
</tr>
<tr>
<td>Spirea splendens</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
</tr>
<tr>
<td>Unidentified</td>
</tr>
<tr>
<td>forb</td>
</tr>
<tr>
<td>Achillea millefolium</td>
</tr>
<tr>
<td>Actaea rubra</td>
</tr>
<tr>
<td>Agastache urticifolia</td>
</tr>
<tr>
<td>Allium spp.</td>
</tr>
<tr>
<td>Angelica arguta</td>
</tr>
<tr>
<td>Angelica dawsonii</td>
</tr>
<tr>
<td>Arnica spp.</td>
</tr>
<tr>
<td>Arnica cordifolia</td>
</tr>
<tr>
<td>Arnica latifolia</td>
</tr>
<tr>
<td>Aster spp.</td>
</tr>
<tr>
<td>Astragalus spp.</td>
</tr>
</tbody>
</table>
Riparian Streambottom, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>forb, continued.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td>-</td>
<td>-</td>
<td>31%</td>
<td>6%</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bidens spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Campanula spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cirsium spp.</td>
<td>-</td>
<td>19%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clematis tenuiloba</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Collinsia parviflora</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dodecatheon pauciflorum</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>25%</td>
<td>6%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equisetum hyemale</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Galium boreale</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>19%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Habenaria dilata</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>19%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ligusticum spp.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lupinus spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>13%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mentha spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mentha spicata</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nepeta cataria</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Osmorhiza chilensis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>13%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>13%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pedicularis spp.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pedicularis groenlandica</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Riparian Streambottom, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to 1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedicularis racemosa</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantago spp.</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pteridium aquilinum</td>
<td></td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td></td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raphanus sativus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratibida columnifera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senecio spp.</td>
<td></td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td></td>
<td></td>
<td>44%</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smilacena racemosa</td>
<td></td>
<td>6%</td>
<td>19%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td></td>
<td>6%</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solidago spp.</td>
<td></td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptopus amplexifolius</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td></td>
<td></td>
<td>13%</td>
<td>44%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td></td>
<td>6%</td>
<td>31%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifolium spp.</td>
<td></td>
<td></td>
<td></td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifolium procumbens</td>
<td></td>
<td></td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urtica dioica</td>
<td></td>
<td>6%</td>
<td>13%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valeriana sitchensis</td>
<td></td>
<td>13%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veratrum viride</td>
<td></td>
<td>19%</td>
<td>19%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veronica spp.</td>
<td></td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td></td>
<td>19%</td>
<td>13%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified Compositae</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tree (overstory:understory)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abies lasiocarpa</td>
<td></td>
<td>(0%:13%)</td>
<td>(6%:0%)</td>
<td></td>
<td></td>
<td></td>
<td>(6%:0%)</td>
</tr>
<tr>
<td>Larix occidentalis</td>
<td></td>
<td>(0:6%)</td>
<td>(6%:0%)</td>
<td>(6%:0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In Streambottom, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to 1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picea engelmannii</td>
<td>(6%:0%)</td>
<td>(6%:13%)</td>
<td>(6%:0%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>-</td>
<td>(0%:6%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pinus ponderosa</td>
<td>-</td>
<td>(0%:6%)</td>
<td>-</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Populus trichocarpa</td>
<td>-</td>
<td>(13%:0%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td>-</td>
<td>(0%:13%)</td>
<td>(6%:0%)</td>
<td>(6%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Habitat Component: Dry Meadow

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spp.</td>
<td>-</td>
<td>-</td>
<td>30%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>5%</td>
<td>-</td>
<td>30%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Agrostis spp.</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>-</td>
<td>30%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dactylis glomerata</td>
<td>-</td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca scabrella</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phleum pratense</td>
<td>-</td>
<td>15%</td>
<td>50%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Graminae</td>
<td>5%</td>
<td>-</td>
<td>30%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub: sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>-</td>
<td>5%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berberis repens</td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Crataegus douglasii</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Holodiscus discolor</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Physocarpus malvaceus</td>
<td>-</td>
<td>10%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>5%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Salix spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>-</td>
<td>15%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>forb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td>-</td>
<td>10%</td>
<td>35%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Antennaria spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Dry Meadow, continued.

<table>
<thead>
<tr>
<th>Forb, continued</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apocynum spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aster spp.</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td>-</td>
<td>5%</td>
<td>15%</td>
<td>60%</td>
<td>15%</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Chrysanthemum leucanthemum</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>-</td>
<td>10%</td>
<td>35%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Geranium viscosissimum</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>-</td>
<td>10%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Perideridia spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Plantago spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potentilla spp.</td>
<td>-</td>
<td>10%</td>
<td>50%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potentilla glandulosa</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prunella vulgaris</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Smilacina racemosa</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Solidago spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tanacetum spp.</td>
<td>5%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taraxacum officinale</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tragopogon pratensis</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trifolium spp.</td>
<td>-</td>
<td>5%</td>
<td>50%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Verbascum thapsus</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Viola spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Dry Meadow, continued

<table>
<thead>
<tr>
<th>Species</th>
<th>Rare to 1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinus ponderosa</td>
<td></td>
<td></td>
<td>(0%;10%)</td>
<td>(25%;20%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td></td>
<td></td>
<td>(0%;10%)</td>
<td>(15%;10%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Habitat Component: Wet Meadow

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agrostis spp.</td>
<td>-</td>
<td>-</td>
<td>16%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>-</td>
<td>-</td>
<td>26%</td>
<td>16%</td>
<td>21%</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>-</td>
<td>-</td>
<td>21%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>-</td>
<td>5%</td>
<td>42%</td>
<td>5%</td>
<td>-</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>Carex concinnoides</td>
<td>-</td>
<td>5%</td>
<td>21%</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>-</td>
<td>16%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>-</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Juncus spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula spp.</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula nitchcockii</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phleum spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Gramineae</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub: sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berberis repens</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Betula occidentalis</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cornus stolonifera</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ledum glandulosum</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Purshia tridentata</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Salix spp.</td>
<td>-</td>
<td>-</td>
<td>16%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spirea spp.</td>
<td>-</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>-</td>
<td>32%</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Wet Meadow, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>forbs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angelica arguta</td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asperugo procumbens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirsium vulgare</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11%</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dodecatheon pauiiflorum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td>68%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Equisetum hyemale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td></td>
<td></td>
<td>26%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haplopappus spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ligusticum spp.</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ligusticum canbyi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lysichitum americanum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuphar spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicularis groenlandica</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11%</td>
<td>21%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Potentilla spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td>16%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td></td>
<td></td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
...continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-95%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Coverage</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thalictrum occidentale</td>
<td></td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tofieldia glutinosa</td>
<td></td>
<td>5%</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tussilago farfara</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valeriana spp.</td>
<td></td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valeriana sitchensis</td>
<td>5%</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veratrum viride</td>
<td>16%</td>
<td>21%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td>16%</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>5%</td>
<td>21%</td>
<td>5%</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tree</th>
<th>(overstory:understory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>(16%:32%)</td>
</tr>
<tr>
<td>Pinus albicaulis</td>
<td>(0%: 11%)</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>(0%: 5%)</td>
</tr>
<tr>
<td>Picea engelmannii</td>
<td>(0%: 5%)</td>
</tr>
<tr>
<td></td>
<td>(0%:21%)</td>
</tr>
</tbody>
</table>
## Component: Drainage Forbfield

### Species Coverage (percent of plots)

<table>
<thead>
<tr>
<th>Species</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Agropyron spicatum</em></td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Calamagrostis canadensis</em></td>
<td>-</td>
<td>-</td>
<td>35%</td>
<td>-</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Calamagrostis rubescens</em></td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Carex spp.</em></td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Carex concinnoides</em></td>
<td>-</td>
<td>5%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Carex geyeri</em></td>
<td>-</td>
<td>5%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Carex rossii</em></td>
<td>-</td>
<td>5%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Luzula spp.</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Luzula hitchcockii</em></td>
<td>5%</td>
<td>5%</td>
<td>35%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Graminae</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>shrub:sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Alnus sinuata</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Menziesia ferruginea</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Ribes montigenum</em></td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Salix spp.</em></td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Sambucus racemosa</em></td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Sorbus scopulina</em></td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Spirea splendens</em></td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Vaccinium caespitosum</em></td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Vaccinium globulare</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Vaccinium scoparium</em></td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>forb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Actaea rubra</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Angelica arguta</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Angelica dawsonii</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Species Coverage (percent of plots)</td>
<td>Rare to 1%</td>
<td>1-5%</td>
<td>5-25%</td>
<td>25-50%</td>
<td>50-75%</td>
<td>75-95%</td>
<td>95-100%</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
<td>------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Aquilegia spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>-</td>
<td>10%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>-</td>
<td>5%</td>
<td>20%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Aspergo procumbens</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td>-</td>
<td>5%</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Astragalus miser</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>5%</td>
<td>20%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cerastium spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>10%</td>
<td>10%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dodecatheon pauciflorum</td>
<td>-</td>
<td>25%</td>
<td>25%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>5%</td>
<td>15%</td>
<td>15%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Habenaria spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>5%</td>
<td>-</td>
<td>15%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Ligusticum canby</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>-</td>
<td>10%</td>
<td>10%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Osmorhiza chilensis</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td>-</td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Parnassia fimbriata</td>
<td>-</td>
<td>5%</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pedicularis bracteosa</td>
<td>-</td>
<td>15%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pedicularis groenlandica</td>
<td>5%</td>
<td>15%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pedicularis racemosa</td>
<td>-</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
je Forbfield, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>continued</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picea empetriiformis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polemonium spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polygonum spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyrola spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td></td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td></td>
<td>5%</td>
<td>45%</td>
<td>35%</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solanum sarrachoides</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptopus amplexifolius</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td></td>
<td>10%</td>
<td>45%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiarella trifoliata</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valeriana spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valeriana sitchensis</td>
<td></td>
<td>5%</td>
<td>30%</td>
<td>15%</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veratrum viride</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veronica spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td></td>
<td>5%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td></td>
<td>5%</td>
<td>15%</td>
<td>20%</td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified Filicinaceae</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified Umbelliferae</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(overstory:understory)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abies lasiocarpa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picea engelmannii</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinus albicaulis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinus contorta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Habitat Component: Xerophyllum tenax, (Beargrass), Sidehill Park

<table>
<thead>
<tr>
<th>Grass:rush:sedge</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>20%</td>
<td></td>
<td>30%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carex rossii</td>
<td>-</td>
<td>-</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>-</td>
<td>-</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shrub:sub-shrub</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirea splendens</td>
<td>-</td>
<td>20%</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>-</td>
<td>40%</td>
<td></td>
<td>50%</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Forb</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antennaria spp.</td>
<td>10%</td>
<td>10%</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>-</td>
<td>20%</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>-</td>
<td>20%</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>-</td>
<td>-</td>
<td></td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campanula rotundifolia</td>
<td>-</td>
<td>-</td>
<td></td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>-</td>
<td>10%</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>-</td>
<td>10%</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>10%</td>
<td></td>
<td>30%</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>-</td>
<td>10%</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>-</td>
<td>-</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phyllocladus empetrifolius</td>
<td>-</td>
<td>-</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>-</td>
<td>-</td>
<td></td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>-</td>
<td>10%</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td>10%</td>
<td>-</td>
<td></td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Xerophyllum tenax, (Beargrass), Sidehill Park continued.

<table>
<thead>
<tr>
<th>tree</th>
<th>rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>(20%:30%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pinus albicaulis</td>
<td>-</td>
<td>-</td>
<td>(0%:10%)</td>
<td>(10%:0%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Habitat Component: Graminoid Sidehill Park

<table>
<thead>
<tr>
<th>Grass: Rush: Sedge</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agropyron spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>-</td>
<td>33%</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bromus spp.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis spp.</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamagrostis rupeescens</td>
<td>6%</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>-</td>
<td>6%</td>
<td>28%</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>-</td>
<td>11%</td>
<td>39%</td>
<td>33%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>-</td>
<td>-</td>
<td>22%</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>-</td>
<td>-</td>
<td>50%</td>
<td>6%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Festuca scabrella</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>-</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified Graminae</td>
<td>-</td>
<td>11%</td>
<td>28%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shrub: Sub-shrub</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juniperus communis</td>
<td>-</td>
<td>-</td>
<td>28%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>-</td>
<td>11%</td>
<td>17%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Forb</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillea millefolium</td>
<td>-</td>
<td>11%</td>
<td>17%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Antennaria spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Antennaria racemosa</td>
<td>6%</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>-</td>
<td>22%</td>
<td>39%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>-</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td>6%</td>
<td>-</td>
<td>11%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calochortus nuttallii</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>-</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Graminoid Sidehill Park, continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>forb, continued.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>6%</td>
<td>33%</td>
<td>39%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>-</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geum triflorum</td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heuchera spp.</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heuchera cylindrica</td>
<td>-</td>
<td>11%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>-</td>
<td>11%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>-</td>
<td>17%</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lupinus spp.</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>-</td>
<td></td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicularis spp.</td>
<td>-</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicularis bracteosa</td>
<td>-</td>
<td>17%</td>
<td>22%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>-</td>
<td></td>
<td>28%</td>
<td>72%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phyllococe empetriformis</td>
<td>-</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polygonum spp.</td>
<td>-</td>
<td></td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>-</td>
<td></td>
<td>22%</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>-</td>
<td></td>
<td>22%</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td>-</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td>-</td>
<td></td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>-</td>
<td></td>
<td>22%</td>
<td>33%</td>
<td>11%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified Compositae</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>tree</th>
<th>(overstory;understory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>-</td>
</tr>
<tr>
<td>Pinus albicaulis</td>
<td>-</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>-</td>
</tr>
</tbody>
</table>

(overstory;understory)
### Component: Terrace Rock

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ish: sedge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Calamagrostis canadensis</em></td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Carex geyeri</em></td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>60%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>shrub: sub-shrub</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Spirea spp.</em></td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Vaccinium scoparium</em></td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>forb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Anemone patens</em></td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Arenaria spp.</em></td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Arnica spp.</em></td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Arnica latifolia</em></td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Claytonia lanceolata</em></td>
<td>-</td>
<td>60%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Erythronium grandiflorum</em></td>
<td>-</td>
<td>20%</td>
<td>40%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Lomatium spp.</em></td>
<td>-</td>
<td>40%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Mimulus spp.</em></td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Pedicularis spp.</em></td>
<td>-</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Penstemon spp.</em></td>
<td>-</td>
<td>80%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Phyllodoce empetriformis</em></td>
<td>-</td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Ranunculus spp.</em></td>
<td>-</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Sedum spp.</em></td>
<td>-</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Xerophyllum tenax</em></td>
<td>-</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rock continued.

<table>
<thead>
<tr>
<th>Species Coverage (percent of plots)</th>
<th>Rare to 1%</th>
<th>1-5%</th>
<th>5-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-95%</th>
<th>95-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies lasiocarpa</td>
<td>(0%:40%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

Complete Species List
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food $x^1$ key food $xx^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Calamagrostis rubescens</em></td>
<td>pinegrass</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td><em>Carex spp.</em></td>
<td>sedge</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td><em>Carex geyeri</em></td>
<td>elk sedge</td>
<td>5%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Luzula hitchcockii</em></td>
<td>woodrush</td>
<td>24%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><strong>shrub: sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Acer glabrum</em></td>
<td>Rocky mountain maple</td>
<td>12%</td>
<td>$x^1$</td>
</tr>
<tr>
<td><em>Amelanchier alnifolia</em></td>
<td>serviceberry</td>
<td>35%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Arctostaphylos uva-ursi</em></td>
<td>kinninnick</td>
<td>6%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Berberis repens</em></td>
<td>Oregon grape</td>
<td>12%</td>
<td>$x^1$</td>
</tr>
<tr>
<td><em>Linnaea borealis</em></td>
<td>twinfower</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td><em>Lonicera utahensis</em></td>
<td>red twinberry</td>
<td>12%</td>
<td>$x^1$</td>
</tr>
<tr>
<td><em>Menziesia ferruginea</em></td>
<td>menziesia</td>
<td>12%</td>
<td>$x^1$</td>
</tr>
<tr>
<td><em>Pachistima myrsinites</em></td>
<td>pachistima</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td><em>Shepherdia canadensis</em></td>
<td>buffaloberry</td>
<td>6%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Spirea betulifolia</em></td>
<td>white spirea</td>
<td>41%</td>
<td></td>
</tr>
<tr>
<td><em>Sorbus scopulina</em></td>
<td>mountain ash</td>
<td>6%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Vaccinium caespitosum</em></td>
<td>dwarf huckleberry</td>
<td>18%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Vaccinium globulare</em></td>
<td>globe huckleberry</td>
<td>71%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><em>Vaccinium scoparium</em></td>
<td>grouse whortleberry</td>
<td>59%</td>
<td>$xx^2$</td>
</tr>
<tr>
<td><strong>forbs: ferns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Antennaria racemosa</em></td>
<td>woods pussytoes</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td><em>Arnica cordifolia</em></td>
<td>heartleaf arnica</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td><em>Arnica latifolia</em></td>
<td>broadleaf arnica</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>
after Servheen and Wojciechowski, 1978, and Mace and Jonkel, 1980

2 as designated by Madel, 1982
**Sitat Component:** Mixed Shrubfield
8 plots

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food (x^1)</th>
<th>key food (xx^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:rush:sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>bluebunch wheatgrass</td>
<td>38%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Andropogon spp.</td>
<td>bluestem</td>
<td>13%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>63%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>63%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>13%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca scabrella</td>
<td>rough fescue</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>shrubs:sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>Rocky mountain maple</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>serviceberry</td>
<td>88%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>kinnikinnick</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Berberis repens</td>
<td>Oregon grape</td>
<td>75%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ceanothus velutinus</td>
<td>snowbrush</td>
<td>88%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Lonicera involucrata</td>
<td>twinberry</td>
<td>25%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Physocarpus malvaceus</td>
<td>ninebark</td>
<td>38%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td>chokecherry</td>
<td>50%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>rose</td>
<td>38%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Salix spp.</td>
<td>willow</td>
<td>25%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>white spirea</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Symphoricarpus albus</td>
<td>snowberry</td>
<td>50%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>globe huckleberry</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>forbs:ferns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td>yarrow</td>
<td>100%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Antennaria racemosa</td>
<td>woods pussytoes</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Mixed Shrubfield continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food</th>
<th>key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arnica spp.</td>
<td>arnica</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>heartleaf arnica</td>
<td>25%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td>aster</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Balsamorhiza sagittata</td>
<td>arrowleaf balsamroot</td>
<td>25%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bidens spp.</td>
<td>beggarticks</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Calochortus nuttallii</td>
<td>sego lily</td>
<td>38%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Campanula spp.</td>
<td>harebell</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>indian-paintbrush</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clematis tenuioba</td>
<td>clematis</td>
<td>25%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Collinsia parviflora</td>
<td>blue-eyed Mary</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Collomia spp.</td>
<td>collomia</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>25%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>daisy</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>13%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>strawberry</td>
<td>50%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gnaphalium chilense</td>
<td>western cudweed</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>hawkweed</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lomatium dissectum</td>
<td>biscuit root</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>63%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Perideridia gaeldneri</td>
<td>yampah</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Potentilla spp.</td>
<td>potentilla</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>sedum</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Senecio spp.</td>
<td>groundsel</td>
<td>13%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tragopogon pratensis</td>
<td>goatsbeard</td>
<td>13%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>38%</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>


2. designated by Madel, 1982.
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%) plots</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>bluebunch wheatgrass</td>
<td>7%</td>
<td>XX</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>92%</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>62%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>Ross sedge</td>
<td>7%</td>
<td>XX</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>fescue</td>
<td>7%</td>
<td>XX</td>
</tr>
<tr>
<td>Phleum spp.</td>
<td>timothy</td>
<td>15%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>shrubs: sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>Rocky Mountain maple</td>
<td>15%</td>
<td>X</td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td>Sitka alder</td>
<td>31%</td>
<td>X</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>serviceberry</td>
<td>23%</td>
<td>XX</td>
</tr>
<tr>
<td>Berberis repens</td>
<td>Oregon grape</td>
<td>15%</td>
<td>X</td>
</tr>
<tr>
<td>Ceanothus velutinus</td>
<td>snowbrush</td>
<td>23%</td>
<td>-</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td>red twinberry</td>
<td>39%</td>
<td>X</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>menziesia</td>
<td>39%</td>
<td>X</td>
</tr>
<tr>
<td>Pachistima myrsinites</td>
<td>pachistima</td>
<td>23%</td>
<td>-</td>
</tr>
<tr>
<td>Ribes spp.</td>
<td>gooseberry</td>
<td>46%</td>
<td>X</td>
</tr>
<tr>
<td>Ribes montigenum</td>
<td>mountain gooseberry</td>
<td>46%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td>raspberry</td>
<td>7%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus parviflorus</td>
<td>thimbleberry</td>
<td>69%</td>
<td>X</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>elderberry</td>
<td>31%</td>
<td>X</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>mountain ash</td>
<td>15%</td>
<td>X</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>white spirea</td>
<td>46%</td>
<td>-</td>
</tr>
<tr>
<td>Symphoricarpus albus</td>
<td>snowberry</td>
<td>15%</td>
<td>X</td>
</tr>
<tr>
<td>Vaccinium caespitosum</td>
<td>dwarf huckleberry</td>
<td>15%</td>
<td>XX</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>globe huckleberry</td>
<td>62%</td>
<td>XX</td>
</tr>
</tbody>
</table>
Mixed Shrubfield - cutting unit continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%)</th>
<th>bear food</th>
<th>key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillea millefolium</td>
<td>yarrow</td>
<td>31%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Actaea rubra</td>
<td>baneberry</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Angelica spp.</td>
<td>angelica</td>
<td>15%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Antennaria spp.</td>
<td>pussytoes</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Antennaria racemosa</td>
<td>woods pussytoes</td>
<td>31%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>arnica</td>
<td>15%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>heartleaf arnica</td>
<td>31%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>broadleaf arnica</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td>aster</td>
<td>7%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td>locoweed</td>
<td>7%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td>lady fern</td>
<td>7%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td>spotted knapweed</td>
<td>15%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cirsium spp.</td>
<td>thistle</td>
<td>23%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td>queencup beadlily</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>92%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>daisy</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>62%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>strawberry</td>
<td>62%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>sweetscented bedstraw</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Geranium spp.</td>
<td>geranium</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Hedysarum spp.</td>
<td>sweetvetch</td>
<td>23%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>cow-parsnip</td>
<td>15%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>hawkweed</td>
<td>23%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Osmorhiza cniensis</td>
<td>sweetroot</td>
<td>23%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td>sweet cicely</td>
<td>7%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>31%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pteridium aquilinum</td>
<td>bracken fern</td>
<td>15%</td>
<td>XX</td>
<td></td>
</tr>
</tbody>
</table>
Mixed Shrubfield - cutting unit continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%)</th>
<th>bear food</th>
<th>key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranunculus spp.</td>
<td>buttercup</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>saxifrage</td>
<td>23%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td>arrowleaf groundsel</td>
<td>46%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Solidago spp.</td>
<td>goldenrod</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td>starry Solomon's seal</td>
<td>7%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Smilacina racemosa</td>
<td>false Solomon's seal</td>
<td>7%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td>western meadowrue</td>
<td>62%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Veratrum viride</td>
<td>false hellebore</td>
<td>39%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td>violet</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Viola orbiculata</td>
<td>round-leaved violet</td>
<td>7%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>100%</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
Habitat Component: Mixed Shrubfield - snowchute  
(11 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food X¹ key food XX²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>bluejoint</td>
<td>18%</td>
<td>XX</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>73%</td>
<td>-</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>9%</td>
<td>XX</td>
</tr>
<tr>
<td>Luzula spp.</td>
<td>woodrush</td>
<td>9%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>shrubs: sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>Rocky Mountain maple</td>
<td>55%</td>
<td>X</td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td>Sitka alder</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>serviceberry</td>
<td>36%</td>
<td>XX</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td>red twinberry</td>
<td>18%</td>
<td>X</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>menziesia</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td>chokecherry</td>
<td>9%</td>
<td>X</td>
</tr>
<tr>
<td>Ribes spp.</td>
<td>gooseberry</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Ribes montigenum</td>
<td>mountain gooseberry</td>
<td>9%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td>raspberry</td>
<td>36%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus parviflorus</td>
<td>thimbleberry</td>
<td>9%</td>
<td>X</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>elderberry</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>mountain ash</td>
<td>36%</td>
<td>XX</td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>white spirea</td>
<td>18%</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>huckleberry</td>
<td>27%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>forbs: ferns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td>yarrow</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Actaea rubra</td>
<td>baneberry</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Angelica arguta</td>
<td>angelica</td>
<td>18%</td>
<td>XX</td>
</tr>
</tbody>
</table>
Mixed Shrubfield - snowchute continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castilleja spp.</td>
<td>indian-paintbrush</td>
<td>9%</td>
<td>X</td>
</tr>
<tr>
<td>Clematis columbiana</td>
<td>Columbia clematis</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>18%</td>
<td>-</td>
</tr>
<tr>
<td>Galium boreale</td>
<td>northern bedstraw</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>sweetscented bedstraw</td>
<td>9%</td>
<td>X</td>
</tr>
<tr>
<td>Geranium spp.</td>
<td>geranium</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>cow-parsnip</td>
<td>27%</td>
<td>XX</td>
</tr>
<tr>
<td>Mitella spp.</td>
<td>mitrewort</td>
<td>27%</td>
<td>X</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>saxifrage</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td>arrowleaf groundsel</td>
<td>18%</td>
<td>X</td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td>western meadowrue</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Veratrum viride</td>
<td>false hellebore</td>
<td>18%</td>
<td>XX</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>55%</td>
<td>-</td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
## Habitat Component: Huckleberry (Vaccinium spp.) Shrubfield

(5 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food X&lt;sup&gt;1&lt;/sup&gt;</th>
<th>key food XX&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:rush:sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>100%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>woodrush</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>shrubs:sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>globe huckleberry</td>
<td>40%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>grouse whortleberry</td>
<td>100%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>forbs:ferns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>sandwort</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnica latitolia</td>
<td>broadleaf arnica</td>
<td>80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td>locoweed</td>
<td>20%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>indian-paintbrush</td>
<td>20%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>springbeauty</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>40%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>hawkweed</td>
<td>40%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>monkeyflower</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phyllodoce empetriformis</td>
<td>mountain heath</td>
<td>40%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
### Habitat Component: Riparian Streambottom
(16 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food $x^1$</th>
<th>key food $x^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grasses: Sedges</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>bluejoint</td>
<td>75%</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carex spp.</td>
<td>sedge</td>
<td>19%</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>13%</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>fescue</td>
<td>6%</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>6%</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td>Luzula parviflora</td>
<td>smallflowered woodrush</td>
<td>6%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Phleum spp.</td>
<td>timothy</td>
<td>6%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>Shrubs: Subshrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acer glabrum</td>
<td>Rocky Mountain maple</td>
<td>38%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td>Sitka alder</td>
<td>19%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Alnus tenuifolia</td>
<td>black cottonwood</td>
<td>13%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>serviceberry</td>
<td>44%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>kinnikinnick</td>
<td>6%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Artemisia ludoviciana</td>
<td>prairie sage</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berberis repens</td>
<td>Oregon grape</td>
<td>19%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Betula occidentalis</td>
<td>water birch</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cornus stolonifera</td>
<td>red-osier dogwood</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Crataegus douglasii</td>
<td>hawthorn</td>
<td>6%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ledum glandulosum</td>
<td>Labrador tea</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linnaea borealis</td>
<td>twinflower</td>
<td>19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lonicera ciliosa</td>
<td>honeysuckle</td>
<td>6%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Lonicera utahensis</td>
<td>red twinberry</td>
<td>6%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>menziesia</td>
<td>13%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Philadelphus lewisii</td>
<td>syringia</td>
<td>19%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Riparian Streambottom continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physocarpus malvaceus</td>
<td>ninebark</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Prunella vulgaris</td>
<td>selfheal</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Prunus virginiana</td>
<td>chokecherry</td>
<td>25%</td>
<td>X</td>
</tr>
<tr>
<td>Ribes spp.</td>
<td>gooseberry</td>
<td>50%</td>
<td>X</td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>rose</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td>raspberry</td>
<td>19%</td>
<td>X</td>
</tr>
<tr>
<td>Rubus parviflorus</td>
<td>thimbleberry</td>
<td>19%</td>
<td>X</td>
</tr>
<tr>
<td>Salix spp.</td>
<td>willow</td>
<td>19%</td>
<td>X</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>elderberry</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Shepherdia canadensis</td>
<td>buffaloberry</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Spirea spp.</td>
<td>spirea</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>white spirea</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Spirea splendens</td>
<td>spirea</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>mountain ash</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>snowberry</td>
<td>38%</td>
<td>X</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>huckleberry</td>
<td>19%</td>
<td>XX</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>grouse whortleberry</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

forbs: ferns

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillea millefolium</td>
<td>yarrow</td>
<td>31%</td>
<td>X</td>
</tr>
<tr>
<td>Actaea rubra</td>
<td>báneberry</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Agastache urticifolia</td>
<td>giant-hyssop</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Allium spp.</td>
<td>wild onion</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Angelica arguta</td>
<td>angelica</td>
<td>13%</td>
<td>XX</td>
</tr>
<tr>
<td>Angelica dawsonii</td>
<td>angelica</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>arnica</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>heartleaf arnica</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>broadleaf arnica</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>occurrence (% plots)</td>
<td>bear food $^{1}$ key food $^{2}$</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Aster spp.</td>
<td>aster</td>
<td>63%</td>
<td>X</td>
</tr>
<tr>
<td>Astragalus spp.</td>
<td>locoweed</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td>lady fern</td>
<td>44%</td>
<td>XX</td>
</tr>
<tr>
<td>Bidens spp.</td>
<td>beggarticks</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Campanula spp.</td>
<td>harebell</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td>spotted knapweed</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Cirsium spp.</td>
<td>thistle</td>
<td>25%</td>
<td>X</td>
</tr>
<tr>
<td>Clematis tenuiloba</td>
<td>clematis</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td>quencup beadlily</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Cirsium spp.</td>
<td>blue-eyed marx</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Dodecatheon pauciflorum</td>
<td>shootingstar</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>19%</td>
<td>-</td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>horsetail</td>
<td>44%</td>
<td>XX</td>
</tr>
<tr>
<td>Equisetum hyemale</td>
<td>horsetail</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>daisy</td>
<td>6%</td>
<td>X</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>13%</td>
<td>-</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>strawberry</td>
<td>31%</td>
<td>X</td>
</tr>
<tr>
<td>Galium boreale</td>
<td>northern bedstraw</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>sweetscented bedstraw</td>
<td>50%</td>
<td>X</td>
</tr>
<tr>
<td>Habenaria dilatata</td>
<td>white bog-orchid</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>cow-parsnip</td>
<td>38%</td>
<td>XX</td>
</tr>
<tr>
<td>Ligusticum spp.</td>
<td>licoricercoroot</td>
<td>6%</td>
<td>XX</td>
</tr>
<tr>
<td>Lupinus spp.</td>
<td>lupine</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Mentha spp.</td>
<td>mint</td>
<td>19%</td>
<td>-</td>
</tr>
<tr>
<td>Mentha spicata</td>
<td>spearmint</td>
<td>13%</td>
<td>-</td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>monkeyflower</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Nepeta cataria</td>
<td>catnip</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Osmorhiza chilensis</td>
<td>sweetroot</td>
<td>19%</td>
<td>XX</td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td>sweet cicely</td>
<td>25%</td>
<td>XX</td>
</tr>
<tr>
<td>Pedicularis spp.</td>
<td>figwort</td>
<td>6%</td>
<td>-</td>
</tr>
</tbody>
</table>
### Scientific name | Common name | occurrence (% plots) | bear food key food
--- | --- | --- | ---
*Pedicularia groenlandica* | elephanthead | 6% | -
*Pedicularia racemosa* | parrots-beak | 6% | -
*Plantago* spp. | plantain | 6% | -
*Pteridium aquilinum* | bracken fern | 6% | -
*Ranunculus* spp. | buttercup | 13% | X
*Raphanus sativus* | wild radish | 6% | -
*Ratibida columnifera* | coneflower | 6% | -
*Plantago* spp. | plantain | 6% | -
*Senecio triangularis* | arrowleaf groundsel | 75% | X
*Smilacena racemosa* | false Solomon's seal | 25% | -
*Smilacena stellata* | starry Solomon's seal | 31% | XX
*Solidago* spp. | goldenrod | 13% | -
*Streptopus amplexifolius* | twisted stalk | 6% | X
*Taraxacum* spp. | dandelion | 56% | X
*Thalictrum occidentale* | western meadowrue | 38% | -
*Trifolium* spp. | clover | 25% | XX
*Trifolium procumbens* | small hop clover | 6% | XX
*Urtica dioica* | nettle | 19% | X
*Valeriana sitchensis* | Sitka valerian | 19% | X
*Veratrum viride* | false hellebore | 38% | XX
*Veronica* spp. | speedwell | 6% | -
*Viola* spp. | violet | 31% | X
*Xerophyllum tenax* | beargrass | 6% | -


2 as designated by Madel, 1982.
Habitat Component: Dry Meadow  
(20 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food $x^1$</th>
<th>key food $x^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:rush:sedge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spp.</td>
<td>wheatgrass</td>
<td>30%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>bluebunch wheatgrass</td>
<td>50%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Agrostis spp.</td>
<td>bentgrass</td>
<td>15%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>10%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>30%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Dactylis glomerata</td>
<td>orchard-grass</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>fescue</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>20%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca scabrella</td>
<td>rough fescue</td>
<td>10%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Phleum pratense</td>
<td>timothy</td>
<td>90%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>shrubs:sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>serviceberry</td>
<td>10%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>kinnikinnick</td>
<td>25%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Berberis repens</td>
<td>Oregon grape</td>
<td>40%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Crataegus douglasii</td>
<td>hawthorne</td>
<td>10%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Holodiscus discolor</td>
<td>ocean spray</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Physocarpus malvaceus</td>
<td>ninebark</td>
<td>15%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>rose</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Salix spp.</td>
<td>willow</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Spirea betulifolia</td>
<td>white spirea</td>
<td>10%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>snowberry</td>
<td>40%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Dry Meadow continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food X&lt;sup&gt;1&lt;/sup&gt;</th>
<th>key food XX&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>forbs:ferns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td>yarrow</td>
<td>45%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Antennaria spp.</td>
<td>pussytoes</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apocynum spp.</td>
<td>dogbane</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td>aster</td>
<td>10%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>Indian-paintbrush</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Centaurea maculosa</td>
<td>spotted knapweed</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysanthemum leucanthemum</td>
<td>oxeye daisy</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epilobium spp.</td>
<td>fireweed</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>horsetail</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Erigeron spp.</td>
<td>daisy</td>
<td>15%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>strawberry</td>
<td>45%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Geranium viscosissim</td>
<td>sticky geranium</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>hawkweed</td>
<td>20%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>biscuitroot</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perideridia spp.</td>
<td>yampah</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Plantago spp.</td>
<td>plantain</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potentilla glandulosa</td>
<td>sticky cinquefoil</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potentilla spp.</td>
<td>potentilla</td>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prunella vulgaris</td>
<td>selfheal</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td>buttercup</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>sedum</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senecio spp.</td>
<td>groundsel</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Smilacina racemosa</td>
<td>false Solomon's seal</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solidago spp.</td>
<td>goldenrod</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanacetum spp.</td>
<td>tansy</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum officinale</td>
<td>dandelion</td>
<td>10%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Dry Meadow continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%) plots</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tragopogon pratensis</td>
<td>goatsbeard</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Trifolium spp.</td>
<td>clover</td>
<td>55%</td>
<td>XX</td>
</tr>
<tr>
<td>Verbascum thapsus</td>
<td>mullein</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Viola spp.</td>
<td>violet</td>
<td>5%</td>
<td>X</td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
**Habitat Component: Wet Meadow**  
(19 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food</th>
<th>key food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:sedge: rush</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agrostis spp.</td>
<td>bentgrass</td>
<td>16%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>bluejoint</td>
<td>74%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>21%</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>sedge</td>
<td>63%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Carex concinnoides</td>
<td>sedge</td>
<td>37%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Carex rossii</td>
<td>Ross sedge</td>
<td>11%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Festuca spp.</td>
<td>fescue</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Juncus spp.</td>
<td>rush</td>
<td>16%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Luzula spp.</td>
<td>woodrush</td>
<td>11%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>woodrush</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Phleum spp.</td>
<td>timothy</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><strong>shrubs:sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arctostaphylos uva-ursi</td>
<td>kinnikinnick</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Berberis repens</td>
<td>Oregon grape</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Betula occidentalis</td>
<td>water birch</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cornus stolonifera</td>
<td>red-osier dogwood</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Ledum glandulosum</td>
<td>Labrador tea</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>menziesia</td>
<td>11%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Phyllodoce empetriformis</td>
<td>mountain heath</td>
<td>21%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Purshia tridentata</td>
<td>bitterbrush</td>
<td>11%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Rosa spp.</td>
<td>rose</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Salix spp.</td>
<td>willow</td>
<td>16%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Spirea spp.</td>
<td>spirea</td>
<td>11%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Symphoricarpos albus</td>
<td>snowbush</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Wet Meadow continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%) plots</th>
<th>bear food</th>
<th>key food</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Vaccinium globulare</em></td>
<td>huckleberry</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Vaccinium scoparium</em></td>
<td>grouse whortleberry</td>
<td>42%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>forbs: ferns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Achillea millefolium</em></td>
<td>yarrow</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Angelica arguta</em></td>
<td>angelica</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Arnica spp.</em></td>
<td>arnica</td>
<td>11%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Arnica cordifolia</em></td>
<td>heartleaf arnica</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Asperugo procumbens</em></td>
<td>catchweed</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Aster spp.</em></td>
<td>aster</td>
<td>42%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Castilleja spp.</em></td>
<td>indian-paintbrush</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Cirsium vulgare</em></td>
<td>bull thistle</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Claytonia lanceolata</em></td>
<td>springbeauty</td>
<td>21%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Dodecatheon paviflorum</em></td>
<td>shootingstar</td>
<td>74%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Equisetum arvense</em></td>
<td>horsetail</td>
<td>26%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Equisetum hymale</em></td>
<td>horsetail</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Erigon ssp.</em></td>
<td>daisy</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Erythronium grandiflorum</em></td>
<td>glacier lily</td>
<td>26%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Fragaria ssp.</em></td>
<td>strawberry</td>
<td>16%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Haplopappus ssp.</em></td>
<td>goldenweed</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Heracleum lanatum</em></td>
<td>cow parsnip</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Hieracium ssp.</em></td>
<td>hawkweed</td>
<td>5%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Ligusticum ssp.</em></td>
<td>licorice root</td>
<td>5%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Ligusticum canbyi</em></td>
<td>licorice root</td>
<td>16%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Lomatium ssp.</em></td>
<td>biscuit root</td>
<td>11%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td><em>Lysichitum americanum</em></td>
<td>yellow skunk cabbage</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Nuphar spp.</em></td>
<td>water lily</td>
<td>5%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Pedicularis groenlandica</em></td>
<td>elephanthead</td>
<td>37%</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Potentilla ssp.</em></td>
<td>potentilla</td>
<td>11%</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Wet Meadow continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saxifraga spp.</td>
<td>saxifrage</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Senecio spp.</td>
<td>groundsel</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td>arrowleaf groundsel</td>
<td>26%</td>
<td>X</td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td>starry Solomon's seal</td>
<td>11%</td>
<td>XX</td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td>dandelion</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td>western meadowrue</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>Tofieldia glutinosa</td>
<td>false asphodel</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>Tussilago farfara</td>
<td>coltsfood</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Valeriana spp.</td>
<td>valerian</td>
<td>11%</td>
<td>X</td>
</tr>
<tr>
<td>Valeriana sitchensis</td>
<td>Sitka valerian</td>
<td>18%</td>
<td>X</td>
</tr>
<tr>
<td>Veratrum viride</td>
<td>false hellebore</td>
<td>37%</td>
<td>XX</td>
</tr>
<tr>
<td>Viola spp.</td>
<td>violet</td>
<td>21%</td>
<td>X</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>42%</td>
<td>-</td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
Habitat Component: Drainage Forbfield  
(20 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass:rush:sedge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agropyron spicatum</td>
<td>bluebunch wheatgrass</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>bluejoint</td>
<td>65%</td>
<td>XX</td>
</tr>
<tr>
<td>Calamagrostis rubescens</td>
<td>pinegrass</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>sedge</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex concinnoides</td>
<td>sedge</td>
<td>20%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>30%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>Ross sedge</td>
<td>15%</td>
<td>XX</td>
</tr>
<tr>
<td>Luzula spp.</td>
<td>woodrush</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Luzula hitchcockii</td>
<td>woodrush</td>
<td>70%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>shrub:sub-shrub</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alnus sinuata</td>
<td>Sitka alder</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Menziesia ferruginea</td>
<td>menziesia</td>
<td>25%</td>
<td>X</td>
</tr>
<tr>
<td>Phyllodoce empetrifomis</td>
<td>mountain heath</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Ribes montigenum</td>
<td>mountain gooseberry</td>
<td>15%</td>
<td>X</td>
</tr>
<tr>
<td>Salix spp.</td>
<td>willow</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>elderberry</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td>mountain ash</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Spirea splendens</td>
<td>spirea</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium caespitosum</td>
<td>dwarf huckleberry</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Vaccinium globulare</td>
<td>huckleberry</td>
<td>15%</td>
<td>XX</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>grouse whortleberry</td>
<td>30%</td>
<td>XX</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>occurrence (% plots)</td>
<td>bear food $^1$ key food $^2$</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>forbs: ferns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actaea rubra</td>
<td>baneberry</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Angelica arguta</td>
<td>angelica</td>
<td>25%</td>
<td>XX</td>
</tr>
<tr>
<td>Angelica dawsonii</td>
<td>angelica</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Aquilegia spp.</td>
<td>columbine</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>arnica</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Arnica cordifolia</td>
<td>heartleaf arnica</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>broadleaf arnica</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Asperugo procumbens</td>
<td>catchweed</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Aster spp.</td>
<td>aster</td>
<td>45%</td>
<td>X</td>
</tr>
<tr>
<td>Astragalus miser</td>
<td>locoweed</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Athyrium filix-femina</td>
<td>lady fern</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Castilleja spp.</td>
<td>indian-paintbrush</td>
<td>40%</td>
<td>X</td>
</tr>
<tr>
<td>Cerastium spp.</td>
<td>chickweed</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>springbeauty</td>
<td>35%</td>
<td>XX</td>
</tr>
<tr>
<td>Clintonia uniflora</td>
<td>queencup beadiy</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Dodecatheon pauciflorum</td>
<td>shootingstar</td>
<td>50%</td>
<td>X</td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>horsetail</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>40%</td>
<td>XX</td>
</tr>
<tr>
<td>Fragaria spp.</td>
<td>strawberry</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Habenaria spp.</td>
<td>bog-orchid</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Heracleum lanatum</td>
<td>cow-parsnip</td>
<td>25%</td>
<td>XX</td>
</tr>
<tr>
<td>Ligusticum canby</td>
<td>licorice root</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>monkeyflower</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Mimulus lewisii</td>
<td>red monkeyflower</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Osmorhiza chilensis</td>
<td>sweetroot</td>
<td>5%</td>
<td>XX</td>
</tr>
<tr>
<td>Osmorhiza occidentalis</td>
<td>sweet cicely</td>
<td>20%</td>
<td>XX</td>
</tr>
<tr>
<td>Parnassia fimbriata</td>
<td>fringed parnassia</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Pedicularis bracteosa</td>
<td>fernleaf lousewort</td>
<td>30%</td>
<td></td>
</tr>
</tbody>
</table>
Drainage Forbfield continued.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedicularis groenlandica</td>
<td>elephanthead</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Pedicularis racemosa</td>
<td>parrots-beak</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Polemonium spp.</td>
<td>sky pilot</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Polygonum spp.</td>
<td>polygonum</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Pyrola spp.</td>
<td>pyrola</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td>buttercup</td>
<td>20%</td>
<td>X</td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>saxifrage</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>sedum</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Senecio triangularis</td>
<td>arrowleaf groundsel</td>
<td>95%</td>
<td>X</td>
</tr>
<tr>
<td>Smilacina stellata</td>
<td>starry Solomon's seal</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Solanum sarrachoides</td>
<td>hairy nightshade</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td>Streptopus amplexifolius</td>
<td>twisted stalk</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td>dandelion</td>
<td>5%</td>
<td>X</td>
</tr>
<tr>
<td>Thalictrum occidentale</td>
<td>western meadowrue</td>
<td>55%</td>
<td>-</td>
</tr>
<tr>
<td>Tiarella trifoliata</td>
<td>laceflower</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Valeriana spp.</td>
<td>valerian</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Valeriana sitchensis</td>
<td>Sitka valerian</td>
<td>50%</td>
<td>X</td>
</tr>
<tr>
<td>Veratrum viride</td>
<td>false hellebore</td>
<td>85%</td>
<td>XX</td>
</tr>
<tr>
<td>Veronica spp.</td>
<td>speedwell</td>
<td>5%</td>
<td>-</td>
</tr>
<tr>
<td>Viola spp.</td>
<td>violet</td>
<td>25%</td>
<td>X</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>55%</td>
<td>-</td>
</tr>
</tbody>
</table>

1  

2  
as designated by Madel, 1982.
Habitat Component: Beargrass (Xerophyllum tenax) Sidehill Park
(10 plots)

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (%)</th>
<th>bear food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>50%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex rossii</td>
<td>Ross sedge</td>
<td>10%</td>
<td>XX</td>
</tr>
<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>10%</td>
<td>XX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>shrubs:sub-shrubs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirea splendens</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>forbs:ferns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antennaria spp.</td>
</tr>
<tr>
<td>Arenaria spp.</td>
</tr>
<tr>
<td>Arnica spp.</td>
</tr>
<tr>
<td>Arnica latifolia</td>
</tr>
<tr>
<td>Campanula rotundifolia</td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
</tr>
<tr>
<td>Eriogonum spp.</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
</tr>
<tr>
<td>Hieracium spp.</td>
</tr>
<tr>
<td>Lomatium spp.</td>
</tr>
<tr>
<td>Phyllococe empetriformis</td>
</tr>
<tr>
<td>Saxifraga spp.</td>
</tr>
<tr>
<td>Sedum spp.</td>
</tr>
<tr>
<td>Viola spp.</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
</tr>
</tbody>
</table>

\(^1\) after Servheen and Wojciechowski, 1978, and Mace and Jonkel, 1980
\(^2\) as designated by Madel, 1982.
<table>
<thead>
<tr>
<th>LC name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food x^1</th>
<th>key food xx^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>tus nuttallii</td>
<td>sego lily</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ja spp.</td>
<td>indian-paintbrush</td>
<td>6%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>h spp.</td>
<td>fireweed</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eriogonum spp.</td>
<td>eriogonum</td>
<td>78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>6%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Geum triflorum</td>
<td>long-plumed avens</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heuchera spp.</td>
<td>alumroot</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heuchera cylindrica</td>
<td>alumroot</td>
<td>17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hieracium spp.</td>
<td>hawkweed</td>
<td>56%</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>biscuit root</td>
<td>28%</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Lupinus spp.</td>
<td>lupine</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>monkeyflower</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicularis spp.</td>
<td>figwort</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedicularis bracteosa</td>
<td>fernleaf lousewort</td>
<td>39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polygonum spp.</td>
<td>polygonum</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saxifraga spp.</td>
<td>saxifrage</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>sedum</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taraxacum spp.</td>
<td>dandelion</td>
<td>6%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Viola spp.</td>
<td>violet</td>
<td>6%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>72%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>occurrence (% plots)</th>
<th>bear food key food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>grass: rush: sedge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calamagrostis canadensis</td>
<td>bluejoint</td>
<td>20%</td>
<td>XX</td>
</tr>
<tr>
<td>Carex geyeri</td>
<td>elk sedge</td>
<td>100%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>shrubs: sub-shrubs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spirea spp.</td>
<td>spirea</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Vaccinium scoparium</td>
<td>grouse whortleberry</td>
<td>80%</td>
<td>XX</td>
</tr>
<tr>
<td><strong>forbs: ferns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anemone patens</td>
<td>pasqueflower</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Arenaria spp.</td>
<td>sandwort</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Arnica spp.</td>
<td>arnica</td>
<td>40%</td>
<td>-</td>
</tr>
<tr>
<td>Arnica latifolia</td>
<td>broadleaf arnica</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Claytonia lanceolata</td>
<td>springbeauty</td>
<td>80%</td>
<td>XX</td>
</tr>
<tr>
<td>Erythronium grandiflorum</td>
<td>glacier lily</td>
<td>80%</td>
<td>XX</td>
</tr>
<tr>
<td>Lomatium spp.</td>
<td>biscuitroot</td>
<td>60%</td>
<td>XX</td>
</tr>
<tr>
<td>Mimulus spp.</td>
<td>monkeyflower</td>
<td>20%</td>
<td>-</td>
</tr>
<tr>
<td>Pedicularis spp.</td>
<td>figwort</td>
<td>40%</td>
<td>-</td>
</tr>
<tr>
<td>Penstemon spp.</td>
<td>penstemon</td>
<td>100%</td>
<td>-</td>
</tr>
<tr>
<td>Phyllodoce emetrisformis</td>
<td>mountain heath</td>
<td>20%</td>
<td>X</td>
</tr>
<tr>
<td>Ranunculus spp.</td>
<td>buttercup</td>
<td>20%</td>
<td>X</td>
</tr>
<tr>
<td>Sedum spp.</td>
<td>sedum</td>
<td>40%</td>
<td>-</td>
</tr>
<tr>
<td>Xerophyllum tenax</td>
<td>beargrass</td>
<td>100%</td>
<td>XX</td>
</tr>
</tbody>
</table>


2 as designated by Madel, 1982.
APPENDIX D

Key to Habitat Types
### Key to Habitat Types

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Indicator Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABGR/CLUN, CLUN</td>
<td><em>Abies lasiocarpa/Clintonia uniflora, Clintonia uniflora</em></td>
</tr>
<tr>
<td>ABLA/ALSI</td>
<td><em>Abies lasiocarpa/Alnus sinuata</em></td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td><em>Abies lasiocarpa/Calamagrostis canadensis, Calamagrostis canadensis</em></td>
</tr>
<tr>
<td>ABLA/CACA, GATR</td>
<td><em>Abies lasiocarpa/Calamagrostis canadensis, Galium triflorum</em></td>
</tr>
<tr>
<td>ABLA/LUHI, MEFE</td>
<td><em>Abies lasiocarpa/Luzula hitchensii, Menziesia ferruginea</em></td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td><em>Abies lasiocarpa/Luzula hitchensii, Vaccinium scoparium</em></td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td><em>Abies lasiocarpa/Menziesia ferruginea</em></td>
</tr>
<tr>
<td>ABLA/GATR</td>
<td><em>Abies lasiocarpa/Galium triflorum</em></td>
</tr>
<tr>
<td>ABLA/VAGL</td>
<td><em>Abies lasiocarpa/Vaccinium globulare</em></td>
</tr>
<tr>
<td>ABLA/XETE</td>
<td><em>Abies lasiocarpa/Xerophyllum tenax</em></td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td><em>Abies lasiocarpa/Xerophyllum tenax, Vaccinium globulare</em></td>
</tr>
<tr>
<td>ABLA/XETE, VASC</td>
<td><em>Abies lasiocarpa/Vaccinium globulare</em></td>
</tr>
<tr>
<td>ABLA-PIAL, VASC</td>
<td><em>Abies lasiocarpa/Pinus albicaulis, Vaccinium scoparium</em></td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td><em>Pinus albicaulis-Abies lasiocarpa</em></td>
</tr>
<tr>
<td>PICEA/CLUN, CLUN</td>
<td><em>Picea engelmannii/Clintonia uniflora, Clintonia uniflora</em></td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td><em>Picea engelmannii/Equisetum arvense</em></td>
</tr>
<tr>
<td>PICEA/GATR</td>
<td><em>Picea engelmannii/Galium triflorum</em></td>
</tr>
<tr>
<td>PICO/FRID</td>
<td><em>Pinus ponderosa/Festuca idahoensis</em></td>
</tr>
<tr>
<td>PSME/ARCO</td>
<td><em>Pseudotsuga menziesii/Arnica cordifolia</em></td>
</tr>
<tr>
<td>PSME/CARU, CARU</td>
<td><em>Pseudotsuga menziesii/Calamagrostis rubescens, Calamagrostis rubescens</em></td>
</tr>
<tr>
<td>PSME/FRID</td>
<td><em>Pseudotsuga menziesii/Festuca idahoensis</em></td>
</tr>
<tr>
<td>PSME/FESC</td>
<td><em>Pseudotsuga menziesii/Festuca scabrella</em></td>
</tr>
<tr>
<td>PSME/LIBO, SYAL</td>
<td><em>Pseudotsuga menziesii/Linnaea borealis, Symphoricarpus albus</em></td>
</tr>
<tr>
<td>PSME/PHMA, CARU</td>
<td><em>Pseudotsuga menziesii/Physocarpus malvaceus, Calamagrostis rubescens</em></td>
</tr>
<tr>
<td>PSME/PHMA, PEMA</td>
<td><em>Pseudotsuga menziesii/Physocarpus malvaceus, Physocarpus malvaceus</em></td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td><em>Pseudotsuga menziesii/Symphoricarpus albus, Agropyron spicatum</em></td>
</tr>
<tr>
<td>PSME/SYAL, CARU</td>
<td><em>Pseudotsuga menziesii/Symphoricarpus albus, Calamagrostis rubescens</em></td>
</tr>
<tr>
<td>PSME/SYAL, SYAL</td>
<td><em>Pseudotsuga menziesii/Symphoricarpus albus, Symphoricarpus albus</em></td>
</tr>
<tr>
<td>PSME/VAGL, ARUV</td>
<td><em>Pseudotsuga menziesii/Vaccinium globulare, Arctostaphylos uva-ursi</em></td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td><em>Pseudotsuga menziesii/Vaccinium globulare, Vaccinium globulare</em></td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td><em>Pseudotsuga menziesii/Vaccinium globulare, Xerophyllum tenax</em></td>
</tr>
<tr>
<td>PSME/VACA</td>
<td><em>Pseudotsuga menziesii/Vaccinium caespitosum</em></td>
</tr>
<tr>
<td>SCREE</td>
<td><em>Scrée</em></td>
</tr>
</tbody>
</table>

(from Pfister et al., 1977)
APPENDIX E

Habitat Types of Component Plots
Habitat Component: Timbered Shrubfield

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIAL-ABLA</td>
<td>18°</td>
<td>S10E</td>
<td>7880</td>
<td>ridge</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>34°</td>
<td>N10W</td>
<td>7320</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>20°</td>
<td>W</td>
<td>7560</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>18°</td>
<td>S60E</td>
<td>6800</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>14°</td>
<td>S80E</td>
<td>6600</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>20°</td>
<td>S20E</td>
<td>5200</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>16°</td>
<td>S50E</td>
<td>5280</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td>34°</td>
<td>S30E</td>
<td>7300</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/XETE</td>
<td>9°</td>
<td>S30W</td>
<td>6080</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>10°</td>
<td>S40W</td>
<td>5200</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>10°</td>
<td>S80W</td>
<td>4240</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>6°</td>
<td>S30W</td>
<td>5200</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>10°</td>
<td>S50W</td>
<td>5200</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>6°</td>
<td>S30E</td>
<td>5600</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VACA</td>
<td>4°</td>
<td>E</td>
<td>4800</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>24°</td>
<td>S10W</td>
<td>6880</td>
<td>lower slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>25°</td>
<td>N30W</td>
<td>7500</td>
<td>upper slope</td>
</tr>
<tr>
<td>Habitat Type</td>
<td>Slope</td>
<td>Aspect</td>
<td>Elevation (feet)</td>
<td>Topography</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------</td>
<td>--------</td>
<td>------------------</td>
<td>------------</td>
</tr>
<tr>
<td>PSME/CARU, CARU</td>
<td>10°</td>
<td>S30W</td>
<td>5000</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/FESC</td>
<td>15°</td>
<td>S50W</td>
<td>5800</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/CARU, CARU</td>
<td>18°</td>
<td>E</td>
<td>5080</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>10°</td>
<td>S</td>
<td>5200</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>36°</td>
<td>S50E</td>
<td>4800</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>38°</td>
<td>S50E</td>
<td>4720</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/PHMA, CARU</td>
<td>16°</td>
<td>S60W</td>
<td>6080</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>20°</td>
<td>S</td>
<td>5800</td>
<td>middle slope</td>
</tr>
</tbody>
</table>
### Habitat Component: Mixed Shrubfield - Cutting Unit

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA/VAGL</td>
<td>28°</td>
<td>N82E</td>
<td>5600</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>18°</td>
<td>S20W</td>
<td>4680</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>16°</td>
<td>S20W</td>
<td>4680</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>10°</td>
<td>S48W</td>
<td>5720</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>28°</td>
<td>N70E</td>
<td>6440</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>8°</td>
<td>E</td>
<td>5080</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>10°</td>
<td>90E</td>
<td>5280</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>6°</td>
<td>S60E</td>
<td>5360</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/SYAL, CARU</td>
<td>20°</td>
<td>S</td>
<td>5120</td>
<td>lower slope</td>
</tr>
<tr>
<td>PICEA/CLUN, CLUN</td>
<td>20°</td>
<td>S30W</td>
<td>5300</td>
<td>lower slope</td>
</tr>
<tr>
<td>PICEA/GATR</td>
<td>20°</td>
<td>S</td>
<td>6000</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>22°</td>
<td>SE</td>
<td>6500</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>22°</td>
<td>S20E</td>
<td>5080</td>
<td>lower slope</td>
</tr>
</tbody>
</table>
### Habitat Component: Mixed Shrubfield - Snowchute

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA/CACA, CACA</td>
<td>28°</td>
<td>S48E</td>
<td>6170</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>30°</td>
<td>S50E</td>
<td>6120</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/ALSI</td>
<td>28°</td>
<td>S48E</td>
<td>6080</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/GATR</td>
<td>38°</td>
<td>N42E</td>
<td>5600</td>
<td>middle slope</td>
</tr>
<tr>
<td>SCREE</td>
<td>26°</td>
<td>N50E</td>
<td>5200</td>
<td>lower slope</td>
</tr>
<tr>
<td>SCREE</td>
<td>26°</td>
<td>N50E</td>
<td>5180</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/GATR</td>
<td>32°</td>
<td>N48E</td>
<td>5440</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/GATR</td>
<td>32°</td>
<td>N42E</td>
<td>5400</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>32°</td>
<td>N40E</td>
<td>5280</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>28°</td>
<td>N30E</td>
<td>5200</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/XETZ, VACL</td>
<td>28°</td>
<td>S40E</td>
<td>5280</td>
<td>middle slope</td>
</tr>
</tbody>
</table>
**Habitat Component:** Huckleberry Shrubfield

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>S70E</td>
<td>7800</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>E</td>
<td>7200</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>34°</td>
<td>S</td>
<td>7740</td>
<td>upper slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>24°</td>
<td>N80E</td>
<td>7200</td>
<td>upper slope</td>
</tr>
<tr>
<td>ABLA-LUHI, VASC</td>
<td>38°</td>
<td>S50E</td>
<td>8000</td>
<td>upper slope</td>
</tr>
</tbody>
</table>
### Habitat Component: Riparian Streambottom

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA/CACA, GATR</td>
<td>20°</td>
<td>SE</td>
<td>5200</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/CARU, CARU</td>
<td>16°</td>
<td>S20W</td>
<td>5360</td>
<td>streambottom</td>
</tr>
<tr>
<td>PICEA/EQAR*</td>
<td>-</td>
<td>-</td>
<td>6580</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/LIBO, SYAL*</td>
<td>-</td>
<td>-</td>
<td>3800</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/LIBO, SYAL*</td>
<td>-</td>
<td>-</td>
<td>3720</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/LIBO, SYAL</td>
<td>5°</td>
<td>S40W</td>
<td>3800</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/SYAL, SYAL</td>
<td>-</td>
<td>-</td>
<td>3800</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/SYAL, SYAL</td>
<td>5°</td>
<td>S10W</td>
<td>3800</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3880</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>4040</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/LIBO, SYAL</td>
<td>-</td>
<td>-</td>
<td>4280</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>5760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/LIBO, SYAL*</td>
<td>10°</td>
<td>N80W</td>
<td>4720</td>
<td>streambottom</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>20°</td>
<td>N20E</td>
<td>6720</td>
<td>streambottom</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>-</td>
<td>-</td>
<td>6680</td>
<td>streambottom</td>
</tr>
<tr>
<td>PSME/VAGL, VAGL</td>
<td>20°</td>
<td>S</td>
<td>7080</td>
<td>middle slope</td>
</tr>
</tbody>
</table>

*poor fit*
Habitat Component: Dry Meadow

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>3760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3840</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSMA/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>3880</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3880</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>3880</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/AGSP</td>
<td>-</td>
<td>-</td>
<td>3800</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3680</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PEID</td>
<td>-</td>
<td>-</td>
<td>3800</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, CARU</td>
<td>-</td>
<td>-</td>
<td>4120</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>4000</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSMA/SYAL, CARU</td>
<td>-</td>
<td>-</td>
<td>4020</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>3920</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>3860</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, AGSP</td>
<td>-</td>
<td>-</td>
<td>3720</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>4840</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/PHMA, PHMA</td>
<td>-</td>
<td>-</td>
<td>4600</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/SYAL, CARU</td>
<td>-</td>
<td>-</td>
<td>4600</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSME/VAGL, ARUV</td>
<td>-</td>
<td>-</td>
<td>4800</td>
<td>bench or flat</td>
</tr>
</tbody>
</table>
### Habitat Component: Wet Meadow

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA/MEFE</td>
<td>-</td>
<td>-</td>
<td>6940</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/MEFE</td>
<td>-</td>
<td>-</td>
<td>6940</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7120</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PSNE/VAGL, ARUV</td>
<td>-</td>
<td>-</td>
<td>4400</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>6400</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7000</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>-</td>
<td>-</td>
<td>7160</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>-</td>
<td>-</td>
<td>7140</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>5760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>5760</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>5720</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7120</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>-</td>
<td>-</td>
<td>7000</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7320</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7000</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>7040</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PICEA/EQAR</td>
<td>-</td>
<td>-</td>
<td>5680</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7240</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>-</td>
<td>-</td>
<td>7200</td>
<td>bench or flat</td>
</tr>
</tbody>
</table>
### Habitat Component: Drainage Forbfield

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA/CACA, CACA</td>
<td>8°</td>
<td>S58E</td>
<td>7120</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>6°</td>
<td>N80E</td>
<td>7120</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td>10°</td>
<td>S30E</td>
<td>7460</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>6°</td>
<td>S60E</td>
<td>7160</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>4°</td>
<td>S</td>
<td>7120</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>4°</td>
<td>S20E</td>
<td>7120</td>
<td>lower slope</td>
</tr>
<tr>
<td>PSME/ARCO</td>
<td>8°</td>
<td>S60W</td>
<td>5729</td>
<td>middle slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>8°</td>
<td>SW</td>
<td>5480</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/LUHI, MEFE</td>
<td>5°</td>
<td>W</td>
<td>5360</td>
<td>streambottom</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>2°</td>
<td>N10W</td>
<td>7000</td>
<td>upper slope</td>
</tr>
<tr>
<td>PSME/VAGL, XETE</td>
<td>10°</td>
<td>S10E</td>
<td>6400</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>20°</td>
<td>S</td>
<td>7240</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/LUHI</td>
<td>40°</td>
<td>S70E</td>
<td>6820</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>20°</td>
<td>N50W</td>
<td>6230</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/CACA, GATR</td>
<td>18</td>
<td>N20W</td>
<td>7100</td>
<td>streambottom</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>20°</td>
<td>N60E</td>
<td>7160</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>18°</td>
<td>N20E</td>
<td>7240</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>30°</td>
<td>N</td>
<td>6800</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/CACA, CACA</td>
<td>18°</td>
<td>S10E</td>
<td>7080</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td>40°</td>
<td>N10E</td>
<td>7780</td>
<td>middle slope</td>
</tr>
</tbody>
</table>
Habitat Component: Beargrass Sidehill Park

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLA-PIAL/VASC</td>
<td>30°</td>
<td>S20E</td>
<td>7160</td>
<td>lower slope</td>
</tr>
<tr>
<td>ABLA/XETE, VASC</td>
<td>20°</td>
<td>SE</td>
<td>7000</td>
<td>ridge</td>
</tr>
<tr>
<td>SCREE</td>
<td>28°</td>
<td>S40E</td>
<td>7700</td>
<td>upper slope</td>
</tr>
<tr>
<td>SCREE</td>
<td>18°</td>
<td>SE</td>
<td>7400</td>
<td>upper slope</td>
</tr>
<tr>
<td>SCREE</td>
<td>35°</td>
<td>E</td>
<td>7600</td>
<td>upper slope</td>
</tr>
<tr>
<td>ABLA-PIAL/VASC</td>
<td>18°</td>
<td>S10E</td>
<td>7680</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA-PIAL/VASC</td>
<td>30°</td>
<td>S30E</td>
<td>7200</td>
<td>lower slope</td>
</tr>
<tr>
<td>SCREE</td>
<td>34°</td>
<td>S</td>
<td>-7600</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>32°</td>
<td>S36E</td>
<td>7760</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>S80W</td>
<td>7840</td>
<td>upper slope</td>
</tr>
</tbody>
</table>
### Habitat Component: Graminoid Sidehill Park

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Slope</th>
<th>Aspect</th>
<th>Elevation (feet)</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCREE</td>
<td>20°</td>
<td>N30E</td>
<td>6720</td>
<td>ridge</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>36°</td>
<td>S40E</td>
<td>7440</td>
<td>upper slope</td>
</tr>
<tr>
<td>ABLA/XETE, VASC</td>
<td>12°</td>
<td>S50E</td>
<td>7000</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>10°</td>
<td>S30W</td>
<td>7400</td>
<td>ridge</td>
</tr>
<tr>
<td>SCREE</td>
<td>38°</td>
<td>S50E</td>
<td>7400</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>16°</td>
<td>S60E</td>
<td>7400</td>
<td>ridge</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>32°</td>
<td>W</td>
<td>7400</td>
<td>ridge</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>S45E</td>
<td>7600</td>
<td>ridge</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>18°</td>
<td>S84E</td>
<td>6480</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>18°</td>
<td>E</td>
<td>6500</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>36°</td>
<td>S40E</td>
<td>7800</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>24°</td>
<td>S40E</td>
<td>7460</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>E</td>
<td>7400</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td>22°</td>
<td>S20E</td>
<td>7920</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>12°</td>
<td>S86E</td>
<td>7200</td>
<td>middle slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>18°</td>
<td>N80E</td>
<td>7300</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/LUHI, VASC</td>
<td>22°</td>
<td>S30E</td>
<td>7400</td>
<td>middle slope</td>
</tr>
<tr>
<td>ABLA/XETE, VAGL</td>
<td>4°</td>
<td>E</td>
<td>7000</td>
<td>bench or flat</td>
</tr>
<tr>
<td>Habitat Type</td>
<td>Slope</td>
<td>Aspect</td>
<td>Elevation (feet)</td>
<td>Topography</td>
</tr>
<tr>
<td>---------------</td>
<td>-------</td>
<td>--------</td>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>S60E</td>
<td>8000</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>30°</td>
<td>N80E</td>
<td>7200</td>
<td>bench or flat</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>26°</td>
<td>E</td>
<td>7529</td>
<td>upper slope</td>
</tr>
<tr>
<td>PIAL-ABLA</td>
<td>20</td>
<td>E</td>
<td>7500</td>
<td>bench or flat</td>
</tr>
<tr>
<td>ABLA-LUNI/VASC</td>
<td>30°</td>
<td>N10W</td>
<td>7200</td>
<td>bench or flat</td>
</tr>
</tbody>
</table>