

# Appendix A - Plant and Animal Diversity

Providing for diversity of plant and animal communities in the Plan area is a requirement of the National Forest Management Act (NFMA). Towards this end, Plan components were developed to provide ecological conditions that support species and groups of species. The following discussion briefly describes the process used to provide for plant and animal diversity in the proposed Land Management Plan.

The NFMA requires land management plans to provide for diversity of plant and animal communities based on the suitability and capability of the land area while meeting overall multiple-use objectives. The 2005 Planning Rule and associated Forest Service directives specify how to meet this diversity requirement. A hierarchical approach that assesses both ecosystem diversity and species diversity was used in the KIPZ Plan revision process.

The initial focus of the assessment process was on ecosystem diversity, both in addressing the needs of healthy, diverse, and resilient ecosystems within the Plan area, and in determining the extent to which maintaining ecosystem diversity will also maintain populations of plant and animal species within their ranges in the Plan area. An assumption relative to terrestrial animals is that ecosystem diversity will maintain habitat for the persistence of the vast majority of species. This has often been referred to as the “coarse filter” conservation approach (Hunter et al. 1988, Baydeck et al. 1999, Samson 2002, Samson et al. 2003). For the KIPZ, a coarse filter ecosystem diversity evaluation was used to compare existing vegetation communities to a set of reference conditions in order to evaluate changes in disturbance regimes and ecological communities. See the Comprehensive Evaluation Report (CER) for a complete description of the process used. Based on the results of this evaluation, Plan components were developed to maintain or move vegetation communities towards a desired level or condition.

A complementary approach (species diversity) to the ecosystem diversity analysis was used for those species for which ecological conditions necessary to sustain populations may not be provided by maintaining ecosystem diversity. In these cases, a species-specific approach was used in the analysis and for the establishment of Plan components, where necessary. The assessment of individual species is often referred to as the “fine filter” approach (Holthausen 2002, Samson et al. 2003). Forest Service directives associated with the 2005 Planning Rule provide guidelines for conducting species sustainability assessments. The focus in this analysis is on species that are of regional or local conservation concern as indicated by documented threats to populations or habitats. Native terrestrial vertebrates and invertebrates known to occur on land managed by the Forest Service on the Kootenai National Forests were considered.

Criteria in the Forest Service planning directives were used as the basis for identification of species to include in the species diversity analysis (FSH 1909.12 Chapter 43.2; effective date 1/09/2006).

Specifically species included are:

- **Federally listed species** are species that are listed by the Department of the Interior, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, or National Marine Fisheries Service as threatened or endangered under the Endangered Species Act.
- **Species of concern** are species for which management actions may be necessary to prevent listing under the Endangered Species Act.

- **Species of interest** are species for which management actions may be necessary or desirable to achieve ecological or other multiple-use objectives.

A five-step approach was used in the assessment for species of concern and species of interest:

Identification of species.

Screening species for further consideration in the planning process.

Grouping species where possible and if necessary selecting surrogate species.

Determining plan components for species diversity.

Evaluation of plan components on species diversity.

**Step 1 – Identification of species**

Based on the criteria in the Forest Service directives (Chapter 43.22 a, b, c), a list of species was developed for use in the analysis process. Species considered for inclusion on the lists are species of global, state, and local concern, Birds of Conservation Concern, species on the regional (Forest Service Northern Region) sensitive species list, species identified as regional species at risk, and species that were previously delineated as management indicator species (MIS) for the Kootenai National Forest.

**Step 2 - Screening species for further consideration in the planning process**

All species identified in Step 1 were screened to determine whether a species should be considered further in the planning process. Part of the screening process includes the collection of information (including habitat requirements and risks or threats) using criteria in the directives (43.22c and 43.22d). One of the principle factors considered was determining if Plan components for ecosystem diversity was adequate to provide for a particular species needs. If so, no further analysis was considered necessary for those species. The complete screening process, including why or why or not a species was considered further in the planning process, is included in the CER.

Based on the screening process the following list of species was identified for further consideration in the analysis process:

**Potential Species of Concern for the Kootenai National Forest**

| Common Name                                 | Scientific Name              | Species Group or Plant Habitat Guild |
|---|------------------------------|--------------------------------------|
| <b>Birds</b>                                |                              |                                      |
| American peregrine falcon                   | <i>Falco peregrinus</i>      | Cliffs                               |
| <b>Terrestrial Invertebrates (mollusks)</b> |                              |                                      |
| Magnum mantleslug                           | <i>Magnipelta mycophaga</i>  | Terrestrial invertebrates (mollusk)  |
| Pygmy slug                                  | <i>Kootenaia burkei</i>      | Terrestrial invertebrates (mollusk)  |
| Sheathed slug                               | <i>Zacoleus idahoensis</i>   | Terrestrial invertebrates (mollusk)  |
| Smokey taildropper                          | <i>Prophysaon humile</i>     | Terrestrial invertebrates (mollusk)  |
| <b>Fish</b>                                 |                              |                                      |
| Westslope cutthroat trout                   | <i>Salmo clarki lewisi</i>   | Aquatic                              |
| Burbot (ling)                               | <i>Lota lota</i>             | Aquatic                              |
| <b>Plants</b>                               |                              |                                      |
| Short-beaked Aloe-moss                      | <i>Aloina brevirostris</i>   | Grassland                            |
| Upswept moonwort                            | <i>Botrychium ascendens</i>  | Wet Forest                           |
| Dainty moonwort                             | <i>Botrychium crenulatum</i> | Wet Forest                           |

| Common Name                                  | Scientific Name                | Species Group or Plant Habitat Guild |
|--|--------------------------------|--------------------------------------|
| <b>Plants (species of concern continued)</b> |                                |                                      |
| Western moonwort                             | <i>Botrychium hesperium</i>    | Wet Forest                           |
| Western goblin                               | <i>Botrychium montanum</i>     | Wet Forest                           |
| Pale moonwort                                | <i>Botrychium pallidum</i>     | Wet Forest                           |
| Peculiar moonwort                            | <i>Botrychium paradoxum</i>    | Wet Forest/moist forest              |
| Stalked moonwort                             | <i>Botrychium pedunculosum</i> | Wet forest                           |
| Horsehair lichen                             | <i>Bryoria subdivergens</i>    | Subalpine                            |
| Disc lichen                                  | <i>Buellia badia</i>           | Subalpine                            |
| Icelandmoss                                  | <i>Cetraria subalpina</i>      | Subalpine                            |
| Needle lichen                                | <i>Chaenotheca subroscida</i>  | Dry forests                          |
| Short-spored jelly lichen                    | <i>Collema curtisporum</i>     | Deciduous riparian                   |
| Britton's dry rock moss                      | <i>Grimmia brittoniae</i>      | Moist forest                         |
| Washington monkeyflower                      | <i>Mimulus washingtonensis</i> | Moist forest                         |
| Ragged lichen                                | <i>Platismatia stenophylla</i> | Moist forest/wet forest              |
| Cartilage lichen                             | <i>Ramalina thrausta</i>       | Moist forest/wet forest              |
| Spribillei's groundsel                       | <i>Senecio spribillei</i>      | Subalpine                            |

**Potential Species of Interest for the Kootenai National Forest**

| Common Name              | Scientific Name                      | Species Group or Plant Habitat Guild |
|--------------------------|--------------------------------------|--------------------------------------|
| <b>Amphibians</b>        |                                      |                                      |
| Coeur d'Alene salamander | <i>Plethodon idahoensis</i>          | Aquatic                              |
| Western (boreal) toad    | <i>Bufo boreas</i>                   | Aquatic.                             |
| <b>Mammals</b>           |                                      |                                      |
| Fisher                   | <i>Martes pennanti</i>               | Aquatic                              |
| Fringed myotis           | <i>Myotis thysanodes</i>             | Bat                                  |
| North American Wolverine | <i>Gulo gulo luscus</i>              | Subalpine                            |
| Northern bog lemming     | <i>Synaptomys borealis</i>           | Aquatic                              |
| Townsend's big-eared bat | <i>Corynorhinus townsendii</i>       | Bat                                  |
| Bighorn sheep            | <i>Ovis Canadensis</i>               | Big game                             |
| Elk                      | <i>Cervus elaphus nelsoni</i>        | Big game                             |
| Mountain goat            | <i>Oreamos americanus</i>            | Big game                             |
| <b>Birds</b>             |                                      |                                      |
| Black swift              | <i>Cypseloides niger</i>             | Aquatic                              |
| Black-backed woodpecker  | <i>Picoides arcticus</i>             | Burned forest/snags                  |
| Common loon              | <i>Gavia immer</i>                   | Aquatic                              |
| Flammulated owl          | <i>Otus flammeolus</i>               | Snags                                |
| Harlequin duck           | <i>Histrionicus histrionicus</i>     | Aquatic                              |
| Lewis's woodpecker       | <i>Melanerpes lewis</i>              | Burned forest/snags                  |
| Northern goshawk         | <i>Accipiter gentilis</i>            | Warm forest/moist forest             |
| Olive-sided flycatcher   | <i>Contopus borealis</i>             | Burned forest/snags                  |
| Red-naped sapsucker      | <i>Sphyrapicus nuchalis</i>          | Snags                                |
| Williamson's sapsucker   | <i>Sphyrapicus thyroideus</i>        | Snags                                |
| <b>Fish</b>              |                                      |                                      |
| Interior redband trout   | <i>Oncorhynchus mykiss gairdneri</i> | Aquatic                              |

| Common Name  | Scientific Name                               | Species Group or Plant Habitat Guild |
|--|---|--------------------------------------|
| <b>Aquatic invertebrates (species of interest continued)</b> |   |                                      |
| Western pearlshell mussel                                    | <i>Margaritifera falcata</i>                  | Aquatic                              |
| Striate disc   | <i>Discus shimemkii</i>                       | Aquatic                              |
| <b>Terrestrial Invertebrates - mollusks</b>                  |   |                                      |
| Fir pinwheel   | <i>Radiodiscus abietum</i>                    | Aquatic                              |
| Pale jumping slug  | <i>Hemphillia camelus</i>                     | Aquatic                              |
| <b>Plants</b>  |   |                                      |
| Cuddy Mountain onion   | <i>Allium fibrillum</i>                       | Dry forest                           |
| Thin-leaf alder shrubland                                    | <i>Alnus incana</i> shrubland                 | Moist forest/wet forest              |
| Red alder  | <i>Alnus rubra</i>                            | Moist forest/wet forest              |
| Aloina moss  | <i>Aloina brevirostris</i>                    | Wet forest                           |
| Round-leaved orchis  | <i>Amerorchis rotundifolia</i>                | Wet forest                           |
| Blytt's andreaea moss  | <i>Andreaea blyttii</i>                       | Wet forest                           |
| Greenleaf manzanita  | <i>Arctostaphylos patula</i>                  | Dry forests                          |
| Water marigold   | <i>Bidens beckii</i>                          | Aquatic                              |
| Triangle moonwort  | <i>Botrychium lanceolatum</i>                 | Moist forest/wet forest              |
| Mingan moonwort  | <i>Botrychium minganense</i>                  | Moist forest                         |
| Least moonwort   | <i>Botrychium simplex</i>                     | Dry forest/moist forest              |
| Brachythecium moss   | <i>Brachythecium reflexum</i>                 | Moist forest                         |
| Watershield  | <i>Brasenia schreberi</i>                     | Aquatic                              |
| Sagebrush mariposa lily                                      | <i>Calochortus macrocarpus</i>                | Dry forest                           |
| Small camas  | <i>Camassia quamash</i>                       | Moist forest                         |
| Big-leaf sedge   | <i>Carex amplifolia</i>                       | Moist forest                         |
| String-root sedge  | <i>Carex chordorrhiza</i>                     | Aquatic                              |
| Woollyfruit sedge herbaceous vegetation                      | <i>Carex lasiocarpa</i> herbaceous vegetation | Moist forest                         |
| Pale sedge   | <i>Carex livida</i>                           | Peatland                             |
| Prairie sedge  | <i>Carex prairea</i>                          | Peatland                             |
| Beaked sedge   | <i>Carex rostrata</i>                         | Aquatic                              |
| Many-headed sedge  | <i>Carex synchnocephala</i>                   | Moist forest                         |
| Sheathed sedge   | <i>Carex vaginata</i>                         | Deciduous riparian                   |
| Clustered thistle  | <i>Cirsium brevistylum</i>                    | Dry forest/moist forest              |
| Common Clarkia   | <i>Clarkia rhomboidea</i>                     | Dry Forest                           |
| Sand springbeauty  | <i>Claytonia arenicola</i>                    | Dry forest/moist forest              |
| Pink corydalis   | <i>Corydalis sempervirens</i>                 | Dry forest/moist forest              |
| Clustered lady's slipper                                     | <i>Cypripedium fasciculatum</i>               | Warm forest/moist forest             |
| Yellow Lady's-slipper  | <i>Cypripedium parviflorum</i>                | Deciduous riparian                   |
| Sparrow's-egg Lady's-slipper                                 | <i>Cypripedium passerinum</i>                 | Deciduous riparian                   |
| English sundew   | <i>Drosera anglica</i>                        | Aquatic                              |
| Crested shield fern  | <i>Dryopteris cristata</i>                    | Aquatic                              |
| Slender cottongrass  | <i>Eriophorum gracile</i>                     | Peatland                             |
| Green-keeled cotton grass                                    | <i>Eriophorum viridicarinatum</i>             | Peatland                             |
| Western pearl flower   | <i>Heterocodon rariflorum</i>                 | dry forest                           |
| Hygrohypnum moss   | <i>Hygrohypnum cochlearifolium</i>            | Subalpine                            |
| Tule pea   | <i>Lathyrus bijigatus</i>                     | Dry forest                           |
| Douglas' bladderpod  | <i>Lesquerella douglasii</i>                  | Dry forest                           |
| Leucolepis umbrella moss                                     | <i>Leucolepis acanthoneuron</i>               | Moist forest                         |
| Bitter root  | <i>Lewisia rediviva</i>                       | Dry forest                           |

| Common Name  | Scientific Name   | Species Group or Plant Habitat Guild |
|--|---|--------------------------------------|
| <b>Plants (species of interest continued)</b>          |   |                                      |
| Hall's lung wort                                       | <i>Lobaria hallii</i>   | Moist forest                         |
| Geyer's biscuit root                                   | <i>Lomatium geyeri</i>  | Dry forest                           |
| Northern bog clubmoss                                  | <i>Lycopodiella inundata</i>  | Peatland                             |
| Ground pine  | <i>Lycopodium dendroideum</i>   | Moist forest/wet forest              |
| One-cone clubmoss                                      | <i>Lycopodium lagopus</i>   | Moist forest/wet forest              |
| Opposite-leaved tarweed                                | <i>Madia minima</i>   | Dry forest                           |
| Cascade barberry                                       | <i>Mahonia nervosa</i>  | Dry forest                           |
| Meesia moss  | <i>Meesia triquetra</i>   | Peatland                             |
| Meesia moss  | <i>Meesia uliginosa</i>   | Subalpine                            |
| Shortflower monkeyflower                               | <i>Mimulus breviflorus</i>  | Moist forest                         |
| Nodobryoria subdivergens                               | <i>Nodobryoria subdivergens</i>   | Subalpine                            |
| Oligotrichum moss                                      | <i>Oligotrichum aligerum</i>  | Moist forest                         |
| Northern adder's tongue                                | <i>Ophioglossum pusillum</i>  | Aquatic                              |
| Northern beechfern                                     | <i>Phegopteris connectilis</i>  | Moist forest                         |
| Engelmann and white spruce/ field horsetail forest     | <i>Picea (engelmannii x glauca, engelmannii) / equisetum arvense</i> forest | Moist forests                        |
| Engelmann spruce/ bluejoint forest                     | <i>Picea engelmannii / calamagrostis canadensis</i> forest                  | Moist forests                        |
| Platyhypnidium moss                                    | <i>Platyhypnidium riparioides</i>   | Moist forest/deciduous riparian      |
| Kruckeberg's hollyfern                                 | <i>Polystichum kruckebergii</i>   | Subalpine                            |
| Mountain hollyfern                                     | <i>Polystichum scopulinum</i>   | Moist forest                         |
| Dwarf wooly heads                                      | <i>Psilocarphus brevissimus</i>   | Aquatic                              |
| Pygmy racomitrium moss                                 | <i>Racomitrium pygmaeum</i>   | Moist forest                         |
| Shinyleaf gooseberry                                   | <i>Ribes cognatum</i>   | Moist forest                         |
| Trailing black currant                                 | <i>Ribes laxiflorum</i>   | Moist forests                        |
| Drummond's willow/ bluejoint shrubland                 | <i>Salix drummondiana / calamagrostis canadensis</i> shrubland              | Moist forest/deciduous riparian      |
| Drummond's willow/ Northwest Territory sedge shrubland | <i>Salix drummondiana / carex utriculata</i> shrubland                      | Moist forest/deciduous riparian      |
| Yerba buena  | <i>Satureja douglasii</i>   | Moist forest                         |
| Pod grass  | <i>Scheuchzeria palustris</i>   | Aquatic                              |
| Tufted bulrush   | <i>Scirpus cespitosus</i>   | Peatland                             |
| Water clubrush   | <i>Schoenoplectus subterminalis (Scirpus subterminalis)</i>                 | Aquatic                              |
| Scorpidium moss  | <i>Scorpidium scorpioides</i>   | Peatland                             |
| Wulf's sphagnum  | <i>Sphagnum wulfianum</i>   | Moist forest/deciduous riparian      |
| Pyramid Spirea   | <i>Spiraea pyramidata</i>   | Moist forest/ wet forest             |
| Pigflower tellima                                      | <i>Tellima grandiflora</i>  | Moist forests                        |
| Flat-leaved bladderwort                                | <i>Utricularia intermedia</i>   | Aquatic                              |
| Velvetleaf huckleberry                                 | <i>Vaccinium myrtilloides</i>   | Moist forest                         |
| White violet   | <i>Viola renifolia</i>  | Moist forest/wet forest              |
| Selkirk's violet                                       | <i>Viola selkirkii</i>  | Moist forest/wet forest              |

### Step 3 - Grouping species where possible and if necessary selecting surrogate species

While managing species habitats and populations using a species-by-species approach has intuitive ecological merit, the sheer number of species often makes such an approach untenable. In many

cases, the ecological understanding and resources needed to manage all species on an individual basis are not available. Tremendous efficiencies can be gained from managing groups of species. For these reasons, the Forest Service planning directives encourage the use of groups and “surrogate species” (FSH 1909.12 Chapter 43.24).

Using a hierarchical approach, species of concern and species of interest on the above lists were grouped, where possible, based on species habitat needs, and identified risks or threats. Species groups were reviewed to determine the need for a surrogate species. No surrogate species were identified for the KNF. The KIPZ vegetation matrix, the Regional Diversity Matrix, and the Interior Columbia Basin (Wisdom et al. 2000) were reviewed during the process of grouping wildlife species. Plant species of concern and species of interest were placed into habitat guilds established for the major habitat types on the forest(s). See above table for species groups and habitat guilds. A complete description of habitat guilds and associated species is included in the Comprehensive Evaluation Report (CER).

#### **Step 4 - Determining Plan components for species diversity**

Where necessary, Plan components were developed for each species group or individual species identified as species of concern or species of interest. These components were developed to address specific habitat needs or to reduce risks of other negative outcomes and threats that have not been fully addressed in the provisions for ecosystem diversity. The main components that were developed include: Plan components for snags and down wood; protection of documented locations of known occurrences and habitats where there is a high probability of a species occurring; and reducing human-caused disturbances during critical life stages (e.g., nesting, rearing, denning, winter).

#### **Step 5 - Evaluation of Plan components on species diversity**

The combination of plan components for ecosystem diversity and components for species diversity have been developed to provide appropriate ecological conditions for all species that have been identified as federally listed species, species of concern and species of interest.