

#946537860

ID88071868

BH
76
.M37
1995

BLM LIBRARY
BLDG 50, ST-150A
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, COLORADO 80225

**Information On File as Cited in the
Terrestrial Ecology Assessment Chapter,
Science Integration Team Report,
Interior Columbia Basin Ecosystem Management Project**

Compiled by: Bruce G. Marcot, Lisa Croft, Jeff Jones, M. G. "Sherm" Karl, John Lehmkuhl, S. G. Leonard, Robert Naney, Kurt Nelson, Chris Niwa, Roger Sandquist, Elaine Zieroth

11 September 1995
** for REVIEW DRAFT **

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25017
Denver, CO 80225

Preface

The following report was prepared by University scientists through cooperative agreement, project science staff, or contractors as part of the ongoing efforts of the Interior Columbia Basin Ecosystem Management Project, co-managed by the U.S. Forest Service and the Bureau of Land Management. It was prepared for the express purpose of compiling information, reviewing available literature, researching topics related to ecosystems within the Interior Columbia Basin, or exploring relationships among biophysical and economic/social resources.

This report has been reviewed by agency scientists as part of the ongoing ecosystem project. The report may be cited within the primary products produced by the project or it may have served its purposes by furthering our understanding of complex resource issues within the Basin. This report may become the basis for scientific journal articles or technical reports by the USDA Forest Service or USDI Bureau of Land Management. The attached report has not been through all the steps appropriate to final publishing as either a scientific journal article or a technical report.

The following report was prepared by the research team during the project. The project was a part of the ongoing efforts of the research team at the University of California, Davis, to study the effects of the U.S. Forest Service and the Bureau of Land Management on the management of riparian habitats. The report was prepared for the purpose of providing information regarding the riparian habitat, including riparian vegetation, riparian wildlife, and riparian fisheries. The report also includes a description of the riparian habitat and the riparian habitat management plan.

This report has been prepared for agency officials as part of the ongoing project. The report may be cited within the project and may be used for other purposes. The report was prepared by the research team at the University of California, Davis, and the Bureau of Land Management. The report was prepared for the purpose of providing information regarding the riparian habitat, including riparian vegetation, riparian wildlife, and riparian fisheries. The report also includes a description of the riparian habitat and the riparian habitat management plan.

Overall Summary -- Terrestrial Ecology Assessment

Trends in Vegetation Cover Types and Structural Stages

Summary of results: Native grasslands (*Fescue-bunchgrass*, *Agropyron* bunchgrass), shrublands (big sagebrush), and old single-stratum and multi-strata stages of many forest types, especially lower montane ponderosa pine forests, have declined since historic times. Declines are on both federal and non-federal lands, with most decline on non-federal land. Individual species most associated with these types are many and are listed in tables. Vertebrate "decreasers" of old-growth forests included primary cavity excavators and species with large home ranges.

Assessment of Species Occurrence and Listing Status

Summary of results: Over 35,000 species of macro-organisms are estimated to occur in the assessment area and 14,439 species are known to occur. Micro-organisms are little known and probably tally at least several hundred thousand species. They are critical to ecosystem health and function. We evaluated 11,422 species and explicitly included 1,339 individual species and 143 species groups in a Species-Environment Relations Model. This rich biodiversity is because of the wide variety of habitats, topographic conditions, and prehistoric events within the study area. Some 268 taxa (species, subspecies, or fish stocks) have Federal listing status, including 208 Candidate 2, 33 Candidate 1, 16 endangered, and 11 threatened taxa. FS and BLM list 537 species as sensitive. The Science Integration Team lists 178 species as of particular interest by American Indian tribes. Experts' knowledge levels were greater for plants than vertebrates and greater for vertebrates than invertebrates, which are poorly studied.

Fungi

Summary of results: The fungal flora is poorly known, including effects of management activities. Some species are important to recreational and commercial gatherers. Many kinds of fungi occur, including species with narrow distributions, that fruit after fire, that fruit in dung, and that are mycorrhizal and saprophytic and thus that depend on host plants. Fungi conservation can include protection of type localities in mycological preserves and further study of biology and ecology of species.

Lichens

Summary of results: Lichens play key ecological roles in ecosystems, including contributing mass and nutrients to litter and duff, increasing canopy and soil moisture holding capacity, fixing atmospheric nitrogen, serving as food source for American Indians and animals, and acting as bioindicators for air quality. Lichens are part of microbiotic crusts in rangelands, which protect soils but which are susceptible to damage from livestock grazing. One lichen is listed as a candidate species. The 736 lichen species were divided into 40 functional groups based on ecological relationships. The groups occur on four main substrates: dead organic matter, corticate and decorticate wood, rock, and soil. Forest conservation should include providing clumps of old trees and uneven-aged stands for their legacy of lichens. Lichens are major components of native rangelands and provide critical soil functions, but

Vegetation Survey and Botanical Ecology

Summary of results: Native plant species (vascular plants, algae, fungi, lichens, bryophytes, and non-vascular plants) and their interactions with the environment are discussed. The study area includes various habitats such as wetlands, riparian areas, and upland forests. Key findings include the presence of several rare and endangered species, and the impact of land use changes on the local flora.

Inventory of Species Occurrence and Listing Status

Inventory of species: Over 100 species of vascular plants and 150 species of non-vascular plants were identified. The list includes species names, their occurrence status (e.g., common, rare, endangered), and their listing status under various protection acts. The study also notes the distribution of these species across the different habitats surveyed.

Summary of results: The fungal flora is poorly known, including effects of management activities. Some species are important for the ecosystem and conservation purposes. Many kinds of fungi occur, including species with medicinal properties. The study highlights the need for further research on the diversity and ecology of fungi in the region.

Lichens

Summary of results: Lichens play key ecological roles in ecosystems, including soil formation, nutrient cycling, and habitat provision. The study identifies several lichen species and their distribution patterns. Key findings include the presence of rare and endangered lichen species, and the impact of air pollution and land use changes on lichen diversity.

have been threatened from exotic grasses, increased fires, conversion of rangelands, and livestock trampling. Basic lichen surveys and studies of management effects are needed.

Bryophytes

Summary of results: Most bryophytes have wide arctic-alpine and boreal distributions. Others are coastal and north Pacific, or occur in arid environments as part of soil crusts. Three species are endemic. Eleven ecological groups of bryophytes were identified based on substrates. Changes in water quality affect aquatic submersed and wet rock species. Opening of forest canopies affects mycorrhizal species associated with decaying wood and forest humus and duff. Collection may affect some of the humus and duff species. Other species in bogs, fens, and other environments are poorly studied. Dry soil species are critical to soil protection. Many species, at least 268, may be regionally rare, but need inventory to better determine status, especially those in arid habitats, on calcareous rocks, mineralized deposits, peatlands, floodplains, geothermal areas, and isolated canyons. Bryophyte conservation can include training for identification, including bryophytes in field vegetation plot data, and inventory of bryophytes in protected areas.

Vascular Plants

Summary of results: Vascular plants number at least 8000 species, which include at least 154 local or regional endemics. The diversity is from complex biophysical environments along gradients of elevation, bedrock and soils, temperature, and moisture. Native plant communities have declined significantly, prompting concerns for rare species and rare plant communities. Of particular concern are communities affected by grazing, introduction of exotic species, and timber harvesting; examples are bunchgrass grasslands of the Palouse region and low elevation cedar/hemlock old-growth forests. Some 87 plant taxa are of tribal concern for sustained harvestability. Conservation measures can include monitoring rare species and plant communities; off-site collection of pollen, seeds, and rare plants; and protection of key areas of high species rarity, endemism, and diversity.

Invertebrates

Summary of results: No species are listed as threatened, endangered, or Candidate 1; 38 are Candidate 2. FS lists none as sensitive; BLM lists 25. Some 95 terrestrial mollusks need conservation attention singly or as groups; many are confined to calcareous substrates. Invertebrates are critical for many ecosystem functions including detritovory and nutrient cycling. We identify rare and endemic species that bear further watching. Functional roles of invertebrates include: detritovory and nutrient cycling; maintaining soil structure, chemistry, and productivity; wood decomposition; herbivory; pathogenic effects on other organisms as well as control of disease-causing organisms; Invertebrates can make excellent bioindicators of soil and vegetation health. Most arthropods are poorly known; many are unnamed. Arthropod predators may control other invertebrate populations including some defoliator pests, and require a mix of habitat types, down wood, and vegetation substrates. Invertebrate pollinators are critical to maintaining the flora. In grasslands and forests, species groups, particularly herbivores, are important links in food webs and affect

have been determined from aerial photos, ground surveys, and other sources. The following are the results of the survey and the areas which are being protected.

Priority of areas: Most of the areas are of high priority and are being protected immediately. Other areas are of medium priority and are being protected as soon as possible. The following are the results of the survey and the areas which are being protected.

Priority Areas

Priority of areas: Most of the areas are of high priority and are being protected immediately. Other areas are of medium priority and are being protected as soon as possible. The following are the results of the survey and the areas which are being protected.

Priority Areas

Priority of areas: Most of the areas are of high priority and are being protected immediately. Other areas are of medium priority and are being protected as soon as possible. The following are the results of the survey and the areas which are being protected.

vegetation succession; a few are agricultural or forestry pests. Fire and changes in soil chemistry, especially in range and forest conditions altered from historic structures, directly affect invertebrates. Other management concerns are mechanical and livestock compaction and mixing of soils. Other management activities potentially harmful to desirable invertebrates include overgrazing, some recreation, loss of sphagnum bogs, exotic plants or arthropods, and pesticides. Management should focus on providing a diversity of habitats, maintaining soil structure and soil chemistry, and preventing or eradicating exotics.

Vertebrates

Summary of results: Amphibians require water or moist environments, are susceptible to exotic species, and correlate more with substrates such as down wood or talus than with vegetation types or stages. Amphibians transfer nutrients from aquatic to terrestrial environments, are prey for predators, and contribute major biomass in forest systems. Studies are needed on effects on amphibians from water quality changes, canopy closure, pesticides, livestock grazing, eutrophication, and ultraviolet radiation; and on dispersal requirements and distribution. Reptiles correlate with elevation, aspect, and substrate more than with vegetation. Reptiles are susceptible to dams, off-road vehicles, loss of wetlands, livestock grazing, and fire suppression. Survey techniques for reptiles are needed. Birds are susceptible to management-induced changes in vegetation, especially historic declines in old single-stratum interior ponderosa pine forests and *Agropyron* bunchgrass. Columbian sharp-tailed grouse have particularly declined. Neotropical migrants require conservation or restoration of riparian, old-growth forest, shrubsteppe, grassland, and juniper habitats. Mammals with population or habitat declines include some bats and predators. Some 47 vertebrates are listed as endangered, threatened, or Candidate 2; status of each is discussed. Few locations still contain all top predators.

General Trends of Species Ecological Characteristics

Summary of results: Probably no vertebrates have become regionally extinct in historic times; information on other taxa is lacking. Small-bodied, less widely-vagile species may be at greater risk of declines or local extirpations. Edges of ranges are important for species conservation. A Species-Environment Relations Model annotates species closely associated with environmental conditions affected by management, including forest canopy, mistletoe brooms, dead parts of live trees, trees with exfoliated bark, snags, down wood, litter and duff, fire processes and insect outbreaks, recreation, roads, and trails. This information is useful for management to predict potential effects of activities and identify specific conditions for conservation of species functional groups.

Rangeland Ecology and Grazing Management

Summary of results: Grazing and herbivory are important historic processes disrupted by elimination of paleofauna and wide introduction of livestock. Removal of livestock from riparian, true grasslands, and open conifer-grasslands would aid restoration of native habitat conditions, soil crusts, and riparian-wetlands. Decreased fire occurrence has led to conifer encroachment and increased big sagebrush and shrub density, and increased fires with annual grasses has led to declines in native grasses. Exotics, including cheatgrass, have played

vegetation succession a few are attributed to density peaks. This
and changes in soil chemistry, especially in range and forest conditions
affected large historic mammals, mainly affect invertebrates. Other
management concerns are mechanical and livestock competition and killing
of deer. Other management activities potentially harmful to desirable
invertebrates include overgrazing, some vegetation loss of species
base, exotic plants of agriculture, and pesticides. Management should
focus on providing a diversity of habitats, maintaining soil structure
and soil chemistry, and providing or enhancing exotics.

Vegetation

Summary of results: Agricultural riparian water in soil environments, are
conducive to exotic species, and contribute more with exotics than
as some food or refuge than with vegetation types of species. Vegetation
removal increases the ability to tolerate environmental changes, the prey
for predators, and contribute major changes in forest systems. Studies
are needed on effects of agriculture from water quality changes, canopy
closure, pesticides, livestock grazing, anthropogenic, and agricultural
habitat, and on dispersal mechanisms and distribution. Riparian
corridors with elevated, rapid, and substrate more than with
vegetation. Riparian are conducive to some off-road vehicles, loss
of wetlands, livestock grazing, and tree suppression. Better techniques
for riparian are needed. Much are conducive to management-induced
changes in vegetation, especially historic changes in the riparian
riparian habitat conditions like forests and riparian wetlands.
Cultural sharp-tailed zones have previously been identified. Ecological
riparian riparian conservation or restoration of riparian, and riparian
forest, shrublands, grasslands, and riparian habitats. Riparian with
population of riparian habitat include some data and products. Some of
vegetation are listed as endangered, threatened, or sensitive to status
of each is discussed. Few locations will contain all the habitats.

General Trends of Species Ecological Characteristics

Summary of results: Probably no vertebrates have become regionally
extinct in historic times; information on other taxa is lacking. Early
extinct taxa which require specific may be at greater risk of decline or
local extirpation. Some of species are important for species
conservation. A species-environment Relations Model analyzes species
closely associated with environmental conditions affected by management,
including forest canopy, substrate, stream, dead parts of live trees,
trees with extensive bark, canopy, down wood, litter and duff, fire
processes and canopy structure, vegetation, roads, and trails. This
information is useful for management to predict potential effects of
activities and identify specific conditions for conservation of species
functional groups.

Habitat and Ecology and Habitat Management

Summary of results: Habitat and history are important historic
processes disrupted by alteration of paleoecology and wide introduction
of livestock. Removal of livestock from riparian, tree grasslands, and
open coastal grasslands would aid restoration of native habitat
conditions, soil content, and riparian-wetlands. Decreased fire
management has led to earlier encroachment and increased the vegetation
and shrub density, and increased fire with annual grasses has led to
declines in native grasses. Exotics, including cheaters, have played

ecological havoc on native grassland systems. Juniper has expanded from fire suppression, reducing Mountain Big Sagebrush and adversely affecting native vegetation communities and soil processes; prescribed fire can slow juniper expansion. Soil (microbiotic) crusts play critical roles in arid land ecology and have been significantly and adversely affected by grazing practices. Riparian grazing has damaged many systems, but can be restored with livestock exclusion or control of grazing season and intensity. Noxious weeds are an increasing problem on rangelands; prevention of new introductions is more cost-effective than eradication. Range degradation has prompted seeding with nonnative forage grasses, which have seriously affected native biodiversity. We identify sundry indicators to disturbance stress for rangelands.

Key Ecological Functions of Species and Processes of Ecological Subsystems

Summary of results: Major ecological functions of species are summarized from the Species-Environment Model data bases. Understanding functions are critical to crafting appropriate ecosystem management guidelines; the fate of individual species is only one facet of terrestrial ecology conservation. Major ecological functions addressed include: species contributing to major biomass; herbivory; nutrient cycling relations; interspecies relations; soil productivity; wood decomposition; and water quality. We advocate using such key ecological functional groups of species rather than identifying individual keystone species; and avoiding use of ecological equivalents among species, as each species provides unique ecological services.

Endemism, Biodiversity, and Natural Areas

Summary of results: Twelve "hot spot" areas with unusually high levels of plant and animal species endemism, rarity, and biodiversity were identified; additional areas were identified separately for plants, invertebrates, and vertebrates. Key areas include southwestern Oregon, Snake River, Columbia River Gorge, and desert steppe in central and southern Washington. Natural areas on federal lands total 11.72 million ha in 26 land allocation categories. Size of natural areas might be suitable for supporting at least small populations of at least 70 percent of vertebrate species.

Biogeography

Summary of results: Broad-scale biogeography of species is poorly studied in the assessment area. We identified some species closely associated with some of the 9 landform classes. Species such as boreal owl appear as disjunct populations because of breaks in distributions of suitable environments or incomplete sampling; smaller and more isolated disjunct populations are likely more susceptible to local declines or extinctions. Locally endemic species or subspecies often are highly habitat-specific, such as Coeur d'Alene salamander. Distributions of local endemics can result from contracted ranges from habitat loss or extirpations, overall scarcity of suitable environments, or other ~~f~~Apparent peripheral, disjunct, and scattered distributions of some species may be an artifact of the location and size of the area of interest. Most Ecological Report Unit had at least some unique species, although many species overlapped several Units. Some species are closely associated with single biophysical factors, although many species are likely correlated with multiple factors.

ecological basis on native grassland systems. Further the expanded list
and vegetation, reduced nutrient and herbivory
attending native vegetation communities and soil processes prescribed
the low nutrient conditions. Soil (microbiotic) diversity and
critical roles in soil food web and how been significantly and
diversity affected by grazing pressure. Nitrogen levels has changed
many systems, but can be correlated with livestock exclusion of control of
grazing season and intensity. Wetland weeds are an increasing problem
as rangeland prevention of new introductions is more cost-effective
than eradication. Range degradation has prompted several with sensitive
biotic processes, which have extensively affected native biodiversity. We
identify study indicators to disturbance risks for rangelands.

Key Ecological Functions of Species and Processes of Ecological Subsystems

function of species: major ecological functions of species are
emphasized from the species-environment model that based. Understanding
functions are critical to creating appropriate resource management
decisions, the role of individual species is only one level of
functional ecology consideration. Major ecological functions addressed
include: species contributing to major business, herbivory, nutrient
cycling relations, interspecific relationships and productivity, food
web, and water quality. We address each key ecological
functional groups of species rather than identifying individual species
species, and avoiding use of ecological equivalents among species, as
each species provides unique ecological services.

Ecological, Biodiversity, and Natural Areas

function of species: "Two hot spots" areas with unusually high levels
of plant and animal species endemism, rarity, and biodiversity were
identified: additional areas were identified separately for plants,
invertebrates, and vertebrates. Key areas include southwestern Oregon,
Snake River, Columbia River Gorge, and desert steppe in central and
southern Washington. Natural areas on federal lands total 11.75 million
acres in 26 land allocation categories. Size of natural areas might be
percentage of vertebrate species.

Biogeography

function of species: Broad-scale biogeography of species is poorly
studied in the assessment area. We identified some species closely
associated with some of the 5 landscape classes. Species such as desert
owl appear as distinct populations because of breaks in distributions of
suitable environments or geographic sampling smaller and more isolated
distinct populations are likely more susceptible to local extinction or
extinctions. Locally endemic species or subspecies often are highly
habitat-specific, such as Great Basin salamander. Distributions of
local endemics can result from contracted ranges from habitat loss or
extinctions, overall capacity of suitable environments, or other
factors. Geographic patterns, adjacent, and scattered distributions of
some species may be an artifact of the location and size of the area of
interest. Most biological report unit had at least some unique species
although many species overlapped several units. Some species are
closely associated with single physical factors, although many
species are likely correlated with multiple factors.

CONCLUSIONS

Historic and current conditions:

habitats most in decline:

late-successional forests

old, open ponderosa pine forests

native closed shrublands (e.g., big sagebrush)

native grasslands (*Fescue*-bunchgrass, *Agropyron* bunchgrass)

declines on both non-federal and federal lands; non-federal more extreme

major concerns with rangeland degradation, and exotic plants

Terrestrial biodiversity:

over 35,000 species of macro-organisms

ecology and trends of most are unknown

17 taxa T&E, 219 C1&C2, 537 FS or BLM sensitive (excluding fish)

assume USFWS T&E recovery process will provide for those species

To meet goals of ecological integrity:

For conservation of biodiversity:

some realignment of natural areas to better represent ecosystems
and provide for rare and endemic species

conserve at least 12 "hot spots" of species rarity, endemism, and
richness

provide for a full array of historic vegetation conditions

For long-term productivity of terrestrial ecosystems:

realize ecological role of, study, and provide for, soil micro-
organisms

provide for unique assemblages of species and all ecological
functions

For maintaining long-term evolutionary potential:

provide for all populations of species with disjunct distributions

provide for locally and regionally endemic species, and locally

endemic subspecies

protect type localities for rare plants

in-field and off-site rare plant conservation measures

Need much basic scientific information

inventories of many fungi, lichens, bryophytes, rare plants

monitoring of selected rare plant communities

basic taxonomy (find, name species) of invertebrates

basic ecology, biology, and ecological roles of many plants, most
invertebrates

Use early warning indicators of ecosystem health

soil crusts, microorganisms, invertebrate herbivores, fungi, lichens,
bryophytes

Historic and current conditions
 indicate most in decline
 late-successional forests
 old open ponderosa pine forests
 native closed woodlands (e.g., oak savanna)
 native grasslands (inter-ecotones, riparian woodlands)
 decline in both low-forest and forest lands non-forest more extensive
 major concerns with regional degradation, and water plants
 botanical productivity
 over 25,000 species of macro-invertebrates
 ecology and diversity of most are unknown
 in taxa 100, 200, 300 or 400 sensitive (including fish)
 assume that the necessary resources will provide for these species

To meet goals of ecological integrity
 for conservation of biodiversity
 some reassignment of natural areas to better represent ecosystems
 and provide for rare and endemic species
 resources to meet 10 "hot spots" of species rarity, endemism, and
 richness
 provide for a full array of historic vegetation conditions
 for long-term productivity of terrestrial ecosystems
 realize ecological role of study, and provide for self-sustain-
 ing systems
 provide for unique assemblages of species and all ecological
 functions
 for maintaining long-term evolutionary potential
 provide for all positions of species with different distributions
 provide for locally and regionally endemic species, and locally
 endemic subspecies
 protect type localities for rare plants
 in-kind and off-site rare plant conservation resources

Need much basic scientific information
 inventories of many fungi, lichens, cryptophytes, rare plants
 monitoring of selected rare plant communities
 basic taxonomy (and some species) of invertebrates
 basic ecology, biology, and ecological roles of many plants, most
 invertebrates
 use early warning indicators of ecosystem health
 soil fauna, macroinvertebrates, invertebrate herbivores, forest lichens,
 cryptophytes

Numbers of taxa (species, subspecies, fish stocks) by Federal listing status, extirpated, and of special interest to American Indian tribes.

Taxonomic classes: NV = nonvascular plants; P = vascular plants; I = invertebrates; F = fish; A = amphibians; R = reptiles; B = birds; M = mammals.

Listing status classes: USFWS = USDI Fish and Wildlife Service; FS = USDA Forest Service; BLM = USDI Bureau of Land Management; C1 = Candidate 1; C2 = Candidate 2; THR = threatened; END = endangered; FPT = Federally proposed threatened; FPE = Federally proposed endangered; FS-S = Forest Service sensitive (in at least one state within the assessment area); BLM-S = Bureau of Land Management sensitive (in at least one state within the assessment area); Joint FS/BLM-S = same species listed by both FS and BLM as sensitive; TRIBAL = species identified by the CRB Science Integration Team as of particular interest to American Indian tribes.

Class	USFWS						FS & BLM				
	C1	C2	THR	END	FPT	FPE	FS-S	BLM-S	Joint ¹ FS/BLM-S	Total ² FS/BLM-S	TRIBAL
NV		1					3	10	1	12	4
P	31	111	1	3		1	371	113	45	439	87
I		38	1	4				25		25	16
F	2	19	5	5			[...see Aquatic/Riparian chapter...]				
A		6					2	5	2	5	
R		2					1	5		6	2
B		14	3	2			22	23	12	33	34
M		17	1	2			11	12	6	17	35
TOTAL	32	208	11	16	0	1	410	193	66	537	178

268

¹Joint FS/BLM-S refers to the same species that are listed by both FS and BLM as sensitive.

²Total FS/BLM-S refers to all species listed by either FS or BLM as sensitive.

Inventory of taxa (species, subspecies, fish stocks) by Federal listing status, extrapolated, and of special interest to American Indian tribes.

Threatened classes: W = nonvascular plants; F = vascular plants; I = insects; A = amphibians; B = reptiles; S = birds; M = mammals.

Listing status abbreviations: USFS = US Forest Service; USFWS = US Fish and Wildlife Service; USFIS = US Fishery Service; USDI = US Department of Interior; USDO = US Department of the Ocean; USDOE = US Department of Energy; USDOH = US Department of Health, Education and Welfare; USDOA = US Department of Agriculture; USDOJ = US Department of Justice; USDOE = US Department of Energy; USDOH = US Department of Health, Education and Welfare; USDOA = US Department of Agriculture; USDOJ = US Department of Justice.

Condition codes: C = critically endangered; E = endangered; P = possibly endangered; I = imperiled; S = secure; U = unclassified.

Joint FWS/BLM-2 = taxa species listed by both FWS and BLM as sensitive; FWS = species identified by the US Fish and Wildlife Service; BLM = species identified by the US Department of the Interior.

Class	FWS					BLM					Total
	CI	E	P	I	S	CI	E	P	I	S	
W	1										1
F	1										1
I	1										1
A	1										1
B	1										1
S	1										1
M	1										1
TOTAL	11	1	1	1	1	11	1	1	1	1	18

BLM as sensitive.

Total FWS/BLM-2 refers to all species listed by either FWS or BLM as sensitive.

Joint FWS/BLM-2 refers to the same species that are listed by both FWS and BLM as sensitive.

Assessment of Species Rarity, Endemism, and Biodiversity Hot Spots

Figure. Distribution of hot spots of species rarity and endemism and centers of biodiversity, with Ecological Reporting Unit. These are locations that are particularly rich among plants, invertebrates, and vertebrates.

Appendix A. Historical and current habitat types for which vascular and non-vascular plant, invertebrate and vertebrate species richness and diversity are reported from a study area in the Cordillera Occidental, Guatemala. Ecological Reporting Units (ERUs) are listed in the first column. The second column lists the habitat type. The third column lists the number of hot spots. The fourth column lists the number of species. The fifth column lists the number of endemics. The sixth column lists the number of species per hot spot. The seventh column lists the number of endemics per hot spot. The eighth column lists the number of species per endemism center. The ninth column lists the number of endemics per endemism center. The tenth column lists the number of species per biodiversity center. The eleventh column lists the number of endemics per biodiversity center.

Type	ERU	Habitat	Hot Spots	Species	Endemics	Species/Hot Spot	Endemics/Hot Spot	Species/Endemism Center	Endemics/Endemism Center	Species/Biodiversity Center	Endemics/Biodiversity Center
Lichen group	LEA10	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA11	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA12	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA13	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA14	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA15	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA16	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA17	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA18	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA19	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA20	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA21	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA22	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA23	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA24	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA25	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA26	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA27	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA28	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA29	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA30	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA31	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA32	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA33	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA34	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA35	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA36	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA37	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA38	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA39	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA40	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA41	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA42	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA43	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA44	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA45	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA46	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA47	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA48	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA49	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500
Lichen group	LEA50	Cloud forest	10	10,746,500	10,746,500	1,074,650	1,074,650	10,746,500	10,746,500	10,746,500	10,746,500

Assessment of species rarity, abundance, and biodiversity hot spots

Figure. Illustration of hot spots of species rarity and abundance and centers of biodiversity. With ecological mapping tool. These are locations that are geographically rich among plants, invertebrates, and vertebrates.

Appendix xx. Historical and current habitat area for select vascular and non-vascular plant species and groups in the Interior Columbia River Basin based on vegetation types mapped from satellite imagery at a 1-km² pixel resolution.

Type	Species code	Scientific name	Common Name	Historic habitat (ha)	Current habitat (ha)	Change from historic (%)
Bryophyte group	DECWOO	Decayed wood bryophyte		6,380,000	10,748,000	68.5
Bryophyte group	EIPHY	Epiphytic bryophyte		6,380,000	10,748,000	68.5
Bryophyte group	HUMDUF	Humus duff bryophyte		7,427,700	10,794,200	45.3
Bryophyte group	ROCCAL	Rock calcareous bryophyte		55,294,500	44,445,700	-19.6
Bryophyte group	ROCOTH	Rock other bryophyte		57,677,500	57,582,000	-0.2
Bryophyte group	ROCWET	Rock wet bryophyte		261,400	184,800	-29.3
Bryophyte group	SOIALK	Soil alkaline bryophyte		1,293,900	856,700	-33.8
Bryophyte group	SOIDRY	Soil dry bryophyte		57,677,500	57,582,000	-0.2
Bryophyte group	SOIWET	Soil wet bryophyte		55,114,400	41,665,200	-24.4
Lichen sp.	OCEFRU	Oceanic fruticose	Oceanic fruticose	7,247,900	9,464,000	30.6
Lichen sp.	TEXSAJ	<i>Texosporium sancti-jacobi</i>	Wovenspored lichens	14,342,500	9,604,000	-33.0
Lichen group	ASPSPE	Aspen specialist lichens	Aspen specialist	563,100	1,046,200	85.8
Lichen group	CALIND	Calcareous indicator lichens	Calcareous rock indicators	57,416,100	57,397,200	0.0
Lichen group	CALSTE	Calcareous steppe indicator lichens	Calcareous steppe indicators	33,212,100	32,789,000	-1.3
Lichen group	CHASNA	Charred snag lichens	Charred snag lichens	9,577,900	13,681,700	42.8
Lichen group	EXCNIT	Excess nitrogen indicator lichens	Excess nitrogen indicators	57,416,100	57,397,200	0.0
Lichen group	FENPOS	Fencepost lichens	Fencepost lichens	31,090,500	29,971,500	-3.6
Lichen group	FORAGE	Forage lichens	Forage	24,744,500	25,952,300	4.9
Lichen group	FRUTRE	Fruticose tree lichens	Fruticose tree lichens	24,744,500	25,952,300	4.9
Lichen group	LEALIC	Leaf lichens	Leaf lichens	24,744,500	25,952,300	4.9
Lichen group	METRIC	Metal rich indicator lichens	Metal rich indicators	55,294,500	54,579,700	-1.3
Lichen group	MOSDIT	Moss and ditritus binders lichens	Moss and ditritus binders	55,294,500	44,445,700	-19.6
Lichen group	N-FIXE	N-fixing epiphytes lichens	N-fixing epiphytes	24,744,500	25,952,300	4.9
Lichen group	N-FIXR	N-fixing riparian lichens	N-fixing riparian	24,744,500	25,952,300	4.9

Lichen group	NFIXRO	N-fixing rock lichens	N-fixing rock lichens	55,294,500	54,579,700	-1.3
Lichen group	NFIXSO	N-fixing soil lichens	N-fixing soil lichens	57,416,100	47,263,200	-17.7
Lichen group	OCEFOR	Oceanic forage lichens	Oceanic forage lichens	7,247,900	9,464,000	30.6
Lichen group	OCELEA	Oceanic leaf lichens	Oceanic leaf lichens	7,247,900	9,464,000	30.6
Lichen group	OCELOG	Oceanic log lichens	Oceanic log lichens	24,744,500	25,952,300	4.9
Lichen group	OCETRE	Oceanic tree crust lichens	Oceanic tree crusts	7,340,700	9,821,700	33.8
Lichen group	PINLIC	Pin lichens	Pin lichens	24,744,500	25,952,300	4.9
Lichen group	PIOSOI	Pioneer soil stabilizers lichens	Pioneer soil stabilizers	57,416,100	57,397,200	0.0
Lichen group	RIPARI	Riparian lichens	Riparian	24,744,500	25,952,300	4.9
Lichen group	ROCCRU	Rock crusts lichens	Rock crusts	55,294,500	54,579,700	-1.3
Lichen group	ROCMAC	Rock macro lichens	Rock macrolichens	57,416,100	57,397,200	0.0
Lichen group	ROTLOG	Rotten log and tree base lichens	Rotten log and tree base	24,744,500	25,952,300	4.9
Lichen group	SEEPAG	Seepage lichens	Seepage rock lichens	55,294,500	44,445,700	-19.6
Lichen group	SHELED	Sheltered ledges and overhangs lichens	Sheltered ledges and overhangs	55,294,500	44,445,700	-19.6
Lichen group	SOILIC	Soil lichens	Soil lichens	31,090,500	19,837,500	-36.2
Lichen group	STESOI	Steppe soil crust lichens	Steppe soil crusts	33,756,600	33,074,200	-2.0
Lichen group	TRECRU	Tree crusts	Tree crust lichens	24,744,500	25,952,300	4.9
Lichen group	URBPOL	Urban pollution-tolerant lichens	Urban pollution tolerant lichens	57,416,100	57,397,200	0.0
Lichen group	VAGGRO	Vagrant ground lichens	Vagrant ground lichens	30,426,200	18,671,800	-38.6
Plant sp.	ALLAAS	<i>Allium aaseae</i>	Aase's onion	14,521,600	9,722,400	-33.0
Plant sp.	ALLANC	<i>Allium anceps</i>	Two-headed onion	540,500	1,344,100	148.7
Plant sp.	ALLBIS	<i>Allium bisceptrum</i>		26,897,100	24,195,500	-10.0
Plant sp.	ALLCON	<i>Allium constrictum</i>	Douglas constricted onion	1,065,200	1,111,000	4.3
Plant sp.	ALLDIC	<i>Allium dictuon</i>		20,415,900	13,323,000	-34.7
Plant sp.	ALLDIC	<i>Allium dictuon</i>	Blue mountain onion	20,415,900	13,323,000	-34.7
Plant sp.	ALLMAD	<i>Allium madidum</i>	Swamp onion	7,967,500	5,892,600	-26.0
Plant sp.	ALLNEV	<i>Allium nevii</i>		7,967,500	16,026,600	101.1

1611	16'052'000	1611	16'052'000
1612	2'825'000	1612	2'825'000
1613	12'432'000	1613	12'432'000
1614	13'252'000	1614	13'252'000
1615	1'111'000	1615	1'111'000
1616	34'162'200	1616	34'162'200
1617	1'344'100	1617	1'344'100
1618	8'333'000	1618	8'333'000
1619	18'031'800	1619	18'031'800
1620	22'231'500	1620	22'231'500
1621	52'025'200	1621	52'025'200
1622	21'034'500	1622	21'034'500
1623	18'822'200	1623	18'822'200
1624	44'442'200	1624	44'442'200
1625	44'442'200	1625	44'442'200
1626	52'025'200	1626	52'025'200
1627	22'231'500	1627	22'231'500
1628	24'236'200	1628	24'236'200
1629	52'025'200	1629	52'025'200
1630	22'231'500	1630	22'231'500
1631	52'025'200	1631	52'025'200
1632	52'025'200	1632	52'025'200
1633	52'025'200	1633	52'025'200
1634	52'025'200	1634	52'025'200
1635	52'025'200	1635	52'025'200
1636	52'025'200	1636	52'025'200
1637	52'025'200	1637	52'025'200
1638	52'025'200	1638	52'025'200
1639	52'025'200	1639	52'025'200
1640	52'025'200	1640	52'025'200
1641	52'025'200	1641	52'025'200
1642	52'025'200	1642	52'025'200
1643	52'025'200	1643	52'025'200
1644	52'025'200	1644	52'025'200
1645	52'025'200	1645	52'025'200
1646	52'025'200	1646	52'025'200
1647	52'025'200	1647	52'025'200
1648	52'025'200	1648	52'025'200
1649	52'025'200	1649	52'025'200
1650	52'025'200	1650	52'025'200

1651 16'052'000
 1652 2'825'000
 1653 12'432'000
 1654 13'252'000
 1655 1'111'000
 1656 34'162'200
 1657 1'344'100
 1658 8'333'000
 1659 18'031'800
 1660 22'231'500
 1661 52'025'200
 1662 21'034'500
 1663 18'822'200
 1664 44'442'200
 1665 44'442'200
 1666 52'025'200
 1667 22'231'500
 1668 24'236'200
 1669 52'025'200
 1670 22'231'500
 1671 52'025'200
 1672 52'025'200
 1673 52'025'200
 1674 52'025'200
 1675 52'025'200
 1676 52'025'200
 1677 52'025'200
 1678 52'025'200
 1679 52'025'200
 1680 52'025'200
 1681 52'025'200
 1682 52'025'200
 1683 52'025'200
 1684 52'025'200
 1685 52'025'200
 1686 52'025'200
 1687 52'025'200
 1688 52'025'200
 1689 52'025'200
 1690 52'025'200
 1691 52'025'200
 1692 52'025'200
 1693 52'025'200
 1694 52'025'200
 1695 52'025'200
 1696 52'025'200
 1697 52'025'200
 1698 52'025'200
 1699 52'025'200
 1700 52'025'200

Plant sp.	ALLPUN	<i>Allium punctum</i>		14,342,500	9,604,000	-33.0
Plant sp.	ALLROB	<i>Allium robinsonii</i>	Robinson's onion	269,700	13,793,000	5014.2
Plant sp.	ALLTOP	<i>Allium tolmiei</i> var. <i>Persimile</i>	Tolmie's onion	9,330,800	8,881,100	-4.8
Plant sp.	ANTARO	<i>Antennaria aromatica</i>		89,600	89,400	-0.2
Plant sp.	ARAFEC	<i>Arabis secunda</i>	Sapphire rockcress	39,311,100	26,124,500	-33.5
Plant sp.	ARAFLC	<i>Arabis falcifructa</i>		14,342,500	9,604,000	-33.0
Plant sp.	ARTCAW	<i>Artemisia campestris</i> var. <i>Wormskioldii</i>	Northern wormwood	179,100	118,400	-33.9
Plant sp.	ARTLUE	<i>Artemisia ludoviciana</i> ssp. <i>Estesii</i>	Estes' artemisia	14,751,800	9,764,000	-33.8
Plant sp.	ASTANS	<i>Astragalus anserinus</i>	Goose creek milkvetch	6,117,000	5,442,400	-11.0
Plant sp.	ASTAPP	<i>Astragalus applegatei</i>	Applegate's milk-vetch	1,293,900	856,700	-33.8
Plant sp.	ASTATI	<i>Astragalus atratus</i> var. <i>Inseptus</i>	Mourning milkvetch	19,919,000	13,702,300	-31.2
Plant sp.	ASTCLA	<i>Astragalus collinus</i> var. <i>Laurentii</i>	Laurence's milk-vetch	9,759,300	3,758,600	-61.5
Plant sp.	ASTCOL	<i>Astragalus columbianus</i>	Columbia milk-vetch	15,407,700	10,715,000	-30.5
Plant sp.	ASTDIA	<i>Astragalus diaphanus</i> var. <i>Diaphanus</i>	Transparent milk-vetch	9,234,600	3,991,700	-56.8
Plant sp.	ASTDID	<i>Astragalus diaphanus</i> var. <i>Diurnis</i>	South john day milk-vetch	5,254,900	2,859,600	-45.6
Plant sp.	ASTHOW	<i>Astragalus howellii</i> Howell milk-vetch		14,342,500	9,604,000	-33.0
Plant sp.	ASTJES	<i>Aster jessicae</i>	Jessica's aster	4,776,200	1,599,800	-66.5
Plant sp.	ASTMOL	<i>Aster mollis</i>		31,814,600	23,758,000	-25.3
Plant sp.	ASTMUL	<i>Astragalus mulfordiae</i>	Mulford's milk-vetch	14,521,600	9,722,400	-33.0
Plant sp.	ASTONI	<i>Astragalus oniciformis</i>	Picabo milkvetch	18,853,800	12,591,300	-33.2
Plant sp.	ASTPAY	<i>Astragalus paysonii</i>	Payson's milkvetch	11,527,800	12,789,200	10.9
Plant sp.	ASTPEC	<i>Astragalus peckii</i>	Peck's milk-vetch	23,941,800	18,197,400	-24.0
Plant sp.	ASTPUS	<i>Astragalus pulsiferae</i> var. <i>Suksdorfii</i>	Ames' milk-vetch	22,310,000	15,496,600	-30.5
Plant sp.	ASTSCA	<i>Astragalus scaphoides</i>	Bitterroot milkvetch	1,293,900	856,700	-33.8
Plant sp.	ASTSIN	<i>Astragalus sinuatus</i>	Whited milk-vetch	19,919,000	13,702,300	-31.2
Plant sp.	ASTSOL	<i>Astragalus solitarius</i>	Weak milk-vetch	14,342,500	9,604,000	-33.0
Plant sp.	ASTSTE	<i>Astragalus sterilis</i>	Sterile milk-vetch	5,805,200	3,844,000	-33.8
Plant sp.	ASTTEG	<i>Astragalus tegetarioides</i>	Bastard kentrophyta	478,700	1,259,800	163.2
Plant sp.	ASTTYG	<i>Astragalus tyghensis</i>	Tygh valley milk-vetch	14,993,000	10,959,200	-26.9

Plant sp.	ASTVEN	<i>Astragalus vexilliflexus</i> var. <i>Nubilus</i>	White cloud milkvetch	773,200	472,200	-38.9
Plant sp.	ASTYOW	<i>Astragalus yoder-williamsii</i>	Osgoodmountains milkvetch	6,055,200	5,358,100	-11.5
Plant sp.	BALROS	<i>Balsamorhiza rosea</i>	Rosy balsamroot	4,983,100	2,158,800	-56.7
Plant sp.	BOTASC	<i>Botrychium ascendens</i>	Upward-lobed moonwort	211,200	486,600	130.4
Plant sp.	BOTCRE	<i>Botrychium crenulatum</i>		10,540,500	12,106,000	14.9
Plant sp.	BOTCRE	<i>Botrychium crenulatum</i>	Crenulate moonwort	10,540,500	12,106,000	14.9
Plant sp.	BOTCRE	<i>Botrychium crenulatum</i>	Wavy moonwort	10,540,500	12,106,000	14.9
Plant sp.	BOTLIN	<i>Botrychium lineare</i>	Linear leaved moonwort	89,600	89,400	-0.2
Plant sp.	BOTLUN	<i>Botrychium lunaria</i>	Common moonwort	211,200	486,600	130.4
Plant sp.	BOTPAR	<i>Botrychium paradoxum</i>		11,823,800	9,107,800	-23.0
Plant sp.	BOTPAR	<i>Botrychium paradoxum</i>	Paradox moonwort	11,823,800	9,107,800	-23.0
Plant sp.	BOTPAR	<i>Botrychium paradoxum</i>	Peculiar moonwort	11,823,800	9,107,800	-23.0
Plant sp.	BOTPED	<i>Botrychium pedunculosum</i>	Stalked moonwort	4,905,200	2,080,400	-57.6
Plant sp.	BOTPUM	<i>Botrychium pumicola</i>	Pumice grape-fern	89,600	89,400	-0.2
Plant sp.	CALLOL	<i>Calochortus longebarbatus</i> var. <i>Longebarbatus</i>	Long-bearded mariposa-lily	16,833,400	8,635,600	-48.7
Plant sp.	CALLOP	<i>Calochortus longebarbatus</i> var. <i>Peckii</i>	Peck's mariposa-lily	17,908,800	12,861,900	-28.2
Plant sp.	CALNIT	<i>Calochortus nitidus</i>	Broad-fruit mariposa	21,481,100	14,434,000	-32.8
Plant sp.	CAMPYG	<i>Camissonia pygmaea</i>	Dwarf evening-primrose	657,800	1,378,200	109.5
Plant sp.	CARLED	<i>Carex lenticularis</i> var. <i>Dolia</i>	Goose-grass sedge	89,600	89,400	-0.2
Plant sp.	CARPAI	<i>Carex parryana</i> ssp. <i>Idaho</i>	Idaho sedge	171,800	95,400	-44.5
Plant sp.	CASCHL	<i>Castilleja chlorotica</i>	Green-tinged paintbrush	31,430,600	22,830,200	-27.4
Plant sp.	CASCRY	<i>Castilleja cryptantha</i>	Obscure indian paintbrush	171,800	95,400	-44.5
Plant sp.	CASPIS	<i>Castilleja pilosa</i> var. <i>Steenensis</i>	Steens mt. Paintbrush	10,442,300	5,787,500	-44.6
Plant sp.	CASRUB	<i>Castilleja rubida</i>	Purple alpine paintbrush	89,600	89,400	-0.2
Plant sp.	CHACUS	<i>Chaenactis cusickii</i> Cusick chaenactis		5,805,200	3,844,000	-33.8
Plant sp.	CHRPAM	<i>Chrysothamnus parryi</i> ssp. <i>Montanus</i>	Centennial rabbitbrush	89,600	89,400	-0.2
Plant sp.	CLAUMB	<i>Claytonia umbellata</i>	Umbellate spring beauty	3,917,900	1,047,800	-73.3
Plant sp.	COLMAZ	<i>Collomia mazama</i>	Mt. Mazama collomia	4,882,300	7,544,900	54.5

Լրաց ձև	ՀԱՅԿԸ	Շրջանի արտաքին	ԿՊՎ ԿՊՎԻ ԿՊՎԻ	4'825'300	1'744'500	242
Լրաց ձև	ՀԿՄԻԿԻ	Հրճված արժեքներ	ԴՊՎԻ ԿՊՎԻ ԿՊՎԻ	3'611'800	1'041'800	337
Լրաց ձև	ՀԿՄԻՄ	Հավանաբար հաճելի չեն արժեքներ	ՀՊՎԻ ԿՊՎԻ ԿՊՎԻ	88'800	88'800	03
Լրաց ձև	ՀԿՄԿԸԸ	Հրճված արժեքներ Հարկի հիմունքի վրա	ՀՊՎԻ ԿՊՎԻ ԿՊՎԻ	3'802'300	3'844'300	475
Լրաց ձև	ՀՎՋԻԿԻ	Հարկի հիմունք	Հարկի հիմունքի վերաբերյալ	88'800	88'800	03
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի հետ շահույթ	Հարկի հիմունքի վերաբերյալ	10'445'100	1'381'200	244
Լրաց ձև	ՀՎՋԸԿՎ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	111'800	82'800	254
Լրաց ձև	ՀՎՋԻԿԻ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	31'430'900	53'820'500	534
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	111'800	82'800	242
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	88'800	88'800	03
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	821'800	1'311'300	1002
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	31'431'100	11'434'800	252
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	11'408'800	15'861'800	585
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	16'832'800	8'232'800	182
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	88'800	88'800	03
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	4'202'300	3'088'800	232
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	11'833'800	2'161'800	050
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	11'832'800	8'161'800	252
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	11'851'800	6'101'800	270
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	211'300	198'500	13021
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	88'800	88'800	03
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	10'240'200	15'166'000	141
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	10'240'200	15'166'000	141
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	10'240'200	15'166'000	141
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	311'300	488'800	4031
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	4'049'400	3'122'800	221
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	6'022'800	7'218'100	211
Լրաց ձև	ՀՎՋԻԸԸ	Հարկի հիմունքի վերաբերյալ	Հարկի հիմունքի վերաբերյալ	111'300	411'300	422

Plant sp.	COLREN	<i>Collomia renacta</i>	Barren valley collomia	3,917,900	1,047,800	-73.3
Plant sp.	CYMNIV	<i>Cymopterus nivalis</i>	Hayden's cymopterus	1,154,800	1,200,400	3.9
Plant sp.	CYPFAS	<i>Cypripedium fasciculatum</i>		12,035,000	13,940,600	15.8
Plant sp.	CYPFAS	<i>Cypripedium fasciculatum</i>	Clustered lady slipper	12,035,000	13,940,600	15.8
Plant sp.	CYPFAS	<i>Cypripedium fasciculatum</i>	Clustered lady's slipper	12,035,000	13,940,600	15.8
Plant sp.	CYPFAS	<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper	12,035,000	13,940,600	15.8
Plant sp.	DOUIDA	<i>Douglasia idahoensis</i>	Idaho douglasia	3,179,400	3,265,700	2.7
Plant sp.	DRATRI	<i>Draba trichocarpa</i>	Stanley's whitlow-grass	14,342,500	9,604,000	-33.0
Plant sp.	ERIBAS	<i>Erigeron basalticus</i>	Basalt daisy	20,619,500	12,619,500	-38.8
Plant sp.	ERICHR	<i>Eriogonum chrysops</i>	Golden buckwheat	1,065,200	1,111,000	4.3
Plant sp.	ERICUS	<i>Eriogonum cusickii</i>	Cusick's erigonum	1,065,200	1,111,000	4.3
Plant sp.	ERILAC	<i>Erigeron lackschewitzii</i>	Front mountain fleabane	89,600	89,400	-0.2
Plant sp.	ERILAT	<i>Erigeron latus</i>	Broad fleabane	15,948,200	12,059,100	-24.4
Plant sp.	ERILEW	<i>Eriogonum lewisii</i>	Lewis's buckwheat	1,065,200	1,111,000	4.3
Plant sp.	ERIPRO	<i>Eriogonum prociduum</i>	Prostrate buckwheat	1,605,700	2,455,100	52.9
Plant sp.	ERYGRN	<i>Erythronium grandiflorum</i> var. <i>Nudipetalum</i>		9,206,400	5,827,700	-36.7
Plant sp.	GRAHET	<i>Gratiola heterosepala</i>	Boggs lake hedge-hyssop	1,065,200	1,111,000	4.3
Plant sp.	GRIHOW	<i>Grindelia howellii</i>	Howell's gumweed	20,415,900	13,323,000	-34.7
Plant sp.	HACCRO	<i>Hackelia cronquistii</i>	Cronquist's stickseed	14,342,500	9,604,000	-33.0
Plant sp.	HACVEN	<i>Hackelia venusta</i>	Showy stickseed	4,024,000	7,652,700	90.2
Plant sp.	HAPINS	<i>Haplopappus insecticruris</i>	Bugleg goldenweed	5,841,400	2,710,800	-53.6
Plant sp.	HAPLIA	<i>Haplopappus liatrisformis</i>	Palouse goldenweed	4,776,200	1,599,800	-66.5
Plant sp.	HAPRAD	<i>Haplopappus radiatus</i>		14,521,600	9,722,400	-33.0
Plant sp.	HOWAQU	<i>Howellia aquatilis</i>	Howellia	8,879,500	8,301,800	-6.5
Plant sp.	HOWAQU	<i>Howellia aquatilis</i>	Water howellia	8,879,500	8,301,800	-6.5
Plant sp.	IVERHR	<i>Ivesia rhypara</i> var. <i>Rhypara</i>	Grimy ivesia	20,098,100	13,820,700	-31.2
Plant sp.	IVERHS	<i>Ivesia rhypara</i> var. <i>Shellyi</i>	Shelly's ivesia	18,800,900	11,995,900	-36.2
Plant sp.	LATGRI	<i>Lathyrus grimesii</i>	Grimes vetchling	4,511,300	2,987,300	-33.8

Plant sp.	LEPDAV	<i>Lepidium davisii</i>	Davis' peppergrass	19,919,000	13,702,300	-31.2
Plant sp.	LEPPAP	<i>Lepidium papilliferum</i>	Slick spot peppergrass	14,342,500	9,604,000	-33.0
Plant sp.	LEPPUH	<i>Leptodactylon pungens</i> ssp. <i>Hazeliae</i>	Hazel's prickly-phlox	8,694,100	2,647,600	-69.5
Plant sp.	LESCAC	<i>Lesquerella carinata</i> var. <i>Carinata</i>	Keeled bladderpod	4,511,300	2,987,300	-33.8
Plant sp.	LESCAL	<i>Lesquerella carinata</i> var. <i>Languida</i>	Keeled bladderpod	11,886,300	6,945,200	-41.6
Plant sp.	LESHUM	<i>Lesquerella humilis</i>	Few-seeded bladderpod	1,034,600	657,000	-36.5
Plant sp.	LESPAY	<i>Lesquerella paysonii</i>	Payson's bladderpod	23,567,600	14,145,400	-40.0
Plant sp.	LESSNO	<i>Lesquerella</i> sp. Nov. (" <i>pulchella</i> ")	Undescribed bladderpod	8,486,800	6,513,000	-23.3
Plant sp.	LOMERY	<i>Lomatium erythrocarpum</i>	Red-fruited lomatium	89,600	89,400	-0.2
Plant sp.	LOMGRE	<i>Lomatium greenmanii</i>		862,800	561,600	-34.9
Plant sp.	LOMOCH	<i>Lomatium</i> sp. Nov. (" <i>ochocensis</i> ")		4,983,100	2,158,800	-56.7
Plant sp.	LOMSUK	<i>Lomatium suksdorfii</i>	Suksdorf's lomatium	12,926,900	7,614,900	-41.1
Plant sp.	LUISER	<i>Luina serpentina</i>		11,885,400	6,940,400	-41.6
Plant sp.	LUPBID	<i>Lupinus biddlei</i>	Biddle's lupine	18,260,400	10,651,800	-41.7
Plant sp.	LUPCUS	<i>Lupinus cusickii</i>	Prairie lupine	20,397,700	14,962,100	-26.6
Plant sp.	MECORE	<i>Meconella oregana</i>	White meconella	548,600	289,300	-47.3
Plant sp.	MENMOL	<i>Mentzelia mollis</i>	Smooth mentzelia	18,853,800	12,591,300	-33.2
Plant sp.	MENPAC	<i>Mentzelia packardiae</i>	Packard's mentzelia	14,342,500	9,604,000	-33.0
Plant sp.	MIMCLI	<i>Mimulus clivicola</i>		20,707,200	16,212,500	-21.7
Plant sp.	MIMCLI	<i>Mimulus clivicola</i>	Bank monkey flower	20,707,200	16,212,500	-21.7
Plant sp.	MIMEVA	<i>Mimulus evanescens</i>	Disappearing monkeyflower	14,883,000	10,948,100	-26.4
Plant sp.	MIMHYM	<i>Mimulus hymenophyllus</i>	Membrane-leaved monkeyflower	16,767,700	15,145,100	-9.7
Plant sp.	MIMJEP	<i>Mimulus jepsonii</i>	Jepson's monkeyflower	16,152,000	14,903,300	-7.7
Plant sp.	MIMJUN	<i>Mimulus jungermannioides</i>	Hepatic monkeyflower	8,873,200	2,766,000	-68.8
Plant sp.	MIMLAT	<i>Mimulus latidens</i>	Broad-toothed monkeyflower	14,342,500	9,604,000	-33.0
Plant sp.	MIMPAT	<i>Mimulus patulus</i>	Stalk-leaved monkeyflower	11,885,400	6,940,400	-41.6
Plant sp.	MIMPUL	<i>Mimulus pulsiferae</i>	Pulsifer monkeyflower	16,809,800	16,281,500	-3.1
Plant sp.	MIMPYG	<i>Mimulus pygmaeus</i>	Pygmy monkeyflower	36,037,400	26,685,300	-26.0

Plant sp.	MIMSUK	<i>Mimulus suksdorfii</i>	Suksdorf's monkey-flower	34,233,700	27,792,200	-18.8
Plant sp.	MIMTRI	<i>Mimulus tricolor</i>	Three-colored monkeyflower	12,200,500	11,935,200	-2.2
Plant sp.	MIMWAW	<i>Mimulus washingtonensis</i> var. <i>Washingtonensis</i>	Washington monkeyflower	35,478,000	24,389,500	-31.3
Plant sp.	MIRBIR	<i>Mirabilis biglovii</i> var. <i>Retrosa</i>		1,293,900	856,700	-33.8
Plant sp.	MIRMAC	<i>Mirabilis macfarlanei</i>	Mac farlane's four o'clock	8,694,100	2,647,600	-69.5
Plant sp.	MIRMAC	<i>Mirabilis macfarlanei</i>	Macfarlane's 4-0-clock	8,694,100	2,647,600	-69.5
Plant sp.	ORYCON	<i>Oryzopsis contracta</i>		19,919,000	13,702,300	-31.2
Plant sp.	ORYCON	<i>Oryzopsis contracta</i>	Ricegrass	19,919,000	13,702,300	-31.2
Plant sp.	ORYHEN	<i>Oryzopsis hendersonii</i>	Henderson's rice-grass	4,983,100	2,158,800	-56.7
Plant sp.	ORYHEN	<i>Oryzopsis hendersonii</i>	Henderson's ricegrass	4,983,100	2,158,800	-56.7
Plant sp.	OXYCAC	<i>Oxytropis campestris</i> var. <i>Columbiana</i>	Columbia crazyweed	12,743,700	7,492,400	-41.2
Plant sp.	OXYCAW	<i>Oxytropis campestris</i> var. <i>Wanapum</i>	Wanapum crazyweed	14,342,500	9,604,000	-33.0
Plant sp.	PAPPYG	<i>Papaver pygmaeum</i>	Alpine poppy	89,600	89,400	-0.2
Plant sp.	PARKOP	<i>Parnassia kotzebuei</i> var. <i>Pumila</i>		89,600	89,400	-0.2
Plant sp.	PENBAR	<i>Penstemon barrettiae</i>	Barrett's penstemon	20,415,900	13,323,000	-34.7
Plant sp.	PENDAP	<i>Penstemon davidsonii</i> var. <i>Praeteritus</i>		23,036,600	12,251,600	-46.8
Plant sp.	PENDEV	<i>Penstemon deustus</i> var. <i>Variabilis</i>	Hot-rock penstemon	13,684,100	6,894,700	-49.6
Plant sp.	PENGLA	<i>Penstemon glaucinus</i>	Blue-leaved penstemon	17,951,900	16,449,900	-8.4
Plant sp.	PENJAN	<i>Penstemon janishiae</i>	Janish's penstemon	23,515,300	13,511,400	-42.5
Plant sp.	PENKIN	<i>Penstemon kingii</i>		9,172,800	3,907,400	-57.4
Plant sp.	PENLEM	<i>Penstemon lemhiensis</i>	Lemhi penstemon	39,449,700	26,037,500	-34.0
Plant sp.	PENNIK	<i>Penstemon nikei</i>		14,821,200	10,863,800	-26.7
Plant sp.	PENPEC	<i>Penstemon peckii</i>	Peck's penstemon	8,146,600	6,011,000	-26.2
Plant sp.	PENPER	<i>Penstemon perpulcher</i>	Very beautiful penstemon	9,172,800	3,907,400	-57.4
Plant sp.	PENPRA	<i>Penstemon pratensis</i>		1,041,800	2,306,000	121.3
Plant sp.	PENSEO	<i>Penstemon seorsus</i>	Short lobed penstemon	23,515,300	13,511,400	-42.5
Plant sp.	PENSPA	<i>Penstemon spatulatus</i>		7,955,600	4,865,500	-38.8
Plant sp.	PENWIL	<i>Penstemon wilcoxii</i>	Wilcox's penstemon	16,767,700	15,145,100	-9.7

Plant sp.	PERERY	<i>Perideridia erythrorhiza</i>	Red-root yampah	4,948,000	1,695,200	-65.7
Plant sp.	PETCIN	<i>Petrophytum cinerascens</i>	Chelan rockmat	14,521,600	9,722,400	-33.0
Plant sp.	PHAMIN	<i>Phacelia minutissima</i>	Tiny-flower phacelia	5,074,400	4,033,500	-20.5
Plant sp.	PHYINM	<i>Physaria integrifolia</i> var. <i>Monticola</i>		19,919,000	13,702,300	-31.2
Plant sp.	PLEORE	<i>Pleuropogon oregonus</i>	Oregon semaphore grass	171,800	95,400	-44.5
Plant sp.	POLPEC	<i>Polemonium pectinatum</i>	Washington polemonium	28,401,700	17,972,700	-36.7
Plant sp.	RANREC	<i>Ranunculus reconditus</i>	Dalles mt. Buttercup	4,780,300	1,603,900	-66.4
Plant sp.	RUBBAR	<i>Rubus bartonianus</i>		11,907,000	6,960,000	-41.5
Plant sp.	RUBBAR	<i>Rubus bartonianus</i>	Barton berry	11,907,000	6,960,000	-41.5
Plant sp.	SIDORC	<i>Sidalcea oregana</i> var. <i>Calva</i>	Oregon checkermallow	563,100	1,046,200	85.8
Plant sp.	SILSEE	<i>Silene seelyi</i>	Seely's silene	14,308,100	16,249,400	13.6
Plant sp.	SILSPA	<i>Silene spaldingii</i>		27,107,800	28,039,100	3.4
Plant sp.	SILSPA	<i>Silene spaldingii</i>	Spalding's catchfly	27,107,800	28,039,100	3.4
Plant sp.	SISSAR	<i>Sisyrinchium sarmentosum</i>	Blue-eyed grass	4,024,000	7,652,700	90.2
Plant sp.	STACON	<i>Stanleya confertiflora</i>		14,342,500	9,604,000	-33.0
Plant sp.	STEMAL	<i>Stephanomeria malheurensis</i>	Malheur wire-lettuce	14,342,500	9,604,000	-33.0
Plant sp.	TAUHOO	<i>Tauschia hooveri</i>	Hoover's tuschia	4,987,200	2,162,900	-56.6
Plant sp.	THEEUC	<i>Thelypodium eucosmum</i>		540,500	1,344,100	148.7
Plant sp.	THEEUC	<i>Thelypodium eucosmum</i>	Arrow-leaf thelypod	540,500	1,344,100	148.7
Plant sp.	THEHOS	<i>Thelypodium howellii</i> ssp. <i>Spectabilis</i>	Howell's spectacular thelypody	1,293,900	856,700	-33.8
Plant sp.	TRIDOU	<i>Trifolium douglasii</i>		171,800	95,400	-44.5
Plant sp.	TRIDOU	<i>Trifolium douglasii</i>	Douglas's clover	171,800	95,400	-44.5
Plant sp.	TRILEI	<i>Trifolium leibergii</i>	Leiberg's clover	1,065,200	1,111,000	4.3
Plant sp.	TRIOWY	<i>Trifolium owyheense</i>	Owyhee clover	1,065,200	1,111,000	4.3
Plant sp.	TRITHO	<i>Trifolium thompsonii</i>	Thompson's clover	36,002,700	24,156,400	-32.9
Plant group	ALLGR1	<i>Allium scablands</i> spp group		3,754,300	4,782,800	27.4
Plant group	ALLGR2	<i>Allium riparian</i> spp group		7,309,900	7,978,200	9.1
Plant group	BOTGR1	<i>Botrychium forest</i> spp group		39,400	391,200	892.9

Plant group	BOTGR3	<i>Botrychium</i> meadow spp group	89,600	89,400	-0.2
Plant group	CXDMSA	<i>Carex</i> dry meadow subalpine alpine group	89,600	89,400	-0.2
Plant group	CXEMSA	<i>Carex</i> ephemeral meadow subalpine alpine group	89,600	89,400	-0.2
Plant group	CXMMSA	<i>Carex</i> mesic meadow subalpine alpine group	89,600	89,400	-0.2
Plant group	CXWMSA	<i>Carex</i> wet meadow subalpine alpine group	89,600	89,400	-0.2
Plant group	MIMGUT	<i>Mimulus guttatus</i> complex	51,873,900	50,927,200	-1.8
Plant group	MIMHIE	<i>Mimulus</i> hi elev wet habitat group	15,416,500	17,999,700	16.8
Plant group	MIMLOW	<i>Mimulus</i> low elevation wet habitat	54,474,500	43,729,800	-19.7
Plant group	MIMVER	<i>Mimulus</i> vernal group	42,864,200	30,918,700	-27.9
Plant group	MIMXER	<i>Mimulus</i> xeric group	52,286,300	40,503,400	-22.5
Plant group	PENACU	<i>Penstemon acuminatus</i> group	15,157,100	7,869,800	-48.1
Plant group	PENCIN	<i>Penstemon cinicola</i> complex	21,142,000	19,150,400	-9.4
Plant group	PNDOSS	<i>Penstemon</i> dry open scab sagebrush group	35,994,100	22,391,300	-37.8
Plant group	PNFMDR	<i>Penstemon</i> foothills to montane dry rocky group	45,926,500	35,821,700	-22.0
Plant group	PNFMMG	<i>Penstemon</i> foothills to montane meadow group	30,618,800	25,018,900	-18.3

Code	Description	Quantity	Unit Price	Total Price
011-	...	52'118'000	5008'810'00	...
012-
013-
014-
015-
016-
017-
018-
019-
020-
021-
022-
023-
024-
025-
026-
027-
028-
029-
030-
031-
032-
033-
034-
035-
036-
037-
038-
039-
040-
041-
042-
043-
044-
045-
046-
047-
048-
049-
050-

Table PLNTCONC. Geography and trends of, and threats to, plant species of special concern.

This table lists all fungi species of special concern and rates them for population trend and threats to the population. Also listed are the geographic status of each species according to distribution. GEOGRAPHY (endemism) - 1 = local; 2 = regional; 3 = peripheral; 4 = disjunct; 5 = Scattered; 6 = common; TREND - 1 = increasing; 2 = decreasing; 3 = stable; 4 = unknown; THREATS - E = Exotic/ weed invasion; F = change in fire regime; G = livestock grazing; H = change in hydrologic regime; M = mining; R = recreation; T = timber.

Blanks, except in TREND column, mean that no data were readily available. The nearly 2600 common fungal species are not part of this table. This table has only species of special concern; all are considered rare in the assessment area, and some are endemic. Threats to some species are unknown because of lack of knowledge. All mycorrhizal formers are considered potentially threatened by timber management, as they would be impacted to some degree by all silvicultural treatments. The TREND column contains all number 4's for unknown because there is no comprehensive data on population viability of any of the species. These species are considered rare but we know extremely little concerning their biology and ecology. There is an urgent need to direct research on these species.

<u>TAXON</u>	<u>GEOGRAPHY</u>	<u>TREND</u>	<u>THREATS</u>
<i>Abstoma citrina</i>	1	4	
<i>Abstoma plumbea</i>	1	4	
<i>Abstoma reticulatum</i>	1	4	
<i>Abstoma townei</i>	1	4	
<i>Agaricus albolutescens</i>		4	
<i>Albatrellus dispansus</i>		4	
<i>Alpova mollis</i>	4	4	T
<i>Amanita alba</i>		4	T
<i>Amanita armillariformis</i>	1	4	T
<i>Amanita aurantiasquamosa</i>	1	4	T
<i>Amanita malheurensis</i>	1	4	T
<i>Amanita silvicola</i>		4	T
<i>Antrodia alpina</i>		4	
<i>Arcangeliella crassa (=tenax)</i>	4	4	T
<i>Balsamia platyspora</i>	3	4	T
<i>Balsamia vulgaris</i>	3	4	T
<i>Battarraea stevensii</i>	2	4	
<i>Boletus barrowsii</i>	2	4	T
<i>Boletus calopus</i> var. <i>frustusus</i>	2	4	T
<i>Bovista aestivalis</i>		4	
<i>Bovista californica</i>		4	
<i>Bovista dakotensis</i>		4	
<i>Bovista leucoderma</i>		4	
<i>Byssonectria cartilaginea</i>	1	4	
<i>Calocybe onychina</i>		4	
<i>Calvatia bovista</i>		4	
<i>Calvatia cretacea</i>		4	
<i>Calvatia excipuliformis</i>		4	
<i>Calvatia fragilis</i>		4	
<i>Calvatia fumosa</i> var. <i>idahoensis</i>	1	4	
<i>Calvatia lloydii</i>		4	
<i>Calvatia lycoperdoides</i>		4	
<i>Calvatia owyheensis</i>	1	4	
<i>Calvatia pallida</i>		4	

<i>Calvatia tatrensis</i>		4	
<i>Calvatia utriformis</i>		4	
<i>Cantharellus floccosus</i> var. <i>rainierensis</i>	1	4	T
<i>Cantharellus fumosa</i>	2	4	TT
<i>Cantharellus subcretacea</i>		4	T
<i>Cenangium piniphilum</i>	2	4	
<i>Chamonixia brevicolumna</i>	1	4	T
<i>Choiromyces alveolatus</i>	2	4	T
<i>Chroogomphus pseudovinicolor</i>	1	4	T
<i>Ciboria alni</i>		4	
<i>Clavariadelphus sachalinensis</i>		4	
<i>Clavicornia avellanea</i>		4	
<i>Clavicornia divaricata</i>	2	4	
<i>Clitocybe caperata</i>		4	
<i>Clitocybe deceptiva</i>		4	
<i>Clitocybe epigaea</i>		4	
<i>Clitocybe gruberi</i>		4	
<i>Clitocybe pallidipes</i>		4	
<i>Clitocybe payettensis</i>	1	4	
<i>Clitocybe profundidisca</i>		4	
<i>Clitocybe pungens</i>		4	
<i>Clitocybe varispora</i>		4	
<i>Clitocybe multicarpa</i>		4	
<i>Coprinus martini</i>		4	
<i>Cortinarius albonigrellus</i>		4	T
<i>Cortinarius alnetorum</i>		4	T
<i>Cortinarius delibutus</i>		4	T
<i>Cortinarius fuscoperonatus</i>		4	T
<i>Cortinarius glandicolor</i>		4	T
<i>Cortinarius hemitrichus</i> f. <i>improcerus</i>		4	T
<i>Cortinarius iodes</i>		4	T
<i>Cortinarius jubarinus</i>		4	T
<i>Cortinarius melinus</i>		4	T
<i>Cortinarius mutabilis</i>		4	T
<i>Cortinarius parperculus</i>		4	T
<i>Cortinarius pholideus</i>		4	T
<i>Cortinarius rapaceus</i>		4	T
<i>Cortinarius sanguineus</i>		4	T
<i>Cortinarius saniosus</i>		4	T
<i>Cortinarius sodagnites</i>		4	T
<i>Cortinarius variecolor</i>		4	T
<i>Cortinarius venetus</i>		4	T
<i>Cortinarius vulpicolor</i>		4	T
<i>Crepidotus lagenicystis</i>	4	4	
<i>Crepidotus montanensis</i>	4	4	
<i>Crepidotus payettensis</i>	1	4	
<i>Crepidotus ponderosus</i>		4	
<i>Crepidotus stratosus</i>	4	4	
<i>Crepidotus sububer</i>	1	4	
<i>Cyathus farcta</i>		4	
<i>Cyathus fimbriatus</i>		4	
<i>Cyathus olla</i> f. <i>lanatus</i>	1	4	
<i>Cystoderma subpurpureum</i>		4	
<i>Dadalea quercina</i>		4	
<i>Daedaleopsis confragosa</i>		4	
<i>Daedaleopsis steroides</i>		4	
<i>Destuntzia subborealis</i>	1	4	

<i>Entoloma lividoalbum</i>		4	T
<i>Fayodia gracilipes</i>		4	
<i>Galerina anelligera</i>	1	4	
<i>Galerina borealis</i>	3	4	
<i>Galerina castanescens</i>	1	4	
<i>Galerina diabolissima</i>	1	4	
<i>Galerina fontinalis</i>	1	4	
<i>Galerina fuscobrunnea</i>	1	4	
<i>Galerina mainsii</i>	1	4	
<i>Galerina nordmaniana</i>	1	4	
<i>Galerina payettensis</i>	1	4	
<i>Galerina pseudostylifera</i>	1	4	
<i>Galerina pubescentipes</i>	1	4	
<i>Galerina stylifera</i> var. <i>badia</i>	1	4	
<i>Galerina stylifera</i> var. <i>velosa</i>	1	4	
<i>Galerina triscopa</i> f. <i>longocystis</i>		4	
<i>Gastroboletus subalpinus</i>	2	4	T
<i>Gastroboletus turbinatus</i> var. <i>flammeus</i>	1	4	T
<i>Gautieria monitcola</i>	3	4	T
<i>Genabea cerebriformis</i>	4	4	T
<i>Geopora clausa</i>	4	4	T
<i>Geopora sepulta</i>	3	4	T
<i>Gloeophyllum odoratum</i>		4	
<i>Gymnomyces ferruginascens</i>	1	4	T
<i>Gymnopilus rufobrunneus</i>		4	
<i>Gymnopilus terrestris</i>		4	
<i>Hebeloma alpinicola</i>	1	4	T
<i>Hebeloma idahoense</i>	3	4	T
<i>Hebeloma kellogense</i>	1	4	T
<i>Hebeloma latisporum</i>	3	4	T
<i>Hebeloma mesophaeum</i> var. <i>subobscurum</i>	1	4	T
<i>Hebeloma occidentale</i>	1	4	T
<i>Hebeloma oregonense</i>	1	4	T
<i>Hebeloma parcivelum</i>	1	4	T
<i>Hebeloma pseudofastibile</i> var. <i>distans</i>	1	4	T
<i>Hebeloma pungens</i>	1	4	T
<i>Hebeloma salmonense</i>	1	4	T
<i>Hebeloma stanleyense</i>	1	4	T
<i>Hebeloma strophosum</i> var. <i>occidentale</i>	1	4	T
<i>Hebeloma vinaceogriseum</i>		4	T
<i>Helvella corium</i>	2	4	T
<i>Helvella crassitunicata</i>	2	4	T
<i>Helvella maculata</i>	2	4	T
<i>Henningsomyces candidus</i>		4	
<i>Hydnellum cyanopodium</i>		4	T
<i>Hydnellum mirabile</i>		4	T
<i>Hydnellum pseudocaeeruleum</i>		4	T
<i>Hydnellum regium</i>		4	T
<i>Hydnotrya michaelis</i>	4	4	T
<i>Hydnum indurescens</i>		4	T
<i>Hygrophorus albicarneus</i>	1	4	
<i>Hygrophorus albiflavus</i>	1	4	
<i>Hygrophorus burgdorfensis</i>	1	4	
<i>Hygrophorus ellenae</i>	1	4	
<i>Hygrophorus nordmanensis</i>	1	4	
<i>Hygrophorus velatus</i>	1	4	
<i>Hygrophorus vinicolor</i>	1	4	

<i>Hypoxylon serpens</i> var. <i>macrospora</i>		4	
<i>Hysterangium fallax</i>	2	4	T
<i>Inocybe boltoni</i>		4	T
<i>Inocybe hystrix</i>		4	T
<i>Itajahya galericulata</i>	1	4	
<i>Kuehneromyces carbonicola</i>		4	
<i>Lactarius gossypinus</i>	1	4	T
<i>Lactarius payettensis</i>	3	4	T
<i>Lactarius rufus</i> var. <i>parvus</i> 1		4	T
<i>Leccinum clavatum</i>		4	T
<i>Leccinum idahoense</i>		4	T
<i>Leccinum incarnatum</i>		4	T
<i>Leccinum subfulvum</i>		4	T
<i>Leccinum truebloodii</i>	1	4	T
<i>Lentinellus truebloodii</i>		4	
<i>Lepiota atrodisca</i>		4	
<i>Leptonia sarcitula</i>		4	
<i>Leptosphaeria hysterioides</i>		4	
<i>Leucopaxillus albissimus</i> var. <i>monticola</i>		4	
<i>Leucopaxillus septentrionalis</i>		4	
<i>Leucophleps magnata</i>	4	4	T
<i>Lyophyllum brunellae</i>		4	
<i>Lyophyllum canescetipes</i>		4	
<i>Lyophyllum chamaeleon</i>		4	
<i>Lyophyllum chondrocephalum</i>		4	
<i>Lyophyllum fistulosum</i>		4	
<i>Lyophyllum gracile</i>		4	
<i>Lyophyllum investitum</i>		4	
<i>Lyophyllum leptosarx</i>		4	
<i>Macowanites acris</i>	1	4	T
<i>Macowanites citrinus</i>	1	4	T
<i>Macowanites fulvescens</i>	1	4	T
<i>Macowanites fuscoviolaceus</i>	1	4	T
<i>Macowanites lilacinus</i>	1	4	T
<i>Macowanites nauseosus</i>	1	4	T
<i>Macowanites olidus</i>	1	4	T
<i>Macowanites pinicola</i>	1	4	T
<i>Macowanites pseudometicus</i>	1	4	T
<i>Macowanites subolivaceous</i>	1	4	T
<i>Macowanites subrosaceus</i>	1	4	T
<i>Macowanites vinicolor</i>	1	4	T
<i>Martellia brunnescens</i>	4	4	T
<i>Martellia ellipsospora</i>	4	4	T
<i>Martellia foetens</i>	4	4	T
<i>Martellia fragans</i>	1	4	T
<i>Martellia fulvispora</i>	1	4	T
<i>Martellia monticola</i>	4	4	T
<i>Martellia subalpina</i>	4	4	T
<i>Martellia subochracea</i>	4	4	T
<i>Melanogaster ambiguus</i>	4	4	T
<i>Melanogaster tuberiformis</i>			
<i>Montagnea candollei</i>		4	
<i>Morchella semilibera</i>		4	
<i>Mucronella calva</i> var. <i>aggregata</i>		4	
<i>Nannfeldtiella aggregata</i>	2	4	
<i>Omphalina chrysophylla</i> var. <i>salmonispora</i>		4	
<i>Onygena equina</i>		4	

<i>Ophiobolus prunellae</i>		4	
<i>Peniophora decorticans</i>		4	
<i>Peziza ammophila</i>	1	4	
<i>Phaeocollybia deceptiva</i>		4	T
<i>Phellorinia inquinans</i>		4	
<i>Pholiota agglutinata</i>	1	4	
<i>Pholiota atripes</i>	3	4	
<i>Pholiota aurantioflava</i>	1	4	
<i>Pholiota avellaneifolia</i>	1	4	
<i>Pholiota baptistii</i>	1	4	
<i>Pholiota brunnea</i>	1	4	
<i>Pholiota flavida</i> var. <i>graveolens</i>	1	4	
<i>Pholiota flavopallida</i>	1	4	
<i>Pholiota fulvodisca</i>	1	4	
<i>Pholiota fulvozonata</i>	1	4	F
<i>Pholiota gruberi</i>	1	4	
<i>Pholiota hiemalis</i>	1	4	
<i>Pholiota humii</i>	2	4	
<i>Pholiota lubrica</i> var. <i>luteifolia</i>	2	4	
<i>Pholiota luteola</i>	1	4	
<i>Pholiota macrocystis</i>	1	4	
<i>Pholiota milleri</i>	2	4	
<i>Pholiota nigripes</i>	2	4	
<i>Pholiota obscura</i>	2	4	
<i>Pholiota occidentalis</i> var. <i>luteifolia</i>	1	4	
<i>Pholiota pallida</i>	1	4	
<i>Pholiota pulchella</i> var. <i>brevipes</i>	1	4	
<i>Pholiota scamboides</i>	1	4	
<i>Pholiota subechinata</i>	2	4	
<i>Pholiota sublubrica</i>	2	4	
<i>Pholiota subsaponacea</i>	1	4	F
<i>Pholiota tetonensis</i>	1	4	
<i>Pholiota umbilicata</i>	1	4	
<i>Picoa carthusiana</i>	4	4	T
<i>Plectania milleri</i>	2	4	
<i>Polyzellus multiplex</i>		4	T
<i>Porphyrellus amylosporus</i>		4	T
<i>Protogautieria lutea</i>	1	4	T
<i>Psathyrella abieticola</i>	2	4	
<i>Psathyrella acuticystis</i>	1	4	
<i>Psathyrella annulata</i>	1	4	
<i>Psathyrella aregentata</i>	1	4	
<i>Psathyrella boulderensis</i>	1	4	
<i>Psathyrella communis</i>	4	4	
<i>Psathyrella crassulistipes</i>	1	4	
<i>Psathyrella deserticola</i>	1	4	
<i>Psathyrella ellenae</i>	1	4	
<i>Psathyrella equina</i>	4	4	
<i>Psathyrella fragans</i>	1	4	
<i>Psathyrella fulva</i>	1	4	
<i>Psathyrella fuscospora</i>	1	4	
<i>Psathyrella gruberi</i>	1	4	F
<i>Psathyrella idahoensis</i>	1	4	
<i>Psathyrella lepidotoides</i>	1	4	
<i>Psathyrella mesocystis</i>	1	4	
<i>Psathyrella nezpercii</i>	2	4	
<i>Psathyrella oregonensis</i>	1	4	

<i>Psathyrella owyheensis</i>	1	4	
<i>Psathyrella populorum</i>	1	4	
<i>Psathyrella praetenuis</i>	1	4	
<i>Psathyrella pseudolimicola</i>	2	4	
<i>Psathyrella psilocyboides</i>	4	4	
<i>Psathyrella quercicola</i>	1	4	
<i>Psathyrella roothaanensis</i>	1	4	
<i>Psathyrella rufogrisea</i> var. <i>bonnerensis</i>	1	4	
<i>Psathyrella rufogrisea</i> var. <i>riparia</i>	1	4	
<i>Psathyrella salictaria</i>	1	4	
<i>Psathyrella stuntzii</i>	2	4	
<i>Psathyrella subalpina</i>	1	4	
<i>Psathyrella subcaespitosa</i>	1	4	
<i>Psathyrella sublongipes</i>	1	4	
<i>Psathyrella subnuda</i> var. <i>velosa</i>	1	4	
<i>Psathyrella subradicata</i>	1	4	
<i>Psathyrella uskensis</i>	1	4	
<i>Psathyrella variata</i>	1	4	
<i>Psathyrella vesiculocystis</i>	1	4	
<i>Psathyrella wapinitaensis</i>	4	4	
<i>Psathyrella warrenensis</i>	1	4	
<i>Pseudorhizina sphaerospora</i>	1	4	
<i>Psilocybe pelliculosa</i>		4	
<i>Psilocybe semilanceata</i>		4	
<i>Psilocybe subborealis</i>		4	
<i>Pyrenogaster atrogleba</i>	3	4	T
<i>Radiigera fuscogleba</i>	3	4	T
<i>Rhizopogon abietis</i>	4	4	T
<i>Rhizopogon albidus</i>	2	4	T
<i>Rhizopogon albiroseus</i>	2	4	T
<i>Rhizopogon alkalivirens</i>	2	4	T
<i>Rhizopogon alpestris</i>	1	4	T
<i>Rhizopogon anomalus</i>	1	4	T
<i>Rhizopogon arenicola</i>	1	4	T
<i>Rhizopogon argillascens</i>	2	4	T
<i>Rhizopogon avellaneitectus</i>	2	4	T
<i>Rhizopogon bacillisporus</i>	2	4	T
<i>Rhizopogon brunneicolor</i>	2	4	T
<i>Rhizopogon brunneifibrillosus</i>	2	4	T
<i>Rhizopogon butyraceus</i>	2	4	T
<i>Rhizopogon chamaleontinus</i>	4	4	T
<i>Rhizopogon cinerascens</i>	1	4	T
<i>Rhizopogon clavitisporus</i>	4	4	T
<i>Rhizopogon colossus</i> var. <i>colossus</i>	4	4	T
<i>Rhizopogon colossus</i> var. <i>nigromaculatus</i>	2	4	T
<i>Rhizopogon cylindrisporus</i>	1	4	T
<i>Rhizopogon deceptivus</i>	2	4	T
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>	4	4	T
<i>Rhizopogon fallax</i>	2	4	T
<i>Rhizopogon flavofibrillosus</i> 4		4	T
<i>Rhizopogon florencianus</i>	1	4	T
<i>Rhizopogon fragans</i>	2	4	T
<i>Rhizopogon fragmentatus</i>	1	4	T
<i>Rhizopogon griseogleba</i>	1	4	T
<i>Rhizopogon hysterangioides</i>	1	4	T
<i>Rhizopogon inquinatus</i>	1	4	T
<i>Rhizopogon kauffmanii</i>	2	4	T

<i>Rhizopogon laetiflavus</i>	1	4	T
<i>Rhizopogon luteoalboides</i>	2	4	T
<i>Rhizopogon luteorubescens</i>	2	4	T
<i>Rhizopogon lutescens</i>	2	4	T
<i>Rhizopogon masonae</i>	1	4	T
<i>Rhizopogon milleri</i>	1	4	T
<i>Rhizopogon molligleba</i>	1	4	T
<i>Rhizopogon obscurus</i>	2	4	T
<i>Rhizopogon ochraceisporus</i>	2	4	T
<i>Rhizopogon ochraceobrunnescens</i>	2	4	T
<i>Rhizopogon ochroleucus</i>	2	4	T
<i>Rhizopogon odoratus</i>	1	4	T
<i>Rhizopogon olivaceoluteus</i>	1	4	T
<i>Rhizopogon oswaldii</i>	2	4	T
<i>Rhizopogon parksii</i>	3	4	T
<i>Rhizopogon parvulus</i>	2	4	T
<i>Rhizopogon proximus</i>	1	4	T
<i>Rhizopogon pseudoaffinis</i>	1	4	T
<i>Rhizopogon pseudoalbus</i>	1	4	T
<i>Rhizopogon quericola</i>	2	4	T
<i>Rhizopogon rogersii</i>	4	4	T
<i>Rhizopogon rubescens</i> var. <i>pallidimaculatus</i>	4	4	T
<i>Rhizopogon rudus</i>	1	4	T
<i>Rhizopogon semireticulatus</i>	2	4	T
<i>Rhizopogon semitectus</i>	2	4	T
<i>Rhizopogon sordidus</i>	4	4	T
<i>Rhizopogon subbadius</i>	2	4	T
<i>Rhizopogon subcaerulescens</i>			
var. <i>viridescens</i>	1	4	T
<i>Rhizopogon subcinnamomeus</i>	4	4	T
<i>Rhizopogon subclavitisporus</i> ⁴		4	T
<i>Rhizopogon subcroceus</i>	2	4	T
<i>Rhizopogon subgelatinosus</i>	4	4	T
<i>Rhizopogon sublateritius</i>	4	4	T
<i>Rhizopogon subolivascens</i>	1	4	T
<i>Rhizopogon subpurpurascens</i>	2	4	T
<i>Rhizopogon subradicatus</i>	4	4	T
<i>Rhizopogon subsalmonius</i>			
var. <i>griseolilascens</i>	1	4	T
<i>Rhizopogon subsalmonius</i> var. <i>roseitinctus</i>	1	4	T
<i>Rhizopogon subsalmonius</i> var. <i>similis</i>	2	4	T
<i>Rhizopogon udus</i>	2	4	T
<i>Rhizopogon umbrinoviolascens</i>	2	4	T
<i>Rhizopogon variabilisporus</i>	4	4	T
<i>Rhizopogon vesiculosus</i>	2	4	T
<i>Rhizopogon villescens</i>	4	4	T
<i>Rhizopogon zelleri</i>	4	4	T
<i>Rhodoscypha ovilla</i>	1	4	
<i>Russula crenulata</i>	2	4	T
<i>Russula idahoensis</i>	2	4	T
<i>Russula nana</i>	2	4	T
<i>Russula olivacea</i>	2	4	T
<i>Russula subdepallens</i>	2	4	T
<i>Russula velenovskyi</i>	2	4	T
<i>Russula vinosa</i>		4	T
<i>Sarcodon fuscoindicus</i>		4	T
<i>Sclerogaster xerophila</i>	4	4	T

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

<i>Simocybe rubi</i>		4	
<i>Sowerbyella imperialis</i>		4	T
<i>Sowerbyella rhenana</i>	1	4	
<i>Spathularia flavida</i> var. <i>ramosa</i>		4	
<i>Stropharia aeruginosa</i>		4	
<i>Suillus imitatus</i>	2	4	T
<i>Suillus pallidiceps</i>	2	4	T
<i>Suillus pseudobrevipes</i>	2	4	T
<i>Tapesia strobicula</i>		4	
<i>Tomentella lateritia</i>		4	T
<i>Tricholomopsis cystidiosum</i>		4	
<i>Truncocolumella citrina</i> var. <i>separabilis</i>	1	4	T
<i>Tuber irradians</i>	2	4	T
<i>Tuber rufum</i> var. <i>nitidum</i>	5	4	T
<i>Tylopilus pseudoscaber</i>		4	T
<i>Typhula idahoensis</i>		4	
<i>Weraroa coprophila</i>		4	
<i>Weraroa nivalis</i>		4	
<i>Wolfiporia cocos</i>		4	
<i>Wynnella silvicola</i>		4	



Appendix PLNTHERB. Vascular and nonvascular plant species and species groups using open or closed, grassland/herb structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 219 threatened or endangered, C1 and C2 candidate threatened and endangered species, and special-interest groups.

Class	Scientific name	Common name	Versatility*
P	<i>Aster jessicae</i>	Jessica's aster	0
P	<i>Carex parryana</i> ssp. <i>idaho</i>	Idaho sedge	0
P	<i>Castilleja cryptantha</i>	Obscure indian paintbrush	0
P	<i>Claytonia umbellata</i>	Umbellate spring beauty	0
P	<i>Collomia renacta</i>	Barren valley collomia	0
P	<i>Haplopappus liatrifomis</i>	Palouse goldenweed	0
P	<i>Leptodactylon pungens</i> ssp. <i>hazeliae</i>	Hazel's prickly-phlox	0
P	<i>Mirabilis macfarlanei</i>	Mac farlane's four o'clock	0
P	<i>Perideridia erythrorhiza</i>	Red-root yampah	0
P	<i>Pleuropogon oregonus</i>	Oregon semaphore grass	0
P	<i>Trifolium douglasii</i>	Douglas's clover	0
P	<i>Allium aaseae</i>	Aase's onion	1
P	<i>Astragalus atratus</i> var. <i>inseptus</i>	Mourning milkvetch	1
P	<i>Astragalus columbianus</i>	Columbia milk-vetch	1
P	<i>Astragalus diaphanus</i> var. <i>diaphanus</i>	Transparent milk-vetch	1
P	<i>Astragalus diaphanus</i> var. <i>diurnis</i>	South john day milk-vetch	1
P	<i>Astragalus howellii</i>	Howell milk-vetch	1
P	<i>Astragalus mulfordiae</i>	Mulford's milk-vetch	1
P	<i>Astragalus oniciformis</i>	Picabo milkvetch	1
P	<i>Astragalus sinuatus</i>	Whited milk-vetch	1
P	<i>Astragalus solitarius</i>	Weak milk-vetch	1
P	<i>Draba trichocarpa</i>	Stanley's whitlow-grass	1
P	<i>Hackelia cronquistii</i>	Cronquist's stickseed	1
P	<i>Ivesia rhypara</i> var. <i>rhypara</i>	Grimy ivesia	1
P	<i>Lepidium davisii</i>	Davis' peppergrass	1
P	<i>Lepidium papilliferum</i>	Slick spot peppergrass	1
P	<i>Mentzelia mollis</i>	Smooth mentzelia	1
P	<i>Mentzelia packardiae</i>	Packard's mentzelia	1
P	<i>Mimulus jungermannioides</i>	Hepatic monkeyflower	1
P	<i>Mimulus latidens</i>	Broad-toothed monkeyflower	1
P	<i>Oryzopsis contracta</i>	Ricegrass	1
P	<i>Oxytropis campestris</i> var. <i>wanapum</i>	Wanapum crazyweed	1
P	<i>Penstemon perpulcher</i>	Very beautiful penstemon	1
P	<i>Petrophytum cinerascens</i>	Chelan rockmat	1
P	<i>Ranunculus reconditus</i>	Dalles mt. Buttercup	1
P	<i>Stephanomeria malheurensis</i>	Malheur wire-lettuce	1
L	<i>Texosporium sancti-jacobi</i>	Wovenspored lichens	1
P	<i>Astragalus collinus</i> var. <i>laurentii</i>	Laurence's milk-vetch	2
P	<i>Balsamorhiza rosea</i>	Rosy balsamroot	2
P	<i>Castilleja pilosa</i> var. <i>steenensis</i>	Steens mt. Paintbrush	2

P	<i>Erigeron basalticus</i>	Basalt daisy	2
P	<i>Erigeron latus</i>	Broad fleabane	2
P	<i>Haplopappus insecticruris</i>	Bugleg goldenweed	2
P	<i>Lupinus biddlei</i>	Biddle's lupine	2
P	<i>Lupinus cusickii</i>	Prairie lupine	2
P	<i>Mimulus evanescens</i>	Disappearing monkeyflower	2
P	<i>Oryzopsis hendersonii</i>	Henderson's ricegrass	2
P	<i>Astragalus tyghensis</i>	Tygh valley milk-vetch	3
P	<i>Ivesia rhypara</i> var. <i>shellyi</i>	Shelly's ivesia	3
P	<i>Penstemon deustus</i> var. <i>variabilis</i>	Hot-rock penstemon	3
P	<i>Penstemon janishiae</i>	Janish's penstemon	3
P	<i>Penstemon seorsus</i>	Short lobed penstemon	3
P	<i>Tauschia hooveri</i>	Hoover's tuschia	3
LG	Vagrant ground lichens	Vagrant ground lichens	3
LG	Calcareous steppe indicator lichens	Calcareous steppe indicators	5
LG	Fencepost lichens	Fencepost lichens	5
LG	Soil lichens	Soil lichens	5
LG	Steppe soil crust lichens	Steppe soil crusts	5
P	<i>Allium robinsonii</i>	Robinson's onion	6
P	<i>Botrychium ascendens</i>	Upward-lobed moonwort	6
P	<i>Botrychium lunaria</i>	Common moonwort	6
P	<i>Allium dictuon</i>	Blue mountain onion	7
P	<i>Artemisia ludoviciana</i> ssp. <i>etesii</i>	Estes' artemisia	7
P	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	Long-bearded mariposa-lily	7
P	<i>Calochortus longebarbatus</i> var. <i>peckii</i>	Peck's mariposa-lily	7
P	<i>Grindelia howellii</i>	Howell's gumweed	7
P	<i>Lesquerella carinata</i> var. <i>languida</i>	Keeled bladderpod	7
P	<i>Mimulus hymenophyllus</i>	Membrane-leaved monkeyflower	7
P	<i>Mimulus patulus</i>	Stalk-leaved monkeyflower	7
P	<i>Oxytropis campestris</i> var. <i>columbiana</i>	Columbia crazyweed	7
P	<i>Penstemon barrettiae</i>	Barrett's penstemon	7
P	<i>Penstemon wilcoxii</i>	Wilcox's penstemon	7
P	<i>Astragalus peckii</i>	Peck's milk-vetch	8
P	<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	Ames' milk-vetch	8
P	<i>Botrychium paradoxum</i>	Peculiar moonwort	8
P	<i>Botrychium pedunculatum</i>	Stalked moonwort	8
P	<i>Castilleja chlorotica</i>	Green-tinged paintbrush	8
P	<i>Lesquerella humilis</i>	Few-seeded bladderpod	8
P	<i>Lesquerella</i> sp. Nov. ("pulchella")	Undescribed bladderpod	8
P	<i>Arabis fecunda</i>	Sapphire rockcress	9
P	<i>Calochortus nitidus</i>	Broad-fruit mariposa	9
P	<i>Lesquerella paysonii</i>	Payson's bladderpod	9

1	Small Daisy	Erigeron annuus	1
2	Black Licium	Erigeron annuus	2
3	Large Licium	Erigeron annuus	3
4	Small Daisy	Erigeron annuus	4
5	Black Licium	Erigeron annuus	5
6	Large Licium	Erigeron annuus	6
7	Small Daisy	Erigeron annuus	7
8	Black Licium	Erigeron annuus	8
9	Large Licium	Erigeron annuus	9
10	Small Daisy	Erigeron annuus	10
11	Black Licium	Erigeron annuus	11
12	Large Licium	Erigeron annuus	12
13	Small Daisy	Erigeron annuus	13
14	Black Licium	Erigeron annuus	14
15	Large Licium	Erigeron annuus	15
16	Small Daisy	Erigeron annuus	16
17	Black Licium	Erigeron annuus	17
18	Large Licium	Erigeron annuus	18
19	Small Daisy	Erigeron annuus	19
20	Black Licium	Erigeron annuus	20
21	Large Licium	Erigeron annuus	21
22	Small Daisy	Erigeron annuus	22
23	Black Licium	Erigeron annuus	23
24	Large Licium	Erigeron annuus	24
25	Small Daisy	Erigeron annuus	25
26	Black Licium	Erigeron annuus	26
27	Large Licium	Erigeron annuus	27
28	Small Daisy	Erigeron annuus	28
29	Black Licium	Erigeron annuus	29
30	Large Licium	Erigeron annuus	30
31	Small Daisy	Erigeron annuus	31
32	Black Licium	Erigeron annuus	32
33	Large Licium	Erigeron annuus	33
34	Small Daisy	Erigeron annuus	34
35	Black Licium	Erigeron annuus	35
36	Large Licium	Erigeron annuus	36
37	Small Daisy	Erigeron annuus	37
38	Black Licium	Erigeron annuus	38
39	Large Licium	Erigeron annuus	39
40	Small Daisy	Erigeron annuus	40
41	Black Licium	Erigeron annuus	41
42	Large Licium	Erigeron annuus	42
43	Small Daisy	Erigeron annuus	43
44	Black Licium	Erigeron annuus	44
45	Large Licium	Erigeron annuus	45
46	Small Daisy	Erigeron annuus	46
47	Black Licium	Erigeron annuus	47
48	Large Licium	Erigeron annuus	48
49	Small Daisy	Erigeron annuus	49
50	Black Licium	Erigeron annuus	50

P	<i>Lomatium suksdorfii</i>	Suksdorf's lomatium	9
P	<i>Mimulus suksdorfii</i>	Suksdorf's monkey-flower	9
P	<i>Penstemon lemhiensis</i>	Lemhi penstemon	9
P	<i>Trifolium thompsonii</i>	Thompson's clover	9
P	<i>Mimulus clivicola</i>	Bank monkey flower	10
P	<i>Mimulus pygmaeus</i>	Pygmy monkeyflower	10
P	<i>Mimulus washingtonensis</i> var. <i>washingtonensis</i>	Washington monkeyflower	10
P	<i>Polemonium pectinatum</i>	Washington polemonium	10
P	<i>Rubus bartonianus</i>	Barton berry	10
P	<i>Silene spaldingii</i>	Spalding's catchfly	10
P	<i>Allium bisceptrum</i>		12
P	<i>Allium neviai</i>		12
P	<i>Allium punctum</i>	Urban pollution tolerant	12
P	<i>Arabis falcifruca</i>		12
P	<i>Aster mollis</i>		12
LG	Calcareous indicator lichens	Calcareous rock indicators	12
P	<i>Erythronium grandiflorum</i> var. <i>nudipetalum</i>		12
LG	Excess nitrogen indicator lichens	Excess nitrogen indicators	12
P	<i>Haplopappus radiatus</i>		12
P	<i>Lomatium</i> sp. Nov. ("ochocensis")		12
P	<i>Luina serpentina</i>		12
LG	Metal rich indicator lichens	Metal rich indicators	12
P	<i>Mimulus ampliatus</i>		12
PG	<i>Mimulus guttatus</i> complex		12
PG	<i>Mimulus</i> low elevation wet habitat		12
PG	<i>Mimulus</i> vernal group		12
PG	<i>Mimulus</i> xeric group		12
LG	Moss and ditritus binders lichens	Moss and ditritus binders	12
LG	N-fixing rock lichens	N-fixing rock lichens	12
LG	N-fixing soil lichens	N-fixing soil lichens	12
PG	<i>Penstemon acuminatus</i> group		12
P	<i>Penstemon davidsonii</i> var. <i>praeteritus</i>		12
P	<i>Penstemon kingii</i>		12
P	<i>Penstemon nikei</i>		12
P	<i>Penstemon spatulatus</i>		12
P	<i>Physaria integrifolia</i> var. <i>monticola</i>		12
LG	Pioneer soil stabilizers lichens	Pioneer soil stabilizers	12
PG	<i>Penstemon</i> dry open scab sagebrush group		12
PG	<i>Penstemon</i> foothills to montane dry rocky group		12

Appendix PLNTSHRB. Vascular and nonvascular plant species and species groups using open or closed, low-medium shrub structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 219 threatened or endangered, C1 and C2 candidate threatened and endangered species, and special-interest groups.

Class	Scientific name	Common name	Versatility ^b
P	<i>Artemisia campestris</i> var. <i>wormskioldii</i>	Northern wormwood	0
P	<i>Allium constrictum</i>	Douglas constricted onion	0
P	<i>Astragalus applegatei</i>	Applegate's milk-vetch	0
P	<i>Astragalus scaphoides</i>	Bitterroot milkvetch	0
P	<i>Astragalus sterilis</i>	Sterile milk-vetch	0
P	<i>Botrychium lineare</i>	Linear leaved moonwort	0
P	<i>Botrychium pumicola</i>	Pumice grape-fern	0
P	<i>Camissonia pygmaea</i>	Dwarf evening-primrose	0
P	<i>Carex lenticularis</i> var. <i>dolia</i>	Goose-grass sedge	0
P	<i>Castilleja rubida</i>	Purple alpine paintbrush	0
P	<i>Chaenactis cusickii</i>	Cusick chaenactis	0
P	<i>Chrysothamnus parryi</i> ssp. <i>montanus</i>	Centennial rabbitbrush	0
P	<i>Cymopterus nivalis</i>	Hayden's cymopterus	0
P	<i>Eriogonum chrysops</i>	Golden buckwheat	0
P	<i>Eriogonum cusickii</i>	Cusick's erigonum	0
P	<i>Erigeron lackschewitzii</i>	Front mountain fleabane	0
P	<i>Eriogonum lewisii</i>	Lewis's buckwheat	0
P	<i>Gratiola heterosepala</i>	Boggs lake hedge-hyssop	0
P	<i>Lathyrus grimesii</i>	Grimes vetchling	0
P	<i>Lomatium erythrocarpum</i>	Red-fruited lomatium	0
P	<i>Papaver pygmaeum</i>	Alpine poppy	0
P	<i>Thelypodium howellii</i> ssp. <i>spectabilis</i>	Howell's spectacular thelypody	0
P	<i>Trifolium leibergii</i>	Leiberg's clover	0
P	<i>Trifolium owyheense</i>	Owyhee clover	0
P	<i>Allium aaseae</i>	Aase's onion	1
P	<i>Astragalus anserinus</i>	Goose creek milkvetch	1
P	<i>Astragalus atratus</i> var. <i>inseptus</i>	Mourning milkvetch	1
P	<i>Astragalus columbianus</i>	Columbia milk-vetch	1
P	<i>Astragalus howellii</i>	Howell milk-vetch	1
P	<i>Astragalus mulfordiae</i>	Mulford's milk-vetch	1
P	<i>Astragalus oniciformis</i>	Picabo milkvetch	1
P	<i>Astragalus sinuatus</i>	Whited milk-vetch	1
P	<i>Astragalus solitarius</i>	Weak milk-vetch	1
P	<i>Astragalus yoder-williamsii</i>	Osgoodmountains milkvetch	1
P	<i>Draba trichocarpa</i>	Stanley's whitlow-grass	1
P	<i>Eriogonum prociduum</i>	Prostrate buckwheat	1
P	<i>Hackelia cronquistii</i>	Cronquist's stickseed	1
P	<i>Ivesia rhypara</i> var. <i>rhypara</i>	Grimy ivesia	1

1960-1961. The following table lists the species and their groups
 which were included in the assessment. The species were
 listed in the order of their occurrence in the assessment.
 The species were listed in the order of their occurrence in the assessment.
 The species were listed in the order of their occurrence in the assessment.

Order	Scientific Name	Common Name	Value-Utility
1	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
2	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
3	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
4	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
5	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
6	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
7	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
8	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
9	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
10	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
11	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
12	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
13	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
14	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
15	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
16	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
17	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
18	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
19	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
20	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
21	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
22	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
23	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
24	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
25	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
26	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
27	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
28	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
29	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
30	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
31	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
32	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
33	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
34	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
35	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
36	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
37	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
38	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
39	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
40	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
41	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
42	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
43	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
44	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
45	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
46	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
47	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
48	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
49	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1
50	<i>Lupinus albus</i> var. <i>albus</i>	White lupine	1

P	<i>Lepidium davisii</i>	Davis' peppergrass	1
P	<i>Lepidium papilliferum</i>	Slick spot peppergrass	1
P	<i>Mentzelia mollis</i>	Smooth mentzelia	1
P	<i>Mentzelia packardiae</i>	Packard's mentzelia	1
P	<i>Mimulus jungermannioides</i>	Hepatic monkeyflower	1
P	<i>Mimulus latidens</i>	Broad-toothed monkeyflower	1
P	<i>Oryzopsis contracta</i>	Ricegrass	1
P	<i>Oxytropis campestris</i> var. <i>wanapum</i>	Wanapum crazyweed	1
P	<i>Petrophytum cinerascens</i>	Chelan rockmat	1
P	<i>Stephanomeria malheurensis</i>	Malheur wire-lettuce	1
L	<i>Texosporium sancti-jacobi</i>	Wovenspored lichens	1
P	<i>Astragalus collinus</i> var. <i>laurentii</i>	Laurence's milk-vetch	2
P	<i>Balsamorhiza rosea</i>	Rosy balsamroot	2
P	<i>Castilleja pilosa</i> var. <i>steenensis</i>	Steens mt. Paintbrush	2
P	<i>Erigeron basalticus</i>	Basalt daisy	2
P	<i>Erigeron latus</i>	Broad fleabane	2
P	<i>Haplopappus insecticruris</i>	Bugleg goldenweed	2
P	<i>Lupinus biddlei</i>	Biddle's lupine	2
P	<i>Lupinus cusickii</i>	Prairie lupine	2
P	<i>Mimulus evanescens</i>	Disappearing monkeyflower	2
P	<i>Oryzopsis hendersonii</i>	Henderson's ricegrass	2
P	<i>Astragalus tyghensis</i>	Tygh valley milk-vetch	3
P	<i>Ivesia rhypara</i> var. <i>Shellyi</i>	Shelly's ivesia	3
P	<i>Penstemon deustus</i> var. <i>Variabilis</i>	Hot-rock penstemon	3
P	<i>Penstemon janishiae</i>	Janish's penstemon	3
P	<i>Penstemon seorsus</i>	Short lobed penstemon	3
P	<i>Tauschia hooveri</i>	Hoover's tuschia	3
LG	Vagrant ground lichens	Vagrant ground lichens	3
P	<i>Phacelia minutissima</i>	Tiny-flower phacelia	4
LG	Calcareous steppe indicator lichens	Calcareous steppe indicators	5
LG	Fencepost lichens	Fencepost lichens	5
LG	Soil lichens	Soil lichens	5
LG	Steppe soil crust lichens	Steppe soil crusts	5
P	<i>Allium tolmiei</i> var. <i>persimile</i>	Tolmie's onion	6
P	<i>Astragalus paysonii</i>	Payson's milkvetch	6
P	<i>Collomia mazama</i>	Mt. Mazama collomia	6
P	<i>Douglasia idahoensis</i>	Idaho douglasia	6
P	<i>Penstemon peckii</i>	Peck's penstemon	6
P	<i>Artemisia ludoviciana</i> ssp. <i>estesii</i>	Estes' artemisia	7
LG	Charred snag lichens	Charred snag lichens	7
P	<i>Mimulus pulsiferae</i>	Pulsifer monkeyflower	7
P	<i>Penstemon glaucinus</i>	Blue-leaved penstemon	7

1	Davis' pagodaria	Lepidolepis daviesii	1
1	Black spot pagodaria	Lactaria pagilliformis	1
1	Black mentzelia	Mentzelia mollis	1
1	Becker's mentzelia	Mentzelia beckeriana	1
1	Hepatic monkeyflower	Mimulus jupponensis	1
1	Broad-footed monkeyflower	Mimulus latifolius	1
1	Ricciaria	Cypripedium montanum	1
1	Wagon wheel	Cystopteris montana var. wagonii	1
1	Chelan rockrose	Lithospermum chelanense	1
1	Malheur wire-leaved	Staphylea malheuriana	1
1	Woodsport lichen	Thapsosiphon woodsportensis	1
1	Lewis's milk-vetch	Astragalus collinus var. lewisii	1
1	Rock delphinium	Delphinium rockii	1
1	Sierra mt. aster	Callitriche sierrae var. asterifolia	1
1	Rock daisy	Erigeron saxatilis	1
1	Broad lichen	Cladonia lichen	1
1	Bugby goldweed	Diaprepes bugbyensis	1
1	Stidman's lupine	Lupinus stidmanii	1
1	Patric lupine	Lupinus patricii	1
1	Dissecting monkeyflower	Mimulus dissectus	1
1	Henderson's ricciaria	Cypripedium hendersonii	1
1	Typo valley milk-vetch	Astragalus typocensis	1
1	Shelby's ivy	Isotria medeoloides var. shelbyi	1
1	Hot-rock penstemon	Penstemon deserti var. hot-rockii	1
1	Lewis's penstemon	Penstemon lewisii	1
1	Short leaved penstemon	Penstemon brevis	1
1	Hooker's ruscus	Ruscus hookeri	1
1	Vegetic ground lichen	Vegetia groundii	1
1	Triflower phacelia	Phacelia triflora	1
1	Callisiphon sedge indicator	Callisiphon sedgeii	1
1	Penstemon lichen	Penstemon lichen	1
1	Sold lichen	Soldia lichen	1
1	Sage soil crust lichen	Sagea soil crustii	1
1	Tolmie's onion	Allium tolmiense var. oniscoides	1
1	Payson's milkwort	Asclepias paysonii	1
1	Dr. Lewis collomia	Collomia lewisii	1
1	Idaho douglasii	Douglasia idahoensis	1
1	Leek's penstemon	Penstemon leekii	1
1	Leek's ericoides	Erica leekii	1
1	Clayton's lichen	Claytonia lichen	1
1	Palmer monkeyflower	Mimulus palmeri	1
1	Five-leaved penstemon	Penstemon pentactenus	1

P	<i>Astragalus peckii</i>	Peck's milk-vetch	8
P	<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	Ames' milk-vetch	8
P	<i>Botrychium paradoxum</i>	Peculiar moonwort	8
P	<i>Botrychium pedunculosum</i>	Stalked moonwort	8
P	<i>Castilleja chlorotica</i>	Green-tinged paintbrush	8
P	<i>Lesquerella humilis</i>	Few-seeded bladderpod	8
P	<i>Lesquerella</i> sp. Nov. ("pulchella")	Undescribed bladderpod	8
P	<i>Arabis fecunda</i>	Sapphire rockcress	9
P	<i>Calochortus nitidus</i>	Broad-fruit mariposa	9
P	<i>Lesquerella paysonii</i>	Payson's bladderpod	9
P	<i>Lomatium suksdorfii</i>	Suksdorf's lomatium	9
P	<i>Mimulus suksdorfii</i>	Suksdorf's monkey-flower	9
P	<i>Penstemon lemhiensis</i>	Lemhi penstemon	9
P	<i>Trifolium thompsonii</i>	Thompson's clover	9
P	<i>Mimulus clivicola</i>	Bank monkey flower	10
P	<i>Mimulus pygmaeus</i>	Pygmy monkeyflower	10
P	<i>Mimulus washingtonensis</i> var. <i>washingtonensis</i>	Washington monkeyflower	10
P	<i>Polemonium pectinatum</i>	Washington polemonium	10
P	<i>Rubus bartonianus</i>	Barton berry	10
P	<i>Silene spaldingii</i>	Spalding's catchfly	10
P	<i>Allium bisceptrum</i>		12
P	<i>Allium punctum</i>		12
P	<i>Antennaria aromatica</i>		12
P	<i>Arabis falcifruca</i>		12
P	<i>Aster mollis</i>		12
PG	<i>Botrychium meadow</i> spp group		12
LG	Calcareous indicator lichens	Calcareous rock indicators	12
PG	<i>Carex dry meadow</i> subalpine alpine group		12
PG	<i>Carex ephemeral meadow</i> subalpine alpine group		12
PG	<i>Carex mesic meadow</i> subalpine alpine group		12
PG	<i>Carex wet meadow</i> subalpine alpine group		12
LG	Excess nitrogen indicator lichens	Excess nitrogen indicators	12
P	<i>Haplopappus radiatus</i>		12
P	<i>Lesquerella carinata</i> var. <i>carinata</i>		12
P	<i>Lomatium greenmanii</i>		12
P	<i>Lomatium</i> sp. Nov. ("ochocensis")		12
LG	Metal rich indicator lichens	Metal rich indicators	12
PG	<i>Mimulus guttatus</i> complex		12

PG	<i>Mimulus</i> hi elev wet habitat group		12
PG	<i>Mimulus</i> low elevation wet habitat		12
PG	<i>Mimulus</i> vernal group		12
PG	<i>Mimulus</i> xeric group		12
P	<i>Mirabilis biglovii</i> var. <i>retrosa</i>		12
LG	Moss and ditritus binders lichens	Moss and ditritus binders	12
LG	N-fixing rock lichens	N-fixing rock lichens	12
LG	N-fixing soil lichens	N-fixing soil lichens	12
P	<i>Parnassia kotzebuei</i> var. <i>pumila</i>		12
PG	<i>Penstemon acuminatus</i> group		12
PG	<i>Penstemon cinicola</i> complex		12
P	<i>Penstemon davidsonii</i> var. <i>Praeteritus</i>		12
P	<i>Penstemon nikei</i>		12
P	<i>Penstemon spatulatus</i>		12
P	<i>Physaria integrifolia</i> var. <i>monticola</i>		12
LG	Pioneer soil stabilizers lichens	Pioneer soil stabilizers	12
PG	<i>Penstemon</i> dry open scab sagebrush group		12
PG	<i>Penstemon</i> foothills to montane dry rocky group		12
PG	<i>Penstemon</i> foothills to montane meadow group		12
BG	Rock calcareous bryophyte		12
LG	Rock crusts lichens	Rock crusts	12
LG	Rock macro lichens	Rock macrolichens	12
BG	Rock other bryophyte		12
BG	Rock wet bryophyte		12
LG	Seepage lichens	Seepage rock lichens	12
LG	Sheltered ledges and overhangs lichens	Sheltered ledges and overhangs	12
BG	Soil alkaline bryophyte		12
BG	Soil dry bryophyte		12
BG	Soil wet bryophyte		12
P	<i>Stanleya confertiflora</i>		12
LG	Urban pollution-tolerant lichens	Urban pollution tolerant lichens	12

^a - B=bryophyte; BG=bryophyte group; L=lichen; LG=lichen group; P=plant species; PG = plant group.

^b - Versatility rating denotes the number of other structural stages used by the species (11 maximum).

Appendix PLNTOLDF. Vascular and nonvascular plant species and species groups using single- and multi-storied old forest structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 219 threatened or endangered, C1 and C2 candidate threatened or endangered species, and special-interest groups.

Class	Scientific name	Common name	Versatility*
P	<i>Astragalus vexilliflexus</i> var. <i>nubilus</i>	White cloud milkvetch	4
P	<i>Botrychium crenulatum</i>	Wavy moonwort	4
P	<i>Hackelia venusta</i>	Showy stickseed	4
P	<i>Howellia aquatilis</i>	Water howellia	4
P	<i>Sisyrinchium sarmentosum</i>	Blue-eyed grass	4
P	<i>Allium madidum</i>	Swamp onion	5
P	<i>Mimulus jepsonii</i>	Jepson's monkeyflower	5
LG	Oceanic forage lichens	Oceanic forage lichens	5
L	Oceanic fruticose	Oceanic fruticose	5
LG	Oceanic leaf lichens	Oceanic leaf lichens	5
LG	Oceanic tree crust lichens	Oceanic tree crusts	5
P	<i>Silene seelyi</i>	Seely's silene	5
P	<i>Allium robinsonii</i>	Robinson's onion	6
P	<i>Allium tolmiei</i> var. <i>persimile</i>	Tolmie's onion	6
P	<i>Astragalus paysonii</i>	Payson's milkvetch	6
P	<i>Botrychium ascendens</i>	Upward-lobed moonwort	6
P	<i>Botrychium lunaria</i>	Common moonwort	6
P	<i>Collomia mazama</i>	Mt. Mazama collomia	6
P	<i>Cypripedium fasciculatum</i>	Clustered lady slipper	6
P	<i>Douglasia idahoensis</i>	Idaho douglasia	6
LG	Forage lichens	Forage	6
LG	Fruticose tree lichens	Fruticose tree lichens	6
LG	Leaf lichens	Leaf lichens	6
P	<i>Mimulus tricolor</i>	Three-colored monkeyflower	6
LG	N-fixing epiphytes lichens	N-fixing epiphytes	6
LG	N-fixing riparian lichens	N-fixing riparian	6
LG	Oceanic log lichens	Oceanic log lichens	6
P	<i>Penstemon peckii</i>	Peck's penstemon	6
LG	Pin lichens	Pin lichens	6
LG	Riparian lichens	Riparian	6
LG	Rotten log and tree base lichens	Rotten log and tree base	6
LG	Tree crusts	Tree crust lichens	6
P	<i>Allium dictuon</i>	Blue mountain onion	7
P	<i>Artemisia ludoviciana</i> ssp. <i>estesii</i>	Estes' artemisia	7
P	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	long-bearded mariposa-	7
P	<i>Calochortus longebarbatus</i> var. <i>peckii</i>	Peck's mariposa-lily	7
LG	Charred snag lichens	Charred snag lichens	7
P	<i>Grindelia howellii</i>	Howell's gunweed	7

P	<i>Lesquerella carinata</i> var. <i>languida</i>	Keeled bladderpod	7
P	<i>Mimulus hymenophyllus</i>	Membrane-leaved monkeyflower	7
P	<i>Mimulus patulus</i>	Stalk-leaved monkeyflower	7
P	<i>Mimulus pulsiferae</i>	Pulsifer monkeyflower	7
P	<i>Oxytropis campestris</i> var. <i>columbiana</i>	Columbia crazyweed	7
P	<i>Penstemon barrettiae</i>	Barrett's penstemon	7
P	<i>Penstemon glaucinus</i>	Blue-leaved penstemon	7
P	<i>Penstemon wilcoxii</i>	Wilcox's penstemon	7
P	<i>Astragalus peckii</i>	Peck's milk-vetch	8
P	<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	Ames' milk-vetch	8
P	<i>Botrychium paradoxum</i>	Peculiar moonwort	8
P	<i>Botrychium pedunculatum</i>	Stalked moonwort	8
P	<i>Castilleja chlorotica</i>	Green-tinged paintbrush	8
P	<i>Lesquerella humilis</i>	Few-seeded bladderpod	8
P	<i>Lesquerella</i> sp. Nov. (" <i>pulchella</i> ")	Undescribed bladderpod	8
P	<i>Arabis fecunda</i>	Sapphire rockcress	9
P	<i>Calochortus nitidus</i>	Broad-fruit mariposa	9
P	<i>Lesquerella paysonii</i>	Payson's bladderpod	9
P	<i>Lomatium suksdorfii</i>	Suksdorf's lomatium	9
P	<i>Mimulus suksdorfii</i>	Suksdorf's monkey-flower	9
P	<i>Penstemon lemhiensis</i>	Lemhi penstemon	9
P	<i>Trifolium thompsonii</i>	Thompson's clover	9
P	<i>Mimulus clivicola</i>	Bank monkey flower	10
P	<i>Mimulus pygmaeus</i>	Pygmy monkeyflower	10
P	<i>Mimulus washingtonensis</i> var. <i>washingtonensis</i>	Washington monkeyflower	10
P	<i>Polemonium pectinatum</i>	Washington polemonium	10
P	<i>Rubus bartonianus</i>	Barton berry	10
P	<i>Silene spaldingii</i>	Spalding's catchfly	10
P	<i>Allium bisceptrum</i>		12
PG	<i>Allium scablands</i> spp group		12
PG	<i>Allium riparian</i> spp group		12
P	<i>Allium nevii</i>		12
P	<i>Aster mollis</i>		12
PG	<i>Botrychium forest</i> spp group		12
LG	Calcareous indicator lichens	Calcareous rock indicators	12
BG	Decayed wood bryophyte		12
BG	Epiphytic bryophyte		12
P	<i>Erythronium grandiflorum</i> var. <i>nudipetalum</i>	12	
LG	Excess nitrogen indicator lichens	Excess nitrogen indicators	12
BG	Humus duff bryophyte		12
P	<i>Lomatium greenmanii</i>		12

1	Keel-bladed	<i>Leptocarpus carinatus</i> var. <i>leptocarpus</i>	1
1	Wedge-leaved	<i>Mimulus hypophyllus</i>	2
1	Nonny-flowered	<i>Mimulus parviflorus</i>	3
1	Blair-leaved	<i>Mimulus parviflorus</i>	4
1	Nonny-flowered	<i>Mimulus parviflorus</i>	5
1	Pulcherr nonny-flowered	<i>Glycyrrhiza asperata</i> var. <i>colombiana</i>	6
1	Colombian grasswort	<i>Penstemon parviflorus</i>	7
1	Bartlett's grasswort	<i>Penstemon glaucus</i>	8
1	Blue-leaved grasswort	<i>Penstemon nitidus</i>	9
1	Wilson's grasswort	<i>Penstemon nitidus</i>	10
1	Beck's milk-vetch	<i>Asperula parviflora</i> var. <i>suborbitalis</i>	11
1	Wass' milk-vetch	<i>Asperula parviflora</i>	12
1	Pacific manwort	<i>Asperula parviflora</i>	13
1	Blair manwort	<i>Asperula parviflora</i>	14
1	Green-tipped paleflora	<i>Asperula parviflora</i>	15
1	Low-seeded bladedpod	<i>Asperula parviflora</i>	16
1	Underscribed bladedpod	<i>Asperula parviflora</i>	17
1	Asperula rufescens	<i>Asperula parviflora</i>	18
1	Blair-leaved manwort	<i>Asperula parviflora</i>	19
1	Wilson's bladedpod	<i>Asperula parviflora</i>	20
1	Blair's manwort	<i>Asperula parviflora</i>	21
1	Blair's manwort	<i>Asperula parviflora</i>	22
1	Blair's manwort	<i>Asperula parviflora</i>	23
1	Blair's manwort	<i>Asperula parviflora</i>	24
1	Blair's manwort	<i>Asperula parviflora</i>	25
1	Blair's manwort	<i>Asperula parviflora</i>	26
1	Blair's manwort	<i>Asperula parviflora</i>	27
1	Blair's manwort	<i>Asperula parviflora</i>	28
1	Blair's manwort	<i>Asperula parviflora</i>	29
1	Blair's manwort	<i>Asperula parviflora</i>	30
1	Blair's manwort	<i>Asperula parviflora</i>	31
1	Blair's manwort	<i>Asperula parviflora</i>	32
1	Blair's manwort	<i>Asperula parviflora</i>	33
1	Blair's manwort	<i>Asperula parviflora</i>	34
1	Blair's manwort	<i>Asperula parviflora</i>	35
1	Blair's manwort	<i>Asperula parviflora</i>	36
1	Blair's manwort	<i>Asperula parviflora</i>	37
1	Blair's manwort	<i>Asperula parviflora</i>	38
1	Blair's manwort	<i>Asperula parviflora</i>	39
1	Blair's manwort	<i>Asperula parviflora</i>	40
1	Blair's manwort	<i>Asperula parviflora</i>	41
1	Blair's manwort	<i>Asperula parviflora</i>	42
1	Blair's manwort	<i>Asperula parviflora</i>	43
1	Blair's manwort	<i>Asperula parviflora</i>	44
1	Blair's manwort	<i>Asperula parviflora</i>	45
1	Blair's manwort	<i>Asperula parviflora</i>	46
1	Blair's manwort	<i>Asperula parviflora</i>	47
1	Blair's manwort	<i>Asperula parviflora</i>	48
1	Blair's manwort	<i>Asperula parviflora</i>	49
1	Blair's manwort	<i>Asperula parviflora</i>	50
1	Blair's manwort	<i>Asperula parviflora</i>	51
1	Blair's manwort	<i>Asperula parviflora</i>	52
1	Blair's manwort	<i>Asperula parviflora</i>	53
1	Blair's manwort	<i>Asperula parviflora</i>	54
1	Blair's manwort	<i>Asperula parviflora</i>	55
1	Blair's manwort	<i>Asperula parviflora</i>	56
1	Blair's manwort	<i>Asperula parviflora</i>	57
1	Blair's manwort	<i>Asperula parviflora</i>	58
1	Blair's manwort	<i>Asperula parviflora</i>	59
1	Blair's manwort	<i>Asperula parviflora</i>	60
1	Blair's manwort	<i>Asperula parviflora</i>	61
1	Blair's manwort	<i>Asperula parviflora</i>	62
1	Blair's manwort	<i>Asperula parviflora</i>	63
1	Blair's manwort	<i>Asperula parviflora</i>	64
1	Blair's manwort	<i>Asperula parviflora</i>	65
1	Blair's manwort	<i>Asperula parviflora</i>	66
1	Blair's manwort	<i>Asperula parviflora</i>	67
1	Blair's manwort	<i>Asperula parviflora</i>	68
1	Blair's manwort	<i>Asperula parviflora</i>	69
1	Blair's manwort	<i>Asperula parviflora</i>	70
1	Blair's manwort	<i>Asperula parviflora</i>	71
1	Blair's manwort	<i>Asperula parviflora</i>	72
1	Blair's manwort	<i>Asperula parviflora</i>	73
1	Blair's manwort	<i>Asperula parviflora</i>	74
1	Blair's manwort	<i>Asperula parviflora</i>	75
1	Blair's manwort	<i>Asperula parviflora</i>	76
1	Blair's manwort	<i>Asperula parviflora</i>	77
1	Blair's manwort	<i>Asperula parviflora</i>	78
1	Blair's manwort	<i>Asperula parviflora</i>	79
1	Blair's manwort	<i>Asperula parviflora</i>	80
1	Blair's manwort	<i>Asperula parviflora</i>	81
1	Blair's manwort	<i>Asperula parviflora</i>	82
1	Blair's manwort	<i>Asperula parviflora</i>	83
1	Blair's manwort	<i>Asperula parviflora</i>	84
1	Blair's manwort	<i>Asperula parviflora</i>	85
1	Blair's manwort	<i>Asperula parviflora</i>	86
1	Blair's manwort	<i>Asperula parviflora</i>	87
1	Blair's manwort	<i>Asperula parviflora</i>	88
1	Blair's manwort	<i>Asperula parviflora</i>	89
1	Blair's manwort	<i>Asperula parviflora</i>	90
1	Blair's manwort	<i>Asperula parviflora</i>	91
1	Blair's manwort	<i>Asperula parviflora</i>	92
1	Blair's manwort	<i>Asperula parviflora</i>	93
1	Blair's manwort	<i>Asperula parviflora</i>	94
1	Blair's manwort	<i>Asperula parviflora</i>	95
1	Blair's manwort	<i>Asperula parviflora</i>	96
1	Blair's manwort	<i>Asperula parviflora</i>	97
1	Blair's manwort	<i>Asperula parviflora</i>	98
1	Blair's manwort	<i>Asperula parviflora</i>	99
1	Blair's manwort	<i>Asperula parviflora</i>	100

P	<i>Luina serpentina</i>		12
LG	Metal rich indicator lichens	Metal rich indicators	12
P	<i>Mimulus ampliatus</i>		12
PG	<i>Mimulus guttatus</i> complex		12
PG	<i>Mimulus</i> hi elev wet habitat group		12
PG	<i>Mimulus</i> low elevation wet habitat		12
PG	<i>Mimulus</i> vernal group		12
PG	<i>Mimulus</i> xeric group		12
LG	Moss and ditritus binders lichens	Moss and ditritus binders	12
LG	N-fixing rock lichens	N-fixing rock lichens	12
LG	N-fixing soil lichens	N-fixing soil lichens	12
PG	<i>Penstemon cinicola</i> complex		12
P	<i>Penstemon spatulatus</i>		12
LG	Pioneer soil stabilizers lichens	Pioneer soil stabilizers	12
PG	<i>Penstemon</i> dry open scab sagebrush group	12	
PG	<i>Penstemon</i> foothills to montane dry rocky group	12	
PG	<i>Penstemon</i> foothills to montane meadow group	12	
BG	Rock calcareous bryophyte		12
LG	Rock crusts lichens	Rock crusts	12
LG	Rock macro lichens	Rock macrolichens	12
BG	Rock other bryophyte		12
LG	Seepage lichens	Seepage rock lichens	12
LG	Sheltered ledges and overhangs lichens	Sheltered ledges and overhangs	12
BG	Soil dry bryophyte		12
BG	Soil wet bryophyte		12
LG	Urban pollution-tolerant	Urban pollution tolerant lichens	12

^a - B=bryophyte; BG=bryophyte group; L=lichen; LG=lichen group; P=plant species; PG = plant group.

^b - Versatility rating denotes the number of other structural stages used by the species (11 maximum).

Table BRYO3. Herbaria housing bryophyte specimens from Columbia River basin, listed by acronym per *Index Herbariorum*. Asterisk (*) indicates herbaria systematically searched for records from study area.

ALTA	University of Alberta, Edmonton
BING	State University of New York, Binghamton
BM	British Museum (Natural History), London
*BSU	Boise State University, Boise
*BUF	Buffalo Museum of Science, Buffalo
C	Botanical Museum, Copenhagen
CANM	Canadian Museum of Nature, Ottawa
CAS	California Academy of Sciences, San Francisco
COLO	University of Colorado, Boulder
CS	Colorado State University, Fort Collins
CU	Cornell University, Ithaca
DPU	DePauw University, Greencastle
DUKE	Duke University, Durham
FH	Farlow Herbarium, Harvard University, Cambridge
G	Conservatory and Botanical Garden, Geneva
GFC	College of Great Falls, Great Falls
HSC	Humboldt State University, Arcata
IA	University of Iowa, Iowa City
*ID	University of Idaho, Moscow
K	Botanic Gardens, Kew [now housed at BM]
MICH	University of Michigan, Ann Arbor
MIL	Milwaukee Public Museum, Milwaukee
MO	Missouri Botanical Garden, St. Louis
*MONTU	University of Montana, Missoula
NICH	Hattori Botanical Laboratory, Nichinan
NY	New York Botanical Garden, New York
*ORE	of Oregon [now housed at OSC]
*OSC	Oregon State University, Corvallis
P	National Museum of Natural History, Paris
*PSU	Portland State University, Portland
*RM	University of Wyoming, Laramie
S	Museum of Natural History, Stockholm
SMS	Southwest Missouri State University, Springfield
SMU	Southern Methodist University, Dallas
TENN	University of Tennessee, Knoxville
TRTC	University of Toronto, Toronto
UAC	University of Calgary, Calgary
*UBC	University of British Columbia, Vancouver
UCNW	University College of North Wales, Bangor
UWSP	University of Wisconsin, Stevens Point
*WS	Washington State University, Pullman
*WTU	University of Washington, Seattle
US	Smithsonian Institution, Washington D.C.
UT	University of Utah [now housed at COLO]

Without acronym: Grand Teton National Park herbarium, Yellowstone National Park herbarium

Personal herbaria: Guy Brassard, Allan Chambers, John Christy, John Davis, Judith Harpel, Patricia Eckel, Barbara Hoisington

Table B10C. Herbaria housing psychophyte specimens from Columbia River basin. Listed by acronym per Index Herbariorum. Asterisk (*) indicates herbaria systematically searched for records from study area.

ALTA	University of Alberta, Edmonton
ANMO	State University of New York, Binghamton
BM	British Museum (Natural History), London
*BSU	Boston State University, Boston
*BUT	Bulletin Bureau of Science, Buffalo
C	Botanical Museum, Copenhagen
CMNH	Canadian Museum of Nature, Ottawa
CAS	California Academy of Sciences, San Francisco
COLD	University of Colorado, Boulder
CS	Colorado State University, Fort Collins
CU	Cornell University, Ithaca
DU	Duquesne University, Pittsburgh
DUKE	Duke University, Durham
EA	Eastwold Herbarium, Harvard University, Cambridge
E	Conservatory and Botanical Garden, Geneva
NYC	College of Saint Yvonne, Great Falls
NEC	Northwest State University, Arcata
IA	University of Iowa, Iowa City
ID	University of Idaho, Moscow
K	Kew (now housed at BM)
MOCH	University of Michigan, Ann Arbor
ML	Minnesota Public Museum, Milwaukee
MO	Missouri Botanical Garden, St. Louis
MTNH	University of Montana, Missoula
NICH	Natural History Laboratory, Michigan
NY	New York Botanical Garden, New York
*OAC	of Oregon (now housed at OGC)
*OD	Oregon State University, Corvallis
P	National Museum of Natural History, Paris
*PDI	Portland State University, Portland
*PM	University of Wyoming, Laramie
P	Museum of Natural History, Stockholm
SWC	Southwest Missouri State University, Springfield
SMU	Southern Methodist University, Dallas
TENN	University of Tennessee, Knoxville
TATC	University of Toronto, Toronto
UNC	University of Calgary, Calgary
*UCC	University of British Columbia, Vancouver
UCJH	University College of North Wales, Bangor
UW	University of Wisconsin, Stevens Point
*W	Washington State University, Pullman
*WU	University of Washington, Seattle
US	National Institute of Health, Washington D.C.
UT	University of Utah (now housed at CGU)
WIND	Windward Oahu National Park Herbarium, Yellwacme National Park Herbarium
WV	West Virginia State University, Morgantown
Y	Yale University, New Haven

Table PLANTX. Number of accessions of rare plant taxa from the Interior Columbia River Basin for which seeds or living collections are maintained at botanic gardens.

Taxon	Botanic Garden		
	Berry*	Denver	Red Butte
Allium aaseae	1		
Amsinckia carinata		5	
Antennaria arcuata		1	
Arabis fecunda			1#
Artemisia campestris var. wormskioldii		4	
Astragalus applegatei	4		
Astragalus diaphanus var. diurnis		1	
Astragalus mulfordiae		10	
Astragalus peckii		2	
Astragalus sinuatus	6		
Astragalus solitarius	3		
Astragalus sterilis		3	
Astragalus tegetarioides		3	
Astragalus tyghensis	3		
Calochortus longebarbatus var. longebarbatus		3	
Castilleja chlorotica		3	
Castilleja christii			1#
Chaenactis cusickii		1	
Colloma mazama	2		
Cypripedium fasciculatum		1	
Delphinium viridescens	4		
Erigeron basalticus		1	
Eriogonum argophyllum			1
Eriogonum crosbyae	3		
Eriogonum cusickii		4	
Eriogonum prociduum	5		
Hackelia cronquistii	12		
Hackelia venusta	22		
Haplopappus radiatus	10		
Howellia aquatilis	living plants		
Ivesia rhypara var. rhypara		21	
Lepidium davisii	5		
Limnanthes floccosa ssp. bellingeriana		2	
Lomatium erythrocarpum	1		
Lomatium suksdorfii	5		
Luina serpentina	4		
Lupinus biddlei	8		
Mentzelia mollis	5		
Menzelia packardiae	8		
Mimulus hymenophyllus	1		
Mimulus jungermannioides	3		
Mimulus pygmaeus	1		
Mirabilis macfarlanei		39	
Penstemon barrettiae	33		
Penstemon peckii	201		
Perideridia erythrorhiza		7	
Phacelia lenta	3		
Pleuropogon oregonus	4		

Polemonium pectinatum	3		
Primula nevadensis	1		
Ranunculus reconditus	4		
Rorippa columbiae	1		
Senecio ertterae	9		
Sidalcea oregana			
var. calva	3		
Silene seelyi		4	
Silene spaldingii	23		
Stephanomeria malheurensis	127		
Tauschia hooveri	1		
Thelypodium eucosmum	2		
Thelypodium howellii			
ssp. spectabilis	2		
Trifolium leibergii		2	
Trifolium owyheense	5		
Trifolium thompsonii		2	

* The number of accessions can indicate many things. In earlier years, some accessions from different plants in a population were accessioned together. Later, each plant from a population received a separate accession number.

Accession is split between the garden and the National Seed Storage Laboratory. May be more than one accession.

Table 4MGTPRACT. Categories of potential wildland management practices, as evaluated in expert panels on invertebrates ecology and management.

FOREST

- I. Site Preparation
 - A. Prescribed burning
 - 1. pile and burn
 - a. mechanical
 - b. hand
 - 2. jackpot
 - 3. broadcast
 - B. Ripping
 - C. Scarification
 - D. Herbicides
- II. Intermediate Entries
 - A. Fertilization
 - 1. N
 - 2. K
 - B. Precommercial thinning
 - C. Pruning
 - D. Vegetation management
 - 1. herbicide
 - 2. mechanical
 - 3. livestock grazing
 - E. Commercial thinning
- III. Regeneration methods
 - A. Evenaged
 - 1. Clearcut
 - 2. Seed tree
 - 3. Shelterwood
 - B. Unevenaged
 - 1. group
 - 2. individual tree
 - C. ground vs. cable
- IV. Other
 - A. Grazing
 - B. Harvesting of special forest products (eg. fungi, firewood)
 - C. Pest management
 - 1. B.t.
 - 2. virus
 - 3. pheromones
 - D. Exotics
 - 1. flora
 - 2. fauna
 - E. Fire control
 - 1. borate
 - 2. backfire
 - 3. exclusion
 - F. Amelioration of pest, fire, flood, wind and volcanic disturbance
 - 1. grass seeding
 - 2. salvage logging
- V. Natural Disturbances
 - A. Drought
 - B. Wildfire
 - 1. groundfire
 - 2. stand replacement
 - C. Insect outbreaks and disease

activity

- 1. bark beetles
- 2. defoliators
- 3. root rot
- 4. mistletoe

RANGE

- I. Grazing
 - A. Grazing systems
 - 1. seasonal
 - 2. deferred
 - 3. rest rotation
 - B. Juniper and sagebrush control
 - 1. mechanical
 - 2. herbicide
 - 3. fire
 - a. prescribed
 - b. wildfire
- II. Other
 - A. Harvesting of special products (eg. fungi, firewood)
 - B. Pest management
 - C. Exotics
 - 1. flora
 - a. herbicidal control
 - b. manual (grubbing)
 - c. biological control (insects, rusts, etc.)
 - d. grass seeding to prevent reinvasion after herbicide treatment.
 - 2. fauna
 - D. Fire control
 - 1. borate
 - 2. backfire
 - 3. exclusion
 - E. Amelioration of pest, fire, flood, wind and volcanic disturbance
- III. Natural Disturbances
 - A. Drought
 - B. Wildfire
 - 1. groundfire
 - 2. stand replacement
 - C. Insect outbreaks and disease activity

CONSIDERATIONS FOR ASSESSMENT

- I. Temporal scale
 - A. immediate <5 yrs

Activity	Forest
1. Part practice	1. Site preparation
2. Defoliation	2. Prescribed burning
3. Root rot	3. Pile and bark
4. Pruning	4. Mechanical
	5. Herbicide
	6. Fuel
	7. Logging
	8. Pruning
	9. Skidding
	10. Ripping
	11. Scarification
	12. Herbicide
	13. Intermediate harvest
	14. Fertilization
	15. N
	16. P
	17. Nutrient management
	18. Harvesting
	19. Vegetation management
	20. Herbicide
	21. Mechanical
	22. Live oak grazing
	23. Chemical thinning
	24. Mechanical thinning
	25. Harvesting
	26. Vegetation management
	27. Herbicide
	28. Mechanical
	29. Live oak grazing
	30. Chemical thinning
	31. Mechanical thinning
	32. Harvesting
	33. Vegetation management
	34. Herbicide
	35. Mechanical
	36. Live oak grazing
	37. Chemical thinning
	38. Mechanical thinning
	39. Harvesting
	40. Vegetation management
	41. Herbicide
	42. Mechanical
	43. Live oak grazing
	44. Chemical thinning
	45. Mechanical thinning
	46. Harvesting
	47. Vegetation management
	48. Herbicide
	49. Mechanical
	50. Live oak grazing
	51. Chemical thinning
	52. Mechanical thinning
	53. Harvesting
	54. Vegetation management
	55. Herbicide
	56. Mechanical
	57. Live oak grazing
	58. Chemical thinning
	59. Mechanical thinning
	60. Harvesting
	61. Vegetation management
	62. Herbicide
	63. Mechanical
	64. Live oak grazing
	65. Chemical thinning
	66. Mechanical thinning
	67. Harvesting
	68. Vegetation management
	69. Herbicide
	70. Mechanical
	71. Live oak grazing
	72. Chemical thinning
	73. Mechanical thinning
	74. Harvesting
	75. Vegetation management
	76. Herbicide
	77. Mechanical
	78. Live oak grazing
	79. Chemical thinning
	80. Mechanical thinning
	81. Harvesting
	82. Vegetation management
	83. Herbicide
	84. Mechanical
	85. Live oak grazing
	86. Chemical thinning
	87. Mechanical thinning
	88. Harvesting
	89. Vegetation management
	90. Herbicide
	91. Mechanical
	92. Live oak grazing
	93. Chemical thinning
	94. Mechanical thinning
	95. Harvesting
	96. Vegetation management
	97. Herbicide
	98. Mechanical
	99. Live oak grazing
	100. Chemical thinning
	101. Mechanical thinning
	102. Harvesting
	103. Vegetation management
	104. Herbicide
	105. Mechanical
	106. Live oak grazing
	107. Chemical thinning
	108. Mechanical thinning
	109. Harvesting
	110. Vegetation management
	111. Herbicide
	112. Mechanical
	113. Live oak grazing
	114. Chemical thinning
	115. Mechanical thinning
	116. Harvesting
	117. Vegetation management
	118. Herbicide
	119. Mechanical
	120. Live oak grazing
	121. Chemical thinning
	122. Mechanical thinning
	123. Harvesting
	124. Vegetation management
	125. Herbicide
	126. Mechanical
	127. Live oak grazing
	128. Chemical thinning
	129. Mechanical thinning
	130. Harvesting
	131. Vegetation management
	132. Herbicide
	133. Mechanical
	134. Live oak grazing
	135. Chemical thinning
	136. Mechanical thinning
	137. Harvesting
	138. Vegetation management
	139. Herbicide
	140. Mechanical
	141. Live oak grazing
	142. Chemical thinning
	143. Mechanical thinning
	144. Harvesting
	145. Vegetation management
	146. Herbicide
	147. Mechanical
	148. Live oak grazing
	149. Chemical thinning
	150. Mechanical thinning
	151. Harvesting
	152. Vegetation management
	153. Herbicide
	154. Mechanical
	155. Live oak grazing
	156. Chemical thinning
	157. Mechanical thinning
	158. Harvesting
	159. Vegetation management
	160. Herbicide
	161. Mechanical
	162. Live oak grazing
	163. Chemical thinning
	164. Mechanical thinning
	165. Harvesting
	166. Vegetation management
	167. Herbicide
	168. Mechanical
	169. Live oak grazing
	170. Chemical thinning
	171. Mechanical thinning
	172. Harvesting
	173. Vegetation management
	174. Herbicide
	175. Mechanical
	176. Live oak grazing
	177. Chemical thinning
	178. Mechanical thinning
	179. Harvesting
	180. Vegetation management
	181. Herbicide
	182. Mechanical
	183. Live oak grazing
	184. Chemical thinning
	185. Mechanical thinning
	186. Harvesting
	187. Vegetation management
	188. Herbicide
	189. Mechanical
	190. Live oak grazing
	191. Chemical thinning
	192. Mechanical thinning
	193. Harvesting
	194. Vegetation management
	195. Herbicide
	196. Mechanical
	197. Live oak grazing
	198. Chemical thinning
	199. Mechanical thinning
	200. Harvesting
	201. Vegetation management
	202. Herbicide
	203. Mechanical
	204. Live oak grazing
	205. Chemical thinning
	206. Mechanical thinning
	207. Harvesting
	208. Vegetation management
	209. Herbicide
	210. Mechanical
	211. Live oak grazing
	212. Chemical thinning
	213. Mechanical thinning
	214. Harvesting
	215. Vegetation management
	216. Herbicide
	217. Mechanical
	218. Live oak grazing
	219. Chemical thinning
	220. Mechanical thinning
	221. Harvesting
	222. Vegetation management
	223. Herbicide
	224. Mechanical
	225. Live oak grazing
	226. Chemical thinning
	227. Mechanical thinning
	228. Harvesting
	229. Vegetation management
	230. Herbicide
	231. Mechanical
	232. Live oak grazing
	233. Chemical thinning
	234. Mechanical thinning
	235. Harvesting
	236. Vegetation management
	237. Herbicide
	238. Mechanical
	239. Live oak grazing
	240. Chemical thinning
	241. Mechanical thinning
	242. Harvesting
	243. Vegetation management
	244. Herbicide
	245. Mechanical
	246. Live oak grazing
	247. Chemical thinning
	248. Mechanical thinning
	249. Harvesting
	250. Vegetation management
	251. Herbicide
	252. Mechanical
	253. Live oak grazing
	254. Chemical thinning
	255. Mechanical thinning
	256. Harvesting
	257. Vegetation management
	258. Herbicide
	259. Mechanical
	260. Live oak grazing
	261. Chemical thinning
	262. Mechanical thinning
	263. Harvesting
	264. Vegetation management
	265. Herbicide
	266. Mechanical
	267. Live oak grazing
	268. Chemical thinning
	269. Mechanical thinning
	270. Harvesting
	271. Vegetation management
	272. Herbicide
	273. Mechanical
	274. Live oak grazing
	275. Chemical thinning
	276. Mechanical thinning
	277. Harvesting
	278. Vegetation management
	279. Herbicide
	280. Mechanical
	281. Live oak grazing
	282. Chemical thinning
	283. Mechanical thinning
	284. Harvesting
	285. Vegetation management
	286. Herbicide
	287. Mechanical
	288. Live oak grazing
	289. Chemical thinning
	290. Mechanical thinning
	291. Harvesting
	292. Vegetation management
	293. Herbicide
	294. Mechanical
	295. Live oak grazing
	296. Chemical thinning
	297. Mechanical thinning
	298. Harvesting
	299. Vegetation management
	300. Herbicide
	301. Mechanical
	302. Live oak grazing
	303. Chemical thinning
	304. Mechanical thinning
	305. Harvesting
	306. Vegetation management
	307. Herbicide
	308. Mechanical
	309. Live oak grazing
	310. Chemical thinning
	311. Mechanical thinning
	312. Harvesting
	313. Vegetation management
	314. Herbicide
	315. Mechanical
	316. Live oak grazing
	317. Chemical thinning
	318. Mechanical thinning
	319. Harvesting
	320. Vegetation management
	321. Herbicide
	322. Mechanical
	323. Live oak grazing
	324. Chemical thinning
	325. Mechanical thinning
	326. Harvesting
	327. Vegetation management
	328. Herbicide
	329. Mechanical
	330. Live oak grazing
	331. Chemical thinning
	332. Mechanical thinning
	333. Harvesting
	334. Vegetation management
	335. Herbicide
	336. Mechanical
	337. Live oak grazing
	338. Chemical thinning
	339. Mechanical thinning
	340. Harvesting
	341. Vegetation management
	342. Herbicide
	343. Mechanical
	344. Live oak grazing
	345. Chemical thinning
	346. Mechanical thinning
	347. Harvesting
	348. Vegetation management
	349. Herbicide
	350. Mechanical
	351. Live oak grazing
	352. Chemical thinning
	353. Mechanical thinning
	354. Harvesting
	355. Vegetation management
	356. Herbicide
	357. Mechanical
	358. Live oak grazing
	359. Chemical thinning
	360. Mechanical thinning
	361. Harvesting
	362. Vegetation management
	363. Herbicide
	364. Mechanical
	365. Live oak grazing
	366. Chemical thinning
	367. Mechanical thinning
	368. Harvesting
	369. Vegetation management
	370. Herbicide
	371. Mechanical
	372. Live oak grazing
	373. Chemical thinning
	374. Mechanical thinning
	375. Harvesting
	376. Vegetation management
	377. Herbicide
	378. Mechanical
	379. Live oak grazing
	380. Chemical thinning
	381. Mechanical thinning
	382. Harvesting
	383. Vegetation management
	384. Herbicide
	385. Mechanical
	386. Live oak grazing
	387. Chemical thinning
	388. Mechanical thinning
	389. Harvesting
	390. Vegetation management
	391. Herbicide
	392. Mechanical
	393. Live oak grazing
	394. Chemical thinning
	395. Mechanical thinning
	396. Harvesting
	397. Vegetation management
	398. Herbicide
	399. Mechanical
	400. Live oak grazing
	401. Chemical thinning
	402. Mechanical thinning
	403. Harvesting
	404. Vegetation management
	405. Herbicide
	406. Mechanical
	407. Live oak grazing
	408. Chemical thinning
	409. Mechanical thinning
	410. Harvesting
	411. Vegetation management
	412. Herbicide
	413. Mechanical
	414. Live oak grazing
	415. Chemical thinning
	416. Mechanical thinning
	417. Harvesting
	418. Vegetation management
	419. Herbicide
	420. Mechanical
	421. Live oak grazing
	422. Chemical thinning
	423. Mechanical thinning
	424. Harvesting
	425. Vegetation management
	426. Herbicide
	427. Mechanical
	428. Live oak grazing
	429. Chemical thinning
	430. Mechanical thinning
	431. Harvesting
	432. Vegetation management
	433. Herbicide
	434. Mechanical
	435. Live oak grazing
	436. Chemical thinning
	437. Mechanical thinning
	438. Harvesting
	439. Vegetation management
	440. Herbicide
	441. Mechanical
	442. Live oak grazing
	443. Chemical thinning
	444. Mechanical thinning
	445. Harvesting
	446. Vegetation management
	447. Herbicide
	448. Mechanical
	449. Live oak grazing
	450. Chemical thinning
	451. Mechanical thinning
	452. Harvesting
	453. Vegetation management
	454. Herbicide
	455. Mechanical
	456. Live oak grazing
	457. Chemical thinning
	458. Mechanical thinning
	459. Harvesting
	460. Vegetation management
	461. Herbicide
	462. Mechanical
	463. Live oak grazing
	464. Chemical thinning
	465. Mechanical thinning
	466. Harvesting
	467. Vegetation management
	468. Herbicide
	469. Mechanical
	470. Live oak grazing
	471. Chemical thinning
	472. Mechanical thinning
	473. Harvesting
	474. Vegetation management
	475. Herbicide
	476. Mechanical
	477. Live oak grazing
	478. Chemical thinning
	479. Mechanical thinning
	480. Harvesting
	481. Vegetation management
	482. Herbicide
	483. Mechanical
	484. Live oak grazing
	485. Chemical thinning
	486. Mechanical thinning
	487. Harvesting
	488. Vegetation management
	489. Herbicide
	490. Mechanical
	491. Live oak grazing
	492. Chemical thinning
	493. Mechanical thinning
	494. Harvesting
	495. Vegetation management
	496. Herbicide
	497. Mechanical
	498. Live oak grazing
	499. Chemical thinning
	500. Mechanical thinning

CONSIDERATIONS FOR ASSESSMENT

1. Temporal scale
2. Immediate < 5 yrs

- B. short term 550 yrs
- C. long term >50 yrs
- II. Spatial scale
 - A. stand
 - B. landscape
- III. Forest cover
 - A. LPP climax
 - B. PP climax
 - C. Dry mixed conifer DF, GF,
- PP, WL
- D. Moist mixed conifer DF, WF,
- WL, WWP, LPP
- E. High elevation mixed conifer
- ES, SAF, WBP, MH
- F. Riparian/Wetlands
 - PP=Ponderosa pine
 - WL=Western larch
 - DF=Douglas fir
 - GF=Grand fir,
 - WF=White fir
 - LPP=Lodgepole pine
 - WWP=Western white pine
 - ES=Engleman spruce
 - SAF=Subalpine fir
 - WBP=Whitebark pine
 - MH=Mountain hemlock

- IV. Range type
 - A. Juniper woodlands
 - B. Grasslands
 - 1. mountain
 - 2. palouse
 - C. Shrublands
 - 1. salt desert shrub
 - 2. xeric sagebrush
 - 3. mesic sagebrush
 - D. Riparian/Wetlands
- V. Structural stage
 - A. Early
 - B. Stem exclusion
 - C. Reinitiation
- VI. Season
- VII. Intensity
 - A. severity
 - B. number of entries
- VIII. Source of knowledge
 - A. Experimental data from CRB
 - B. Extrapolated from outside CRB
 - C. No experimental data

IV. Range type
 A. Temper woodlands
 B. Grasslands
 1. m. contains
 2. patches
 C. Shrublands
 1. well developed shrub
 2. xeric vegetation
 3. mesic vegetation
 D. Riparian/Wetlands
 V. Structural stage
 A. Early
 B. Intermediate
 C. Maturity
 VI. Season
 VII. Intensity
 A. Severity
 B. Number of entries
 VIII. Source of knowledge
 A. Experimental data from
 CWS
 B. Extrapolated from outside
 CWS
 C. No experimental data

A. Short term 250 yrs
 B. Long term 500 yrs
 C. Special scale
 A. Stand
 B. Landscape
 C. Forest cover
 III. Forest cover
 A. 15% climax
 B. 5% climax
 C. Dry mixed conifer 15, 5%
 IV. WT
 D. Mixed mixed conifer 15, WT
 WT, 15%
 E. High elevation mixed conifer
 WT, 15%, WT, 15%
 V. Riparian/Wetlands
 WT-ponderosa pine
 WT-western larch
 DE-Douglas fir
 SE-Grand fir
 WF-White fir
 LP-Lodgepole pine
 WT-western white pine
 ES-Engelmann spruce
 SA-Subalpine fir
 WT-western pine
 MT-mountain hemlock

Appendix xx. Historical and current habitat area for select invertebrate species in the Interior Columbia River Basin based on vegetation types mapped from satellite imagery at a 1-km² pixel resolution.

Family	Species code	Scientific name	Common Name	Historic habitat (ha)	Current habitat (ha)	Change from historic (%)
Adelgidae	ADEPIC	<i>Adelges piceae</i>		2,706,400	6,091,900	125.1
Alydidae	ALYCAL	<i>Alydus calcaratus</i>		na	10,923,100	na
Anthocoridae	ORITRI	<i>Orius tristicolor</i>		43,245,400	37,754,600	-12.7
Anthocoridae	TETLAT	<i>Tetraphleps latipennis</i>		12,942,200	10,405,700	-19.6
Berytidae	JALWIC	<i>Jalysus wickhami</i>		23,952,900	35,252,200	47.2
Carabidae	NEBGFR	<i>Nebria gebleri fragariae</i>		545,600	544,500	-0.2
Carabidae	NEBVWY	<i>Nebria vandykei wyeast</i>	Wyeast's gazelle beetle	773,500	772,200	-0.2
Carabidae	PTEPRO	<i>Pterostichus protractus</i>		28,046,500	24,853,400	-11.4
Chriporelidae	CHRSCR	<i>Chrysomela scripta</i>	Cottonwood leaf beetle	409,300	160,000	-60.9
Cicindellidae	CICWEC	<i>Cicindela willistoni echo</i>		1,977,800	1,539,500	-22.2
Cicindellide	CICARE	<i>Cicindela arenicola</i>		138,300	138,300	0.0
Cicindellide	CICCOL	<i>Cicindela columbica</i>		683,900	682,800	-0.2
Cimicidae	CIMLET	<i>Cimex latipennis</i>		43,245,400	37,754,600	-12.7
Cleridae	ENOSPH	<i>Enoclerus sphegeus</i>		20,869,300	21,754,800	4.2
Coccinellidae	HYPLAT	<i>Hyperaspis lateralis</i>		21,994,800	27,179,300	23.6
Coleophoridae	COLLAR	<i>Coleophora laricella</i>	Larch casebearer	2,132,700	1,369,800	-35.8
Coreidae	CHEVIT	<i>Chelinidea vittiger</i>		16,701,600	11,571,700	-30.7
Coreidae	LEPOCC	<i>Leptoglossus occidentalis</i>		9,015,200	5,938,800	-34.1
Corixidae	CALAUD	<i>Callicorixa audeni</i>		545,600	544,500	-0.2
Corixidae	CORDEC	<i>Corisella decolor</i>		545,600	544,500	-0.2
Cydnidae	MICOB	<i>Microporus obliquus</i>		1,856,200	2,230,100	20.1
Dipriohidae	NEOFUL	<i>Neodiprion fulviceps</i>	Pine sawfly spp.	7,967,500	5,892,600	-26.0
Enicocephalidae	BORAME	<i>Boreostolus americanus</i>		545,600	544,500	-0.2
Formicidae	CAMMOD	<i>Camponotus modoc</i>	Carpenter ant	6,156,700	9,022,500	46.5
Formicidae	FOROBS	<i>Formica obscuripes</i>	Thatch ant	43,367,900	48,731,600	12.4

Gelastocoridae	GELOCU	<i>Gelastocoris oculatus</i>		545,600	544,500	-0.2
Gelechiidae	COLMIL	<i>Coleotechnites milleri</i>	Lodgepole needle miner	4,430,200	4,227,900	-4.6
Geometridae	ALSPOM	<i>Alsophila pometaria</i>	Fall cankerworm	563,100	1,046,200	85.8
Geometridae	DREUNI	<i>Drepanulatrix unicalcararia</i>		172,700	100,200	-42.0
Gerridae	GERGIL	<i>Gerris gillettei</i>		545,600	544,500	-0.2
Gnaphosidae/Araneida	ZELHEN	<i>Zelotes hentzi</i>		21,994,800	27,179,300	23.6
Herbridae	HEBBUE	<i>Hebrus buenoi</i>		22,540,400	27,723,800	23.0
Hesperiidae	POLMAR	<i>Polites mardon</i>	Mardon skipper	172,700	100,200	-42.0
Lasiocampidae	MALDIS	<i>Malacosoma disstria</i>	Forest tent caterpillar	563,100	1,046,200	85.8
Leiiodidae	GLABAT	<i>Glacicavicola bathyscooides</i>		138,300	138,300	0.0
Lumbricidae	ALLTUR	<i>Allolobophora turgida</i>		21,994,800	16,256,200	-26.1
Lycaenidae	MITJOH	<i>Mitowra johnsoni</i>		7,967,500	5,892,600	-26.0
Lycosidae/Araneida	ARCLIT	<i>Arctosa littoralis</i>		545,600	544,500	-0.2
Lygaeidae	EURRUB	<i>Europiella rubricornis</i>		1,293,900	856,700	-33.8
Lygaeidae	GASPAC	<i>Gastrodes pacificus</i>		3,754,300	4,782,800	27.4
Lygaeidae	GEOBUL	<i>Geocoris bullatus</i>		31,234,300	30,116,900	-3.6
Lygaeidae	MALANG	<i>Malezonotus angustatus</i>		12,942,200	10,405,700	-19.6
Lymantriidae	ORGPSE	<i>Orgyia pseudotsugata</i>	Douglas-fir tussock moth	8,473,300	11,726,600	38.4
Meloidae	EPINOR	<i>Epicanta normalis</i>		29,395,900	28,975,000	-1.4
Miridae	ADESUP	<i>Adelphocoris superbus</i>		54,214,800	42,316,700	-21.9
Miridae	ATRBAL	<i>Atractotomus balli</i>		21,245,400	15,684,700	-26.2
Miridae	DERBRE	<i>Dereocoris brevis</i>		51,290,800	53,399,900	4.1
Miridae	DICSPP	<i>Dichaetocoris spp.</i>		na	10,923,100	na
Miridae	IRBPAC	<i>Irbisia pacifica</i>		31,234,300	19,193,800	-38.5
Miridae	LABHES	<i>Labops hesperius</i>		29,395,900	18,051,900	-38.6
Miridae	LOPNIG	<i>Lopidea nigridea</i>		52,920,900	41,460,000	-21.7
Miridae	LYGELI	<i>Lygus elisus</i>		22,319,700	16,217,600	-27.3
Miridae	MYRORE	<i>Myrmecophyes oregonensis</i>		29,395,900	18,051,900	-38.6

Miridae	NEOXAN	<i>Neoborella xanthenes</i>		12,397,700	10,120,500	-18.4
Miridae	PHYJUN	<i>Phytocoris juniperanus</i>		2,400,700	13,438,400	459.8
Miridae	PHYLAE	<i>Phytocoris laevis</i>		22,319,700	16,217,600	-27.3
Miridae	PHYLAT	<i>Phytocoris lattini</i>		545,600	544,500	-0.2
Miridae	PHYNIG	<i>Phytocoris nigrolineatus</i>		20,481,300	25,998,800	26.9
Miridae	PHYSTE	<i>Phytocoris stellatus</i>		4,430,200	4,227,900	-4.6
Miridae	PHYYOL	<i>Phytocoris yollabollae</i>		3,754,300	4,782,800	27.4
Miridae	PILTIB	<i>Pilophorus tibialis</i>		12,397,700	10,120,500	-18.4
Miridae	PLARUB	<i>Platylygus rubripes</i>		12,397,700	10,120,500	-18.4
Nabidae	NABVAN	<i>Nabicula vanduzeei</i>		10,021,400	4,634,800	-53.8
Nabidae	NABALT	<i>Nabis alternatus</i>		23,952,900	24,329,100	1.6
Naucoridae	AMBMOR	<i>Ambrysus mormon</i>		22,540,400	16,800,700	-25.5
Noctuidae	SYNORO	<i>Syngrapha orophila</i>		172,700	100,200	-42.0
Notonectidae	NOTKIR	<i>Notonecta kirbyi</i>		545,600	544,500	-0.2
Nymphalidae	NYMANT	<i>Nymphalis antiopa</i>	Mourningcloak butterfly	409,300	160,000	-60.9
Olethrentidae	EUCSON	<i>Eucosma sonomana</i>	Western pine shoot borer	12,397,700	10,120,500	-18.4
Papilionidae	PAPZEL	<i>Papilio zelicaon</i>		na	10,923,100	na
Papilionidae	PARCLO	<i>Parnassius clodius</i>		138,300	138,300	0.0
Pentatomidae	CHLOPU	<i>Chlorochroa opuntiae</i>		16,701,600	11,571,700	-30.7
Pentatomidae	CODREM	<i>Codophila remota</i>		21,994,800	27,179,300	23.6
Pentatomidae	ZICCAE	<i>Zicrona caerulea</i>		21,994,800	27,179,300	23.6
Phymatidae	PHYAME	<i>Phymata americana</i>		20,700,900	26,322,600	27.2
Pieridae	COLPEL	<i>Colias pelidne</i>		89,600	89,400	-0.2
Pieridae	NEOMEN	<i>Neophasia menapia</i>	Pine butterfly	12,397,700	10,120,500	-18.4
Pseudogarypidae/Chernilldal	PSEHES	<i>Pseudogarypus hesperus</i>		9,521,000	11,772,800	23.7
Reduviidae	SINDIA	<i>Sinea diadema</i>		20,700,900	26,322,600	27.2
Rhopalidae	BOIRUB	<i>Boisea rubrolineata</i>		545,600	544,500	-0.2
Rhopalidae	CHOSNO	<i>Chorosoma sp nov</i>		1,293,900	856,700	-33.8
Saldidae	IOSPOL	<i>Ioscytus politus</i>		545,600	544,500	-0.2

Saldidae	MICFEN	<i>Micracanthia fennica</i>		22,540,400	27,723,800	23.0
Saldidae	SALBUE	<i>Salda buenoi</i>		545,600	544,500	-0.2
Salticidae	METAEN	<i>Metaphidipous aeneolus</i>	Jumping spider	18,554,400	19,143,000	3.2
Saturniidae	COLPAN	<i>Coloradia pandora</i>	Pandora moth	12,397,700	10,120,500	-18.4
Saturniidae	HEMHER	<i>Hemileuca hera</i>		na	10,923,100	na
Scolytidae	DENBRE	<i>Dendroctonus brevicomis</i>		9,015,200	5,938,800	-34.1
Scolytidae	DENPON	<i>Dendroctonus ponderosae</i>		17,894,700	14,240,600	-20.4
Scolytidae	DENPSE	<i>Dendroctonus pseudotsugae</i>		14,308,100	16,249,400	13.6
Scolytidae	DENRUF	<i>Dendroctonus rufipennis</i>		6,746,800	6,932,000	2.7
Scolytidae	SCOVEN	<i>Scolytus ventralis</i>		269,700	2,869,900	964.1
Scutelleridae	HOMBIJ	<i>Homaemus bijugis</i>		8,914,600	2,976,200	-66.6
Scutelleridae	TETROB	<i>Tetyra robusta</i>		1,106,800	1,658,600	49.9
Shore bug family?	SALEXP	<i>Saldula explanata</i>		3,754,300	4,782,800	27.4
Shore bug family?	SALNIG	<i>Saldula nigrita</i>		545,600	544,500	-0.2
Sphingidae	SPHVAS	<i>Sphinx vashti</i>		172,700	100,200	-42.0
Tenchodiniidae	PRIERI	<i>Pristophora erichsonii</i>	Larch sawfly	2,132,700	1,369,800	-35.8
Tenthredinidae	PONPAC	<i>Pontania pacifica</i>	Gall-forming sawflies	409,300	160,000	-60.9
Theridilidae/Araneida	LATHES	<i>Latrodectus hesperus</i>		22,539,300	27,464,500	21.9
Thyreocoridae	COREXT	<i>Corimelaena extensa</i>		31,234,300	19,193,800	-38.5
Tingidae	CORIMM	<i>Corythucha immaculata</i>		26,022,500	17,289,300	-33.6
Tingidae	CORMOL	<i>Corythucha mollicula</i>		545,600	544,500	-0.2
Tortricidae	CHOCON	<i>Choristoneura conflictana</i>	Large aspen tortrix	563,100	1,046,200	85.8
Tortricidae	CHOOCC	<i>Choristoneura occidentalis</i>	Western spruce budworm	6,340,600	10,356,800	63.3
Travuniidae/Phalangida	SPESEN	<i>Speleonychia sengeri</i>		138,300	138,300	0.0
Veliidae	MICBUE	<i>Microvelia buenoi</i>		545,600	544,500	-0.2
Veludae	RHADIS	<i>Rhagovelia distincta</i>		545,600	544,500	-0.2
Vespidae	VESPEN	<i>Vespula pensylvanica</i>	Western yellow jacket	55,818,500	54,315,500	-2.7
	NEORID	<i>Neomis ridingsii</i>		na	10,923,100	na

Appendix INVEHERB. Invertebrate species using open and closed grassland/herb structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 206 invertebrate species representative of habitats and functions in the ICBEMP assessment area.

Family	Scientific name	Common name	Versatility
Alydidae	<i>Alydus calcaratus</i>		0
Geometridae	<i>Drepanulatrix unicalcararia</i>		0
Hesperiidae	<i>Polites mardon</i>	Mardon skipper	0
Miridae	<i>Dichaetocoris</i> spp.		0
Noctuidae	<i>Syngrapha orophila</i>		0
Papilionidae	<i>Papilio zelicaon</i>		0
Saturniidae	<i>Hemileuca hera</i>		0
Sphingidae	<i>Sphinx vashti</i>		0
	<i>Neomis ridingsii</i>		0
Cicindellidae	<i>Cicindela willistoni echo</i>		1
Lygaeidae	<i>Europiella rubricornis</i>		1
Rhopalidae	<i>Chorosoma sp nov</i>		1
Coreidae	<i>Chelinidea vittiger</i>		2
Pentatomidae	<i>Chlorochroa opuntiae</i>		2
Scutelleridae	<i>Homaemus bijugis</i>		2
Carabidae	<i>Pterostichus protractus</i>		7
Berytidae	<i>Jalysus wickhami</i>		8
Cydnidae	<i>Microporus obliquus</i>		8
Formicidae	<i>Formica obscuripes</i>	Thatch ant	8
Miridae	<i>Phytocoris juniperanus</i>		8
Coccinellidae	<i>Hyperaspis lateralis</i>		9
Gnaphosidae/ Araneida	<i>Zelotes hentzi</i>		9
Herbridae	<i>Hebrus buenoi</i>		9
Lumbricidae	<i>Allolobophora turgida</i>		9
Lygaeidae	<i>Geocoris bullatus</i>		9
Meloidae	<i>Epicanta normalis</i>		9
Miridae	<i>Atractotomus balli</i>		9
Miridae	<i>Dereocoris brevis</i>		9
Miridae	<i>Irbisia pacifica</i>		9
Miridae	<i>Labops hesperius</i>		9
Miridae	<i>Lopidea nigridea</i>		9
Miridae	<i>Lygus elisus</i>		9
Miridae	<i>Myrmecophyes oregonensis</i>		9
Miridae	<i>Phytocoris laevis</i>		9
Miridae	<i>Phytocoris nigrolineatus</i>		9

2	<i>Medicago lupulina</i>	Leguminosae
3	<i>Asperula cynosuroides</i>	Rubiaceae
4	<i>Conoclinium ovale</i>	Asteraceae
5	<i>Limonium carolinianum</i>	Plumbaginaceae
6	<i>Hypericum ascyron</i>	Hypericaceae
7	<i>Rhus glabra</i>	Anacardiaceae
8	<i>Microrhiza lanata</i>	Rubiaceae
9	<i>Leptocarpus hirsutus</i>	Urticaceae
10		Compositae
11	<i>Coronilla varia</i>	Rubiaceae
12	<i>Corydalis sempervivens</i>	Papaveraceae
13	<i>Verbena pennsylvanica</i>	Verbenaceae
14	Western Yellow Jacket	
15	<i>Ornithoglossum virginicum</i>	Liliaceae
16	<i>Claytonia virginica</i>	Claytoniaceae
17	<i>Stachys palustris</i>	Lamiaceae

- - - - - Vertically ruling denotes the number of other structural stages used by the species (if maximum).

Appendix INVESH RB. Invertebrate species using open or closed, low-medium shrub structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 206 invertebrate species representative of habitats and functions in the ICBEMP assessment area.

Family	Scientific name	Common name	Versatility
Alydidae	<i>Alydus calcaratus</i>		0
Geometridae	<i>Drepanulatrix unicalcararia</i>		0
Hesperiidae	<i>Polites mardon</i>	Mardon skipper	0
Miridae	<i>Dichaetocoris</i> spp.		0
Noctuidae	<i>Syngrapha orophila</i>		0
Papilionidae	<i>Papilio zelicaon</i>		0
Saturniidae	<i>Hemileuca hera</i>		0
Sphingidae	<i>Sphinx vashti</i>		0
	<i>Neomis ridingsii</i>		0
Cicindellidae	<i>Cicindela willistoni</i>		1
	<i>echo</i>		
Lygaeidae	<i>Europiella rubricornis</i>		1
Rhopalidae	<i>Chorosoma</i> sp nov		1
Coreidae	<i>Chelinidea vittiger</i>		2
Pentatomidae	<i>Chlorochroa opuntiae</i>		2
Scutelleridae	<i>Homaemus bijugis</i>		2
Carabidae	<i>Pterostichus protractus</i>		7
Berytidae	<i>Jalysus wickhami</i>		8
Cydnidae	<i>Microporus obliquus</i>		8
Formicidae	<i>Formica obscuripes</i>	Thatch ant	8
Miridae	<i>Phytocoris juniperanus</i>		8
Coccinellidae	<i>Hyperaspis lateralis</i>		9
Gnaphosidae/araneida	<i>Zelotes hentzi</i>		9
Herbridae	<i>Hebrus buenoi</i>		9
Lumbricidae	<i>Allolobophora turgida</i>		9
Lygaeidae	<i>Geocoris bullatus</i>		9
Meloidae	<i>Epicanta normalis</i>		9
Miridae	<i>Atractotomus balli</i>		9
Miridae	<i>Dereocoris brevis</i>		9
Miridae	<i>Irbisia pacifica</i>		9
Miridae	<i>Labops hesperius</i>		9
Miridae	<i>Lopidea nigridea</i>		9
Miridae	<i>Lygus elisus</i>		9
Miridae	<i>Myrmecophyes oregonensis</i>		9
Miridae	<i>Phytocoris laevis</i>		9

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

- - - - -
 the species (if known).
 - - - - -
 the number of other structural stages used by

Appendix INVEOLDF. Invertebrate species using single- and multi-storied old forest structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project. Species were determined from a select list of 206 invertebrate species representative of habitats and functions in the ICBEMP assessment area.

Family	Scientific name	Common name	Versatility
Diprionidae	<i>Neodiprion fulviceps</i>	Pine sawfly spp.	0
Formicidae	<i>Camponotus modoc</i>	Carpenter ant	0
Lycaenidae	<i>Mitowra johnsoni</i>		0
Pseudogarypidae/ Chernilldal	<i>Pseudogarypus hesperus</i>		0
Scolytidae	<i>Dendroctonus pseudotsugae</i>		0
Gelechiidae		Lodgepole needle miner	1
Saturniidae	<i>Coloradia pandora</i>	Pandora moth	1
Coleophoridae	<i>Coleophora laricella</i>	Larch casebearer	2
Coreidae	<i>Leptoglossus occidentalis</i>		2
Lygaeidae	<i>Gastrodes pacificus</i>		2
Lygaeidae	<i>Malezonotus angustatus</i>		2
Lymantriidae	<i>Orgyia pseudotsugata</i>	Douglas-fir tussock moth	2
Pieridae	<i>Neophasia menapia</i>	Pine butterfly	2
Tortricidae	<i>Choristoneura conflictana</i>	Large aspen tortrix	2
Tortricidae	<i>Choristoneura occidentalis</i>	Western spruce budworm	2
Adelgidae	<i>Adelges piceae</i>		3
Cleridae	<i>Enoclerus spegeus</i>		3
Geometridae	<i>Alsophila pometaria</i>	Fall cankerworm	3
Lasiocampidae	<i>Malacosoma disstria</i>	Forest tent caterpillar	3
Miridae	<i>Neoborella xanthenes</i>		3
Miridae	<i>Phytocoris yollabollae</i>		3
Miridae	<i>Platylygus rubripes</i>		3
Scolytidae	<i>Dendroctonus brevicomis</i>		3
Scolytidae	<i>Dendroctonus ponderosae</i>		3
Scolytidae	<i>Dendroctonus rufipennis</i>		3
Scolytidae	<i>Scolytus ventralis</i>		3
Tenchodidae	<i>Pristophora erichsonii</i>	Larch sawfly	3
Miridae	<i>Pilophorus tibialis</i>		4
Salticidae	<i>Metaphidipous aeneolus</i>	Jumping spider	4
Shore bug family?			4
Anthocoridae	<i>Tetraphleps latipennis</i>		5
Scutelleridae	<i>Tetyra robusta</i>		5
Carabidae	<i>Pterostichus protractus</i>		7

Berytidae	<i>Jalysus wickhami</i>		8
Cydnidae	<i>Microporus obliquus</i>		8
Formicidae	<i>Formica obscuripes</i>	Thatch ant	8
Miridae	<i>Phytocoris juniperanus</i>		8
Coccinellidae	<i>Hyperaspis lateralis</i>		9
Gnaphosidae/ Araneida	<i>Zelotes hentzi</i>		9
Herbidae	<i>Hebrus buenoi</i>		9
Lumbricidae	<i>Allolobophora turgida</i>		9
Lygaeidae	<i>Geocoris bullatus</i>		9
Meloidae	<i>Epicanta normalis</i>		9
Miridae	<i>Atractotomus balli</i>		9
Miridae	<i>Dereocoris brevis</i>		9
Miridae	<i>Irbisia pacifica</i>		9
Miridae	<i>Labops hesperius</i>		9
Miridae	<i>Lopidea nigridea</i>		9
Miridae	<i>Lygus elisus</i>		9
Miridae	<i>Myrmecophyes oregonensis</i>		9
Miridae	<i>Phytocoris laevis</i>		9
Miridae	<i>Phytocoris nigrolineatus</i>		9
Nabidae	<i>Nabicula vanduzeei</i>		9
Naucoridae	<i>Ambrysus mormon</i>		9
Pentatomidae	<i>Codophila remota</i>		9
Pentatomidae	<i>Zicrona caerulea</i>		9
Phymatidae	<i>Phymata americana</i>		9
Reduviidae	<i>Sinea diadema</i>		9
Saldidae	<i>Micracanthia fennica</i>		9
Theridilidae/ Araneida	<i>Latrodectus hesperus</i>		9
Thyreocoridae	<i>Corimelaena extensa</i>		9
Tingidae	<i>Corythucha immaculata</i>		9
Vespidae	<i>Vespula pensylvanica</i>	Western yellow jacket	9
Anthocoridae	<i>Orius tristicolor</i>		11
Cimicidae	<i>Cimex latipennis</i>		11
Miridae	<i>Adelphocoris superbus</i>		11

* - Versatility rating denotes the number of other structural stages used by the species (11 maximum).

1		<i>Lepturus wickhami</i>	Lepturidae
2		<i>Meloboris melleus</i>	Cyrtidae
3	Thrush	<i>Lepturus wickhami</i>	Cyrtidae
4		<i>Pyrochroa pyrochroa</i>	Meloidae
5		<i>Pyrochroa lateralis</i>	Coccinellidae
6		<i>Lepturus wickhami</i>	Cyrtidae
7		<i>Lepturus wickhami</i>	Cyrtidae
8		<i>Alcidiphora curvata</i>	Lepturidae
9		<i>Geocoris pallipes</i>	Geocoridae
10		<i>Episcapha notata</i>	Meloidae
11		<i>Arctostema falli</i>	Meloidae
12		<i>Geocoris brevis</i>	Meloidae
13		<i>Lepturus wickhami</i>	Meloidae
14		<i>Lepturus wickhami</i>	Meloidae
15		<i>Lepturus wickhami</i>	Meloidae
16		<i>Lepturus wickhami</i>	Meloidae
17		<i>Pyrochroa pyrochroa</i>	Meloidae
18		<i>Pyrochroa lateralis</i>	Meloidae
19		<i>Pyrochroa nigricollis</i>	Meloidae
20		<i>Meloboris melleus</i>	Meloidae
21		<i>Lepturus wickhami</i>	Meloidae
22		<i>Lepturus wickhami</i>	Meloidae
23		<i>Lepturus wickhami</i>	Meloidae
24		<i>Lepturus wickhami</i>	Meloidae
25		<i>Lepturus wickhami</i>	Meloidae
26		<i>Lepturus wickhami</i>	Meloidae
27		<i>Lepturus wickhami</i>	Meloidae
28		<i>Lepturus wickhami</i>	Meloidae
29		<i>Lepturus wickhami</i>	Meloidae
30		<i>Lepturus wickhami</i>	Meloidae
31		<i>Lepturus wickhami</i>	Meloidae
32		<i>Lepturus wickhami</i>	Meloidae
33		<i>Lepturus wickhami</i>	Meloidae
34		<i>Lepturus wickhami</i>	Meloidae
35		<i>Lepturus wickhami</i>	Meloidae
36		<i>Lepturus wickhami</i>	Meloidae
37		<i>Lepturus wickhami</i>	Meloidae
38		<i>Lepturus wickhami</i>	Meloidae
39		<i>Lepturus wickhami</i>	Meloidae
40		<i>Lepturus wickhami</i>	Meloidae
41	Western yellow jacket	<i>Vespa pensylvanica</i>	Vespidae
42		<i>Oxycera tricolor</i>	Anthracidae
43		<i>Climax latipennis</i>	Climacidae
44		<i>Anthracoceros ephemerus</i>	Meloidae

* - Voucher specimens deposited in the number of other specimens stages used by the species (if maximum).

Appendix VERTCAND. Summaries of vertebrate species with USFWS Candidate C1 or C2 status.

Larch Mountain salamander. Primarily a species found west of the Cascade crest in Washington and Oregon with few reports east of the Cascades. Primary habitat is moist talus associated with late succession coniferous forests. Threats to the species can be as a result of disturbance of suitable talus through mining activities (for road construction or other gravel sources) or trail and road construction. Disturbance of the talus during survey for the presence of salamanders can also result in drying out of the talus and reduction of prey.

Western toad. Widespread across the CRB. Habitat is near wetlands, marshes and small ponds associated with dry forests or "shrubby" areas. Reported to be declining in parts of the range, e.g. southern Idaho, but populations seem stable in other areas. Development, including channelization of low elevation wet areas result in loss of habitat. Increases in ultraviolet radiation may also be a problem. Breeding habitat may be lost as a result of dam construction. Prior to dams, high water flows formed breeding pools when the water receded, regulated river flows as a result of dams prevent these habitats from forming.

Red-legged frog.

Tailed frog.

Cascades frog. Range overlaps with spotted frog and the two may compete and hybridize in some locations. They are most common in small pools adjacent to streams flowing through subalpine meadows. The species may be locally abundant but also absent from habitat that appears to be suitable. Introduction of predatory fish into frog breeding areas have been recognized as possible threats to the population. Increases in ultraviolet radiation and effects on embryos is a possible threat. Livestock grazing may have an adverse effect on vegetation associated with breeding areas, but little work has been completed to document the effects.

Spotted frog. Populations east of the Cascades in Washington appear stable, but in Utah, Nevada and southwestern Idaho populations have declined. There have been proposals to divide the species into two, recognizing the difference between east and west of the Cascades.

Threats to the populations in southwestern Idaho include grazing, resulting from reduction of cover associated with wetlands and effects of urine and feces on water quality where cattle concentrations occur in riparian areas. Loss of habitat as a result of development and fragmentation of habitat which results in disruptions in movements within home ranges (between hibernaculum and breeding grounds). Springs are an important habitat, providing sites for hibernacula. Development of the spring may prevent the use of the area by frogs since the natural surface flow (point where frogs enter to hibernate) is eliminated. Conversion of wetlands to irrigated pastures. Road construction presents threats in a variety of ways: direct loss of habitat to the road or during construction, traffic on roads results in direct mortality, roads may present barriers to movements and roads may contribute to increased sedimentation which degrades habitat. Construction of dams may permanently flood breeding sites above dams and because of regulated flows below the dam alter the seasonal high waters and prevent formation of pools suitable for breeding. Introduction of bullfrogs and fish, not native to the area, increases predation and has been detrimental to many species of amphibians.

Western least bittern.

Large Mountain salamander. Primarily a species found west of the Cascade crest in Washington and Oregon with few reports east of the Cascades. Primary habitat is moist rain forest associated with late succession coniferous forests. Threats to the species are as a result of disturbance of suitable rain forest through mining activities (low road construction or other gravel sources) or fire and road construction. Disturbance of the rain forest during survey for the presence of salamanders can also result in drying out of the rain and reduction of prey.

Western Toad. Widely distributed across the US. Habitat is near wetlands, meadows and small ponds associated with dry forests or "shrubby" areas. Reported to be declining in parts of the range, e.g. southern Idaho, but population seems stable in other areas. Development, including channelization of low elevation wet areas result in loss of habitat. Increases in microclimate radiation may also be a problem. Breeding habitat may be lost as a result of dam construction. Loss of stream, high water flows toward breeding pools when the water needed, regulated river flows as a result of dam prevent these habitats from forming.

Red-legged frog
Tailed frog

Red-legged frog. Range overlaps with spotted frog and the two may compete and hybridize in some locations. They are most common in small ponds adjacent to streams flowing through riparian meadows. The species may be locally abundant but also absent from habitat that appears to be suitable. Introduction of predatory fish into frog breeding areas have been recognized as possible threats to the population. Increases in microclimate radiation and effects on amphibians in a possible threat. Invertebrate grazing may have an adverse effect on vegetation associated with breeding areas, but little work has been completed to document the effect.

Spotted frog. Populations east of the Cascades in Washington appear stable. But in Utah, Nevada and southwestern Idaho populations have declined. There have been proposals to divide the species into two, recognizing the difference between east and west of the Cascades.

Threats to the population in southwestern Idaho include grazing, resulting in loss of habitat or cover associated with wetlands and effects of mine and forest on water quality where cattle concentrations occur in riparian areas. Loss of habitat as a result of development and fragmentation of habitat which results in disturbance to movements within home ranges between riparian and breeding grounds. Grazing and an important habitat, providing sites for development. Development of the spring may prevent the use of the area by frogs along the natural surface flow (rain water) into riparian areas. Construction of wetlands to irrigated pastures. Road construction presents threats in a variety of ways: direct loss of habitat to the road or during construction, results on roads result in direct mortality, roads may prevent habitats for movements and roads may contribute to increased fragmentation with increased habitat. Construction of dams may permanently flood breeding sites above dams and because of regulated flows below the dam alter the seasonal high water and prevent formation of pools suitable for breeding. Introduction of bullfrogs and fish, not native to the area, increases predation and has been detrimental to many species of amphibians.

Western least salamander

White-faced ibis.

Trumpeter swan. A translocation effort was initiated in 1990 for southern Oregon, southeastern Idaho and western Wyoming. The primary wintering areas are in eastern Idaho and southwestern Montana and wintering populations have increased from approximately 200 in the 1930s to over 2500 in 1995. The Tri-State flock (Oregon, Idaho and Montana) increased as a result of artificial feeding, habitat protection and reduction in hunting. Between 1990 and 1994 the breeding population declined by approximately 50% and it was speculated as a result of terminating the artificial feeding program and translocations.

The primary threat to the population is habitat conversion from wetlands to agriculture or other uses. Disturbance of incubating females from nests leaving the nest unattended and vulnerable to predation and temperature fluctuations. Lead poisoning has been a problem in some areas. Mis-identification of trumpeters for tundra swans and direct killing has also been a problem.

Harlequin duck. Status in western states has been reported as stable to declining.

Northern goshawk. Population status of the goshawk is not clearly defined. Historical distribution and distribution is also poorly understood and few records or nest site locations were known prior to the 1960s (Thomas, et. al. 1995). The species was listed as a Candidate 2 species in 1992 (Fed. Register, Vol 57 #123) primarily as a result habitat alteration of primary habitat, late succession montane forests.

Habitat modification of nesting and/or foraging habitat is the primary threat for goshawks. This includes direct destruction of nest trees or reducing stem density or canopy closure. Long-term fire suppression with potential result of stand replacement fires in vegetation communities which historically had frequent low intensity fires is also a threat for habitat alteration. In some areas livestock grazing has had adverse consequences to goshawks by reducing aspen regeneration (affecting potential nesting habitat) and alters forest understory vegetation which effects prey and hunting ability. Livestock use in riparian areas by removing or altering vegetation species composition and distribution also influences nesting and foraging habitat..

Ferruginous hawk. Populations have increased in parts of Montana, but decreased in Idaho. It is considered a threatened species in Canada..

Threats are conversion of native areas, grasslands and shrub-steppe, to agriculture. Egg contamination with pesticides, organophosphates, PCBs and mercury have been reported for the species. Overuse by livestock can result in loss of foraging or nesting habitat..

Western sage grouse. In both Washington and Oregon populations have declined in the past several decades. In Washington, only two population centers remain: northwestern Douglas County and the Yakima Firing Range in Kittitas and Yakima counties (each with approximately 300 birds) (Tirhi 1994). A 42% decrease in numbers of sage grouse using between 14 and 20 leks were monitored was reported in Oregon between 1988 and 1993 (USDI, BLM 1994). It is not clear whether this is a distinct subspecies and different from populations in Montana and Idaho, where populations have not declined as dramatically.

Threats to the Washington and Oregon populations are primarily conversion of shrub-steppe habitat to agriculture and residential/urban development. Recreational hunting, during declining populations can further reduce numbers. Livestock grazing can alter shrub-steppe communities and result in less

Translocated from... A translocation effort was initiated in 1960 for... The primary reasons for... The woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit...

The primary reason for the population decline... The woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit...

Woolly-shouldered tit... Status in western states has been reported as stable to declining.

Historical distribution... Population status of the woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit...

Woolly-shouldered tit... Habitat modification of nesting and/or foraging habitat... The woolly-shouldered tit... The woolly-shouldered tit...

Woolly-shouldered tit... Populations have increased in parts of Montana, but decreased in Idaho. It is considered a threatened species in Canada.

Threats are considered to include... The woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit...

Woolly-shouldered tit... In both Washington and Oregon populations have declined... The woolly-shouldered tit... The woolly-shouldered tit...

Woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit... The woolly-shouldered tit...

suitable habitat. Conversion of shrub-steppe to livestock forage species has contributed to declines of sage grouse. Pesticide use can influence insect populations important to young sage grouse.

Columbian sharp-tailed grouse. In Washington numbers of males on leks declined from 13 in 1954 to 5 in 1994 and numbers of leks declined 46%, 65% and 61% in Douglas, Okanogan and Lincoln counties respectively (Tirhi 1994). Populations have declined in Oregon and native populations may be extirpated. Restoration efforts through translocation efforts in Oregon have been largely unsuccessful.

As with sage grouse the primary threat is conversion of shrub-steppe habitat to agriculture or residential/urban development. Recreational hunting during declining population levels likely contributed to declines.

Black tern.

Burrowing owl.

Olive-sided flycatcher.

Willow flycatcher.

Loggerhead shrike.

Tricolored blackbird.

Preble's shrew.

Spotted bat.

Western small-footed myotis.

Long-eared myotis.

Fringed myotis.

Long-legged myotis.

Yuma myotis.

Pale western big-eared bat.

Pygmy rabbit. The population in eastern Washington has declined to only 5 populations in Douglas County.

The primary threat is conversion of sagebrush communities to agriculture, including livestock pastures and other losses, such as flooding as a result of dam construction.

Idaho ground squirrel.

Washington ground squirrel.

Potholes meadow vole.

Wolverine. Wolverine were petitioned to be listed as threatened under ESA. The status was determined not warranted. Wolverines historically were widespread, but in low densities. Even where relatively abundant, they are difficult to observe and frequency of wolverine reports may be more related to human activity than to wolverine population density (Banci 1994).



Large, unroaded areas for seclusion are required for wolverine persistence. Roading and increasing human activity into these areas is the primary threat. It is speculated that roads, at least higher traffic volume or multi-land roads, may be barriers to movement. Alteration of large refugia with intrusions of roads presents the largest threat to wolverine populations. Winter recreation, including snowmobiling and backcountry skiing, may result in displacement of females with young from rendezvous sites or from food caches.

Lynx. Lynx were petitioned to be listed as threatened in northcentral Washington under ESA. A determination of not warranted was made based on connection with a stable population in British Columbia and known emigration between the US and Canada. A followup petition for listing was made based on range-wide declines and concern for lynx. Recommendations by segments of the Fish and Wildlife Service as well as other biologists familiar with lynx were for listing, at least over portions of their range. Oregon Department of Fish and Wildlife consider lynx extirpated from the state, although an individual lynx was trapped in Oregon in 1993. Montana and Idaho have restricted trapping quotas for lynx.

Trapping, fire suppression and forest management pose threats to the population as do increased road access to unroaded areas and winter recreation. Most lynx populations in the CRB are peninsular extensions of suitable lynx habitat in Canada and fragmenting the habitat presents conservation threats.

Pacific fisher. Human activities, particularly trapping and forest management, have contributed to declines in fisher populations in western states, including the CRB (Powell and Zielinski 1994). Aubry and Houston (1992) reported fishers may be on the edge of extinction in Washington. Reports in southern Oregon during the past 5 years; presently research studies are underway to better understand fisher ecology in Oregon. Fishers have been augmented in Idaho and Montana and continue to be trapped in Montana.

Changes in forest structure are the primary threat to fisher persistence. Increases in road density may contribute to disturbance to fishers. Fragmentation of forests may result in isolated populations. Trapping contributes to population declines. Fisher may be taken inadvertently during trapping for American marten.

Sagebrush lizard.

Appendix CARNIV. Legal status and harvest summaries of vertebrate carnivores in the interior CRB Assessment Area.

SPECIES/AREA	CLASSIFICATION	STATUS	HARVEST (YEAR)	HARVEST TREND
WOLF				
Eastern OR	Game Mammal	Protected	No harvest	—
Eastern WA	Game Mammal	Protected	No harvest	—
ID	Game Mammal	Protected	No harvest	—
Northwest MT	Game Mammal	Protected	No harvest	Occasional Incidental Take
COYOTE				
Eastern OR	Predatory Mammal	Unprotected	4500 (1994-1995)	Stable/Increasing (1985-1995)
Eastern WA	Predatory Mammal	Unprotected	1415 (1993-1994)	Stable/Increasing (1983-1994)
ID	Predatory Mammal	Unprotected	1825 (1993-1994)	Stable/Decreasing (1984-1994)
Northwest MT	Predatory Mammal	Unprotected	1198 (1993-1994)	Stable (1984-1994)
LYNX				
Eastern OR	Furbearer	Protected (extirpated)	No Harvest	—
Eastern WA	Furbearer	Protected (regulated harvest)	No Harvest (since 1991)	Decreasing (1970-1991)
ID	Furbearer	Regulated Harvest (quota)	1 (1993-1994)	Decreasing (1984-1994)
Northwest MT	Furbearer	Regulated Harvest (quota)	4 (1994-1995)	Decreasing (1984-1995)
MOUNTAIN LION				

MEMORANDUM FOR

MEMORANDUM TO	DATE	FROM	SUBJECT
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO

MEMORANDUM TO	DATE	FROM	SUBJECT
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO

MEMORANDUM TO	DATE	FROM	SUBJECT
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO

MEMORANDUM TO	DATE	FROM	SUBJECT
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO
MEMORANDUM TO	11/11/54	MEMORANDUM TO	MEMORANDUM TO

MEMORANDUM TO MEMORANDUM TO MEMORANDUM TO MEMORANDUM TO MEMORANDUM TO

Eastern OR	Game Mammal	Regulated harvest	93 (1992)	Increasing (1970-1992)
Eastern WA	Game Mammal	Regulated harvest	148 (1994-19945)	Increasing (1989-1995)
ID	Game Mammal	Regulated harvest	448 (1993-1994)	Stable/Increasing (1988-1994)
Northwest MT	Game Mammal	Regulated harvest	258 (1993-1994)	Increasing (1984-1994)

BLACK BEAR

Eastern OR	Game Mammal	Regulated harvest	approx. 270 (1991)	Stable (1975-1992)
Eastern WA	Game Mammal	Regulated harvest	781 (1992-1993)	Stable (1984-1993)
ID	Game Mammal	Regulated harvest	1231 (1993--1994)	Stable/Increasing (1983-1994)
Northwest MT	Game Mammal	Regulated harvest	approx. 750 1993	Stable (1986-1993)

GRIZZLY BEAR

Eastern OR	Game Mammal	Protected (Extirpated)	No harvest	—
Eastern WA	Game Mammal	Protected	No harvest	—
ID	Game Mammal	Protected	No harvest	—
Northwest MT	Game Mammal	Protected	No harvest	Occasional Incidental Take

FISHER

Eastern OR	Furbearer	Protected	No harvest (since 1932)	—
Eastern WA	Furbearer	Protected	No harvest	—
ID	Furbearer	Protected	No harvest	Occasional incidental take
Northwest MT	Furbearer	Regulated harvest (quota)	8 (1994-1995)	Stable (1984-1995)

1988-1989
1989-1990

1990-1991
1991-1992

1992-1993
1993-1994

1994-1995
1995-1996

1996-1997
1997-1998

1998-1999

1999-2000
2000-2001

2001-2002
2002-2003

2003-2004
2004-2005

2005-2006
2006-2007

2007-2008
2008-2009

2009-2010

2010-2011
2011-2012

2012-2013
2013-2014

2014-2015
2015-2016

2016-2017
2017-2018

2018-2019
2019-2020

2020-2021

2021-2022
2022-2023

2023-2024
2024-2025

2025-2026
2026-2027

2027-2028
2028-2029

2029-2030
2030-2031

2031-2032

MARTEN

Eastern OR	Furbearer	Regulated harvest	10 (1994-1995)	Decreasing (1985-1995)
Eastern WA	Furbearer	Regulated harvest	40 (1993-1994)	Decreasing (1983-1994)
ID	Furbearer	Regulated harvest	364 (1993-1994)	Decreasing (1984-1994)
Northwest MT	Furbearer	Regulated harvest	631 (1993-1994)	Decreasing (1984-1994)

WOLVERINE

Eastern OR	Furbearer	Protected	No harvest	—
Eastern WA	Furbearer	Protected	No harvest	—
ID	Furbearer	Protected	No harvest	Occasional incidental take
Northwest MT	Furbearer	Regulated harvest	3 (1994-1995)	Stable (1984-1995)

RIVER OTTER

Eastern OR	Furbearer	Regulated harvest	84 (1994-1995)	Stable (1985-1995)
Eastern WA	Furbearer	Regulated harvest	35 (1993-1994)	Stable/increasing (1983-1994)
ID	Furbearer	Protected	No harvest	Occasional incidental take
Northwest MT	Furbearer	Regulated harvest	26 (1994-1995)	Stable (1984-1994)

Appendix UNGULATES. Summary of management issues and key environmental correlates for 6 species of ungulates.

Information extracted from longer reports. Authors for the primary material were:

Elk:

Alan G. Christensen, USDA Forest Service, Region 1
L. Jack Lyon, USDA, Forest Service, Intermountain Res.Sta.

Mule deer and White-tailed deer:

Richard Pedersen, USDA Forest Service, Region 6

Bighorn sheep:

Walt L. Bodie, State of Idaho, Dept.of Game and Fish

Mountain goat:

Rolf Johnson, State of Washington, Dept.of Fish & Wildlife

Pronghorn (Antelope):

Bart O'Gara, USDI, Fish and Wildlife Service (retired)

Caribou:

Paul Harrington, USDA Forest Service, Idaho Panhandle National Forests

SPECIES

ISSUES

CORRELATES

ELK

Road Access

Road Density/occurrence
Open road density by season
summer/fall range
roadless areas

Vegetation Manipulation
(Habitat Components)

Forested Acres
Non-forested acres
summer/fall range
acres logged annually
acres burned annually
acres grazed (cattle allotments)

Grazing

Summer/fall range
Cattle Allotments
Primary Range

Security/refugia

Roadless areas
Conifer Forest/patch Size
Terrain Features
Road densities
Proximity to Human Development

Winter Range

Aspect
Elevation
Snow Depth
Ownership patterns

Fire Management

Summer/fall Range
Winter Range
Wilderness fire plans
fuel/fire models
terrain features

Vulnerability

Summer/fall range
Open road density
State management Guidelines
Forested Acres

Game Farms

Game Farm Locations

Models/guidelines

Cover/vegetation

FIRE MANAGEMENT

Roads/access
State Guidelines
Bull:cow ratios
Hunter density/seasons

ORV's

Road Density
Terrain Features
Forested Acres
summer/fall ranges
Winter Range

Recreation

Road Density
Trails/campsites
Developed recreation sites
Seasons of use by humans
Summer/fall range
Human densities

Tribal Relationships

Tribal ownership patterns
Treating hunting rights boundaries
Proximity of Public lands
Summer/fall range
Winter range
Road Densities

Land Ownership

Ownership Patterns
Private/corporate management
summer/fall range
winter range

MULE DEER

Forage

acres logged annually
acres burned annually
miles of road on winter range
human population density

Snow depth

snow depth 20 inches

Competition with livestock

acres of sheep allotments
acres of cattle allotments

Fire management

acres prescribed fire
acres wild fire

Logging

acres logged

Urban development

Human population density
road density

Road access

none suggested

Poaching

Road density
Human population density

Domestic dogs

none suggested

Highways

Vehicle mortality

WHITE-TAILED DEER

Forage

Shrub fields
riparian zone
abandoned farm fields

Snow depth

snow depth 20 inches

Competition

Moose range
Livestock allotments
Elk winter range

Handwritten text at the top of the page, possibly a header or title.

Handwritten text block, likely a list or set of notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Handwritten text block, continuing the list or notes.

Fire management	acres prescribed fire acres wild fire
Logging	acres logged, last 3-5 yrs
Urban development	Human population density Homes/cabin density adjacent to federal lands Recreation sites/mile of riparian Seasonal use at recreation sites Road density
Farm practices	acres of specific croplands ratio of agricultural land to successional habitat
Road access	Road density
Poaching	Road density Human population density
Domestic dogs	none suggested
Highways	
Vehicle mortality	

BIGHORN SHEEP

Diseases	Domestic sheep allotments Livestock Allotments
Grazing	none suggested
Vegetation Manipulation	Seasonal Ranges Mixed shrub/grasslands Shrublands Potential habitat
Human Disturbance	Escape terrain Proximity to humans Seasonal Ranges
Vacant Habitat	Suitable habitat Domestic sheep allotments
Key Habitats	Winter range
Wilderness Management	Wilderness Mangement Amount of habitat Aircraft Acces
Models	Topographic features Escape Terrain Human Activies Centers Bighorn population paramaters

MOUNTAIN GOAT

Road Access	Road Density Proximity to escape terrain Winter open road density
Vegetation Management	Cover/forage ratios Road density Proximity to escape terrain
Security	Proximity to escape terrain Road Density
Winter Range	Juxtaposition to winter range Rock/cliff habitat
Fire Management	Let burn policy

Prescribed burns

Harvest Management	(none identified)
Predator/Prey Relationships	(none identified)
Competition (forage)	(none identified)
Recreation	Subdivision/summer cabins Destination ski resorts

PRONGHORN ANTELOPE

Fencing	Livestock grazing allotments
Livestock grazing on rangeland shared with pronghorn	Livestock grazing allotments Spring range
Predation and food for carnivores	Coyote populations Golden eagle Bobcat Mountain lion
Improving degraded rangeland	Sub-climax vegetation Shrub encroachment
Habitat Models	Grass/forbs in spring Subclimax vegetation
Habitat Parameters favoring pronghorn	-low rolling to flat terrain -20-38 cm precipitation -snow depths under 30cm -grass/forb rangelands, <45 cm -open water sources

MOUNTAIN CARIBOU

Late Successional Stands	Western Cedar/Hemlock Englemann spruce/subalpine fir Ecotone habitat Acres of potential old-growth
Human Disturbance	Groomed Snowmobile trails Open Alpine assessable areas
Fire	Access management Acres of non-target stands
Herd Augmentation	Public Acceptance Animal availability
Direct Mortality	Predator control Access management Law enforcement Public education

Appendix VERTHERB. Vertebrate species using open and closed grassland/herb structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project.

Family	Scientific name	Common name	Versatility
Ardeidae	<i>Bubulcus ibis</i>	Cattle egret	0
Gruidae	<i>Grus canadensis tabida</i>	Greater sandhill crane	0
Passeridae	<i>Passer domesticus</i>	House sparrow	0
Phasianidae	<i>Colinus virginianus</i>	Northern bobwhite	0
Phasianidae	<i>Phasianus colchicus</i>	Ring-necked pheasant	0
Muridae	<i>Mus musculus</i>	House mouse	0
Sciuridae	<i>Sciurus niger</i>	Eastern fox squirrel	0
Emberizidae	<i>Dolichonyx oryzivorus</i>	Bobolink	1
Strigidae	<i>Athene cunicularia</i>	Burrowing owl	1
Falconidae	<i>Falco mexicanus</i>	Prairie falcon	2
Falconidae	<i>Falco rusticolus</i>	Gyr falcon	2
Fringillidae	<i>Leucosticte tephrocotis</i>	Gray-crowned rosy finch	2
Motacillidae	<i>Anthus rubescens</i>	American pipit	2
Phasianidae	<i>Tympanuchus phasianellus columbianus</i>	Columbian sharp-tailed grouse	2
Strigidae	<i>Asio flammeus</i>	Short-eared owl	2
Strigidae	<i>Nyctea scandiaca</i>	Snowy owl	2
Heteromyidae	<i>Perognathus longimembris</i>	Little pocket mouse	2
Vespertilionidae	<i>Pipistrellus hesperus</i>	Western pipistrelle	2
Colubridae	<i>Sonora semiannulata</i>	Ground snake	2
Iguanidae	<i>Crotaphytus bicinctores</i>	Mojave black-collared lizard	2
Accipitridae	<i>Circus cyaneus</i>	Northern harrier	3
Emberizidae	<i>Amphispiza belli</i>	Sage sparrow	3
Emberizidae	<i>Passerculus sandwichensis</i>	Savannah sparrow	3
Hirundinidae	<i>Tachycineta bicolor</i>	Tree swallow	3
Bovidae	<i>Bos bison</i>	American bison	3
Canidae	<i>Urocyon cinereoargenteus</i>	Common gray fox	3
Canidae	<i>Vulpes velox</i>	Kit fox	3
Molossidae	<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	3
Ochotonidae	<i>Ochotona princeps</i>	American pika	3
Soricidae	<i>Sorex merriami</i>	Merriam's shrew	3
Talpidae	<i>Scapanus latimanus</i>	Broad-footed mole	3
Accipitridae	<i>Buteo swainsoni</i>	Swainson's hawk	4
Emberizidae	<i>Ammodramus savannarum</i>	Grasshopper sparrow	4
Emberizidae	<i>Amphispiza bilineata</i>	Black-throated sparrow	4
Falconidae	<i>Falco sparverius</i>	American kestrel	4
Sciuridae	<i>Marmota caligata</i>	Hoary marmot	4
Sciuridae	<i>Spermophilus brunneus</i>	Idaho ground squirrel	4

Apodidae	<i>Chaetura vauxi</i>	Vaux's swift	5
Emberizidae	<i>Poocetes gramineus</i>	Vesper sparrow	5
Emberizidae	<i>Sturnella neglecta</i>	Western meadowlark	5
Mimidae	<i>Oreoscoptes montanus</i>	Sage thrasher	5
Phasianidae	<i>Dendragapus obscurus</i>	Blue grouse	5
Cervidae	<i>Rangifer tarandus caribou</i>	Woodland caribou	5
Geomyidae	<i>Thomomys bottae</i>	Botta's pocket gopher	5
Heteromyidae	<i>Dipodomys californicus</i>	California kangaroo rat	5
Sciuridae	<i>Spermophilus armatus</i>	Uinta ground squirrel	5
Iguanidae	<i>Gambelia wislizenii</i>	Longnose leopard lizard	5
Ambystomatidae	<i>Ambystoma gracile</i>	Northwestern salamander	6
Accipitridae	<i>Buteo lagopus</i>	Rough-legged hawk	6
Emberizidae	<i>Geothlypis trichas</i>	Common yellowthroat	6
Emberizidae	<i>Spizella breweri</i>	Brewer's sparrow	6
Hirundinidae	<i>Progne subis</i>	Purple martin	6
Laniidae	<i>Lanius excubitor</i>	Northern shrike	6
Phasianidae	<i>Alectoris chukar</i>	Chukar	6
Phasianidae	<i>Callipepla californica</i>	California quail	6
Phasianidae	<i>Callipepla gambelii</i>	Gambel's quail	6
Phasianidae	<i>Perdix perdix</i>	Gray partridge	6
Picidae	<i>Melanerpes lewis</i>	Lewis' woodpecker	6
Picidae	<i>Sphyrapicus thyroideus</i>	Williamson's sapsucker	6
Troglodytidae	<i>Catherpes mexicanus</i>	Canyon wren	6
Troglodytidae	<i>Salpinctes obsoletus</i>	Rock wren	6
Antilocapridae	<i>Antilocapra americana</i>	Pronghorn	6
Bovidae	<i>Ovis canadensis californiana</i>	California bighorn sheep	6
Bovidae	<i>Ovis canadensis canadensis</i>	Rocky mountain bighorn sheep	6
Equidae	<i>Equus caballus</i>	Feral horse	6
Heteromyidae	<i>Dipodomys ordii</i>	Ord's kangaroo rat	6
Heteromyidae	<i>Perognathus parvus</i>	Great basin pocket mouse	6
Leporidae	<i>Sylvilagus floridanus</i>	Eastern cottontail	6
Leporidae	<i>Sylvilagus nuttallii</i>	Mountain cottontail	6
Muridae	<i>Neotoma lepida</i>	Desert woodrat	6
Muridae	<i>Onychomys leucogaster</i>	Northern grasshopper mouse	6
Muridae	<i>Peromyscus crinitus</i>	Canyon mouse	6
Muridae	<i>Phenacomys intermedius</i>	Heather vole	6
Sciuridae	<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel	6
Sciuridae	<i>Spermophilus beecheyi</i>	California ground squirrel	6
Sciuridae	<i>Spermophilus townsendii</i>	Townsend's ground squirrel	6
Sciuridae	<i>Spermophilus washingtoni</i>	Washington ground squirrel	6
Soricidae	<i>Sorex preblei</i>	Preble's shrew	6
Colubridae	<i>Masticophis taeniatus</i>	Striped whipsnake	6

Colubridae	<i>Rhinocheilus lecontei</i>	Longnose snake	6
Iguanidae	<i>Phrynosoma douglassii</i>	Short-horned lizard	6
Iguanidae	<i>Phrynosoma platyrhinos</i>	Desert horned lizard	6
Iguanidae	<i>Uta stansburiana</i>	Side-blotched lizard	6
Scincidae	<i>Eumeces skiltonianus</i>	Western skink	6
Teiidae	<i>Cnemidophorus tigris</i>	Western whiptail	6
Teiidae	<i>Cnemidophorus velox</i>	Plateau striped whiptail	6
Pelobatidae	<i>Spea intermontana</i>	Great basin spadefoot	7
Accipitridae	<i>Accipiter striatus</i>	Sharp-shinned hawk	7
Emberizidae	<i>Vermivora ruficapilla</i>	Nashville warbler	7
Falconidae	<i>Falco columbarius</i>	Merlin	7
Hirundinidae	<i>Hirundo pyrrhonota</i>	Cliff swallow	7
Phasianidae	<i>Centrocercus urophasianus</i>	Sage grouse	7
Tyrannidae	<i>Sayornis saya</i>	Say's phoebe	7
Tyrannidae	<i>Tyrannus verticalis</i>	Western kingbird	7
Heteromyidae	<i>Dipodomys microps</i>	Chisel-toothed kangaroo rat	7
Heteromyidae	<i>Microdipodops megacephalus</i>	Dark kangaroo mouse	7
Leporidae	<i>Lepus townsendii</i>	White-tailed jackrabbit	7
Muridae	<i>Clethrionomys gapperi</i>	Southern red-backed vole	7
Sciuridae	<i>Marmota flaviventris</i>	Yellow-bellied marmot	7
Sciuridae	<i>Spermophilus columbianus</i>	Columbian ground squirrel	7
Accipitridae	<i>Aquila chrysaetos</i>	Golden eagle	8
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar waxwing	8
Columbidae	<i>Columba livia</i>	Rock dove	8
Emberizidae	<i>Chondestes grammacus</i>	Lark sparrow	8
Emberizidae	<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	8
Emberizidae	<i>Seiurus noveboracensis</i>	Northern waterthrush	8
Laniidae	<i>Lanius ludovicianus</i>	Loggerhead shrike	8
Muscicapidae	<i>Catharus fuscescens</i>	Veery	8
Tyrannidae	<i>Empidonax oberholseri</i>	Dusky flycatcher	8
Tyrannidae	<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	8
Tytonidae	<i>Tyto alba</i>	Common barn owl	8
Bovidae	<i>Oreamnos americanus</i>	Mountain goat	8
Geomyidae	<i>Thomomys mazama</i>	Western pocket gopher	8
Geomyidae	<i>Thomomys talpoides douglasi</i>	Brushprairie pocket gopher	8
Geomyidae	<i>Thomomys townsendii</i>	Townsend's pocket gopher	8
Mustelidae	<i>Mephitis mephitis</i>	Striped skunk	8
Sciuridae	<i>Spermophilus beldingi</i>	Belding's ground squirrel	8
Sciuridae	<i>Spermophilus elegans nevadensis</i>	Wyoming ground squirrel	8
Sciuridae	<i>Tamias minimus</i>	Least chipmunk	8
Vespertilionidae	<i>Antrozous pallidus</i>	Pallid bat	8

6	Longnose snail	<i>Physorbis longirostris</i>	Physorbidae
6	Short-horned lizard	<i>Phrynosoma hernandesi</i>	Phrynosomatidae
6	Coast horned lizard	<i>Phrynosoma muniti</i>	Phrynosomatidae
6	Side-banded lizard	<i>Uta stansburiana</i>	Lacertidae
6	Western skink	<i>Lamprolepis inornata</i>	Lacertidae
6	Western whiptail	<i>Cnemidophorus tigris</i>	Lacertidae
6	Massena striped whiptail	<i>Cnemidophorus viridis</i>	Lacertidae
7	Great basin spadefoot	<i>Speos nototriton</i>	Crotalidae
7	Sharp-shinned hawk	<i>Accipiter striatus</i>	Accipitridae
7	Mexican warbler	<i>Troglodytes aedon</i>	Troglodytidae
7	Wren	<i>Troglodytes aedon</i>	Troglodytidae
7	Citl swallow	<i>Hirundo pyrrhonota</i>	Hirundinidae
7	Sage grouse	<i>Centrocercus urophasianus</i>	Phasianidae
7	Say's phoebe	<i>Sayornis saya</i>	Tyrannidae
7	Western kingbird	<i>Tyrannus verticalis</i>	Tyrannidae
7	Chisel-toothed kangaroo rat	<i>Dipodomys microps</i>	Neotomidae
7	Dark kangaroo mouse	<i>Microdipodops</i>	Neotomidae
7	White-tailed jackrabbit	<i>Lepus texianus</i>	Leporidae
7	Southern red-backed vole	<i>Microtus pennsylvanicus</i>	Citellidae
7	Yellow-billed cormorant	<i>Phalacrocorax auritus</i>	Phalacrocoracidae
7	Columbian ground squirrel	<i>Spermophilus columbianus</i>	Sitomidae
8	Golden eagle	<i>Haliaeetus leucocephalus</i>	Accipitridae
8	Red-tailed hawk	<i>Buteo calurus</i>	Accipitridae
8	Rock dove	<i>Columba livia</i>	Columbidae
8	Tree sparrow	<i>Chondestes grammacus</i>	Sylviidae
8	Black-headed grosbeak	<i>Pheucticus ludovicianus</i>	Picidae
8	Northwestern screech owl	<i>Bubo occidentalis</i>	Bucconidae
8	Logskull shrike	<i>Lanius ludovicianus</i>	Laniidae
8	Wren	<i>Catherpes mexicanus</i>	Troglodytidae
8	Dusky flycatcher	<i>Tijdsia sibilatrix</i>	Tyrannidae
8	Red-breasted flycatcher	<i>Tijdsia cristata</i>	Tyrannidae
8	Common barn owl	<i>Tyto alba</i>	Tyrannidae
8	Mountain quail	<i>Turnix ssp.</i>	Columbidae
8	Western pocket gopher	<i>Thomomys talpoides</i>	Geomysidae
8	San Joaquin pocket gopher	<i>Thomomys talpoides</i>	Geomysidae
8	Lawson's pocket gopher	<i>Thomomys talpoides</i>	Geomysidae
8	Striped skunk	<i>Mephitis mephitis</i>	Mephitidae
8	Belmont's ground squirrel	<i>Spermophilus belmonti</i>	Sitomidae
8	Wyoming ground squirrel	<i>Spermophilus elegans</i>	Sitomidae
8	Least chipmunk	<i>Tamias minimus</i>	Sitomidae
8	White rat	<i>Rattus norvegicus</i>	Muridae

Iguanidae	<i>Sceloporus occidentalis</i>	Western fence lizard	8
Bufo	<i>Bufo woodhousii</i>	Woodhouse's toad	9
Accipitridae	<i>Buteo jamaicensis</i>	Red-tailed hawk	9
Emberizidae	<i>Passerina amoena</i>	Lazuli bunting	9
Emberizidae	<i>Spizella passerina</i>	Chipping sparrow	9
Fringillidae	<i>Carduelis tristis</i>	American goldfinch	9
Hirundinidae	<i>Hirundo rustica</i>	Barn swallow	9
Hirundinidae	<i>Tachycineta thalassina</i>	Violet-green swallow	9
Phasianidae	<i>Oreortyx pictus</i>	Mountain quail	9
Tyrannidae	<i>Contopus sordidulus</i>	Western wood-pewee	9
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum	9
Geomyidae	<i>Thomomys talpoides</i>	Northern pocket gopher	9
Geomyidae	<i>Thomomys talpoides limosus</i>	White salmon pocket gopher	9
Leporidae	<i>Lepus americanus</i>	Snowshoe hare	9
Muridae	<i>Reithrodontomys megalotis</i>	Western harvest mouse	9
Procyonidae	<i>Procyon lotor</i>	Common raccoon	9
Sciuridae	<i>Spermophilus saturatus</i>	Cascade golden-mantled ground squirrel	9
Vespertilionidae	<i>Myotis evotis</i>	Long-eared myotis	9
Vespertilionidae	<i>Myotis thysanodes</i>	Fringed myotis	9
Anguillidae	<i>Elgaria multicarinata</i>	Southern alligator lizard	9
Boidae	<i>Charina bottae</i>	Rubber boa	9
Colubridae	<i>Diadophis punctatus</i>	Ringneck snake	9
Colubridae	<i>Pituophis catenifer</i>	Gopher snake	9
Plethodontidae	<i>Ensatina eschscholtzii</i>	Ensatina	10
Accipitridae	<i>Buteo regalis</i>	Ferruginous hawk	10
Apodidae	<i>Cypseloides niger</i>	Black swift	10
Charadriidae	<i>Charadrius vociferus</i>	Killdeer	10
Corvidae	<i>Corvus brachyrhynchos</i>	American crow	10
Cuculidae	<i>Coccyzus americanus</i>	Yellow-billed cuckoo	10
Emberizidae	<i>Junco hyemalis</i>	Dark-eyed junco	10
Emberizidae	<i>Passerella iliaca</i>	Fox sparrow	10
Emberizidae	<i>Vermivora celata</i>	Orange-crowned warbler	10
Emberizidae	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	10
Emberizidae	<i>Zonotrichia querula</i>	Harris' sparrow	10
Falconidae	<i>Falco peregrinus</i>	Peregrine falcon	10
Hirundinidae	<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	10
Strigidae	<i>Otus kennicottii</i>	Western screech owl	10
Trochilidae	<i>Archilochus alexandri</i>	Black-chinned hummingbird	10
Trochilidae	<i>Selasphorus rufus</i>	Rufous hummingbird	10
Trochilidae	<i>Stellula calliope</i>	Calliope hummingbird	10
Tyrannidae	<i>Tyrannus tyrannus</i>	Eastern kingbird	10
Canidae	<i>Vulpes vulpes</i>	Red fox	10
Cervidae	<i>Odocoileus virginianus</i>	White-tailed deer	10

2	Western fence lizard	<i>Scolecophorus</i>	Scolecophoridae
3	Woodhouse's toad	<i>Bufo woodhousei</i>	Bufo
4	Red-tailed hawk	<i>Bubo ferrugineus</i>	Bubo
5	Lesser prairie-chicken	<i>Tympanuchus</i>	Tympanuchidae
6	Chimney swift	<i>Chaetopteryx</i>	Chaetopterygidae
7	American goldfinch	<i>Carduelis</i>	Carduelidae
8	Red-wings	<i>Agelaius</i>	Agelaiidae
9	Yellow-green swallow	<i>Icthyophaga</i>	Icthyophagidae
10	Mountain quail	<i>Turnix</i>	Turnixidae
11	Western wood-pewee	<i>Campylorhynchus</i>	Campylorhynchidae
12	Virginia opossum	<i>Didelphis</i>	Didelphidae
13	Western pocket gopher	<i>Thomomys</i>	Thomomysidae
14	White-tailed pocket gopher	<i>Thomomys</i>	Thomomysidae
15	Shrew	<i>Sorex</i>	Soricidae
16	Shrew	<i>Sorex</i>	Soricidae
17	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
18	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
19	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
20	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
21	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
22	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
23	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
24	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
25	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
26	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
27	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
28	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
29	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
30	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
31	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
32	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
33	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
34	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
35	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
36	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
37	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
38	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
39	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
40	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
41	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
42	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
43	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
44	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
45	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
46	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
47	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
48	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
49	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae
50	Eastern harvest mouse	<i>Reithrodontomys</i>	Reithrodontomysidae

Muridae	<i>Microtus montanus</i>	Montane vole	10
Muridae	<i>Microtus pennsylvanicus</i>	Meadow vole	10
Mustelidae	<i>Gulo gulo</i>	Wolverine	10
Mustelidae	<i>Mustela erminea</i>	Ermine	10
Mustelidae	<i>Spilogale gracilis</i>	Western spotted skunk	10
Sciuridae	<i>Spermophilus lateralis</i>	Golden-mantled ground squirrel	10
Soricidae	<i>Sorex vagrans</i>	Vagrant shrew	10
Vespertilionidae	<i>Euderma maculatum</i>	Spotted bat	10
Vespertilionidae	<i>Myotis ciliolabrum</i>	Western small-footed myotis	10
Colubridae	<i>Contia tenuis</i>	Sharptail snake	10
Colubridae	<i>Hypsiglena torquata</i>	Night snake	10
Colubridae	<i>Lampropeltis zonata</i>	California mountain kingsnake	10
Ambystomatidae	<i>Ambystoma macrodactylum</i>	Long-toed salamander	11
Ambystomatidae	<i>Ambystoma tigrinum</i>	Tiger salamander	11
Hylidae	<i>Pseudacris regilla</i>	Pacific chorus frog	11
Hylidae	<i>Pseudacris triseriata</i>	Western chorus frog	11
Apodidae	<i>Aeronautes saxatalis</i>	White-throated swift	11
Caprimulgidae	<i>Chordeiles minor</i>	Common nighthawk	11
Cathartidae	<i>Cathartes aura</i>	Turkey vulture	11
Columbidae	<i>Zenaida macroura</i>	Mourning dove	11
Corvidae	<i>Pica pica</i>	Black-billed magpie	11
Emberizidae	<i>Icteria virens</i>	Yellow-breasted chat	11
Emberizidae	<i>Icterus galbula</i>	Northern oriole	11
Emberizidae	<i>Molothrus ater</i>	Brown-headed cowbird	11
Muscicapidae	<i>Myadestes townsendi</i>	Townsend's solitaire	11
Muscicapidae	<i>Sialia currucoides</i>	Mountain bluebird	11
Muscicapidae	<i>Sialia mexicana</i>	Western bluebird	11
Muscicapidae	<i>Turdus migratorius</i>	American robin	11
Picidae	<i>Colaptes auratus</i>	Northern flicker	11
Strigidae	<i>Asio otus</i>	Long-eared owl	11
Strigidae	<i>Bubo virginianus</i>	Great horned owl	11
Trochilidae	<i>Selasphorus platycercus</i>	Broad-tailed hummingbird	11
Troglodytidae	<i>Troglodytes aedon</i>	House wren	11
Canidae	<i>Canis latrans</i>	Coyote	11
Canidae	<i>Canis lupus</i>	Gray wolf	11
Cervidae	<i>Cervus elaphus nelsonii</i>	Rocky mountain elk	11
Cervidae	<i>Odocoileus hemionus</i>	Mule deer	11
Erethizontidae	<i>Erethizon dorsatum</i>	Common porcupine	11
Felidae	<i>Felis concolor</i>	Mountain lion	11
Felidae	<i>Lynx rufus</i>	Bobcat	11
Muridae	<i>Microtus longicaudus</i>	Long-tailed vole	11
Muridae	<i>Neotoma cinerea</i>	Bushy-tailed woodrat	11

10	Montane vole	Microtus montanus	Microtus
10	Heath vole	Microtus pennsylvanicus	Microtus
10	Wolverine	Gulo gulo	Mustelidae
10	Ermine	Mustela erminea	Mustelidae
10	Western spotted skunk	Spilogale gracilis	Mustelidae
10	Golden-mantled ground squirrel	Spermophilus lateralis	Sitomys
10	Woodrat	Neotoma lepida	Sitomys
10	Woodrat	Neotoma lepida	Sitomys
10	Spotted cat	Spizella monticola	Vireonidae
10	Western small-footed woodrat	Neotoma micropus	Sitomys
10	Sharp-shinned hawk	Circus hudsonius	Falconidae
10	White hawk	Buteo borealis	Falconidae
10	California mountain quail	Lophortyx californicus	Columbidae
11	Long-footed salamander	Ambystoma macrodactylum	Ambystomidae
11	Tiger salamander	Ambystoma tigrinum	Ambystomidae
11	Pacific chorus frog	Pseudacris regilla	Anura
11	Western chorus frog	Pseudacris triseriata	Anura
11	White-throated sparrow	Zonotrichia albicollis	Columbidae
11	Common nighthawk	Chordeiles minor	Columbidae
11	Turkey vulture	Cathartes aura	Columbidae
11	Hououling dove	Columba macroura	Columbidae
11	Black-billed magpie	Pipilo maculatus	Columbidae
11	Yellow-breasted chat	Icterus virens	Icteridae
11	Northern oriole	Icterus galbula	Icteridae
11	Brown-headed cowbird	Molothrus ater	Icteridae
11	Townsend's solitaire	Myadestes townsendi	Corvidae
11	Mountain bluebird	Sialia currucoides	Corvidae
11	Western bluebird	Sialia mexicana	Corvidae
11	American robin	Turdus migratorius	Troglodytidae
11	Northern flicker	Colaptes auratus	Troglodytidae
11	Long-eared owl	Bubo auricularis	Troglodytidae
11	Great horned owl	Bubo virginianus	Troglodytidae
11	Broad-tailed hummingbird	Helminthophila	Troglodytidae
11	House wren	Troglodytes aedon	Troglodytidae
11	Coyote	Canis latrans	Canidae
11	Gray wolf	Canis lupus	Canidae
11	Rocky mountain elk	Cervus elaphus	Canidae
11	Elk	Cervus elaphus	Canidae
11	Common porcupine	Quercus borealis	Canidae
11	Mountain lion	Felis concolor	Felidae
11	Bobcat	Lynx rufus	Felidae
11	Long-tailed weasel	Mustela putorius	Mustelidae
11	Short-tailed weasel	Mustela erminea	Mustelidae

11	Colombian mouse	Peromyscus kenia	Muridae
11	Boer mouse	Peromyscus maniculatus	Muridae
11	Long-tailed weasel	Mustela frenata	Mustelidae
11	American badger	Taxidea taxus	Mustelidae
11	Masked shrew	Sorex cinereus	Soricidae
11	Black bear	Ursus americanus	Ursidae
11	Striped bear	Ursus arctos	Ursidae
11	Big brown bat	Myotis lucifugus	Vespertilionidae
11	Silver-haired bat	Lasiurus borealis	Vespertilionidae
		Notivaga	
11	Northern alligator lizard	Lacerta coerulea	Lacertidae
11	Racer	Coluber constrictor	Colubridae
11	Western terrestrial garter snake	Thamnophis elegans	Colubridae
11	Common garter snake	Thamnophis sirtalis	Colubridae
11	Western rattlesnake	Crotalus viridis	Viperidae

The species in italics are the names of other structural groups used by the author in his paper.

Appendix VERTSHRB. Vertebrate species using open or closed, low-medium shrub structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project.

Family	Scientific name	Common name	Versatility*
Phasianidae	<i>Lagopus leucurus</i>	White-tailed ptarmigan	0
Leporidae	<i>Brachylagus idahoensis</i>	Pygmy rabbit	0
Emberizidae	<i>Dolichonyx oryzivorus</i>	Bobolink	1
Strigidae	<i>Athene cunicularia</i>	Burrowing owl	1
Falconidae	<i>Falco mexicanus</i>	Prairie falcon	2
Falconidae	<i>Falco rusticolus</i>	Gyrfalcon	2
Fringillidae	<i>Leucosticte tephrocotis</i>	Gray-crowned rosy finch	2
Motacillidae	<i>Anthus rubescens</i>	American pipit	2
Phasianidae	<i>Tympanuchus phasianellus columbianus</i>	Columbian sharp-tailed grouse	2
Strigidae	<i>Asio flammeus</i>	Short-eared owl	2
Strigidae	<i>Nyctea scandiaca</i>	Snowy owl	2
Heteromyidae	<i>Perognathus longimembris</i>	Little pocket mouse	2
Vespertilionidae	<i>Pipistrellus hesperus</i>	Western pipistrelle	2
Colubridae	<i>Sonora semiannulata</i>	Ground snake	2
Iguanidae	<i>Crotaphytus bicinctores</i>	Mojave black-collared lizard	2
Accipitridae	<i>Circus cyaneus</i>	Northern harrier	3
Emberizidae	<i>Amphispiza belli</i>	Sage sparrow	3
Emberizidae	<i>Passerculus sandwichensis</i>	Savannah sparrow	3
Hirundinidae	<i>Tachycineta bicolor</i>	Tree swallow	3
Paridae	<i>Parus rufescens</i>	Chestnut-backed chickadee	3
Picidae	<i>Dryocopus pileatus</i>	Pileated woodpecker	3
Bovidae	<i>Bos bison</i>	American bison	3
Canidae	<i>Urocyon cinereoargenteus</i>	Common gray fox	3
Canidae	<i>Vulpes velox</i>	Kit fox	3
Molossidae	<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	3
Ochotonidae	<i>Ochotona princeps</i>	American pika	3
Soricidae	<i>Sorex merriami</i>	Merriam's shrew	3
Talpidae	<i>Scapanus latimanus</i>	Broad-footed mole	3
Accipitridae	<i>Buteo swainsoni</i>	Swainson's hawk	4
Alcidae	<i>Brachyramphus marmoratus</i>	Marbled murrelet	4
Emberizidae	<i>Ammodramus savannarum</i>	Grasshopper sparrow	4
Emberizidae	<i>Amphispiza bilineata</i>	Black-throated sparrow	4
Falconidae	<i>Falco sparverius</i>	American kestrel	4
Phasianidae	<i>Bonasa umbellus</i>	Ruffed grouse	4
Strigidae	<i>Aegolius acadicus</i>	Northern saw-whet owl	4
Strigidae	<i>Strix varia</i>	Barred owl	4
Troglodytidae	<i>Troglodytes troglodytes</i>	Winter wren	4
Tyrannidae	<i>Empidonax wrightii</i>	Gray flycatcher	4
Muridae	<i>Lemmyscus curtatus</i>	Sagebrush vole	4
Muridae	<i>Peromyscus truei</i>	Pinyon mouse	4
Sciuridae	<i>Glaucomys sabrinus</i>	Northern flying squirrel	4
Sciuridae	<i>Marmota caligata</i>	Hoary marmot	4
Sciuridae	<i>Spermophilus brunneus</i>	Idaho ground squirrel	4
Iguanidae	<i>Sceloporus graciosus graciosus</i>	Sagebrush lizard	4
Apodidae	<i>Chaetura vauxi</i>	Vaux's swift	5
Emberizidae	<i>Poocetes gramineus</i>	Vesper sparrow	5
Emberizidae	<i>Sturnella neglecta</i>	Western meadowlark	5
Mimidae	<i>Oreoscoptes montanus</i>	Sage thrasher	5
Phasianidae	<i>Dendragapus obscurus</i>	Blue grouse	5
Phasianidae	<i>Meleagris gallopavo</i>	Wild turkey	5
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed vireo	5

Cervidae	<i>Rangifer tarandus caribou</i>	Woodland caribou	5
Geomyidae	<i>Thomomys bottae</i>	Botta's pocket gopher	5
Heteromyidae	<i>Dipodomys californicus</i>	California kangaroo rat	5
Sciuridae	<i>Spermophilus armatus</i>	Uinta ground squirrel	5
Iguanidae	<i>Gambelia wislizenii</i>	Longnose leopard lizard	5
Accipitridae	<i>Buteo lagopus</i>	Rough-legged hawk	6
Corvidae	<i>Corvus corax</i>	Common raven	6
Emberizidae	<i>Dendroica petechia</i>	Yellow warbler	6
Emberizidae	<i>Geothlypis trichas</i>	Common yellowthroat	6
Emberizidae	<i>Setophaga ruticilla</i>	American redstart	6
Emberizidae	<i>Spizella breweri</i>	Brewer's sparrow	6
Fringillidae	<i>Carduelis psaltria</i>	Lesser goldfinch	6
Hirundinidae	<i>Progne subis</i>	Purple martin	6
Laniidae	<i>Lanius excubitor</i>	Northern shrike	6
Mimidae	<i>Dumetella carolinensis</i>	Gray catbird	6
Mimidae	<i>Mimus polyglottos</i>	Northern mockingbird	6
Muscicapidae	<i>Catharus guttatus</i>	Hermit thrush	6
Muscicapidae	<i>Ixoreus naevius</i>	Varied thrush	6
Phasianidae	<i>Alectoris chukar</i>	Chukar	6
Phasianidae	<i>Callipepla californica</i>	California quail	6
Phasianidae	<i>Callipepla gambelii</i>	Gambel's quail	6
Phasianidae	<i>Perdix perdix</i>	Gray partridge	6
Picidae	<i>Melanerpes lewis</i>	Lewis' woodpecker	6
Picidae	<i>Picoides pubescens</i>	Downy woodpecker	6
Picidae	<i>Sphyrapicus nuchalis</i>	Red-naped sapsucker	6
Picidae	<i>Sphyrapicus thyroideus</i>	Williamson's sapsucker	6
Sittidae	<i>Sitta canadensis</i>	Red-breasted nuthatch	6
Troglodytidae	<i>Catherpes mexicanus</i>	Canyon wren	6
Troglodytidae	<i>Salpinctes obsoletus</i>	Rock wren	6
Antilocapridae	<i>Antilocapra americana</i>	Pronghorn	6
Bovidae	<i>Ovis canadensis californiana</i>	California bighorn sheep	6
Bovidae	<i>Ovis canadensis canadensis</i>	Rocky mountain bighorn sheep	6
Equidae	<i>Equus caballus</i>	Feral horse	6
Heteromyidae	<i>Dipodomys ordii</i>	Ord's kangaroo rat	6
Heteromyidae	<i>Perognathus parvus</i>	Great basin pocket mouse	6
Leporidae	<i>Sylvilagus floridanus</i>	Eastern cottontail	6
Leporidae	<i>Sylvilagus nuttallii</i>	Mountain cottontail	6
Muridae	<i>Neotoma lepida</i>	Desert woodrat	6
Muridae	<i>Onychomys leucogaster</i>	Northern grasshopper mouse	6
Muridae	<i>Peromyscus crinitus</i>	Canyon mouse	6
Muridae	<i>Phenacomys intermedius</i>	Heather vole	6
Sciuridae	<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel	6
Sciuridae	<i>Spermophilus beecheyi</i>	California ground squirrel	6
Sciuridae	<i>Spermophilus townsendii</i>	Townsend's ground squirrel	6
Sciuridae	<i>Spermophilus washingtoni</i>	Washington ground squirrel	6
Soricidae	<i>Sorex monticolus</i>	Montane shrew	6
Soricidae	<i>Sorex preblei</i>	Preble's shrew	6
Colubridae	<i>Masticophis taeniatus</i>	Striped whipsnake	6
Colubridae	<i>Rhinocheilus lecontei</i>	Longnose snake	6
Iguanidae	<i>Phrynosoma douglassii</i>	Short-horned lizard	6
Iguanidae	<i>Phrynosoma platyrhinos</i>	Desert horned lizard	6
Iguanidae	<i>Uta stansburiana</i>	Side-blotched lizard	6
Scincidae	<i>Eumeces skiltonianus</i>	Western skink	6
Teiidae	<i>Cnemidophorus tigris</i>	Western whiptail	6
Teiidae	<i>Cnemidophorus velox</i>	Plateau striped whiptail	6
Pelobatidae	<i>Spea intermontana</i>	Great basin spadefoot	7
Accipitridae	<i>Accipiter striatus</i>	Sharp-shinned hawk	7
Emberizidae	<i>Piranga ludoviciana</i>	Western tanager	7

1	Woodward's	Woodward's	Woodward's
2	Boyer's	Boyer's	Boyer's
3	California	California	California
4	Black ground	Black ground	Black ground
5	Lawrence	Lawrence	Lawrence
6	South	South	South
7	Green	Green	Green
8	Yellow	Yellow	Yellow
9	Green	Green	Green
10	Green	Green	Green
11	Green	Green	Green
12	Green	Green	Green
13	Green	Green	Green
14	Green	Green	Green
15	Green	Green	Green
16	Green	Green	Green
17	Green	Green	Green
18	Green	Green	Green
19	Green	Green	Green
20	Green	Green	Green
21	Green	Green	Green
22	Green	Green	Green
23	Green	Green	Green
24	Green	Green	Green
25	Green	Green	Green
26	Green	Green	Green
27	Green	Green	Green
28	Green	Green	Green
29	Green	Green	Green
30	Green	Green	Green
31	Green	Green	Green
32	Green	Green	Green
33	Green	Green	Green
34	Green	Green	Green
35	Green	Green	Green
36	Green	Green	Green
37	Green	Green	Green
38	Green	Green	Green
39	Green	Green	Green
40	Green	Green	Green
41	Green	Green	Green
42	Green	Green	Green
43	Green	Green	Green
44	Green	Green	Green
45	Green	Green	Green
46	Green	Green	Green
47	Green	Green	Green
48	Green	Green	Green
49	Green	Green	Green
50	Green	Green	Green

Emberizidae	<i>Vermivora peregrina</i>	Tennessee warbler	7
Emberizidae	<i>Vermivora ruficapilla</i>	Nashville warbler	7
Emberizidae	<i>Wilsonia pusilla</i>	Wilson's warbler	7
Falconidae	<i>Falco columbarius</i>	Merlin	7
Fringillidae	<i>Carpodacus cassinii</i>	Cassin's finch	7
Fringillidae	<i>Coccothraustes vespertinus</i>	Evening grosbeak	7
Fringillidae	<i>Pinicola enucleator</i>	Pine grosbeak	7
Hirundinidae	<i>Hirundo pyrrhonota</i>	Cliff swallow	7
Phasianidae	<i>Centrocercus urophasianus</i>	Sage grouse	7
Picidae	<i>Picoides villosus</i>	Hairy woodpecker	7
Sittidae	<i>Sitta carolinensis</i>	White-breasted nuthatch	7
Strigidae	<i>Surnia ulula</i>	Northern hawk owl	7
Tyrannidae	<i>Contopus borealis</i>	Olive-sided flycatcher	7
Tyrannidae	<i>Empidonax hammondii</i>	Hammond's flycatcher	7
Tyrannidae	<i>Sayornis saya</i>	Say's phoebe	7
Tyrannidae	<i>Tyrannus verticalis</i>	Western kingbird	7
Vireonidae	<i>Vireo gilvus</i>	Warbling vireo	7
Vireonidae	<i>Vireo solitarius</i>	Solitary vireo	7
Cervidae	<i>Alces alces</i>	Moose	7
Heteromyidae	<i>Dipodomys microps</i>	Chisel-toothed kangaroo rat	7
Heteromyidae	<i>Microdipodops megacephalus</i>	Dark kangaroo mouse	7
Leporidae	<i>Lepus townsendii</i>	White-tailed jackrabbit	7
Muridae	<i>Clethrionomys gapperi</i>	Southern red-backed vole	7
Muridae	<i>Microtus pennsylvanicus kincaidi</i>	Potholes meadow vole	7
Sciuridae	<i>Marmota flaviventris</i>	Yellow-bellied marmot	7
Sciuridae	<i>Spermophilus columbianus</i>	Columbian ground squirrel	7
Talpidae	<i>Scapanus orarius</i>	Coast mole	7
Vespertilionidae	<i>Lasiurus cinereus</i>	Hoary bat	7
Vespertilionidae	<i>Myotis volans</i>	Long-legged myotis	7
Accipitridae	<i>Accipiter cooperii</i>	Cooper's hawk	8
Accipitridae	<i>Accipiter gentilis</i>	Northern goshawk	8
Accipitridae	<i>Aquila chrysaetos</i>	Golden eagle	8
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar waxwing	8
Columbidae	<i>Columba livia</i>	Rock dove	8
Emberizidae	<i>Chondestes grammacus</i>	Lark sparrow	8
Emberizidae	<i>Dendroica coronata</i>	Yellow-rumped warbler	8
Emberizidae	<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	8
Emberizidae	<i>Seiurus noveboracensis</i>	Northern waterthrush	8
Laniidae	<i>Lanius ludovicianus</i>	Loggerhead shrike	8
Muscicapidae	<i>Catharus fuscescens</i>	Veery	8
Muscicapidae	<i>Catharus ustulatus</i>	Swainson's thrush	8
Paridae	<i>Parus atricapillus</i>	Black-capped chickadee	8
Tyrannidae	<i>Empidonax oberholseri</i>	Dusky flycatcher	8
Tyrannidae	<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	8
Tytonidae	<i>Tyto alba</i>	Common barn owl	8
Bovidae	<i>Oreamnos americanus</i>	Mountain goat	8
Geomyidae	<i>Thomomys mazama</i>	Western pocket gopher	8
Geomyidae	<i>Thomomys talpoides douglasi</i>	Brushprairie pocket gopher	8
Geomyidae	<i>Thomomys townsendii</i>	Townsend's pocket gopher	8
Mustelidae	<i>Mephitis mephitis</i>	Striped skunk	8
Sciuridae	<i>Spermophilus beldingi</i>	Belding's ground squirrel	8
Sciuridae	<i>Spermophilus elegans nevadensis</i>	Wyoming ground squirrel	8
Sciuridae	<i>Tamias minimus</i>	Least chipmunk	8
Vespertilionidae	<i>Antrozous pallidus</i>	Pallid bat	8
Iguanidae	<i>Sceloporus occidentalis</i>	Western fence lizard	8
Bufonidae	<i>Bufo woodhousii</i>	Woodhouse's toad	9
Accipitridae	<i>Buteo jamaicensis</i>	Red-tailed hawk	9
Emberizidae	<i>Oporornis tolmiei</i>	Macgillivray's warbler	9

Emberizidae	<i>Passerina amoena</i>	Lazuli bunting	9
Emberizidae	<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak	9
Emberizidae	<i>Spizella passerina</i>	Chipping sparrow	9
Fringillidae	<i>Carduelis tristis</i>	American goldfinch	9
Hirundinidae	<i>Hirundo rustica</i>	Barn swallow	9
Hirundinidae	<i>Tachycineta thalassina</i>	Violet-green swallow	9
Phasianidae	<i>Oreortyx pictus</i>	Mountain quail	9
Tyrannidae	<i>Contopus sordidulus</i>	Western wood-pewee	9
Tyrannidae	<i>Empidonax traillii</i>	Willow flycatcher	9
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum	9
Geomyidae	<i>Thomomys talpoides</i>	Northern pocket gopher	9
Geomyidae	<i>Thomomys talpoides limosus</i>	White salmon pocket gopher	9
Leporidae	<i>Lepus americanus</i>	Snowshoe hare	9
Muridae	<i>Reithrodontomys megalotis</i>	Western harvest mouse	9
Procyonidae	<i>Procyon lotor</i>	Common raccoon	9
Sciuridae	<i>Spermophilus saturatus</i>	Cascade golden-mantled ground squirrel	9
Vespertilionidae	<i>Myotis evotis</i>	Long-eared myotis	9
Vespertilionidae	<i>Myotis thysanodes</i>	Fringed myotis	9
Anguillidae	<i>Elgaria multicarinata</i>	Southern alligator lizard	9
Boidae	<i>Charina bottae</i>	Rubber boa	9
Colubridae	<i>Diadophis punctatus</i>	Ringneck snake	9
Colubridae	<i>Pituophis catenifer</i>	Gopher snake	9
Plethodontidae	<i>Ensatina eschscholtzii</i>	Ensatina	10
Accipitridae	<i>Buteo regalis</i>	Ferruginous hawk	10
Apodidae	<i>Cypseloides niger</i>	Black swift	10
Charadriidae	<i>Charadrius vociferus</i>	Killdeer	10
Corvidae	<i>Corvus brachyrhynchos</i>	American crow	10
Cuculidae	<i>Coccyzus americanus</i>	Yellow-billed cuckoo	10
Emberizidae	<i>Junco hyemalis</i>	Dark-eyed junco	10
Emberizidae	<i>Passerella iliaca</i>	Fox sparrow	10
Emberizidae	<i>Vermivora celata</i>	Orange-crowned warbler	10
Emberizidae	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	10
Emberizidae	<i>Zonotrichia querula</i>	Harris' sparrow	10
Falconidae	<i>Falco peregrinus</i>	Peregrine falcon	10
Hirundinidae	<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	10
Strigidae	<i>Otus kennicottii</i>	Western screech owl	10
Trochilidae	<i>Archilochus alexandri</i>	Black-chinned hummingbird	10
Trochilidae	<i>Selasphorus rufus</i>	Rufous hummingbird	10
Trochilidae	<i>Stellula calliope</i>	Calliope hummingbird	10
Tyrannidae	<i>Tyrannus tyrannus</i>	Eastern kingbird	10
Canidae	<i>Vulpes vulpes</i>	Red fox	10
Cervidae	<i>Odocoileus virginianus</i>	White-tailed deer	10
Muridae	<i>Microtus montanus</i>	Montane vole	10
Muridae	<i>Microtus pennsylvanicus</i>	Meadow vole	10
Mustelidae	<i>Gulo gulo</i>	Wolverine	10
Mustelidae	<i>Mustela erminea</i>	Ermine	10
Mustelidae	<i>Spilogale gracilis</i>	Western spotted skunk	10
Sciuridae	<i>Spermophilus lateralis</i>	Golden-mantled ground squirrel	10
Soricidae	<i>Sorex vagrans</i>	Vagrant shrew	10
Vespertilionidae	<i>Euderma maculatum</i>	Spotted bat	10
Vespertilionidae	<i>Myotis ciliolabrum</i>	Western small-footed myotis	10
Colubridae	<i>Contia tenuis</i>	Sharptail snake	10
Colubridae	<i>Hypsiglena torquata</i>	Night snake	10
Colubridae	<i>Lampropeltis zonata</i>	California mountain kingsnake	10
Ambystomatidae	<i>Ambystoma macrodactylum</i>	Long-toed salamander	11
Ambystomatidae	<i>Ambystoma tigrinum</i>	Tiger salamander	11
Hylidae	<i>Pseudacris regilla</i>	Pacific chorus frog	11

11	Eastern bluebird	<i>Sialia sialis</i>	11042
11	Red-shouldered hawk	<i>Buteo lineatus</i>	11043
11	Sharp-shinned hawk	<i>Accipiter cooperii</i>	11044
11	American kestrel	<i>Falco tinnunculus</i>	11045
11	Screech owl	<i>Bubo scaberrimus</i>	11046
11	White-throated sparrow	<i>Zonotrichia albicollis</i>	11047
11	Mountain quail	<i>Turnix sibiricus</i>	11048
11	Western meadow-lark	<i>Lark sp.</i>	11049
11	Wilson's phoebe	<i>Phoebe wilsonii</i>	11050
11	Virginia warbler	<i>Vireo virginicus</i>	11051
11	Northern pocket gopher	<i>Thomomys talpoides</i>	11052
11	White-tailed woodpecker	<i>Colaptes auratus</i>	11053
11	Downy woodpecker	<i>Picus pubescens</i>	11054
11	Western hairy woodpecker	<i>Picus harrisi</i>	11055
11	Common nighthawk	<i>Nyctalex borealis</i>	11056
11	Carolina golden-crowned kinglet	<i>Regulus satrapa</i>	11057
11	Kinglet	<i>Regulus satrapa</i>	11058
11	Long-tailed sparrow	<i>Spizella monticola</i>	11059
11	Field sparrow	<i>Spizella monticola</i>	11060
11	Golden-crowned kinglet	<i>Regulus satrapa</i>	11061
11	Red-breasted nuthatch	<i>Sitta canadensis</i>	11062
11	Blue jay	<i>Cyanus cristatus</i>	11063
11	Downy woodpecker	<i>Picus pubescens</i>	11064
11	Golden-crowned kinglet	<i>Regulus satrapa</i>	11065
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11066
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11067
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11068
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11069
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11070
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11071
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11072
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11073
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11074
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11075
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11076
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11077
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11078
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11079
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11080
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11081
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11082
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11083
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11084
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11085
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11086
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11087
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11088
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11089
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11090
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11091
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11092
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11093
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11094
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11095
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11096
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11097
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11098
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11099
11	Black-capped chickadee	<i>Parus ruficapillus</i>	11100

Hylidae	<i>Pseudacris triseriata</i>	Western chorus frog	11
Apodidae	<i>Aeronautes saxatalis</i>	White-throated swift	11
Caprimulgidae	<i>Chordeiles minor</i>	Common nighthawk	11
Cathartidae	<i>Cathartes aura</i>	Turkey vulture	11
Columbidae	<i>Zenaidura macroura</i>	Mourning dove	11
Corvidae	<i>Pica pica</i>	Black-billed magpie	11
Emberizidae	<i>Icteria virens</i>	Yellow-breasted chat	11
Emberizidae	<i>Icterus galbula</i>	Northern oriole	11
Emberizidae	<i>Molothrus ater</i>	Brown-headed cowbird	11
Muscicapidae	<i>Myadestes townsendi</i>	Townsend's solitaire	11
Muscicapidae	<i>Sialia currucoides</i>	Mountain bluebird	11
Muscicapidae	<i>Sialia mexicana</i>	Western bluebird	11
Muscicapidae	<i>Turdus migratorius</i>	American robin	11
Picidae	<i>Colaptes auratus</i>	Northern flicker	11
Strigidae	<i>Asio otus</i>	Long-eared owl	11
Strigidae	<i>Bubo virginianus</i>	Great horned owl	11
Trochilidae	<i>Selasphorus platycercus</i>	Broad-tailed hummingbird	11
Troglodytidae	<i>Troglodytes aedon</i>	House wren	11
Canidae	<i>Canis latrans</i>	Coyote	11
Canidae	<i>Canis lupus</i>	Gray wolf	11
Cervidae	<i>Cervus elaphus nelsonii</i>	Rocky mountain elk	11
Cervidae	<i>Odocoileus hemionus</i>	Mule deer	11
Erethizontidae	<i>Erethizon dorsatum</i>	Common porcupine	11
Felidae	<i>Felis concolor</i>	Mountain lion	11
Felidae	<i>Lynx rufus</i>	Bobcat	11
Muridae	<i>Microtus longicaudus</i>	Long-tailed vole	11
Muridae	<i>Neotoma cinerea</i>	Bushy-tailed woodrat	11
Muridae	<i>Peromyscus keenii</i>	Columbian mouse	11
Muridae	<i>Peromyscus maniculatus</i>	Deer mouse	11
Mustelidae	<i>Mustela frenata</i>	Long-tailed weasel	11
Mustelidae	<i>Taxidea taxus</i>	American badger	11
Soricidae	<i>Sorex cinereus</i>	Masked shrew	11
Ursidae	<i>Ursus americanus</i>	Black bear	11
Ursidae	<i>Ursus arctos</i>	Grizzly bear	11
Vespertilionidae	<i>Eptesicus fuscus</i>	Big brown bat	11
Vespertilionidae	<i>Lasiurus noctivagans</i>	Silver-haired bat	11
Anguillidae	<i>Elgaria coerulea</i>	Northern alligator lizard	11
Colubridae	<i>Coluber constrictor</i>	Racer	11
Colubridae	<i>Thamnophis elegans</i>	Western terrestrial garter snake	11
Colubridae	<i>Thamnophis sirtalis</i>	Common garter snake	11
Viperidae	<i>Crotalus viridis</i>	Western rattlesnake	11

* - Versatility rating denotes the number of other structural stages used by the species (11 maximum).

11	Western bluebird	<i>Cyanocitta stelleri</i>	Western bluebird
11	White-throated sparrow	<i>Zonotrichia albicollis</i>	White-throated sparrow
11	Common nighthawk	<i>Larynx colinus</i>	Common nighthawk
11	Turkey vulture	<i>Cathartes aura</i>	Turkey vulture
11	House sparrow	<i>Passer domesticus</i>	House sparrow
11	Black-billed gull	<i>Larus nigripennis</i>	Black-billed gull
11	Tailorbird	<i>Phoenicurus phoenicurus</i>	Tailorbird
11	Western titmouse	<i>Parus rufescens</i>	Western titmouse
11	Green-headed saltator	<i>Troglodytes aedon</i>	Green-headed saltator
11	Townsend's solitaire	<i>Salpinctes obsoletus</i>	Townsend's solitaire
11	Mountain bluebird	<i>Cyanocitta stelleri</i>	Mountain bluebird
11	Western bluebird	<i>Cyanocitta stelleri</i>	Western bluebird
11	American crow	<i>Corvus americanus</i>	American crow
11	Western flicker	<i>Colaptes auratus</i>	Western flicker
11	Long-tailed woodpecker	<i>Geopelia striata</i>	Long-tailed woodpecker
11	Great horned owl	<i>Bubo virginianus</i>	Great horned owl
11	Sharp-shinned hawk	<i>Buteo lineatus</i>	Sharp-shinned hawk
11	Common raven	<i>Corvus corax</i>	Common raven
11	Crow	<i>Corvus corax</i>	Crow
11	Gray wolf	<i>Canis lupus</i>	Gray wolf
11	Rocky mountain elk	<i>Cervus elaphus nelsoni</i>	Rocky mountain elk
11	Blue hare	<i>Lepus americanus</i>	Blue hare
11	Common porcupine	<i>Erethizon americanum</i>	Common porcupine
11	Mountain lion	<i>Panthera tigris</i>	Mountain lion
11	Bobcat	<i>Lynx rufus</i>	Bobcat
11	Long-tailed weasel	<i>Mustela putorius f. erminea</i>	Long-tailed weasel
11	Short-tailed weasel	<i>Mustela erminea</i>	Short-tailed weasel
11	Common weasel	<i>Mustela putorius</i>	Common weasel
11	Least weasel	<i>Mustela putorius f. erminea</i>	Least weasel
11	Long-tailed weasel	<i>Mustela putorius f. erminea</i>	Long-tailed weasel
11	American badger	<i>Taxidea taxus</i>	American badger
11	Asian badger	<i>Taxidea sibirica</i>	Asian badger
11	Striped skunk	<i>Mephitis mephitis</i>	Striped skunk
11	Bay skunk	<i>Mephitis mephitis</i>	Bay skunk
11	Spotted skunk	<i>Mephitis mephitis</i>	Spotted skunk
11	Ring-necked pheasant	<i>Phasianus torquatus</i>	Ring-necked pheasant
11	Wild turkey	<i>Meleagris gallopavo</i>	Wild turkey
11	Common quail	<i>Turnix sibirica</i>	Common quail
11	Western quail	<i>Turnix sibirica</i>	Western quail

* - Voucherly listed denotes the number of other structural stages used by the species in question.

Appendix VERTOLDF. Vertebrate species using single- and multi-storied old forest structural stages in the assessment area of the Interior Columbia Basin Ecosystem Management Project.

Family	Scientific name	Common name	Versatility
Strigidae	<i>Otus flammeolus</i>	Flammulated owl	0
Certhiidae	<i>Certhia americana</i>	Brown creeper	1
Columbidae	<i>Columba fasciata</i>	Band-tailed pigeon	1
Fringillidae	<i>Loxia leucoptera</i>	White-winged crossbill	1
Strigidae	<i>Aegolius funereus</i>	Boreal owl	1
Sciuridae	<i>Sciurus griseus</i>	Western gray squirrel	1
Plethodontidae	<i>Batrachoseps wrighti</i>	Oregon slender salamander	2
Corvidae	<i>Nucifraga columbiana</i>	Clark's nutcracker	2
Emberizidae	<i>Dendroica townsendi</i>	Townsend's warbler	2
Fringillidae	<i>Loxia curvirostra</i>	Red crossbill	2
Muscicapidae	<i>Regulus satrapa</i>	Golden-crowned kinglet	2
Paridae	<i>Parus hudsonicus</i>	Boreal chickadee	2
Paridae	<i>Parus inornatus</i>	Plain titmouse	2
Phasianidae	<i>Dendragapus canadensis</i>	Spruce grouse	2
Picidae	<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker	2
Picidae	<i>Picoides arcticus</i>	Black-backed woodpecker	2
Strigidae	<i>Glaucidium gnoma</i>	Northern pygmy-owl	2
Strigidae	<i>Strix nebulosa</i>	Great gray owl	2
Tyrannidae	<i>Empidonax occidentalis</i>	Cordilleran flycatcher	2
Muridae	<i>Clethrionomys californicus</i>	Western red-backed vole	2
Sciuridae	<i>Tamias dorsalis</i>	Cliff chipmunk	2
Sciuridae	<i>Tamiasciurus douglasii</i>	Douglas' squirrel	2
Sciuridae	<i>Tamiasciurus hudsonicus</i>	Red squirrel	2
Corvidae	<i>Gymnorhinus cyanocephalus</i>	Pinyon jay	3
Corvidae	<i>Perisoreus canadensis</i>	Gray jay	3
Muscicapidae	<i>Regulus calendula</i>	Ruby-crowned kinglet	3
Paridae	<i>Parus rufescens</i>	Chestnut-backed chickadee	3
Picidae	<i>Dryocopus pileatus</i>	Pileated woodpecker	3
Picidae	<i>Picoides albolarvatus</i>	White-headed woodpecker	3
Picidae	<i>Picoides tridactylus</i>	Three-toed woodpecker	3
Sittidae	<i>Sitta pygmaea</i>	Pygmy nuthatch	3
Muridae	<i>Microtus oregoni</i>	Creeping vole	3
Mustelidae	<i>Martes americana</i>	American marten	3
Mustelidae	<i>Martes pennanti</i>	Fisher	3
Sciuridae	<i>Tamias ruficaudus</i>	Red-tailed chipmunk	3

Appendix 1: Vertebrate species used in the assessment of the Interior Columbia Basin
 Forest Structural Index in the assessment of the Interior Columbia Basin
 Ecosystem Management Project.

Year- Entry	Common Name	Scientific Name	Family
0	Flammulated owl	<i>Otus flammeolus</i>	Strigidae
1	Brown creeper	<i>Certhia americana</i>	Certhiidae
1	Red-tailed pigeon	<i>Columba fasciata</i>	Columbidae
1	White-winged crossbill	<i>Loxia leucoptera</i>	Fringillidae
1	Screech owl	<i>Scopelus lineatus</i>	Strigidae
1	Western gray squirrel	<i>Sciurus griseus</i>	Sciuridae
2	Oregon slender salamander	<i>Ambystoma macrodactylum</i>	Plethorhynchidae
2	Clark's nutcracker	<i>Nucifraga columbiana</i>	Corvidae
2	Townsend's warbler	<i>Dendroica townsendi</i>	Paridae
2	Red crossbill	<i>Loxia curvirostris</i>	Fringillidae
2	Golden-crowned kinglet	<i>Regulus satrapa</i>	Troglodytidae
2	Forest chickadee	<i>Parus hudsonicus</i>	Paridae
2	Plain titmouse	<i>Parus inornatus</i>	Paridae
2	Spurwing thrush	<i>Spizella breweri</i>	Spizellidae
2	Red-headed woodpecker	<i>Melanerpes formicivorus</i>	Picidae
2	Black-backed woodpecker	<i>Nucifraga virens</i>	Picidae
2	Northern pygmy owl	<i>Nyctaleus pygmaeus</i>	Strigidae
2	Great gray owl	<i>Nyctaleus borealis</i>	Strigidae
2	Condillera's flycatcher	<i>Empidonax condillerae</i>	Tyrannidae
2	Western red-backed vole	<i>Callospermophilus lateralis</i>	Citellidae
2	Elf chipmunk	<i>Tamias merriami</i>	Sciuridae
2	Douglas' squirrel	<i>Tamias amoenus</i>	Sciuridae
2	Red squirrel	<i>Sciurus hudsonicus</i>	Sciuridae
2	Empidonax	<i>Empidonax hammondi</i>	Corvidae
2	Gray Jay	<i>Perisoreus canadensis</i>	Corvidae
2	Ruby-crowned kinglet	<i>Regulus calendula</i>	Troglodytidae
2	Chestnut-backed chickadee	<i>Parus rufescens</i>	Paridae
2	White-headed woodpecker	<i>Picoides albicollis</i>	Picidae
2	White-headed woodpecker	<i>Picoides albicollis</i>	Picidae
2	Three-toed woodpecker	<i>Picoides tridactylus</i>	Picidae
2	Pygmy nuthatch	<i>Sitta pygmaea</i>	Sittidae
2	Creeper vole	<i>Microtus oregoni</i>	Muridae
2	American marten	<i>Felis americana</i>	Felidae
2	Fisher	<i>Lynx baileyi</i>	Felidae
2	Red-tailed chipmunk	<i>Tamias rufocaudatus</i>	Sciuridae

Soricidae	<i>Sorex trowbridgii</i>	Trowbridge's shrew	3
Plethodontidae	<i>Plethodon larselli</i>	Larch mountain salamander	4
Alcidae	<i>Brachyramphus marmoratus</i>	Marbled murrelet	4
Emberizidae	<i>Dendroica nigrescens</i>	Black-throated gray warbler	4
Phasianidae	<i>Bonasa umbellus</i>	Ruffed grouse	4
Strigidae	<i>Aegolius acadicus</i>	Northern saw-whet owl	4
Strigidae	<i>Strix varia</i>	Barred owl	4
Troglodytidae	<i>Troglodytes troglodytes</i>	Winter wren	4
Tyrannidae	<i>Empidonax wrightii</i>	Gray flycatcher	4
Aplodontidae	<i>Aplodontia rufa</i>	Mountain beaver	4
Cervidae	<i>Odocoileus hemionus columbianus</i>	Black-tailed deer	4
Felidae	<i>Lynx lynx</i>	Lynx	4
Muridae	<i>Lemmys curtatus</i>	Sagebrush vole	4
Muridae	<i>Peromyscus truei</i>	Pinyon mouse	4
Sciuridae	<i>Glaucomys sabrinus</i>	Northern flying squirrel	4
Sciuridae	<i>Marmota caligata</i>	Hoary marmot	4
Sciuridae	<i>Tamias umbrinus</i>	Uinta chipmunk	4
Soricidae	<i>Sorex hoyi</i>	Pygmy shrew	4
Talpidae	<i>Neurotrichus gibbsii</i>	Shrew-mole	4
Iguanidae	<i>Sceloporus graciosus graciosus</i>	Sagebrush lizard	4
Apodidae	<i>Chaetura vauxi</i>	Vaux's swift	5
Fringillidae	<i>Carduelis pinus</i>	Pine siskin	5
Paridae	<i>Parus gambeli</i>	Mountain chickadee	5
Phasianidae	<i>Dendragapus obscurus</i>	Blue grouse	5
Phasianidae	<i>Meleagris gallopavo</i>	Wild turkey	5
Trochilidae	<i>Calypte anna</i>	Anna's hummingbird	5
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed vireo	5
Cervidae	<i>Rangifer tarandus caribou</i>	Woodland caribou	5
Heteromyidae	<i>Dipodomys californicus</i>	California kangaroo rat	5
Muridae	<i>Neotoma fuscipes</i>	Dusky-footed woodrat	5
Sciuridae	<i>Tamias amoenus</i>	Yellow-pine chipmunk	5
Vespertilionidae	<i>Myotis californicus</i>	California myotis	5
Vespertilionidae	<i>Myotis lucifugus</i>	Little brown myotis	5
Vespertilionidae	<i>Myotis yumanensis</i>	Yuma myotis	5
Iguanidae	<i>Gambelia wislizenii</i>	Longnose leopard lizard	5
Ambystomatidae	<i>Ambystoma gracile</i>	Northwestern salamander	6
Accipitridae	<i>Buteo lagopus</i>	Rough-legged hawk	6
Corvidae	<i>Corvus corax</i>	Common raven	6
Emberizidae	<i>Setophaga ruticilla</i>	American redstart	6
Emberizidae	<i>Spizella breweri</i>	Brewer's sparrow	6
Fringillidae	<i>Carduelis psaltria</i>	Lesser goldfinch	6
Laniidae	<i>Lanius excubitor</i>	Northern shrike	6

1	Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	Paridae
2	Rufous Grouse	<i>Bonasa umbellus</i>	Troglodytidae
3	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Strigidae
4	Belted Owl	<i>Bubo virginianus</i>	Strigidae
5	Winter Wren	<i>Troglodytes aedon</i>	Troglodytidae
6	Gray Flycatcher	<i>Empidonax griseus</i>	Tyrannidae
7	Mountain Pewee	<i>Spizella monticola</i>	Agelaiidae
8	Black-tailed Deer	<i>Odocoileus columbianus</i>	Cervidae
9	Lynx	<i>Lynx baileyi</i>	Felidae
10	Sagebrush Vole	<i>Lasiurus cinereus</i>	Muridae
11	Ring-necked Pheasant	<i>Phasianus torquatus</i>	Columbidae
12	Northern Flying squirrel	<i>Glaucomys sabrinus</i>	Sciuridae
13	Hairy woodrat	<i>Neotoma lepida</i>	Sciuridae
14	White-throated Sparrow	<i>Spizella monticola</i>	Agelaiidae
15	Pygmy shrew	<i>Sorex nanus</i>	Soricidae
16	Shrew-mole	<i>Neurotrichus gibbsii</i>	Talpidae
17	Sagebrush lizard	<i>Sceloporus graciosus</i>	Iguanidae
18	Yukon's sculpin	<i>Cottus cognatus</i>	Cottidae
19	King salmon	<i>Oncorhynchus tshawytscha</i>	Pisces
20	Mountain chickadee	<i>Parus gambeli</i>	Paridae
21	Blue grouse	<i>Dendroica cyanus</i>	Troglodytidae
22	Wild turkey	<i>Meleagris gallopavo</i>	Columbidae
23	Anna's hummingbird	<i>Calypte anna</i>	Troglodytidae
24	Red-eyed vireo	<i>Vireo olivaceus</i>	Vireonidae
25	Woodland scorpion	<i>Scorpius carolinensis</i>	Scorpiones
26	California kangaroo rat	<i>Dipodomys deserti</i>	Heteromyidae
27	Dusky-footed woodrat	<i>Dipodomys deserti</i>	Heteromyidae
28	Yellow-pine chipmunk	<i>Tamias amoenus</i>	Sciuridae
29	California sparrow	<i>Spizella californica</i>	Agelaiidae
30	Little brown sparrow	<i>Spizella monticola</i>	Agelaiidae
31	Yukon sparrow	<i>Spizella monticola</i>	Agelaiidae
32	Longspur leopold lizard	<i>Sceloporus leopoldi</i>	Iguanidae
33	Northwestern salamander	<i>Ambystoma gracile</i>	Amphibia
34	Booby-legged bat	<i>Myotis californicus</i>	Chiroptera
35	Common Raven	<i>Corvus corax</i>	Corvidae
36	American redstart	<i>Minerops virens</i>	Paridae
37	Brewer's sparrow	<i>Spizella breweri</i>	Agelaiidae
38	Lesser goldfinch	<i>Carpodacus mexicanus</i>	Cardinalidae
39	Northern shrike	<i>Lanius borealis</i>	Laniidae

Mimidae	<i>Dumetella carolinensis</i>	Gray catbird	6
Muscicapidae	<i>Catharus guttatus</i>	Hermit thrush	6
Muscicapidae	<i>Ixoreus naevius</i>	Varied thrush	6
Phasianidae	<i>Alectoris chukar</i>	Chukar	6
Phasianidae	<i>Callipepla californica</i>	California quail	6
Phasianidae	<i>Callipepla gambelii</i>	Gambel's quail	6
Phasianidae	<i>Perdix perdix</i>	Gray partridge	6
Picidae	<i>Melanerpes lewis</i>	Lewis' woodpecker	6
Picidae	<i>Picoides pubescens</i>	Downy woodpecker	6
Picidae	<i>Sphyrapicus nuchalis</i>	Red-naped sapsucker	6
Picidae	<i>Sphyrapicus thyroideus</i>	Williamson's sapsucker	6
Sittidae	<i>Sitta canadensis</i>	Red-breasted nuthatch	6
Troglodytidae	<i>Catherpes mexicanus</i>	Canyon wren	6
Troglodytidae	<i>Salpinctes obsoletus</i>	Rock wren	6
Antilocapridae	<i>Antilocapra americana</i>	Pronghorn	6
Bovidae	<i>Ovis canadensis californiana</i>	California bighorn sheep	6
Bovidae	<i>Ovis canadensis canadensis</i>	Rocky mountain bighorn sheep	6
Equidae	<i>Equus caballus</i>	Feral horse	6
Heteromyidae	<i>Dipodomys ordii</i>	Ord's kangaroo rat	6
Heteromyidae	<i>Perognathus parvus</i>	Great basin pocket mouse	6
Leporidae	<i>Sylvilagus floridanus</i>	Eastern cottontail	6
Leporidae	<i>Sylvilagus nuttallii</i>	Mountain cottontail	6
Muridae	<i>Neotoma lepida</i>	Desert woodrat	6
Muridae	<i>Onychomys leucogaster</i>	Northern grasshopper mouse	6
Muridae	<i>Peromyscus crinitus</i>	Canyon mouse	6
Muridae	<i>Phenacomys intermedius</i>	Heather vole	6
Sciuridae	<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel	6
Sciuridae	<i>Spermophilus beecheyi</i>	California ground squirrel	6
Sciuridae	<i>Spermophilus townsendii</i>	Townsend's ground squirrel	6
Sciuridae	<i>Spermophilus washingtoni</i>	Washington ground squirrel	6
Soricidae	<i>Sorex monticolus</i>	Montane shrew	6
Soricidae	<i>Sorex preblei</i>	Preble's shrew	6
Colubridae	<i>Masticophis taeniatus</i>	Striped whipsnake	6
Colubridae	<i>Rhinocheilus lecontei</i>	Longnose snake	6



Iguanidae	<i>Phrynosoma douglassii</i>	Short-horned lizard	6
Iguanidae	<i>Phrynosoma platyrhinos</i>	Desert horned lizard	6
Iguanidae	<i>Uta stansburiana</i>	Side-blotched lizard	6
Scincidae	<i>Eumeces skiltonianus</i>	Western skink	6
Teiidae	<i>Cnemidophorus tigris</i>	Western whiptail	6
Teiidae	<i>Cnemidophorus velox</i>	Plateau striped whiptail	6
Pelobatidae	<i>Spea intermontana</i>	Great basin spadefoot	7
Emberizidae	<i>Piranga ludoviciana</i>	Western tanager	7
Emberizidae	<i>Vermivora peregrina</i>	Tennessee warbler	7
Fringillidae	<i>Carpodacus cassinii</i>	Cassin's finch	7
Fringillidae	<i>Coccothraustes vespertinus</i>	Evening grosbeak	7
Fringillidae	<i>Pinicola enucleator</i>	Pine grosbeak	7
Hirundinidae	<i>Hirundo pyrrhonota</i>	Cliff swallow	7
Phasianidae	<i>Centrocercus urophasianus</i>	Sage grouse	7
Picidae	<i>Picoides villosus</i>	Hairy woodpecker	7
Sittidae	<i>Sitta carolinensis</i>	White-breasted nuthatch	7
Strigidae	<i>Surnia ulula</i>	Northern hawk owl	7
Tyrannidae	<i>Contopus borealis</i>	Olive-sided flycatcher	7
Tyrannidae	<i>Empidonax hammondi</i>	Hammond's flycatcher	7
Tyrannidae	<i>Sayornis saya</i>	Say's phoebe	7
Tyrannidae	<i>Tyrannus verticalis</i>	Western kingbird	7
Vireonidae	<i>Vireo gilvus</i>	Warbling vireo	7
Vireonidae	<i>Vireo solitarius</i>	Solitary vireo	7
Cervidae	<i>Alces alces</i>	Moose	7
Heteromyidae	<i>Dipodomys microps</i>	Chisel-toothed kangaroo rat	7
Heteromyidae	<i>Microdipodops megacephalus</i>	Dark kangaroo mouse	7
Leporidae	<i>Lepus townsendii</i>	White-tailed jackrabbit	7
Muridae	<i>Clethrionomys gapperi</i>	Southern red-backed vole	7
Muridae	<i>Microtus pennsylvanicus kincaidi</i>	Potholes meadow vole	7
Sciuridae	<i>Marmota flaviventris</i>	Yellow-bellied marmot	7
Sciuridae	<i>Spermophilus columbianus</i>	Columbian ground squirrel	7
Talpidae	<i>Scapanus orarius</i>	Coast mole	7
Vespertilionidae	<i>Lasiurus cinereus</i>	Hoary bat	7
Vespertilionidae	<i>Myotis volans</i>	Long-legged myotis	7
Accipitridae	<i>Accipiter cooperii</i>	Cooper's hawk	8
Accipitridae	<i>Accipiter gentilis</i>	Northern goshawk	8
Accipitridae	<i>Aquila chrysaetos</i>	Golden eagle	8
Columbidae	<i>Columba livia</i>	Rock dove	8
Emberizidae	<i>Chondestes grammacus</i>	Lark sparrow	8

1	1910	1910	1910
2	1911	1911	1911
3	1912	1912	1912
4	1913	1913	1913
5	1914	1914	1914
6	1915	1915	1915
7	1916	1916	1916
8	1917	1917	1917
9	1918	1918	1918
10	1919	1919	1919
11	1920	1920	1920
12	1921	1921	1921
13	1922	1922	1922
14	1923	1923	1923
15	1924	1924	1924
16	1925	1925	1925
17	1926	1926	1926
18	1927	1927	1927
19	1928	1928	1928
20	1929	1929	1929
21	1930	1930	1930
22	1931	1931	1931
23	1932	1932	1932
24	1933	1933	1933
25	1934	1934	1934
26	1935	1935	1935
27	1936	1936	1936
28	1937	1937	1937
29	1938	1938	1938
30	1939	1939	1939
31	1940	1940	1940
32	1941	1941	1941
33	1942	1942	1942
34	1943	1943	1943
35	1944	1944	1944
36	1945	1945	1945
37	1946	1946	1946
38	1947	1947	1947
39	1948	1948	1948
40	1949	1949	1949
41	1950	1950	1950
42	1951	1951	1951
43	1952	1952	1952
44	1953	1953	1953
45	1954	1954	1954
46	1955	1955	1955
47	1956	1956	1956
48	1957	1957	1957
49	1958	1958	1958
50	1959	1959	1959
51	1960	1960	1960
52	1961	1961	1961
53	1962	1962	1962
54	1963	1963	1963
55	1964	1964	1964
56	1965	1965	1965
57	1966	1966	1966
58	1967	1967	1967
59	1968	1968	1968
60	1969	1969	1969
61	1970	1970	1970
62	1971	1971	1971
63	1972	1972	1972
64	1973	1973	1973
65	1974	1974	1974
66	1975	1975	1975
67	1976	1976	1976
68	1977	1977	1977
69	1978	1978	1978
70	1979	1979	1979
71	1980	1980	1980
72	1981	1981	1981
73	1982	1982	1982
74	1983	1983	1983
75	1984	1984	1984
76	1985	1985	1985
77	1986	1986	1986
78	1987	1987	1987
79	1988	1988	1988
80	1989	1989	1989
81	1990	1990	1990
82	1991	1991	1991
83	1992	1992	1992
84	1993	1993	1993
85	1994	1994	1994
86	1995	1995	1995
87	1996	1996	1996
88	1997	1997	1997
89	1998	1998	1998
90	1999	1999	1999
91	2000	2000	2000
92	2001	2001	2001
93	2002	2002	2002
94	2003	2003	2003
95	2004	2004	2004
96	2005	2005	2005
97	2006	2006	2006
98	2007	2007	2007
99	2008	2008	2008
100	2009	2009	2009

Emberizidae	<i>Dendroica coronata</i>	Yellow-rumped warbler	8
Emberizidae	<i>Seiurus noveboracensis</i>	Northern waterthrush	8
Laniidae	<i>Lanius ludovicianus</i>	Loggerhead shrike	8
Muscicapidae	<i>Catharus ustulatus</i>	Swainson's thrush	8
Paridae	<i>Parus atricapillus</i>	Black-capped chickadee	8
Tyrannidae	<i>Empidonax oberholseri</i>	Dusky flycatcher	8
Tyrannidae	<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	8
Bovidae	<i>Oreamnos americanus</i>	Mountain goat	8
Geomyidae	<i>Thomomys mazama</i>	Western pocket gopher	8
Geomyidae	<i>Thomomys talpoides douglasi</i>	Brushprairie pocket gopher	8
Geomyidae	<i>Thomomys townsendii</i>	Townsend's pocket gopher	8
Mustelidae	<i>Mephitis mephitis</i>	Striped skunk	8
Sciuridae	<i>Spermophilus beldingi</i>	Belding's ground squirrel	8
Sciuridae	<i>Spermophilus elegans nevadensis</i>	Wyoming ground squirrel	8
Sciuridae	<i>Tamias minimus</i>	Least chipmunk	8
Vespertilionidae	<i>Antrozous pallidus</i>	Pallid bat	8
Iguanidae	<i>Sceloporus occidentalis</i>	Western fence lizard	8
Bufo	<i>Bufo woodhousii</i>	Woodhouse's toad	9
Accipitridae	<i>Buteo jamaicensis</i>	Red-tailed hawk	9
Emberizidae	<i>Oporornis tolmiei</i>	Macgillivray's warbler	9
Emberizidae	<i>Passerina amoena</i>	Lazuli bunting	9
Emberizidae	<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak	9
Emberizidae	<i>Spizella passerina</i>	Chipping sparrow	9
Hirundinidae	<i>Hirundo rustica</i>	Barn swallow	9
Hirundinidae	<i>Tachycineta thalassina</i>	Violet-green swallow	9
Phasianidae	<i>Oreortyx pictus</i>	Mountain quail	9
Tyrannidae	<i>Contopus sordidulus</i>	Western wood-pewee	9
Tyrannidae	<i>Empidonax traillii</i>	Willow flycatcher	9
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum	9
Geomyidae	<i>Thomomys talpoides</i>	Northern pocket gopher	9
Geomyidae	<i>Thomomys talpoides limosus</i>	White salmon pocket gopher	9
Leporidae	<i>Lepus americanus</i>	Snowshoe hare	9
Muridae	<i>Reithrodontomys megalotis</i>	Western harvest mouse	9
Procyonidae	<i>Procyon lotor</i>	Common raccoon	9
Sciuridae	<i>Spermophilus saturatus</i>	Cascade golden-mantled ground squirrel	9
Vespertilionidae	<i>Myotis evotis</i>	Long-eared myotis	9
Vespertilionidae	<i>Myotis thysanodes</i>	Fringed myotis	9

1	Yellow-brown warbler	<i>Geothlypis trichas</i>	Geothlypidae
2	Western tanager	<i>Tanagra virens</i>	Tanagridae
3	Indigo-bird	<i>Indigofera</i>	Indigoferidae
4	Wilson's phoebe	<i>Phoebe wilsonii</i>	Phoebidae
5	Black-chinned flycatcher	<i>Empidonax atriceps</i>	Empidonacidae
6	Mountain parula	<i>Parula montana</i>	Parulidae
7	Western pocket gopher	<i>Thomomys talpoides</i>	Thomomysidae
8	Thomomys pocket gopher	<i>Thomomys talpoides</i>	Thomomysidae
9	Thomomys pocket gopher	<i>Thomomys talpoides</i>	Thomomysidae
10	Striped titmouse	<i>Parus fasciatus</i>	Paridae
11	Wilson's ground squirrel	<i>Spermophilus wilsonii</i>	Spermophilidae
12	Least chipmunk	<i>Tamias minimus</i>	Tamiasidae
13	Yellow rat	<i>Reithrodontomys flavescens</i>	Reithrodontomysidae
14	Western house mouse	<i>Reithrodontomys mullerius</i>	Reithrodontomysidae
15	Woodhouse's mouse	<i>Peromyscus leucopus</i>	Peromyscidae
16	Red-tailed hawk	<i>Buteo calurus</i>	Buteonidae
17	Merulian's screech owl	<i>Otus merulianus</i>	Otidae
18	Least screech owl	<i>Otus asio</i>	Otidae
19	Non-rescaled crossbill	<i>Loxia curvirostris</i>	Loxiidae
20	Chipping sparrow	<i>Spizella socialis</i>	Spizellidae
21	Bank swallow	<i>Hirundo lunifrons</i>	Hirundinidae
22	Violet-green swallow	<i>Iridoprocne bicolor</i>	Iridoprocneidae
23	Mountain quail	<i>Coturnix coturnix</i>	Coturnicidae
24	Western wood-pewee	<i>Ceryle alcyon</i>	Ceryleidae
25	Wilson flycatcher	<i>Empidonax traillii</i>	Empidonacidae
26	Wilson's sparrow	<i>Spizella monticola</i>	Spizellidae
27	Western pocket gopher	<i>Thomomys talpoides</i>	Thomomysidae
28	White-necked pocket gopher	<i>Thomomys talpoides</i>	Thomomysidae
29	House mouse	<i>Reithrodontomys mullerius</i>	Reithrodontomysidae
30	Western house mouse	<i>Reithrodontomys mullerius</i>	Reithrodontomysidae
31	Western house mouse	<i>Reithrodontomys mullerius</i>	Reithrodontomysidae
32	Wilson's golden-crowned kinglet	<i>Regulus satrapa</i>	Regulidae
33	Wilson's golden-crowned kinglet	<i>Regulus satrapa</i>	Regulidae
34	Wilson's golden-crowned kinglet	<i>Regulus satrapa</i>	Regulidae
35	Wilson's golden-crowned kinglet	<i>Regulus satrapa</i>	Regulidae
36	Wilson's golden-crowned kinglet	<i>Regulus satrapa</i>	Regulidae

Anguidae	<i>Elgaria multicarinata</i>	Southern alligator lizard	9
Boidae	<i>Charina bottae</i>	Rubber boa	9
Colubridae	<i>Diadophis punctatus</i>	Ringneck snake	9
Colubridae	<i>Pituophis catenifer</i>	Gopher snake	9
Plethodontidae	<i>Ensatina eschscholtzii</i>	Ensatina	10
Accipitridae	<i>Buteo regalis</i>	Ferruginous hawk	10
Apodidae	<i>Cypseloides niger</i>	Black swift	10
Charadriidae	<i>Charadrius vociferus</i>	Killdeer	10
Corvidae	<i>Corvus brachyrhynchos</i>	American crow	10
Cuculidae	<i>Coccyzus americanus</i>	Yellow-billed cuckoo	10
Emberizidae	<i>Junco hyemalis</i>	Dark-eyed junco	10
Emberizidae	<i>Passerella iliaca</i>	Fox sparrow	10
Emberizidae	<i>Vermivora celata</i>	Orange-crowned warbler	10
Emberizidae	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	10
Emberizidae	<i>Zonotrichia querula</i>	Harris' sparrow	10
Falconidae	<i>Falco peregrinus</i>	Peregrine falcon	10
Hirundinidae	<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	10
Strigidae	<i>Otus kennicottii</i>	Western screech owl	10
Trochilidae	<i>Archilochus alexandri</i>	Black-chinned hummingbird	10
Trochilidae	<i>Selasphorus rufus</i>	Rufous hummingbird	10
Trochilidae	<i>Stellula calliope</i>	Calliope hummingbird	10
Tyrannidae	<i>Tyrannus tyrannus</i>	Eastern kingbird	10
Canidae	<i>Vulpes vulpes</i>	Red fox	10
Cervidae	<i>Odocoileus virginianus</i>	White-tailed deer	10
Muridae	<i>Microtus montanus</i>	Montane vole	10
Muridae	<i>Microtus pennsylvanicus</i>	Meadow vole	10
Mustelidae	<i>Gulo gulo</i>	Wolverine	10
Mustelidae	<i>Mustela erminea</i>	Ermine	10
Mustelidae	<i>Spilogale gracilis</i>	Western spotted skunk	10
Sciuridae	<i>Spermophilus lateralis</i>	Golden-mantled ground squirrel	10
Soricidae	<i>Sorex vagrans</i>	Vagrant shrew	10
Vespertilionidae	<i>Euderma maculatum</i>	Spotted bat	10
Vespertilionidae	<i>Myotis ciliolabrum</i>	Western small-footed myotis	10
Colubridae	<i>Contia tenuis</i>	Sharptail snake	10
Colubridae	<i>Hypsiglena torquata</i>	Night snake	10
Colubridae	<i>Lampropeltis zonata</i>	California mountain kingsnake	10
Ambystomatidae	<i>Ambystoma macrodactylum</i>	Long-toed salamander	11
Ambystomatidae	<i>Ambystoma tigrinum</i>	Tiger salamander	11
Hylidae	<i>Pseudacris regilla</i>	Pacific chorus frog	11

Hylidae	<i>Pseudacris triseriata</i>	Western chorus frog	11
Apodidae	<i>Aeronautes saxatalis</i>	White-throated swift	11
Caprimulgidae	<i>Chordeiles minor</i>	Common nighthawk	11
Cathartidae	<i>Cathartes aura</i>	Turkey vulture	11
Columbidae	<i>Zenaida macroura</i>	Mourning dove	11
Corvidae	<i>Pica pica</i>	Black-billed magpie	11
Emberizidae	<i>Icteria virens</i>	Yellow-breasted chat	11
Emberizidae	<i>Icterus galbula</i>	Northern oriole	11
Emberizidae	<i>Molothrus ater</i>	Brown-headed cowbird	11
Muscicapidae	<i>Myadestes townsendi</i>	Townsend's solitaire	11
Muscicapidae	<i>Sialia currucoides</i>	Mountain bluebird	11
Muscicapidae	<i>Sialia mexicana</i>	Western bluebird	11
Muscicapidae	<i>Turdus migratorius</i>	American robin	11
Picidae	<i>Colaptes auratus</i>	Northern flicker	11
Strigidae	<i>Asio otus</i>	Long-eared owl	11
Strigidae	<i>Bubo virginianus</i>	Great horned owl	11
Trochilidae	<i>Selasphorus platycercus</i>	Broad-tailed hummingbird	11
Troglodytidae	<i>Troglodytes aedon</i>	House wren	11
Canidae	<i>Canis latrans</i>	Coyote	11
Canidae	<i>Canis lupus</i>	Gray wolf	11
Cervidae	<i>Cervus elaphus nelsonii</i>	Rocky mountain elk	11
Cervidae	<i>Odocoileus hemionus</i>	Mule deer	11
Erethizontidae	<i>Erethizon dorsatum</i>	Common porcupine	11
Felidae	<i>Felis concolor</i>	Mountain lion	11
Felidae	<i>Lynx rufus</i>	Bobcat	11
Muridae	<i>Microtus longicaudus</i>	Long-tailed vole	11
Muridae	<i>Neotoma cinerea</i>	Bushy-tailed woodrat	11
Muridae	<i>Peromyscus keenii</i>	Columbian mouse	11
Muridae	<i>Peromyscus maniculatus</i>	Deer mouse	11
Mustelidae	<i>Mustela frenata</i>	Long-tailed weasel	11
Mustelidae	<i>Taxidea taxus</i>	American badger	11
Soricidae	<i>Sorex cinereus</i>	Masked shrew	11
Ursidae	<i>Ursus americanus</i>	Black bear	11
Ursidae	<i>Ursus arctos</i>	Grizzly bear	11
Vespertilionidae	<i>Eptesicus fuscus</i>	Big brown bat	11
Vespertilionidae	<i>Lasionycteris noctivagans</i>	Silver-haired bat	11
Anguidae	<i>Elgaria coerulea</i>	Northern alligator lizard	11
Colubridae	<i>Coluber constrictor</i>	Racer	11
Colubridae	<i>Thamnophis elegans</i>	Western terrestrial garter snake	11
Colubridae	<i>Thamnophis sirtalis</i>	Common garter snake	11
Viperidae	<i>Crotalus viridis</i>	Western rattlesnake	11

11	Western sparrow hawk	<i>Pipilo fuscus</i>	11	11
11	White-throated sparrow	<i>Zonotrichia albicollis</i>	11	11
11	Common nighthawk	<i>Caprimulgus vociferans</i>	11	11
11	Towhee	<i>Spizella monticola</i>	11	11
11	Mountain dove	<i>Columba macroura</i>	11	11
11	Black-billed magpie	<i>Picus harrisii</i>	11	11
11	Yellow-breasted chat	<i>Icterus parisorum</i>	11	11
11	Northwest crow	<i>Corvus cafer</i>	11	11
11	House-lizard	<i>Lacerta agilis</i>	11	11
11	Mountain bluebird	<i>Sialia sialis</i>	11	11
11	Western bluebird	<i>Sialia mexicana</i>	11	11
11	Eastern bluebird	<i>Sialia sialis</i>	11	11
11	Long-eared owl	<i>Bubo virginianus</i>	11	11
11	Great horned owl	<i>Bubo virginianus</i>	11	11
11	Screech-owl	<i>Bubo virginianus</i>	11	11
11	House wren	<i>Troglodytes aedon</i>	11	11
11	Chimney swift	<i>Hirundo fulva</i>	11	11
11	Gray wolf	<i>Canis lupus</i>	11	11
11	Rocky mountain elk	<i>Cervus elaphus</i>	11	11
11	White deer	<i>Odocoileus columbianus</i>	11	11
11	Common porcupine	<i>Erethizon americanum</i>	11	11
11	Mountain lion	<i>Felis concolor</i>	11	11
11	Badger	<i>Taxidea taxus</i>	11	11
11	Long-tailed vole	<i>Microtus longicaudus</i>	11	11
11	Short-tailed vole	<i>Microtus pennsylvanicus</i>	11	11
11	Collared mouse	<i>Peromyscus maniculatus</i>	11	11
11	Field mouse	<i>Peromyscus maniculatus</i>	11	11
11	Long-tailed weasel	<i>Mustela vison</i>	11	11
11	American badger	<i>Taxidea taxus</i>	11	11
11	Masked shrew	<i>Sorex cinereus</i>	11	11
11	Black bear	<i>Ursus americanus</i>	11	11
11	Grizzly bear	<i>Ursus arctos</i>	11	11
11	Big brown bat	<i>Eptesicus fuscus</i>	11	11
11	Silver-haired bat	<i>Lasiurus borealis</i>	11	11
11	Northern alligator lizard	<i>Lacerta agilis</i>	11	11
11	Racer	<i>Coluber constrictor</i>	11	11
11	Western rattlesnake	<i>Crotalus elegans</i>	11	11
11	Common garter snake	<i>Thamnophis sirtalis</i>	11	11
11	Western rattlesnake	<i>Crotalus viridis</i>	11	11

* - Versatility rating denotes the number of other structural stages used by the species (11 maximum).

Table showing types of possible behavior types within community structure

Classification	Behavioral description	Administrative level of organization	Administrative structure	Versatility rating
Simplest structure	Process and direct management of individuals; no division of labor; no social structure; no social system or organization	Individual	Individual	1
Simple structure	To achieve for present and future the individual and diversity of social organization of groups and individuals within social systems, and to assign the genetic diversity of species to which they are related or which they are related to	Group	Group	2
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	3
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	4
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	5
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	6
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	7
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	8
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	9
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	10
Complex structure	Individuals are found in social organization, which are not administrative units	Group	Group	11

Verstärkung durch Anheben der Anzahl der anderen Arten
die Spezies (1) maximieren

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
AREAS OF CRITICAL ENVIRONMENTAL CONCERN	Protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes.	BLM administrative designation	Potential ACEC's considered in BLM planning process; intent and management varies significantly	Small to large.
BIOSPHERE RESERVES	To conserve for present and future use the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends.	UNESCO, United Nations designates areas, but management is up to landowner or agency.	Management varies depending on ownership.	Generally very large
CONGRESSIONALLY DESIGNATED "SPECIAL" AREAS	Varies with specific legislation as identified below.	Act of Congress.	None.	Various.
<u>CDA's in R-1</u>	Rattlesnake NRA: Promote watershed, recreational, wildlife, and educational values.			
<u>CDA's in R-4</u>	Sawtooth NRA: 1. Preserve and protect the natural, scenic, historic, pastoral, and fish and wildlife values. 2. Enhance recreation values including the preservation of sites associated with and typifying the economic and social history of the A West. 3. Protect and conserve the salmon and other fisheries.			

81

ALBANY COUNTY, NEW YORK

STATE OF NEW YORK

IN SENATE

JANUARY 15, 1907

REPORT OF THE COMMISSIONERS OF THE LAND OFFICE

IN RESPONSE TO A RESOLUTION PASSED BY THE SENATE

APRIL 11, 1906

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

ALBANY: J.B. LIPPINCOTT COMPANY, PRINTERS, 1907.

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
<u>CDA's in R-6</u>	PART OF CRGNSA WITHIN ASSESSMENT AREA BOUNDARY Columbia River Gorge NSA: 1. Protect and provide for the enhancement of the scenic, cultural, recreational, and natural resources of the Columbia River Gorge. 2. Protect and support the economy of the Columbia River Gorge area by encouraging growth to existing urban areas and allowing future economic development in a manner that is consistent with (1). Hells Canyon Natural Recreation Area: 1. Preserve the natural beauty and historical and archaeological values. 2. Enhance recreational and ecological values and public enjoyment of the area. Newberry NVM: 1. Preserve and protect its remarkable geologic landforms. 2. Provide for conservation, protection, interpretation, and enhancement of its ecological, botanical, scientific, scenic, recreational, cultural, and fish and wildlife resources.			
	SMALL PART OF OCRA IN ASSESSMENT AREA BOUNDARY Oregon Cascades Recreation Area: 1. Protect, conserve, and manage area in an undeveloped condition. 2. Provide a range of recreation opportunities from primitive to full service developed campgrounds. 3. Provide access for use by the public. 4. To the extent practicable, maintain the natural and scenic character of the area.			
NATIONAL NATURAL LANDMARKS	Identify and encourage the preservation of the full range of geological and ecological features that are determined to represent nationally significant examples of the Nation's natural heritage.	Designation is not a land withdrawal, does not change the ownership of a site, and does not dictate activity. Federal agencies should consider the unique properties of these nationally significant areas in completing NEPA.	Depends on ownership. Areas can be on private as well as public lands. Management varies.	12 - 170,000 ac
NATIONAL PARKS AND MONUMENTS	Purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.	Act of Congress.	Each area within the system is administered in accordance with the provisions of any statute made specifically applicable to that area. Park and Monument managers provide specific purposes and management direction by reading enabling legislation or proclamation and determine general management direction, not inconsistent with the enabling legislation, from the organic act.	98 - 2,219,790 ac

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

ALBANY COUNTY HISTORICAL SOCIETY LIBRARY 100 STATE STREET ALBANY, N.Y. 12202

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
NATIONAL WILDLIFE REFUGE	To provide, preserve, restore, and manage a network of lands and waters sufficient in size, diversity, and location to meet society's needs for areas where the widest possible spectrum of benefits associated with wildlife and wildlands is enhanced and made available.	Designated by Department of Interior, U.S. Fish and Wildlife Service.	Management varies depending on individual areas and wildlife needs.	1,837-536,955
OUTSTANDING NATURAL AREAS	Preserve areas of unusual natural characteristics.	BLM administrative designation.		Small to large.
RESEARCH NATURAL AREA	1. Preserve examples of all significant terrestrial and aquatic ecosystems. 2. Research and education areas. 3. Preserve gene pools for TES species. 4. Serve as benchmarks against which the influences of human management activity can be compared.	USFS Regional Forester and Station Director BLM State Director. FWS Regional Director. NPS Regional Director.	All Federal agencies generally use similar criteria for establishment, though management direction not always the same.	40-33,350 acres.
ROADLESS AREAS (WILDERNESS STUDY)	Inventory for potential wilderness based on size (5,000 acres or self-contained ecosystem) with additional criteria for naturalness.	Regional Forester - completed through existing Forest Plans. BLM State Director - areas currently being evaluated in Resource Management Plans. NPS - not currently evaluating roadless areas.	Inventory directed by Wilderness Act, and subsequent Wilderness legislation. Agencies apply somewhat similar criteria for inventory and subsequent study.	Sized as described for Wilderness.

28

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

STATE OF MISSISSIPPI DEPARTMENT OF REVENUE

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
SPECIAL INTEREST AREAS	1. Protect and, where appropriate, foster public use and enjoyment of areas with scenic, historical, geological, botanical, zoological, paleontological, or other special characteristics. 2. Classify areas that possess unusual recreation and scientific values for public study, use, or enjoyment.	Forest Service administrative designation under authority in 36 CFR 294.1 and 294.1(b). Approval varies by authority and size.	Potential SIA's considered in Forest Service planning process; intent and management varies significantly.	Small to very large.
WILD AND SCENIC RIVERS	1. Preserve free-flowing condition and protect water quality. 2. Protect and enhance the outstandingly remarkable values. 3. Scientific value for study of free-flow processes. 4. Gene reservoirs and refugia for river-dependent species. 5. Some systems provide benchmarks where human management can be compared.	1. Act of Congress; or, 2. for state protected river, by petition of Governor to Secretary of Interior (becomes part of Federal W&SR's System to be administered by State).	Federal statute establishes framework, though agency interpretation and resultant management varies.	No length required. Oft a portion of river system designated. Corridor will be flexible but limited to acres per river mile.
WILD AND SCENIC CONGRESSIONALLY-AUTHORIZED STUDY RIVERS	Inventory for potential W&SR's based on eligibility (free-flow, one or more outstandingly remarkable value). Protected, by statute from water resources projects and, for "wild" rivers, mining/mineral leasing. Agency direction is to protect and, as practicable, enhance outstanding values. Inventoried or recommended classification to be maintained.	Act of Congress.	Agencies apply somewhat similar criteria for eligibility and subsequent study.	As for designated rivers corridor 1/4 mile from ordinary high water mark.

78

DATE OF REPORT: 10/15/68

REPORT MADE AT: SAC, SACRAMENTO

REPORT MADE BY: SA [Name]

CHARACTER OF CASE: [Description]

SYNOPSIS: [Summary]

DETAILS: [Detailed Report]

ADDITIONAL INFORMATION: [Extra Info]

REFERENCE: [References]

REMARKS: [Remarks]

AGENCY: [Agency]

REPORT MADE AT: [Location]

REPORT MADE BY: [Name]

CHARACTER OF CASE: [Description]

SYNOPSIS: [Summary]

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
WILD AND SCENIC STUDY RIVERS (IDENTIFIED VIA AGENCY PLANNING PROCESSES)	Inventory for potential W&SR's based on eligibility (free-flow, one or more outstandingly remarkable value). Agency direction to protect free-flow within authorities and protect and, as practicable enhance outstanding values. Inventoried or recommended classification to be maintained.	Each Federal agency is directed by Section 5(d)(1) of W&SR's Act to consider potential additions in respective planning processes.	Agencies apply somewhat similar criteria for eligibility and subsequent study.	As for designated rivers corridor 1/4 mile from o high water mark.
WILDERNESS AREAS	1. Preserve and protect areas in their natural condition. 2. Scientific value as natural baselines, and for study of natural processes. 3. Gene reservoirs and refugia for certain species. 4. Benchmark to areas where impact of human management can be compared. 5. Provide opportunities for solitude or primitive, unconfined recreation.	Act of Congress.	Federal statute establishes framework, though agency interpretation and resultant management varies.	Statute defines at least acres; however, self-con smaller areas, e.g., Ore Islands at less than 7 a have been designated.
WILDERNESS STUDY AREAS	Montana (P.L. 95-150) - Maintain presently existing wilderness character and potential for inclusion in Wilderness Preservation System. RUTH, I DO NEED TO KNOW WHICH STATE IN R-4 AND THE PROTECTION PROVISION PROVIDED IN ENABLING LEGISLATION--THANKS!	Act of Congress.	Specific areas identified through Wilderness legislation.	Sized as described for Wilderness.

RECEIVED

10/10/52 - 4:41 PM
RECEIVED
10/10/52 - 4:41 PM

10/10/52 - 4:41 PM

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

RECEIVED

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
NATURAL HERITAGE CONSERVATION AREA, OR	1. To protect examples of terrestrial and aquatic ecosystems, and important geologic features; 2. to serve as gene pool reserves; 3. to serve as benchmarks against which the influences of human activity may be compared; 4. and to provide outdoor laboratories for research and education.	State Land Board, State Parks and Recreation Department, Department of Forestry, Department of Fish and Wildlife, Military Department, and Conservation Organizations.	Management direction should be consistent across agencies.	600 ac
REGISTERED STATE NATURAL AREAS, OR	To acknowledge and list examples of relatively undisturbed terrestrial and aquatic ecosystems, rare plant and animal species, and unique geologic features.	Division of State Lands, Parks and Recreation Department, Department of Forestry, Department of Transportation, Department of Fish and Wildlife, local governments, and private landowners.	Direction not consistent across agencies. Private landowners not legally bound by this designation.	50 - 3,000 ac
BIOLOGICAL STUDY AREAS, WA	1. To protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species, and unique geologic features; 2. to serve as gene pools reserves; 3. to serve as baselines against which the influences of human activities in similar, disturbed ecosystems may be compared; and 4. to provide outdoor laboratories for scientific research and education.	Washington State University and University of Washington. Potentially secure designation.	Not very many areas, managed in similar fashion.	7 - 40 ac

SEARCHED INDEXED SERIALIZED FILED

FBI - MEMPHIS

MAY 1968

TO DIRECTOR, FBI

FROM MEMPHIS (100-100000)

RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

URGENT

RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

URGENT

100-100000

TO DIRECTOR, FBI

FROM MEMPHIS (100-100000)

RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

URGENT

TO DIRECTOR, FBI

FROM MEMPHIS (100-100000)

RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

URGENT

TO DIRECTOR, FBI
FROM MEMPHIS (100-100000)
RE MEMPHIS TELETYPE TO BUREAU, MAY 1, 1968.

Table NATHAS. List of possible natural areas within Columbia River Basin.

Designation	Objectives of allocation	Administrative level of allocation	Standardization across ownership	Range in size
HERITAGE AREA, WA	To preserve unique or geological, paleontological, archaeological, historical, scientific, and cultural features of the state which transcend local interest and are of statewide or national significance (WAC 3552-16-020(3)).	Washington State Parks and Recreation Commission.	Some variation in use and management.	No areas in CRB at this
NATURAL AREA, WA	To conserve a natural environment in a nearly undeveloped state for passive low density outdoor recreation activities.	Washington State Parks and Recreation Commission.	Some variation in use and management.	No areas in CRB at this
NATURAL FOREST AREA, WA	Designation of certain forest sites which are natural ecosystems for the preservation and interpretation of natural forest processed pursuant to RCW 43.51.045. These areas may contain old-growth forest communities, mature forest communities, or unusual forest communities (WAC 352-16-020(8)).	Washington State Parks and Recreation Commission.	Some variation in use and management.	No areas in CRB at this
NATURAL AREA PRESERVE, WA	1. To protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species, and unique geologic features; 2. to serve as gene pool reserves; 3. to serve as baselines against which the influences of human activities in similar, disturbed ecosystems may be compared; and 4. to provide outdoor laboratories for scientific research and education (RCW) 79.70.010.	Washington Department of Natural Resources, Washington State Parks and Recreation Commission, Washington Department of Fish and Wildlife.	Management generally consistent across administering agencies.	35 - 3,000 ac

47

REPORT ON THE PROGRESS OF THE RESEARCH DURING THE YEAR 1954

1. INTRODUCTION

The purpose of this report is to summarize the work done during the year 1954 in the field of the study of the properties of the system under investigation.

The work was carried out in the laboratory of the Institute of Physics, University of Cambridge, during the period from January to December 1954.

The results of the work are presented in the following sections:

2. EXPERIMENTAL METHOD

The experimental method used in this work is described in detail in the following sections.

3. RESULTS AND DISCUSSION

The results of the measurements are shown in the following figures and tables.

4. CONCLUSIONS

Table NATHAS2. Total area managed by Federal agencies in four western states, and area and percent in natural area designations. (Source: USGAO 1995)

STATE	ACRES MANAGED (millions of hectares)	ACRES IN NATURAL AREAS (millions of hectares)	PERCENT IN NATURAL AREAS
Oregon	12.99	2.87	22
Washington	4.69	1.94	41
Idaho	13.13	3.91	30
Montana	10.82	3.00	28

TABLE NATURAL. Total area managed by Federal agencies in four western states. and also percent in natural areas. (Source: USFWS, 1951)

STATE	AREA MANAGED (Millions of hectares)	PERCENT IN NATURAL AREAS (Millions of hectares)	PERCENT IN NATURAL AREAS
Oregon	12.82	2.87	22
Washington	4.82	1.82	41
Idaho	13.12	2.91	20
Montana	10.82	2.00	28

Table 1 (TAB. RANGE1, FILE TABRNGRE). Fire and fire management outcome for different vegetation types within the Intermountain West and associated areas. Prescribed fires are indicated by Rx in the "Fire?" column.

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Sheeprock Mts., UT	Pinyon - Juniper	<i>Pinus monophylla</i> <i>Juniperus osteosperma</i>	Yes	Succession in pinyon and juniper woodlands followed a general scheme of annuals to perennial grasses (5 years), to grasses and shrubs (35 years), to shrubs and juniper (70 years), and juniper - pinyon (+100 years).	Barney and Frischknecht 1974
Needle Range, UT	Pinyon - Juniper	<i>Pinus monophylla</i> <i>Juniperus osteosperma</i>	Yes	Juniper established at a higher rate following fire than did pinyon. By 60 years post-fire, pinyon establishment was greater than juniper.	Tausch and West 1988
White River Mts., NV	Pinyon - Juniper	<i>Pinus monophylla</i> <i>Juniperus osteosperma</i>	Yes, Rx	Prescribed fire impacted the pinyon-juniper woodlands differently, depending on season of burn, pre-burn community composition.	Everett and Ward 1984
Great Basin, ID, NV, UT	Pinyon - Juniper	<i>Pinus monophylla</i> <i>Juniperus osteosperma</i>	No	Within pinyon-juniper woodlands, pinyon density was found to be increasing faster than juniper density. It was suggested that livestock grazing, tree utilization, and fire suppression may have interacted to influence the differences in density.	Tausch et al. 1981
Upper Snake River Plains, ID	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Agropyron dasystachyum</i> <i>Stipa comata</i> <i>Poa</i> spp. <i>Carex</i> spp.	Yes, Rx	After 15 years, shrub cover was greatly reduced, while on the unburned areas had increased. Grass production was as much as or greater than on unburned areas. Forb production was also increased. 30 years following the prescribed burns, sagebrush had regained a dominant position in the communities, but had not reached the unburned level. Grass and forb yield declined as sagebrush increased.	Blaisdell 1953 Harniss and Murray 1973

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Northwest Yellowstone Nat. Park, WY	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Festuca idahoensis</i>	No	Lodgepole pine invading sagebrush communities. Invasion is thought to be the result of climatic change.	Patten 1963 Patten 1969
Jackson Hole Area, northwestern WY	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Artemisia arbuscula</i> <i>Purshia tridentata</i> <i>Chrysothamnus</i> spp. Various grass species	No	Due to active fire suppression in the Jackson Hole area since the 1890's, lodgepole pine has invaded sagebrush communities, and sagebrush and other shrubs have increased. It is believed that recurrent fire kept shrub levels lower, and prevented conifer invasion.	Loope and Gruell 1973
Owyhee Mts. ID	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Artemisia arbuscula</i> <i>Agropyron spicatum</i> <i>Festuca idahoensis</i>	No	Active fire suppression is believed to have allowed the invasion of juniper into the <i>Artemisa</i> dominated communities. Ancillary to fire suppression is grazing by domestic livestock and climatic changes.	Burkhardt and Tisdale 1976
Idaho National Engineering Laboratory, southeastern ID	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Chrysothamnus viscidiflorus</i> <i>Leptodactylon pungens</i> <i>Gutierrezia sarothrae</i> <i>Sitanion hystrix</i> <i>Agropyron dasytachyum</i> <i>Oryzopsis hymenoides</i> <i>Stipa comata</i>	No	Over a disturbance-free period of 25 years, shrub and grass species increased in cover, but began a decline after 20 years.	Anderson and Holte 1981
Galena Gulch, MT	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Festuca idahoensis</i> <i>Festuca scabrella</i>	No	The historic fire frequency favored the species of the shrub-grassland. With fire suppression, invasion of <i>Pseudotsuga menziesii</i> and <i>Pinus contorta</i> into the shrub-grasslands has occurred.	Arno and Gruell 1986

06

№ п/п	Имя	Фамилия	Дата	Место рождения	Ученая степень	Ученое звание	Специальность	Степень	Степень	Степень
1	Александров	Иван	1920	Москва	Инженер	Инженер	Инженер	Инженер	Инженер	Инженер
2	Петров	Сергей	1925	Ленинград	Ученый	Ученый	Ученый	Ученый	Ученый	Ученый
3	Сидоров	Александр	1930	Москва	Инженер	Инженер	Инженер	Инженер	Инженер	Инженер
4	Климов	Владимир	1935	Ленинград	Ученый	Ученый	Ученый	Ученый	Ученый	Ученый
5	Васильев	Игорь	1940	Москва	Инженер	Инженер	Инженер	Инженер	Инженер	Инженер
6	Михайлов	Александр	1945	Ленинград	Ученый	Ученый	Ученый	Ученый	Ученый	Ученый
7	Попов	Сергей	1950	Москва	Инженер	Инженер	Инженер	Инженер	Инженер	Инженер
8	Смирнов	Владимир	1955	Ленинград	Ученый	Ученый	Ученый	Ученый	Ученый	Ученый
9	Новиков	Игорь	1960	Москва	Инженер	Инженер	Инженер	Инженер	Инженер	Инженер
10	Кузнецов	Александр	1965	Ленинград	Ученый	Ученый	Ученый	Ученый	Ученый	Ученый

Список кандидатов наук на конкурс на должность профессора кафедры физики в 1980 году.

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Gallatin Nat. For. MT	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Artemisia cana</i> <i>Danthonia unispicata</i> <i>Bromus marginatus</i>	Yes, Rx	A spring prescribed burn resulted in decreases in sagebrush and smooth brome (<i>Bromus marginatus</i>); an increase occurred for danthonia (<i>Danthonia unispicata</i>).	Nimir and Payne 1978
Southwestern MT	Sagebrush - grass - forest ecotone	<i>Artemisia tridentata</i> <i>Agropyron spicatum</i> <i>Festuca idahoensis</i>	No	Suppression of fires is believed to be responsible for the encroachment of conifers into the sagebrush grasslands, and also the increase in density of sagebrush in these areas.	Arno and Gruell 1983
East-central NV	Sagebrush - grass	<i>Artemisia nova</i>	No	Invasion by pinyon pine and juniper into black sagebrush communities has been occurring since 1869. Overgrazing, fire suppression, and change in climate have been proposed as factors in the invasion process.	Blackburn and Tueller 1970.
Northwestern NV	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Stipa thurberiana</i> <i>Bromus tectorum</i>	Yes	The first year following the wildfires, both perennial and annual species were reduced. By the second year post-fire, the areas became dominated by cheatgrass, which prevented seedling establishment of native species.	Young and Evans 1978
Southern British Columbia	Sagebrush - grass	<i>Artemisia tridentata</i> <i>Agropyron spicatum</i>	No	It is believed that recurrent fire maintained sagebrush at low densities prior to settlement by immigrants. With fire suppression, sagebrush densities have increased.	Cawker 1983
Hanford Nuclear Res., WA	Bitterbrush - cheatgrass	<i>Purshia tridentata</i> <i>Bromus tectorum</i>	Yes	The first year following wildfire, cheatgrass production was very low. By the fifth year post-fire, production was similar on burned and unburned sites. Bitterbrush was removed from the site, and there was no evidence of re-establishment.	Rickard and Sauer 1982

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Devils Tower Nat. Monument, WY	Savanna - prairie	Shrub and grass species	No	The fire history of this area indicates an historical fire return period (FRP) of 14 years. Currently, the area has a much longer FRP, which has resulted in the invasion of the savanna and prairie communities by ponderosa pine.	Fisher et al. 1987
Glacier Nat. Park, MT	Grassland	<i>Agropyron spicatum</i> <i>Festuca idahoensis</i> <i>Festuca scabrella</i> <i>Danthonia intermedia</i>	No	These grasslands are thought to have developed and be maintained through the interactions of climate, soils, and fire. Fire suppression in the park, since 1910, has resulted in the invasion of lodgepole pine into the grasslands.	Koterba and Habeck 1971
Southeastern WA	Grassland	<i>Agropyron spicatum</i> <i>Poa secunda</i> <i>Chrysothamnus nauseosus</i> <i>Bromus tectorum</i>	Yes	Fire resulted in a change in balance between the two dominant grass species, with <i>Poa</i> becoming the dominant. Preburn levels were attained after 12 years. Cheatgrass levels attained preburn level by the second year. Rabbitbrush was completely eliminated, in part due to heavy insect herbivory prior to the fire.	Daubenmire 1975
Mt. Sentinel, MT	Grassland	<i>Festuca scabrella</i> <i>Festuca idahoensis</i> <i>Agropyron spicatum</i>	Yes	Active fire suppression allowed the encroachment of ponderosa pine and Douglas fir into the more mesic areas of the grassland. Three years following a wildfire, cover of most species was similar in both burned and unburned areas, fescue was slightly lower on burned areas.	Antos et al. 1983

22

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10 1981 10 10

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Cascades of OR and WA	Subalpine meadow	<i>Phyllodoce empetrifomis</i> / <i>Vaccinium deliciosum</i>	No	High conifer invasion	Franklin et al. 1971
		<i>Valeriana sitchensis</i>		Low conifer invasion	
		<i>Festuca viridula</i>		Low conifer invasion	
Yellowstone Nat. Park, WY	Subalpine meadow	<i>Potentilla flabellifolia</i>		High conifer invasion	Jelinski and Parsons 1993
				Change in climate, resulting in a longer snow-free period, is suggested as the driving force of the invasions.	
Calispell Peak, northeast WA	Subalpine meadow	<i>Artemisia tridentata</i> <i>Agropyron spicatum</i> <i>Abies lasiocarpa</i>	No	Trees occur in swales with deeper soils and low stone content Sagebrush/grass occurs on mounds with deeper soils and low stone content Grasses occur in intermound areas with shallow, stoney soils.	Roche and Busacca 1987
Cascades, central and southern OR	Montane meadow	<i>Rubus parviflorus</i> / <i>Pteridium aquilinum</i> <i>Bromus carinatus</i> / <i>Rudbeckia occidentalis</i>	No	Invasion of meadows by various conifer species depending on the surrounding forest. Fires were believed to be the dominant force in maintaining the meadows.	Vale 1981
Southern Sierra Nevada, CA	Subalpine meadow	<i>Carex scopulorum</i> <i>Carex rostrata</i> <i>Deschampsia caespitosa</i>	Yes	First year post-fire, area dominated by forbs, some lodgepole pine invading the meadow were killed; after 4 years, returning towards pre-fire community, tree encroachment slowed.	DeBenedetti and Parsons 1979 Parsons 1981 DeBenedetti and Parsons 1984

LOCATION	HABITAT	DOMINANT SPECIES	FIRE?	MANAGEMENT OUTCOME	CITATION
Lemhi Mts., ID	Subalpine meadows	<i>Festuca ovina</i> <i>Festuca idahoensis</i> <i>Poa secunda</i> <i>Artemisia</i> spp.	No	Most conifer invasion occurred between 1895-1915 and again between 1920-1940. Several factors are suggested as driving the invasions: climate change, fire history, and grazing pressures.	Butler 1986
Yellowstone Nat. Park, WY	Subalpine meadows: dry and mesic	Dry: <i>Artemisia tridentata</i> <i>Artemisia cana</i> <i>Carex</i> spp. <i>Muhlenbergia</i> spp. <i>Achillea millefolium</i> Mesic: <i>Carex</i> spp. <i>Antennaria carymbosa</i> <i>Potentilla gracilis</i> <i>Deschampsia caespitosa</i> <i>Phleum alpinum</i>	No	Conifer encroachment is suggested to be due to climatic variability in the dry meadows, and due to episodic seed production and microhabitat changes in mesic meadows.	Jakubos and Romme 1993

12

1875
1876
1877

1875
1876
1877

1878
1879
1880

1881
1882
1883

1884
1885
1886

1887
1888
1889

1890
1891
1892

1893
1894
1895

1896
1897
1898

1899
1900
1901

1902
1903
1904

1905
1906
1907

1908
1909
1910



Table TABRNGSO. Soil Susceptibility to Disturbance Stresses (hectares)

ERU ¹	K Factor (mod.)	WEG (mod.)	Salinity (mod.)	SAR (severe)	SAR (mod.)	Shrink- Swell (mod.)
1.	136915	496252	3352			
2.	28226	1826				1826
3.		373926	99877			83055
4.	139255	2710595	496014			614131
5.	3141189	3660856	514628			480221
6.	245564	2306457	77262			596935
7.	370109	3071161	29448			
8.	90730	1543431				
9.	159398	1336702		1711	1711	3066
10.	1045316	5197317	1147419	5544	15863	1145886
11.	949074	963937	1190722		20942	73315
12.	277540	995584	32024			1632
13.	96051	2132411	372039			47225

¹ERU's (Ecological Reporting Units): 1. Northern Cascades, 2. Southern Cascades, 3. Upper Klamath, 4. Northern Great Basin, 5. Columbia Plateau, 6. Blue Mountains, 7. Northern Glaciated Mountains. 8. Lower Clark Fork, 9. Upper Clark Fork, 10. Owyhee Uplands, 11. Upper Snake, 12. Snake Headwaters, 13. Central Idaho Mountains

Table 1. Relationship to Disturbance Between (Percent)

Year	SWR (mod.)	SWR (severe)	SWR (mod.)	SWR (severe)
1	10000	10000	10000	10000
2	10000	10000	10000	10000
3	10000	10000	10000	10000
4	10000	10000	10000	10000
5	10000	10000	10000	10000
6	10000	10000	10000	10000
7	10000	10000	10000	10000
8	10000	10000	10000	10000
9	10000	10000	10000	10000
10	10000	10000	10000	10000
11	10000	10000	10000	10000
12	10000	10000	10000	10000
13	10000	10000	10000	10000

The following table shows the relationship between the SWR (Severe Weather Ratio) and the SWR (Moderate Weather Ratio) for the years 1 through 13. The SWR (Severe Weather Ratio) is calculated as the number of severe weather days divided by the number of moderate weather days. The SWR (Moderate Weather Ratio) is calculated as the number of moderate weather days divided by the number of severe weather days. The relationship between the two ratios is shown in the table below.

To: Cindy Dean, ICBEMP Office, Walla Walla WA

CC:

From: bruce marcot

Date: April 11, 1996

Re: Tribal Vertebrates of Interest

APR 15 1996
RECEIVED

memo

Cindy,

Would you kindly add this table to the "on file" folder material for the Terrestrial Ecology Staff, SIT (the material I had entitled: "Information On File as Cited in the Terrestrial Ecology Assessment Chapter, Science Integration Team Report, Interior Columbia Basin Ecosystem Management Project").

Thanks.

I've sent a copy of this new table to the EIS teams.

- b.

from the desk of...

bruce marcot
wildlife ecologist
usda forest service
333 sw 1st st
portland or 97208

503/326-4952
Fax: 503/326-2455

Only from KERN Office, with WA

To:

CC:

From:

Date:

Re:

Final version of letter

April 11, 1986

press release

APR 15 1986
RECEIVED

Copy

Would you kindly add this table to the "on file" folder material for the Terrestrial Ecology Staff. The material I had entitled "Information On File as Cited in the Terrestrial Ecology Assessment Chapter, Science Integration Team Report, Interior Columbia Basin Ecosystem Management Project."

Thank

I've sent a copy of this new table to the EIS team.

-d-

memo

For the file in...
press release
with copy
and sent email
to the file
contact at 9100
500-016-000
Jan 1986-002

Table TRIBVERT. The 71 vertebrate species considered by the Science Integration Team as important to American Indian tribes in the assessment area. Class: R = reptile, B = bird, M = mammal (no amphibians were included in this list).

Class	Family	Scientific name	Common name
B	ACCIPITRIDAE	AQUILA CHRYSAETOS	GOLDEN EAGLE
B	ACCIPITRIDAE	BUTEO JAMAICENSIS	RED-TAILED HAWK
B	ACCIPITRIDAE	BUTEO REGALIS	FERRUGINOUS HAWK
B	ACCIPITRIDAE	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE
B	ACCIPITRIDAE	PANDION HALIAEETUS	OSPREY
B	ANATIDAE	BRANTA CANADENSIS	CANADA GOOSE
B	ANATIDAE	CYGNUS BUCCINATOR	TRUMPETER SWAN
B	ANATIDAE	CYGNUS COLUMBIANUS	TUNDRA SWAN
B	ANATIDAE	MERGUS MERGANSER	COMMON MERGANSER
B	COLUMBIDAE	ZENAIDA MACROURA	MOURNING DOVE
B	CORVIDAE	CORVUS CORAX	COMMON RAVEN
B	EMBERIZIDAE	ICTERUS GALBULA	NORTHERN ORIOLE
B	EMBERIZIDAE	ICTERUS PARISORUM	SCOTT'S ORIOLE
B	EMBERIZIDAE	STURNELLA NEGLECTA	WESTERN MEADOWLARK
B	FALCONIDAE	FALCO MEXICANUS	PRAIRIE FALCON
B	FALCONIDAE	FALCO SPARVERIUS	AMERICAN KESTREL
B	HIRUNDINIDAE	HIRUNDO PYRRHONOTA	CLIFF SWALLOW
B	HIRUNDINIDAE	HIRUNDO RUSTICA	BARN SWALLOW
B	HIRUNDINIDAE	PROGNE SUBIS	PURPLE MARTIN
B	HIRUNDINIDAE	RIPARIA RIPARIA	BANK SWALLOW
B	HIRUNDINIDAE	STELGIDOPTERYX SERRIPENNIS	NORTHERN ROUGH- WINGED SWALLOW
B	HIRUNDINIDAE	TACHYCINETA BICOLOR	TREE SWALLOW
B	HIRUNDINIDAE	TACHYCINETA THALASSINA	VIOLET-GREEN SWALLOW

Class	Family	Scientific name	Common name
B	MIMIDAE	MIMUS POLYGLOTTOS	NORTHERN MOCKINGBIRD
B	MUSCICAPIDAE	TURDUS MIGRATORIUS	AMERICAN ROBIN
B	PHASIANIDAE	BONASA UMBELLUS	RUFFED GROUSE
B	PHASIANIDAE	CENTROCERCUS UROPHASIANUS	SAGE GROUSE
B	PHASIANIDAE	DENDRAGAPUS CANADENSIS	SPRUCE GROUSE
B	PHASIANIDAE	DENDRAGAPUS OBSCURUS	BLUE GROUSE
B	PHASIANIDAE	TYMPANUCHUS PHASIANELLUS COLUMBIANUS	COLUMBIAN SHARP-TAILED GROUSE
B	PICIDAE	COLAPTES AURATUS	NORTHERN FLICKER
B	RALLIDAE	FULICA AMERICANA	AMERICAN COOT
B	STRIGIDAE	OTUS KENNICOTTII	WESTERN SCREECH OWL
B	TROGLODYTIDAE	CATHERPES MEXICANUS	CANYON WREN
M	ANTILOCAPRIDAE	ANTILOCAPRA AMERICANA	PRONGHORN
M	BOVIDAE	BOS BISON	AMERICAN BISON
M	BOVIDAE	OREAMNOS AMERICANUS	MOUNTAIN GOAT
M	BOVIDAE	OVIS CANADENSIS CALIFORNIANA	CALIFORNIA BIGHORN SHEEP
M	BOVIDAE	OVIS CANADENSIS CANADENSIS	ROCKY MOUNTAIN BIGHORN SHEEP
M	CASTORIDAE	CASTOR CANADENSIS	BEAVER
M	CERVIDAE	ALCES ALCES	MOOSE
M	CERVIDAE	CERVUS ELAPHUS NELSONII	ROCKY MOUNTAIN ELK
M	CERVIDAE	ODOCOILEUS HEMIONUS	MULE DEER
M	CERVIDAE	ODOCOILEUS HEMIONUS COLUMBIANUS	BLACK-TAILED DEER

Class	Family	Scientific name	Common name
M	CERVIDAE	ODOCOILEUS VIRGINIANUS	WHITE-TAILED DEER
M	FELIDAE	FELIS CONCOLOR	MOUNTAIN LION
M	FELIDAE	LYNX RUFUS	BOBCAT
M	LEPORIDAE	BRACHYLAGUS IDAHOENSIS	PYGMY RABBIT
M	LEPORIDAE	LEPUS AMERICANUS	SNOWSHOE HARE
M	LEPORIDAE	LEPUS CALIFORNICUS	BLACK-TAILED JACKRABBIT
M	LEPORIDAE	LEPUS TOWNSENDII	WHITE-TAILED JACKRABBIT
M	LEPORIDAE	SYLVILAGUS NUTTALLII	MOUNTAIN COTTONTAIL
M	MURIDAE	NEOTOMA LEPIDA	DESERT WOODRAT
M	MURIDAE	ONDATRA ZIBETHICUS	COMMON MUSKRAT
M	MUSTELIDAE	LUTRA CANADENSIS	NORTHERN RIVER OTTER
M	MUSTELIDAE	TAXIDEA TAXUS	AMERICAN BADGER
M	OCHOTONIDAE	OCHOTONA PRINCEPS	AMERICAN PIKA
M	SCIURIDAE	MARMOTA FLAVIVENTRIS	YELLOW-BELLIED MARMOT
M	SCIURIDAE	SPERMOPHILUS LATERALIS	GOLDEN-MANTLED GROUND SQUIRREL
M	SCIURIDAE	SPERMOPHILUS TOWNSENDII	TOWNSEND'S GROUND SQUIRREL
M	SCIURIDAE	TAMIAS AMOENUS	YELLOW-PINE CHIPMUNK
M	SCIURIDAE	TAMIAS DORSALIS	CLIFF CHIPMUNK
M	SCIURIDAE	TAMIAS MINIMUS	LEAST CHIPMUNK
M	SCIURIDAE	TAMIAS RUFICAUDUS	RED-TAILED CHIPMUNK
M	SCIURIDAE	TAMIAS UMBRINUS	UINTA CHIPMUNK
M	SCIURIDAE	TAMIASCIURUS DOUGLASII	DOUGLAS' SQUIRREL

Common name	Scientific name	Family	Class
WHITE-TAILED DEER	Odocoileus virginianus	Cervidae	M
MOUNTAIN LION	Panthera concolor	Felidae	M
BOBCAT	Lynx rufus	Felidae	M
EVGMY RABBIT	Brachylagus idahoensis	Leporidae	M
SNOWSHOE HARE	Lepus americanus	Leporidae	M
BLACK-TAILED JACKRABBIT	Lepus californicus	Leporidae	M
WHITE-TAILED JACKRABBIT	Lepus townsendii	Leporidae	M
MOUNTAIN COTTONTAIL	Sylvilagus nuttallii	Leporidae	M
DESERT WOODRAT	Neotoma lepida	Muridae	M
COMMON MUSKAT	Onychomys leucogaster	Muridae	M
NORTH RIVER OTTER	Lutra canadensis	Mustelidae	M
AMERICAN BADGER	Taxidea taxus	Mustelidae	M
AMERICAN BEAVER	Castor canadensis	Castoridae	M
YELLOW-BELLIED MARMOT	Marmota flaviventris	Sciuridae	M
GOLDEN-MANTLED GROUND SQUIREL	Spermophilus lateralis	Sciuridae	M
TOWNSEND'S GROUND SQUIREL	Spermophilus townsendii	Sciuridae	M
YELLOW-PINE CHIPMUNK	Tamias amoenus	Sciuridae	M
CUTT CHIPMUNK	Tamias dorsalis	Sciuridae	M
LEAST CHIPMUNK	Tamias minimus	Sciuridae	M
RED-TAILED CHIPMUNK	Tamias ruficaudus	Sciuridae	M
VINTA CHIPMUNK	Tamias umbrinus	Sciuridae	M
DOUGLAS SQUIREL	Tamiasciurus douglasii	Sciuridae	M

Class	Family	Scientific name	Common name
M	SCIURIDAE	TAMIASCIURUS HUDSONICUS	RED SQUIRREL
M	URSIDAE	URSUS AMERICANUS	BLACK BEAR
M	URSIDAE	URSUS ARCTOS	GRIZZLY BEAR
R	IGUANIDAE	PHRYNOSOMA DOUGLASSII	SHORT-HORNED LIZARD
R	VIPERIDAE	CROTALUS VIRIDIS	WESTERN RATTLESNAKE

BLM LIBRARY
 BLDG 50, ST-150A
 DENVER FEDERAL CENTER
 P.O. BOX 25047
 DENVER, COLORADO 80225

Class	Family	Scientific name	Common name
M	SCURVIDAE	TAMIASCIURUS HUDSONIUS	RED SQUIRREL
M	URSIDAE	URUS AMERICANUS	BLACK BEAR
M	URSIDAE	URUS ARCTOS	GRIZZLY BEAR
R	ICHTHYODAE	PHRYNOSOMA DOUGLASSII	SHORT-HORNED LIZARD
R	VIBRIDAE	CROTALUS VIRIDIS	WESTERN RATTLESNAKE

DENVER FEDERAL CENTER
 P.O. BOX 25047
 DENVER, COLORADO 80225
 BLDG 50 ST-1801
 BLUE LIBRARY