

Appendix E: SWAP Vegetation Conservation Target Abstracts Member National Vegetation Classification Macrogroup/Group Summaries

Alpine & High Montane Scrub, Grassland & Barrens

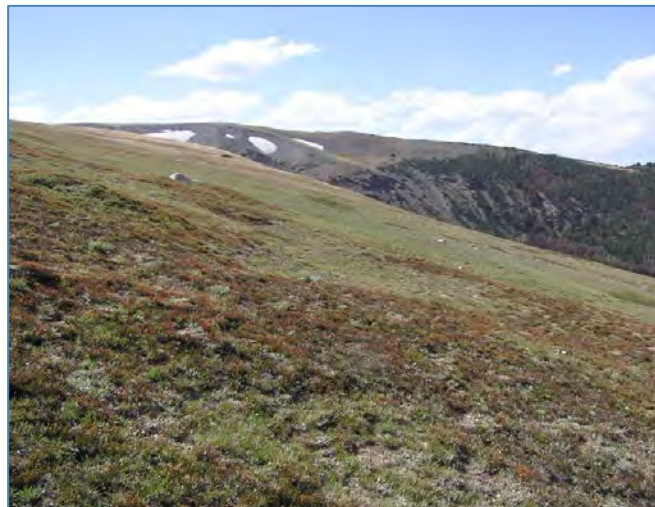
Cushion plant communities, dense sedge and grass turf, heath and willow dwarf-shrubland, wet meadow, and sparsely-vegetated rock and scree found at and above upper timberline. Topography, wind, rock movement, soil depth, and snow accumulation patterns determine distribution of vegetation types in these short growing season habitats.

Alpine Scrub, Forb Meadow & Grassland (M099)

M099. Rocky Mountain & Sierran Alpine Scrub, Forb Meadow & Grassland



Rocky Canyon, Lemhi Mountains,
Idaho © 2006 Chris Murphy



Railroad Ridge RNA, White Cloud Mountains,
Idaho © 2006 Steve Rust

Cushion plant communities, dense turf, dwarf-shrublands, and sparsely-vegetated rock and scree slopes found at and above upper timberline throughout the Rocky Mountains, Great Basin ranges, and Sierra Nevada. Topography (e.g., ridgetops versus lee slopes), wind, rock movement, and snow accumulation patterns produce scoured fell-fields, dry turf, snow accumulation heath sites, runoff-fed wet meadows, and scree communities. Fell-field plants are cushioned or matted, adapted to shallow drought-prone soils where wind removes snow, and are intermixed with exposed lichen coated rocks. Common species include Ross' avens (*Geum rossii*), Bellardi bog sedge (*Kobresia myosuroides*), twinflower sandwort (*Minuartia obtusiloba*),

Appendix E. Habitat Target Descriptions. Continued.

cushion phlox (*Phlox pulvinata*), moss campion (*Silene acaulis*), and others. Dense low-growing, graminoids, especially blackroot sedge (*Carex elynoides*) and fescue (*Festuca* spp.), characterize alpine turf found on dry, but less harsh soil than fell-fields. Dwarf-shrublands occur in snow accumulating areas and are comprised of heath species, such as moss heather (*Cassiope*), dwarf willows (*Salix arctica*, *S. nivalis*), and mountainheath (*Phyllodoce*). Although many alpine scree slopes are barren, plants adapted to unstable sites, such as eightpetal mountain-avens (*Dryas octopetala*) and singlehead goldenbush (*Ericameria suffruticosa*), sometimes become established.

Subalpine & Alpine Snowbed, Wet Meadow & Dwarf-Shrubland (G520)

G520. Vancouverian & Rocky Mountain Subalpine & Alpine Snowbed, Wet Meadow & Dwarf-Shrubland



Belvidere Creek RNA, Big Creek,
Salmon River Mountains, Idaho ©
2006 Lisa Harloe



Trinity Mountain RNA, Trinity Mountains, Idaho ©
2004 Lisa Harloe

Subalpine to alpine meadow and dwarf shrub communities occurring in cirque basins, adjacent to subalpine lakes, along spring-fed streams, and in avalanche runout zones. The hydrology is tightly associated with snowmelt and springs. This group often occurs as a mosaic of plant associations dominated by sedges (e.g., *Carex scopulorum*, *C. subnigricans*, *C. nigricans*, *C. illota*), rushes (e.g., *Juncus arcticus* ssp. *littoralis*, *J. drummondii*), tufted hairgrass (*Deschampsia caespitosa*), or forbs. Abundant forbs include Sierra shootingstar (*Dodecatheon jeffreyi*), cinquefoil (*Potentilla* spp.), white marsh marigold (*Caltha leptosepala*), subalpine fleabane

Appendix E. Habitat Target Descriptions. Continued.

(*Erigeron peregrinus*), fringed grass of Parnassus (*Parnassia fimbriata*), giant red Indian paintbrush (*Castilleja miniata*), and bistort (*Polygonum* spp.). Dwarf-shrubs are typically present, including short-height willows (e.g., *Salix planifolia* var. *monica*, *S. arctica*, *S. brachycarpa*, *S. farriae*), shrubby cinquefoil (*Dasiphora floribunda*), and ericaceous shrubs such as huckleberry (*Vaccinium* spp.), pink mountainheath (*Phyllodoce empetriformis*), alpine laurel (*Kalmia microphylla*), and western Labrador tea (*Ledum glandulosum*).

Aspen Forest & Woodland

Open to dense tree canopies of quaking aspen with lush and diverse understories of deciduous shrubs, grasses, sedges, and wildflower forbs. Aspen occurs where there is adequate soil moisture required to meet the high water demand of these trees.

Aspen Forest & Woodland (G222)

G222. Rocky Mountain Subalpine-Montane Aspen Forest & Woodland



Bannock Range, Idaho © 2008 Tim Weekley

Open to dense canopies dominated by quaking aspen (*Populus tremuloides*) with lush and diverse understories often dominated by mesic site deciduous shrubs, such as Saskatoon serviceberry (*Amelanchier alnifolia*), chokecherry (*Prunus virginiana*), and mountain snowberry (*Symphoricarpos oreophilus*). Distribution is primarily limited by adequate soil moisture required to meet high evapotranspiration demand. Sites may include uplands where moisture is supplemented by intermittent runoff or groundwater. Understory composition and structure can vary greatly,

depending on soil moisture and disturbance history. Forbs, including Fendler's meadow-rue (*Thalictrum fendleri*), mule's ears (*Wyethia amplexicaulis*), and many others, are often abundant. Typical graminoid species include California brome (*Bromus carinatus*), upland sedges (*Carex* spp.), wildrye (*Elymus* spp.), and nonnative Kentucky bluegrass (*Poa pratensis*).

Cliff, Scree & Badland

Sparsely-vegetated (<10% cover) cliffs, canyon walls, mesa and plateau slopes, shale outcrops, clay badlands, volcanic flows, mountain rock outcrops, talus and scree, and cirque and glacial trough walls at all elevations. Plants are drought tolerant and adapted to growing on rock or poorly developed soil. The types and amount of trees, shrubs, herbs, and nonvascular plants present reflect climate and substrate.

Cliff, Scree & Badland Sparse Vegetation (M118)

M118. Intermountain Basins Cliff, Scree & Badland Sparse Vegetation



Mud Flat Oolite ACEC, Poison Creek near Grandview, Idaho © 2013 Chris Murphy

Sparsely-vegetated (<10% cover) cliff and canyon walls, steep mesa and plateau break slopes, shale outcrops, clayey badlands, volcanic deposits, and low elevation mountain talus and scree in the arid and semiarid interior west. Substrates include lava, cinder, ash, tuff, and basalt. Vegetation reflects climate and substrate variability. Characteristic shrubs in ash and badland areas include saltbush (*Atriplex* spp.) and slender buckwheat (*Eriogonum microthecum*) growing with Indian ricegrass (*Achnatherum hymenoides*), princesplume (*Stanleya* spp.), spiderflower (*Cleome* spp.), and

annuals. Lava flows, basalt cliffs, rhyolite outcrops, and cinder support scattered limber pine (*Pinus flexilis*), juniper (*Juniperus* spp.), fernbush (*Chamaebatiaria millefolium*), dwarf goldenbush (*Ericameria nana*), spiny greasewood (*Glossopetalon spinescens*), rock spiraea (*Holodiscus dumosus*), Lewis' mock orange (*Philadelphus lewisii*), and antelope bitterbrush (*Purshia tridentata*), and herbaceous species such as cushion buckwheat (*Eriogonum ovalifolium*), scabland penstemon (*Penstemon deustus*), alumroot (*Heuchera* spp.), and wavewing (*Pteryxia* spp.).

Montane–Subalpine Cliff, Scree & Rock Vegetation (M887)

M887. Western North American Temperate Cliff, Scree & Rock Vegetation

Barren and sparsely-vegetated (<10% cover) rock, cliff, and scree throughout the mountains of western North America. Sites are lower montane to subalpine cliff faces, canyons, cirque and glacial trough walls, rock outcrops, and scree and talus. There can be high cover of lichens, mosses, or spikemosses (*Selaginella* spp.). Trees are patchy, primarily Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), limber pine (*Pinus flexilis*), whitebark pine (*Pinus albicaulis*),



Boise Mountains, North Fork Boise River, Idaho © 2003 Chris Murphy



Middle Fork Salmon River, Idaho © 2001 Chris Murphy

quaking aspen (*Populus tremuloides*), and subalpine fir (*Abies lasiocarpa*), with juniper (*Juniperus* spp.) and mountain mahogany (*Cercocarpus ledifolius*) at lower elevations. Scattered shrubs include Saskatoon serviceberry (*Amelanchier alnifolia*), goldenbush (*Ericameria* spp.), rock spiraea (*Holodiscus dumosus*), common juniper (*Juniperus communis*), Lewis' mock orange (*Philadelphus lewisii*), and American red raspberry (*Rubus idaeus*). Herbaceous species are diverse, but have low cover. They include species adapted to rock substrates, such as alumroot (*Heuchera* spp.), mat rockspiraea (*Petrophyton caespitosum*), and stonecrop (*Sedum* spp.).

Depressional Wetlands

Diverse swamp forest and shrubland, fresh or brackish emergent marsh, aquatic, vernal pool, and mudflat wetland habitats. These occur in any shallowly flooded depression in the landscape, such as floodplain oxbows, and created wetlands, or around lakes, reservoirs, glacial carved ponds, and beaver ponds. Sites are seasonally to permanently flooded and soils are mucky. Emergent plants well-adapted to prolonged flooding include cattail, bulrush, spikerush, pondweed, and others. Vernal pools and mudflats support many annual species.

Swamp Forest (G505)

Rocky Mountain & Great Basin Swamp Forest

Swamp forests on poorly drained peaty or mucky soils that are saturated or seasonally flooded, occurring in river floodplain oxbows, overflow channels, or glacial kettles, as well as on sloped seeps and springs. Abundant tree species include Engelmann spruce (*Picea engelmannii*), western redcedar (*Thuja plicata*), paper birch (*Betula papyrifera*), lodgepole pine (*Pinus contorta*), and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*). Characteristic shrubs include gray alder (*Alnus incana*), western Labrador tea (*Ledum glandulosum*), devilsclub (*Oplopanax horridus* [Sm.] Miq.), willows (*Salix* spp.), rose spiraea (*Spiraea douglasii*), and bog blueberry (*Vaccinium uliginosum*). Typical herbaceous



Coeur d'Alene River, Idaho © 2008 Chris Murphy



Upper Priest River, Idaho © 2007 Chris Murphy

species include bluejoint (*Calamagrostis canadensis*), sedges (*Carex* spp.), Jeffrey's shootingstar (*Dodecatheon jeffreyi*), field horsetail (*Equisetum arvense*), American skunkcabbage (*Lysichiton americanus*), high mountain cinquefoil (*Potentilla flabellifolia*), groundsels (*Packera* spp., *Senecio* spp.), claspleaf twistedstalk (*Streptopus amplexifolius*), and ferns.

Emergent Marsh (M888)

M888. Arid West Interior Freshwater Emergent Marsh

Freshwater to brackish marshes found throughout interior low elevation basins of semiarid temperate western North America (Columbia Basin, Great Basin, Colorado Plateau, and Rocky Mountains). These marshes occur in bottomlands and floodplains, springs, ponds, reservoirs, ditches, streams, managed wetlands, basalt potholes, or dune depressions. They are mostly semipermanently flooded, but range from seasonally to permanently flooded. Tall emergent herbaceous plants growing over 2 m (6.5 ft) in height can be dominant, primarily broadleaf cattail (*Typha latifolia*) and bulrush (*Schoenoplectus* spp.). On the fringes, or in seasonally flooded marshes, shorter-height emergent vegetation may dominate, including spikerush



Hyatt Wetland, Boise River, Idaho © 2010 Chris Murphy



Jewell Wetland, Snake River near Payette, Idaho © 2010 Chris Murphy

Appendix E. Habitat Target Descriptions. Continued.

(*Eleocharis* spp.), sedge (*Carex* spp.), and bulrush (*Schoenoplectus* spp., *Scirpus* spp.). Aquatic forbs may be interspersed between emergent plants in standing water. Noxious and invasive weeds can be present, including reed canarygrass (*Phalaris arundinacea*) and common reed (*Phragmites australis*).

Wet Mudflat (G525)

G525. Temperate Pacific Freshwater Wet Mudflat

Freshwater mudflats found in seasonally flooded and shallow lakebeds, marshes, river floodplains, and drawdown zones of reservoirs. Mudflats must be exposed before vegetation

can develop from the seed bank. They range from sparsely-vegetated mud to extensive, but temporary, mats of herbaceous vegetation. Low-statured annual plants (both native and nonnative) dominate. Species include various annual graminoids (e.g., *Crypsis alopecuroides*, *Cyperus* spp., *Eleocharis acicularis*, *Eragrostis* spp.), small fleshy forbs (e.g., *Anagallis minimus*, *Chenopodium botrys*, *Crassula aquatica*, *Gnaphalium palustre*, *Gratiola neglecta*, *Limosella* spp., *Lindernia dubia*, *Ludwigia palustris*, *Mollugo verticillata*, *Plagiobothrys scouleri*, *Portulaca oleracea*, *Rotala ramosior*, *Veronica peregrina*), and more robust, often nonnative forbs (e.g., *Rumex crispus*, *Xanthium strumarium*, *Rorippa* spp.).



Lloyd Wetland, Snake River near Rupert, Idaho © 2011 Chris Murphy

Vernal Pool (M074)



Weiser River basin near Midvale, Washington County, Idaho © 2009 Chris Murphy

M074. Western North American Vernal Pool

Communities typically dominated by annual plant species and/or silver sagebrush-dominated with high diversity, and sometimes high endemism of plants and invertebrates, forming distinct zones or concentric rings within shallow ephemerally or temporarily flooded precipitation-filled pools. Pools form on hardpan soils with an indurated clay or cemented layer or on shallow soils over bedrock. It is found throughout northwestern interior of North American

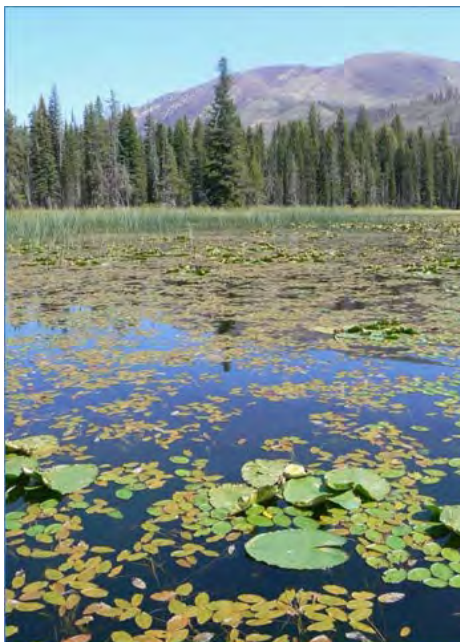
Appendix E. Habitat Target Descriptions. Continued.

(Columbia Basin, northern Great Basin). Characteristic species include needle spikerush (*Eleocharis acicularis*), annual hairgrass (*Deschampsia danthonioides*), popcornflower (*Plagiobothrys* spp.), navarretia (*Navarretia* spp.), milkwort knotweed (*Polygonum polygaloides*), smooth spike-primrose (*Epilobium pygmaeum*), mousetail (*Myosurus* spp.), Carolina foxtail (*Alopecurus carolinianus*), short woollyheads (*Psilocarphus brevissimus*), and calicoflower (*Downingia* spp.). Perennial species include Bolander's sliver sagebrush (*Artemisia cana* ssp. *bolanderi*), common spikerush (*Eleocharis palustris*), mat muhly (*Muhlenbergia richardsonis*), Sandberg's bluegrass (*Poa secunda*, syn. *Poa nevadensis*), and Davis' peppergrass (*Lepidium davisii*), mostly endemic to the Owyhee Uplands.

Aquatic Vegetation (M109)

M109. Western North American Freshwater Aquatic Vegetation

Freshwater aquatic herbaceous vegetation found in reservoirs, lakes, ponds, oxbows, and slow-moving rivers. Occurs in permanently to semipermanently flooded (the latter of which may become mudflats during drawdown) wetlands where restricted to the littoral zone (where light penetration is the limiting growth factor). Floating species may dominate, such as waterfern (*Azolla* spp.), watershield (*Brasenia schreberi*), duckweed (*Lemna minor*), or Rocky Mountain pond-lily (*Nuphar lutea* ssp. *polysepala*). Submerged aquatic vegetation include pondweed (*Stuckenia*, *Potamogeton*), whitewater crowfoot (*Ranunculus aquatilis*), coon's tail (*Ceratophyllum demersum*), watermilfoil (*Myriophyllum* spp.), waterweed (*Elodea* spp.), and others. Some emergent species that are tolerant of persistent flooding can occur in this macrogroup.



Warm Lake, South Fork Salmon River, Idaho © 2008 Chris Murphy



Grays Lake NWR, Idaho © 2013 Chris Murphy

Boreal Freshwater Shrubland, Wet Meadow & Marsh (M870)

M870. North American Arctic & Northern Boreal Freshwater Shrubland, Wet Meadow & Marsh (in part)



Schlepp Marsh, Coeur d'Alene River, Idaho © 2013 Chris Murphy

A diverse macrogroup ranging from boreal Alaska and western Canada, south into northern Idaho, Montana, northeast Washington. It occurs on floodplains, depressions, pond and lake margins, oxbows and abandoned channels, etc., and is characterized by hydrophytic graminoid species in emergent marshes, saturated meadows, and wet shrublands. Composition is similar to riparian shrublands and wet meadows of the Northern Rocky Mountains, but this macrogroup occurs in lower elevation, wider valley bottoms, with lower gradients. Common species include burreed (*Sparganium* spp.), water plantain (*Alisma* spp.), wapato (*Sagittaria* spp.),

horsetails (*Equisetum* spp.), sedge (*Carex* spp.), various grasses, rushes (*Juncus* spp.) and bulrush (*Scirpus*, *Schoenoplectus*). Forbs and ferns are common. Shrubs are locally dominant near water courses, especially rose spiraea (*Spiraea douglasii*), gray alder (*Alnus incana*), willow (especially *Salix drummondiana* and *S. sitchensis*), black hawthorn (*Crataegus douglasii*), redosier dogwood (*Cornus sericea*), and common snowberry (*Symphoricarpos albus*).

Semi-natural Wet Shrubland, Meadow & Marsh (M301)

M301. Western North American Ruderal Wet Shrubland, Meadow & Marsh (in part)

Disturbed wetland meadow, marsh, and shrubland habitats of temperate western North America strongly dominated by nonnative weedy species. Native species are low in abundance. Disturbance can include hay cultivation, severe grazing, past land clearing or industry, roads, logging, altered hydrology, and filling or draining. Dominant herbaceous species include introduced grasses, such as bentgrass (*Agrostis* spp.), meadow foxtail (*Alopecurus* spp.), reed canarygrass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and nonnative



Cub River, Bear River, Idaho © 2011 Chris Murphy

Appendix E. Habitat Target Descriptions. Continued.

bluegrass (*Poa* spp.), and invasive forbs, including Canada thistle (*Cirsium arvense*), paleyellow iris (*Iris pseudacorus*), broadleafed pepperweed (*Lepidium latifolium*), poison hemlock (*Conium maculatum*), purple loosestrife (*Lythrum salicaria*), and others. Common nonnative shrubs include Himalayan blackberry (*Rubus armeniacus*), desert false indigo (*Amorpha fruticosa*), and rose (e.g., *Rosa* spp.).

Alkaline–Saline Wetland (M082)

M082. Warm and Cool Semi-Desert Alkaline–Saline Wetland (in part)

Marshes, wet meadows, and shrublands on alkaline and/or saline soils found throughout much of western North America where evaporation far exceeds precipitation. Sites range from sloped seeps and springs (most commonly) to drainages and pond and playa margins. Flooding or saturation varies, but high groundwater is typical. Vegetation is salt-tolerant.

Characteristic shrubs include greasewood (*Sarcobatus vermiculatus*), shrubby cinquefoil (*Dasiphora floribunda*), iodinebush (*Allenrolfea occidentalis*) (locally), and saltbush (*Atriplex* spp.). Abundant herbaceous species are saltgrass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*), bulrush (*Schoenoplectus*, *Scirpus*), clustered field sedge (*Carex praegracilis*), mountain rush (*Juncus arcticus* ssp. *littoralis*), muhly (*Muhlenbergia* spp.), beaked spikerush (*Eleocharis rostellata*), alkaligrass (e.g., *Puccinellia* spp.), barley (*Hordeum* spp.),



Roswell Wildlife Habitat Area (WHA), Snake River near Parma, Idaho © 2012 Chris Murphy

wildrye (e.g., *Leymus triticoides*, *L. cinereus*), seaside arrowgrass (*Triglochin maritima*), red glasswort (*Salicornia rubra*), and seepweed (*Suaeda* spp.). Disturbed sites have high amounts of nonnative species, such as kochia (*Bassia* spp.), perennial sowthistle (*Sonchus arvensis*), perennial pepperweed (*Lepidium latifolium*), and tall wheatgrass (*Thinopyrum ponticum*).

Dry Lower Montane–Foothill Forest

Fire-dependent conifer forests, woodlands, and savannas often dominated by ponderosa pine and Douglas-fir. Stands occur in dry lower montane to foothill settings. Various shrubs and grasses occur in the understory, the species and abundance of which depend on fire history, soils, and climate. Mallow ninebark, white spirea, snowberry, pinegrass, Geyer's sedge, and Idaho fescue are common.

Dry Lower Montane–Foothill Forest (M501)

M501. Central Rocky Mountain Dry Lower Montane–Foothill Forest

Fire-dependent conifer forests, woodlands, and savannas typically dominated by ponderosa pine (*Pinus ponderosa*) and/or Douglas-fir (*Pseudotsuga menziesii*), with limber pine (*Pinus flexilis*) and Rocky Mountain juniper (*Juniperus scopulorum*) on rocky outcrops. Stands are found in dry settings of the lower montane to foothill zones of the interior Pacific Northwest, central and northern Rocky Mountains, and extending east into the northwestern Great Plains. Climate ranges from warm, winter moist in western canyons to cool, summer moist in eastern mountains. Common shrub understory species include Saskatoon serviceberry (*Amelanchier alnifolia*), kinnikinnick (*Arctostaphylos uva-ursi*), sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus* spp.), common juniper (*Juniperus communis*), mallow ninebark (*Physocarpus malvaceus*), white spirea (*Spiraea betulifolia*), and snowberry (*Symphoricarpos* spp.).



Circle End Creek RNA, South Fork Salmon River, Idaho © 2010 Chris Murphy



Redfish Lake Moraine RNA, Sawtooth Mountains, Idaho © 2005 Steve Rust

Appendix E. Habitat Target Descriptions. Continued.

Characteristic herbs are pinegrass (*Calamagrostis rubescens*), Geyer's sedge (*Carex geyeri*), Idaho fescue (*Festuca idahoensis*), needle-and-thread (*Hesperostipa comata*), prairie Junegrass (*Koeleria macrantha*), littleseed ricegrass (*Piptatherum micranthum*), Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*), heartleaf arnica (*Arnica cordifolia*), timber milkvetch (*Astragalus miser*), and arrowleaf balsamroot (*Balsamorhiza sagittata*). Forbs and graminoids vary, depending on fire history, soils, and local climate.



Willow Creek, South Fork Boise River, Idaho © 2010 Chris Murphy



Cedar Creek, Lost River Range, Idaho © 2010 Brenda Erhardt

High Montane Mesic Shrubland

Upper montane and subalpine shrublands composed of a diverse mix of deciduous shrubs, especially Sitka alder, Scouler's willow, Rocky Mountain maple, rusty menziesia, and huckleberry. Stands occur on avalanche chutes or on mountain slopes kept open by fires. Mesic grasses, ferns, and tall forbs are in the understory.

High Montane Mesic Shrubland (G305)

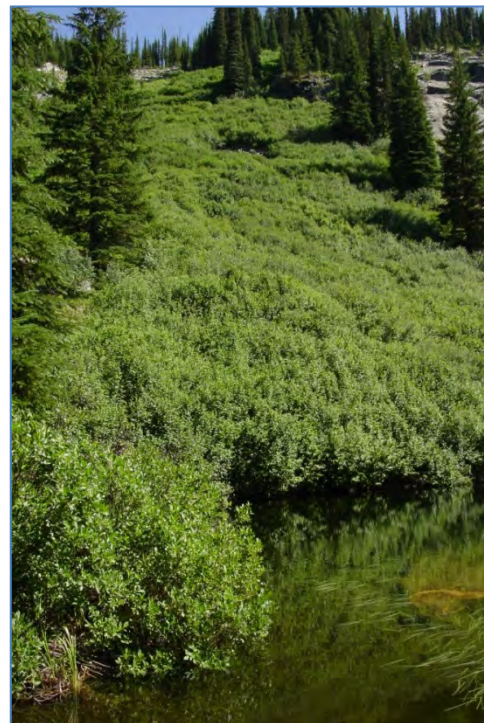
G305. Central Rocky Mountain High Montane Mesic Shrubland



Bruin Mountain RNA, Little French Creek, Salmon River, Idaho © 2009 Chris Murphy

huckleberry (*Vaccinium* spp.), occurring in any combination. Important graminoids and forbs include ladyfern (*Athyrium filix-femina*), bromes (*Bromus* spp.), fireweed (*Chamerion angustifolium*), drooping woodreed (*Cinna latifolia*), heartleaf spring beauty (*Claytonia cordifolia*), blue wildrye (*Elymus glaucus*), licoriceroot (*Ligusticum* spp.), Hitchcock's smooth woodrush (*Luzula glabrata* var. *hitchcockii*), bluebells (*Mertensia* spp.), poke knotweed (*Polygonum phytolaccifolium*), arrowleaf groundsel (*Senecio triangularis*), and common beargrass (*Xerophyllum tenax*).

Shrublands occurring in upper montane and subalpine zones composed of a diverse mix of deciduous shrubs. Stands occur on avalanche slopes and chutes or are initiated by fires. Common species include Sitka alder (*Alnus viridis* ssp. *sinuata*), Rocky Mountain maple (*Acer glabrum*), rusty menziesia (*Menziesia ferruginea*), currants (*Ribes* spp.), thimbleberry (*Rubus parviflorus*), Scouler's willow (*Salix scouleriana*), red elderberry (*Sambucus racemosa*), Greene's mountainash (*Sorbus scopulina*), rose meadowsweet (*Spiraea splendens*),



Goat Lake, Patrick Butte RNA, Idaho © 2005 Lisa Harloe

Juniper Woodland & Savanna

Woodlands and savannas characterized by scattered to dense western or Utah juniper trees. Shrub cover varies, but is most commonly mountain mahogany, sagebrush, and bitterbrush. Savannas can support lush perennial bunchgrasses; dense stands have sparse understories. Decreased fire frequency has allowed juniper to colonize sagebrush steppe in some areas.

Utah Juniper Woodland & Savanna (G246)

G246. Colorado Plateau–Great Basin Juniper Woodland & Savanna

Woodlands and savannas characterized by Utah juniper (*Juniperus osteosperma*) in the tree layer and absence of singleleaf pinyon (*Pinus monophylla*). Savannas can have a lush perennial grass layer with scattered Utah juniper trees; closed canopy stands have sparse understories. Shrub cover varies, but is most commonly sagebrush (*Artemisia tridentata*, *A. arbuscula*, *A. nova*), antelope bitterbrush (*Purshia tridentata*), rabbitbrush (*Ericameria*, *Chrysothamnus*), and slender buckwheat (*Eriogonum microthecum*). Characteristic grasses include Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), saline wildrye (*Leymus salinus*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). Forbs can be diverse but generally have low cover, the most common species being tapertip onion (*Allium acuminatum*), balsamroot (*Balsamorhiza* spp.), tapertip hawksbeard (*Crepis acuminata*), matted buckwheat (*Eriogonum caespitosum*), pricklypear cactus (*Opuntia polyacantha*), longleaf phlox (*Phlox longifolia*), and lambstongue ragwort (*Senecio integerrimus*).



Big Canyon, Goose Creek, Idaho © 2011 Lynn Kinter

Western Juniper Woodland & Savanna (G248)

G248. Columbia Plateau Western Juniper Woodland & Savanna



Castle Creek, Owyhee Mountains, Idaho © 2013 Tim Weekley

Western juniper (*Juniperus occidentalis*) is the diagnostic and dominant species of these woodlands and savannas. In Idaho it occurs in the Owyhee Uplands and a small portion of southern Hells Canyon. Mountain mahogany (*Cercocarpus ledifolius*) may co-dominate some stands. The understory is variable in structure (from sparse in closed-canopy stands to dense shrub or bunchgrass in savannas), and is similar to mesic sagebrush steppe in composition. Characteristic species include big sagebrush (*Artemisia tridentata*), little sagebrush (*Artemisia arbuscula*

ssp. arbuscula), antelope bitterbrush (*Purshia tridentata*), Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and Wyeth's buckwheat (*Eriogonum heracleoides*). Changes to fire regimes have allowed western juniper to colonize some sagebrush-steppe stands.

Lower Montane–Foothill Grassland & Shrubland

Grasslands and deciduous shrublands in foothill and lower montane settings with warm, dry summers and cool, moist winters. Fire-maintained grasslands are comprised of perennial bunchgrass (e.g., wheatgrass, fescue, needlegrass, Sandberg bluegrass, etc.) and diverse forbs on varying soils. Snowberry, mallow ninebark, hawthorn, cherry, rose, netleaf hackberry, and smooth sumac shrublands occur on talus and sheltered foothill and canyon slopes. Trees, such as ponderosa pine and Douglas-fir, are uncommon.

Lower Montane, Foothill & Valley Grassland (G273)

G273. Central Rocky Mountain Lower Montane, Foothill & Valley Grassland
Grasslands found at lower montane to foothill elevations with warm, dry summers (but not semiarid) and cool, wet winters, including grasslands commonly known as "Palouse Prairie." Soils are relatively deep and

fine-textured supporting cool-season perennial bunchgrasses and forbs (>25% cover). Rough fescue (*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), and bluebunch wheatgrass (*Pseudoroegneria spicata*) are dominant, but other native grasses such as needle-and-thread (*Hesperostipa comata*), needlegrass (*Achnatherum* spp.), oatgrass (*Danthonia* spp.), basin wildrye (*Leymus cinereus*), prairie Junegrass (*Koeleria macrantha*), western wheatgrass (*Pascopyrum smithii*), and Sandberg's bluegrass (*Poa secunda*) are common. Forb diversity is

typically high in both mesic and dry aspects of this group. Characteristic forbs include yarrow (*Achillea millefolium*), arrowleaf balsamroot (*Balsamorhiza sagittata*), Indian paintbrush (*Castilleja* spp.), buckwheat (*Eriogonum* spp.), prairie smoke (*Geum triflorum*), sticky geranium (*Geranium viscosissimum*), little sunflower (*Helianthella uniflora*), houndstongue hawkweed (*Hieracium cynoglossoides*), silky lupine (*Lupinus sericeus*), and slender cinquefoil (*Potentilla gracilis*). Ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) trees are uncommon.



Craig Mountain Wildlife Management Area (WMA), Lower Salmon River, Idaho © 2011 Chris Murphy

Montane–Foothill Deciduous Shrubland (G272)

G272. Central Rocky Mountain Montane-Foothill Deciduous Shrubland

Lower montane and foothill deciduous shrublands typically occurring within the matrix of surrounding low-elevation grasslands, sagebrush steppe, or ponderosa pine (*Pinus ponderosa*) - Douglas-fir (*Pseudotsuga menziesii*) woodlands. They are usually found on steep slopes of canyons (e.g., talus) or in areas with some soil development and more mesic conditions than adjacent habitats (drainages, toeslopes, north aspects). The most common dominant shrubs include smooth sumac (*Rhus glabra*), Saskatoon serviceberry (*Amelanchier alnifolia*), netleaf hackberry (*Celtis laevigata* var. *reticulata*), black hawthorn (*Crataegus douglasii*), bitter



Lower Salmon River, Idaho © 2007 Chris Murphy



Palouse, Latah County, Idaho © 2009 Janice Hill

cherry (*Prunus emarginata*), chokecherry (*Prunus virginiana*), rose (*Rosa* spp.), blue elderberry (*Sambucus nigra* ssp. *cerulea*) common snowberry (*Symphoricarpos albus*), Rocky Mountain maple (*Acer glabrum*), mallow ninebark (*Physocarpus malvaceus*), and oceanspray (*Holodiscus discolor*). A variety of cool-season graminoids and forbs common to lower montane, mesic habitats may be present in the understory.

Mesic Lower Montane Forest

Moist conifer forests of the lower montane and montane zones. Climate is maritime influenced. Grand fir, western larch, Douglas-fir, western redcedar, and western hemlock are major trees. Understory vegetation is diverse and lush, comprised of Pacific yew, mesic site deciduous shrubs, numerous forbs (e.g., wild ginger, bride's bonnet, Idaho goldentthread, etc.), and various ferns. Fire return intervals tend to be long.

Mesic Lower Montane Forest (M500)

M500. Central Rocky Mountain Mesic Lower Montane Forest

Mesic to moist conifer forests of the lower montane to montane zone of the central-northern Rocky Mountains and interior Pacific Northwest. Climate is maritime influenced. Grand fir (*Abies grandis*), western larch (*Larix occidentalis*), Engelmann spruce (*Picea engelmannii*), Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*), or western hemlock (*Tsuga heterophylla*) are the major dominants. Understory vegetation is often diverse and lush, comprised of mesic site deciduous shrubs, numerous forbs, and various ferns. Typical species include Rocky Mountain maple (*Acer glabrum*), white spirea (*Spiraea betulifolia*), Pacific yew (*Taxus brevifolia*), dwarf bilberry (*Vaccinium cespitosum*), thinleaf huckleberry (*Vaccinium membranaceum*), British Columbia wildginger (*Asarum caudatum*), bride's bonnet (*Clintonia uniflora*), Idaho goldthread (*Coptis occidentalis*), common beargrass (*Xerophyllum tenax*), maidenhair (*Adiantum aleuticum*), western oakfern (*Gymnocarpium dryopteris*), and western swordfern (*Polystichum munitum*). Fire return intervals tend to be long.



Mica Creek, Middle Fork Weiser River, Idaho © 2005 Lisa Harloe



Upper Priest River, Idaho © 2007 Chris Murphy

Montane Grassland

Upper montane to subalpine grasslands dominated by drought tolerant perennial grasses (e.g., fescue, timber oatgrass, spike fescue, wheatgrass, needlegrass), upland sedges, and various forbs on dry sites, particularly south-facing slopes or ridgetops and well-drained meadows. Fire plays a role in maintaining these open grassy areas, as well as drought or cold air accumulation in some meadows.

Montane Grassland (G267)

G267. Central Rocky Mountain Montane Grassland

Upper montane to subalpine grasslands dominated by perennial grasses and forbs on dry sites, particularly south-facing slopes or ridgetops, and in well-drained meadows. Fire plays a role in maintaining these open grassy areas, as well as drought on ridgetops or cold air accumulation in some dry meadows. Typically dominant species, include prairie Junegrass (*Koeleria macrantha*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), timber oatgrass (*Danthonia intermedia*), needlegrass



Cuddy Mountain, Snake River, Idaho © 2009 Chris Murphy

(*Achnatherum* spp.), slender wheatgrass (*Elymus trachycaulus*), spike fescue (*Leucopoa kingii*), spike trisetum (*Trisetum spicatum*), squirreltail (*Elymus elymoides*), prairie Junegrass (*Koeleria macrantha*), and a variety of dry-site sedges (*Carex* spp.). Important forbs include yarrow (*Achillea millefolium*), littleleaf pussytoes (*Antennaria microphylla*), prickly sandwort (*Arenaria aculeata*), alpine golden buckwheat (*Eriogonum flavum*), thickstem aster (*Eurybia integrifolia*), Virginia strawberry (*Fragaria virginiana*), pleated gentian (*Gentiana affinis*), silvery lupine

(*Lupinus argenteus* ssp. *argenteus*), varileaf cinquefoil (*Potentilla diversifolia*), penstemon (*Penstemon* spp.), goldenweed (*Pyrrocoma* spp.), and western aster (*Symphyotrichum spathulatum*).



Hard Butte, Hazard Creek, Little Salmon River, Idaho © 2010 Chris Murphy

Montane Sclerophyll Scrub

Chaparral shrublands dominated by snowbrush ceanothus, often mixed with other montane evergreen or deciduous shrubs. These shrubs are fire-adapted, resprouting vigorously after burning or producing fire-resistant seeds.

Cool Interior Chaparral (M094)

M094. Cool Interior Chaparral



Trinity Mountains, South Fork Boise River, Idaho © 2013 Jessica Irwin



Camas Peak, Soldier Mountains, Idaho © 2004 Jennifer Miller

Chaparral shrublands that occur between low-elevation desert landscapes and higher subalpine woodlands of the Cascades, Sierra Nevada, and interior mountain ranges of the western US, generally among montane forests above 1500 m (4550 ft) elevation. Dominant and diagnostic shrubs include snowbrush ceanothus (*Ceanothus velutinus*), redstem ceanothus (*Ceanothus sanguineus*), greenleaf manzanita (*Arctostaphylos patula*) – (rare in Idaho), each with sclerophyllous growth form, mixed with mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), mountain snowberry (*Symphoricarpos oreophilus*), and bitter cherry (*Prunus emarginata*). Most of these chaparral species are fire adapted, resprouting vigorously after burning or producing fire-resistant seeds.

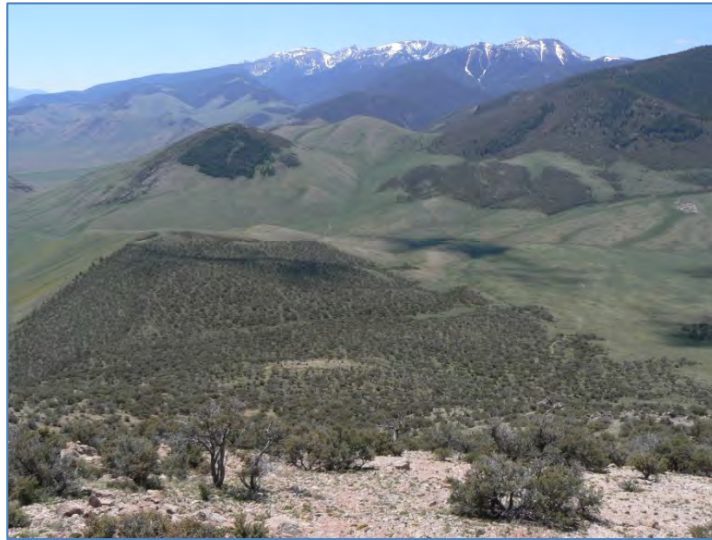
Mountain Mahogany Scrub & Woodland

Curl-leaf mountain mahogany dominates these woodlands and shrublands of canyon, foothill, and mountain slopes. Scattered other trees or shrubs may be present. Understory shrubs, grasses, and forbs are similar to those in sagebrush steppe. Stands are often on rocky calcareous or altered basalt bedrock, where fire is uncommon.

Curl-leaf Mountain Mahogany Scrub & Woodland (G249)

G249. Intermountain Basins Curl-leaf Mountain Mahogany Scrub & Woodland

Curl-leaf mountain mahogany (*Cercocarpus ledifolius*) dominates these woodlands and shrublands of canyon, foothill, and mountain slopes. Scattered other trees (e.g., *Juniperus* spp., *Pinus* spp.) may be present with low cover. Shrubs, especially mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), bitterbrush (*Purshia tridentata*), and mountain snowberry (*Symphoricarpos oreophilus*), may be present to abundant in the understory. Characteristic herbs include bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), basin wildrye (*Leymus cinereus*), arrowleaf balsamroot (*Balsamorhiza sagittata*), buckwheat (*Eriogonum* spp.), and lambstongue ragwort (*Senecio integerrimus*). Stands commonly form on rocky sites, with calcareous or altered basalt



Hawley Mountain, Lost River Range, Idaho © 2008 Chris Murphy

bedrock, where fire is uncommon.



Lower Salmon River, Idaho © 2007 Chris Murphy

Nonnative Annual & Perennial Grassland & Forbland

Disturbed grasslands and scrub found in basins, plains, and foothills, often adjacent to roads, powerlines, developed areas, and in burnt areas. Soils may be compacted and eroded. Dominant nonnative grasses include perennial crested wheatgrass and smooth brome, which have been purposefully seeded, and annual cheatgrass and medusahead. Invasive nonnative annual forbs, such as tall tumbled mustard, are common.

Semi-Desert Ruderal Scrub & Grassland (M499)

M499. Western North American Cool Semi-Desert Ruderal Scrub & Grassland



Snake River Plain near New Plymouth, Idaho © 2015
Idaho Natural Heritage Program

Disturbed grasslands and scrub found in semidesert basins, plains, and foothills throughout western North America. Stands often occur adjacent to roads, powerlines, developed areas, and in burnt areas. Soils may be compacted and eroded with biological crusts absent because of disturbance. Dominant nonnative graminoids include crested wheatgrass (*Agropyron cristatum*, which has been purposefully seeded), cheatgrass (*Bromus tectorum*), and medusahead (*Taeniatherum caput-medusae*). Invasive forbs include prickly Russian thistle (*Salsola tragus*), herb sophia (*Descurainia sophia*), tall tumbled mustard (*Sisymbrium altissimum*),

and clasping pepperweed (*Lepidium perfoliatum*). Noxious weeds may be abundant. Nonnative shrublands are less common, with prostrate summercypress (*Kochia prostrata*) (planted for wildfire prevention) being the main example.



Snake River Plain near Mountain Home, Idaho © 2015
Idaho Natural Heritage Program

Ruderal Grassland & Shrubland (M493)

M493. Western North American Ruderal Grassland & Shrubland

Upland ruderal grasslands, meadows, and shrublands found on human-disturbed sites, and dominated by a mix of nonnative (often purposefully seeded) and generalist native species. Stands occur throughout the western U. S. (Rockies westward) and southwestern Canada in a variety of climate regimes. Sites are moister than semiarid grasslands. These grasslands are



Palouse, Latah County, Idaho © 2009 Janice Hill

dominated by Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus armeniacus*), or rose (e.g., *Rosa eglantheria*) are less common.

common on Conservation Reserve Program lands. Widespread dominant and diagnostic herbs include naturalized forage perennial species such as bentgrass (*Agrostis* spp.), smooth brome (*Bromus inermis*), orchardgrass (*Dactylis glomerata*), quackgrass (*Elymus repens*), timothy (*Phleum pratense*), intermediate wheatgrass (*Thinopyrum intermedium*), and Kentucky bluegrass (*Poa pratensis*). Invasive nonnative shrublands

Palouse Prairie Grassland

Low elevation, cool-season fescue and bluebunch wheatgrass grasslands on deep, fine-textured loess soils. This habitat is confined to the Palouse region with warm, dry summers (not semiarid) and cool, wet winters. Forb diversity and productivity is typically high.

Lower Montane, Foothill & Valley Grassland (G273)

G273. Central Rocky Mountain Lower Montane, Foothill & Valley Grassland

Grasslands found at lower montane to foothill elevations with warm, dry summers (but not semiarid) and cool, wet winters, including grasslands commonly known as "Palouse Prairie." Soils are relatively deep and fine-textured supporting cool-season perennial bunchgrasses and forbs (>25% cover). Rough fescue

(*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), and bluebunch wheatgrass (*Pseudoroegneria spicata*) are dominant, but other native grasses such as needle and thread (*Hesperostipa comata*), needlegrass (*Achnatherum* spp.), oatgrass (*Danthonia* spp.), basin wildrye (*Leymus cinereus*), prairie Junegrass (*Koeleria macrantha*), western wheatgrass (*Pascopyrum smithii*), and Sandberg's bluegrass (*Poa secunda*) are common. Forb diversity is typically high in both mesic and dry aspects of this group.



Palouse, Latah County, Idaho © 2012 Trish Heekin

Characteristic forbs include yarrow (*Achillea millefolium*), arrowleaf balsamroot (*Balsamorhiza sagittata*), Indian paintbrush (*Castilleja* spp.), buckwheat (*Eriogonum* spp.), prairie smoke (*Geum triflorum*), sticky geranium (*Geranium viscosissimum*), little sunflower (*Helianthella uniflora*), houndstongue hawkweed (*Hieracium cynoglossoides*), silky lupine (*Lupinus sericeus*), and slender cinquefoil (*Potentilla gracilis*).

Pinyon–Juniper–Mountain Mahogany Woodland & Savanna

Broadly defined Pinyon–Juniper–Mountain Mahogany Woodland & Savanna occurring on dry foothills and plains. This habitat is characterized by an open to closed tree canopy of western juniper, Utah juniper, singleleaf pinyon (locally in Idaho), and/or mountain mahogany. Understory shrubs include sagebrush, rabbitbrush, and bitterbrush. Herbaceous species are similar to those occurring in mesic sagebrush steppe.

Pinyon–Juniper–Mountain Mahogany Woodland & Savanna (M026)

M026. Intermountain Singleleaf Pinyon–Utah Juniper–Western Juniper Woodland

Broadly defined Pinyon–Juniper–Mountain Mahogany Woodland & Savanna occurring in dry foothills and plains of the interior western US. This habitat is characterized by an open to closed



Castle Creek, Owyhee Mountains, Idaho © 2013 Tim Weekley

tree canopy of western juniper (*Juniperus occidentalis*), Utah juniper (*Juniperus osteosperma*), singleleaf pinyon (*Pinus monophylla*) (locally in Idaho), and/or mountain mahogany (*Cercocarpus ledifolius*).

Understory shrubs include big sagebrush (*Artemisia tridentata*), little sagebrush (*Artemisia arbuscula*), black sagebrush (*Artemisia nova*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush (*Ericameria nauseosa*), antelope bitterbrush (*Purshia tridentata*), wax currant (*Ribes cereum*), and horsebrush (*Tetradymia* spp.).

Herbaceous species are similar to

those occurring in mesic sagebrush steppe. Common graminoids include needle-and-thread (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), basin wildrye (*Leymus cinereus*), saline wildrye (*Leymus salinus*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and Sandberg bluegrass (*Poa secunda*). Forbs, such as arrowleaf balsamroot (*Balsamorhiza sagittata*) and Wyeth's buckwheat (*Eriogonum heracleoides*), may be diverse but typically have low cover.

Pinyon–Juniper Woodland

Lower montane woodlands characterized by an open to dense singleleaf pinyon trees mixed with Utah juniper. The variable understory is similar to montane sagebrush steppe. In Idaho, this habitat is limited to the rocky foothills of the southern Albion Mountains in the vicinity of City of Rocks Reserve.

Pinyon–Juniper Woodland (G247)

G247. Great Basin Pinyon–Juniper Woodland

Lower montane woodlands characterized by an open to dense tree layer of singleleaf pinyon (*Pinus monophylla*), often with codominant Utah juniper (*Juniperus osteosperma*), and variable understories similar to montane sagebrush steppe. In Idaho, this group is limited to the rocky foothills of the southern Albion Mountains in the vicinity of City of Rocks Reserve. Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), black sagebrush (*Artemisia nova*), and antelope bitterbrush (*Purshia tridentata*) are common shrubs. Typical understory species are bunchgrasses, such as needle-and-thread (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and basin wildrye (*Leymus cinereus*), and forbs including arrowleaf balsamroot (*Balsamorhiza sagittata*). Sites are less xeric and have less extreme frosts than Utah juniper and sagebrush-steppe stands occurring downslope.



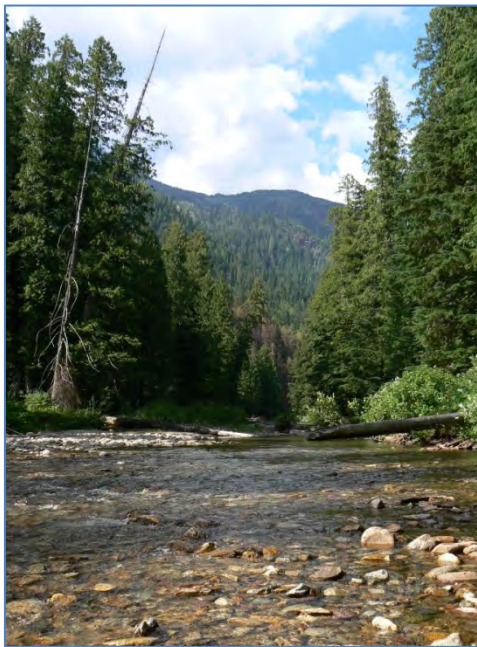
City of Rocks National Reserve, Idaho © Lynn Kinter

Riverine–Riparian Forest & Shrubland

Riparian forests and shrublands on floodplains and terraces of permanent and intermittent rivers and streams. Persistence depends on annual to episodic flooding that creates alluvial bars suitable for tree and shrub reproduction. Stream baseflows provide sufficient groundwater year-round. Stands also occur along backwaters, lakes, ponds, reservoirs, and irrigation ditches. Sites range from steep v-shaped valleys to broad, flat glacial and river valleys. Frequent trees include cottonwoods, pines, alders, subalpine fir, Engelmann spruce, western redcedar, willows, and Russian olive (or other nonnative species). A diverse mix of shrubs are present, most commonly rose spirea, gray alder, willows, water birch, hawthorns, redosier dogwood, Wood's rose, currants, bog birch, and common snowberry. The herb layer is also diverse, with many wetland grass, sedge, rush, and forb species; their cover inversely related to overstory density and flood-scouring.

Lowland & Foothill Riparian Forest (G796)

G796. Northern Rocky Mountain Lowland & Foothill Riparian Forest



Upper Priest River, Idaho © 2007
Chris Murphy



Boise River, Idaho © 2015 Chris Murphy

Low-elevation (foothill, canyon, lower montane) riparian forests and woodlands found along permanent, intermittent, and ephemeral streams, or on river floodplains. Persistence is dependent on annual to episodic flooding that creates alluvial features suitable for tree reproduction and sufficient groundwater. Stands also occur along backwater channels and other wet sites, such as swales and irrigation ditches. Frequently dominant trees are cottonwood (*Populus* spp.), ponderosa pine (*Pinus ponderosa*), white alder (*Alnus rhombifolia*), quaking aspen (*Populus tremuloides*), juniper (*Juniperus* spp.), peachleaf willow (*Salix amygdaloides*),

Appendix E. Habitat Target Descriptions. Continued.

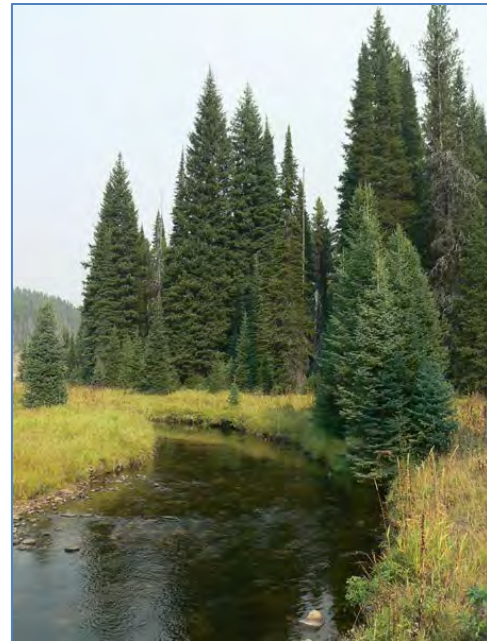
Russian olive (*Elaeagnus angustifolia*), and Western redcedar (*Thuja plicata*). The shrub component is diverse and variable, the most important being common snowberry (*Symphoricarpos albus*), black hawthorn (*Crataegus douglasii*), redosier dogwood (*Cornus sericea*), gray alder (*Alnus incana*), Wood's rose (*Rosa woodsii*), Lewis' mockorange (*Philadelphus lewisii*), willow (*Salix* spp.), water birch (*Betula occidentalis*), and golden currant (*Ribes aureum*). The herbaceous understory is equally diverse, varying in response to the amount of light penetrating overstory canopies and disturbance history.

Montane Riparian Forest (G506)

G506. Rocky Mountain & Great Basin Montane Riparian Forest



Queens River, Middle Fork Boise River, Idaho © 2007 Chris Murphy



Red River, Idaho ©Chris Murphy

Diverse, seasonally flooded riparian forests and woodlands found at montane to subalpine elevations occurring on floodplains or terraces of rivers and streams. They occur in narrow valleys, wide glacial-carved valley bottoms with meadows, or on lake margins. Dominant tree species include subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmanni*), lodgepole pine (*Pinus contorta*), narrowleaf or black cottonwood (*Populus angustifolia*, *P. balsamifera* ssp. *trichocarpa*), quaking aspen (*Populus tremuloides*), and Douglas-fir (*Pseudotsuga menziesii*). Shrubs are diverse and include redosier dogwood (*Cornus sericea*), thinleaf huckleberry (*Vaccinium membranaceum*), gray alder (*Alnus incana*), Rocky Mountain maple (*Acer glabrum*), rusty menziesia (*Menziesia ferruginea*), Sitka alder (*Alnus viridis* ssp. *sinuata*), prickly currant (*Ribes lacustre*), alderleaf buckthorn (*Rhamnus alnifolia*), and western Labrador tea (*Ledum glandulosum*). The herbaceous undergrowth can be lush or sparse, with characteristic species including bluejoint (*Calamagrostis canadensis*), ladyfern (*Athyrium filix-*

Appendix E. Habitat Target Descriptions. Continued.

femina), mountain sedge (*Carex scopulorum*), arrowleaf groundsel (*Senecio triangularis*), claspleaf twistedstalk (*Streptopus amplexifolius*), and softleaf sedge (*Carex disperma*).

Ruderal Flooded & Swamp Forest (M298)

M298. Interior West Ruderal Flooded & Swamp Forest



Montour WMA, Payette River, Idaho © 2012 Chris Murphy

Low-elevation riparian, lacustrine fringe (often human created), seeps and springs, or agricultural areas fed by irrigation throughout the interior Columbia River Basin, Great Basin, and southwestern U. S. and into Mexico that are dominated by nonnative invasive woody species. Abundant trees include Russian olive (*Elaeagnus angustifolia*), salt cedar (e.g., *Tamarix* spp.), and introduced broad-leaved deciduous trees including maple (*Acer* spp.), green ash (*Fraxinus pennsylvanica*), Plains cottonwood (*Populus deltoides*), willow (*Salix alba*, *S. fragilis*), and elm (*Ulmus* spp.). Invasive nonnative shrubs can be

common, such as false indigo (*Amorpha fruticosa*), rose (*Rosa* spp.), and Himalayan blackberry (*Rubus armeniacus*). Invasive and noxious weeds also occur (e.g., *Phalaris arundinacea*, *Elymus repens*, *Cirsium arvense*, *Conium maculatum*, *Solanum dulcamara*).

Lowland & Foothill Riparian Shrubland (G526)

G526. Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland



Shoofly Creek, Owyhee Plateau, Idaho © 2013 Chris Murphy



Willow Creek, South Fork Boise River, Idaho 2003 ©Ed Bottum

Foothill and lower montane riparian shrublands occurring along permanent, intermittent, and ephemeral streams. Sites range from steep-sided, v-shaped valleys and to broad, flat river valleys. Some stands are maintained by annual flooding. Settings range from dynamic alluvial bars to stable alluvial terraces, and from margins of floodplain Depressional Wetlands or sloped springs to created wetlands. A diverse mix of shrubs are present, especially willows (e.g., *Salix exigua*, *S. lasiolepis*, *S. lutea*), *S. lucida* ssp. *caudata*, *S. melanopsis*), water birch (*Betula occidentalis*), gray alder (*Alnus incana*), black hawthorn (*Crataegus douglasii*), Woods' rose (*Rosa woodsii*), Lewis' mock orange (*Philadelphus lewisii*), chokecherry (*Prunus virginiana*), common snowberry (*Symphoricarpos albus*), golden currant (*Ribes aureum*), redosier dogwood (*Cornus sericea*), and Rocky Mountain maple (*Acer glabrum*). The herbaceous layer is diverse, but cover varies depending on the density of the shrub overstory and amount of flood-scouring.

Important species include common horsetail (*Equisetum arvense*), blue wildrye (*Elymus glaucus*), common spikerush (*Eleocharis palustris*), stinging nettle (*Urtica dioica*), sedge (*Carex* spp.), goldenrod (*Solidago canadensis*, *Euthamia occidentalis*), wild mint (*Mentha arvensis*), smallfruit bulrush (*Scirpus microcarpus*), common ladyfern (*Athyrium filix-femina*), starry false lily of the valley (*Maianthemum stellatum*), sweetcicely (*Osmorhiza berteroi*), and fowl mannagrass (*Glyceria striata*). Introduced forage grasses and noxious weeds are often present.

Montane–Subalpine Riparian & Seep Shrubland (G527)

G527. Western Montane-Subalpine Riparian & Seep Shrubland



Crane Meadow, Elk Creek, Frank Church—River of No Return Wilderness, Idaho © 2007 Chris Murphy

Appendix E. Habitat Target Descriptions. Continued.



Pole Creek Exclosure RNA, Salmon River, Idaho © 2000 Ed Bottum



South Fork Boise River, Idaho © 2007
Chris Murphy



Bear River, North Fork Boise River, Idaho © 2004 Lisa Harloe

Montane to subalpine riparian shrublands on streambanks, springs, seeps, and alluvial terraces. Sites range from steep, narrow mountain valleys to wide, low-gradient glacial trough bottoms. Seasonal flooding from overbank flows and snowmelt is common, and floodplains vary from high energy to low energy, sinuous meadow channels. This type also occurs in springs, avalanche

Appendix E. Habitat Target Descriptions. Continued.

chutes, and lower montane areas with cold air drainage. Many riparian shrublands are associated with beaver activity. The most characteristic shrubs are willow (e.g., *Salix boothii*, *S. drummondiana*, *S. geyeriana*, *S. wolfii*, *S. planifolia*), gray alder (*Alnus incana*), redosier dogwood (*Cornus sericea*), Sitka alder (*Alnus viridis* ssp. *sinuata*), alderleaf buckthorn (*Rhamnus alnifolia*), currants (e.g., *Ribes* spp.), rose spiraea (*Spiraea douglasii*), Rocky Mountain maple (*Acer glabrum*), thimbleberry (*Rubus parviflorus*), twinberry honeysuckle (*Lonicera involucrata*), bog birch (*Betula glandulosa*), and shrubby cinquefoil (*Dasiphora floribunda*). The most important graminoids are bluejoint (*Calamagrostis canadensis*), sedge (*Carex* spp.), fowl mannagrass (*Glyceria striata*), smallfruit bulrush (*Scirpus microcarpus*), mountain rush (*Juncus arcticus* ssp. *littoralis*), and Kentucky bluegrass (*Poa pratensis*). The most characteristic forbs are lady fern (*Athyrium filix-femina*), heartleaf springbeauty (*Claytonia cordifolia*), common cow parsnip (*Heracleum maximum*), leafybract aster (*Symphotrichum foliaceum*), giant mountain aster (*Canadanthus modestus*), Columbian monkshood (*Aconitum columbianum*), arrowleaf groundsel (*Senecio triangularis*), and Lyall's angelica (*Angelica arguta*).

Xeric–Riparian Scrub (M095)

M095. Great Basin & Intermountain Xeric-Riparian Scrub



Birch Creek, Owyhee Front near Oreana, Idaho © 2006 Chris Murphy

Open shrublands along intermittently flooded washes found on sandy terraces, wash bottoms, basin floors, and occasionally ephemeral drainages on basalt bedrock. Large flood events are uncommon and unpredictable, but when they do occur massive amounts of sediment, rocks, and wood can be transported. Characteristic shrubs are tolerant of xeric conditions and include fourwing saltbush (*Atriplex canescens*), rubber rabbitbrush (*Ericameria nauseosa*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), greasewood (*Sarcobatus vermiculatus*), saltcedar (*Tamarix* spp.), skunkbush sumac (*Rhus trilobata*), arroyo willow (*Salix lasiolepis*), and low sagebrush (*Artemisia arbuscula*) (in rocky washes). Occasional trees may be present, primarily western juniper (*Juniperus occidentalis*) and peachleaf willow (*Salix amygdaloides*). Herbaceous cover is often minimal and comprised of upland shrubsteppe species and species tolerant of only occasional flooding. Nonnative annuals (e.g., *Bromus tectorum*) can be common.

Boreal Freshwater Shrubland, Wet Meadow & Marsh (M870) (in part)

M870. North American Arctic & Northern Boreal Freshwater Shrubland, Wet Meadow & Marsh (in part)

A diverse macrogroup ranging from boreal Alaska and western Canada, south into northern Idaho, Montana, northeast Washington. It occurs on floodplains, depressions, pond and lake margins, oxbows and abandoned channels, etc., and is characterized by hydrophytic graminoid species in emergent marshes, saturated meadows, and wet shrublands. Composition is similar to riparian shrublands and wet meadows of the Northern Rocky Mountains, but this macrogroup occurs in lower elevation, wider valley bottoms, with lower gradients. Common species include burreed (*Sparganium* spp.), water plantain (*Alisma* spp.), wapato (*Sagittaria* spp.), horsetails (*Equisetum* spp.), sedge (*Carex* spp.), various grasses, rushes (*Juncus* spp.) and bulrush (*Scirpus*, *Schoenoplectus*). Forbs and ferns are common. Shrubs are locally dominant near water courses, especially rose spiraea (*Spiraea douglasii*), gray alder (*Alnus incana*), willow (especially *Salix drummondiana* and *S. sitchensis*), black hawthorn (*Crataegus douglasii*), redosier dogwood (*Cornus sericea*), and common snowberry (*Symphoricarpos albus*).

Semi-natural Wet Shrubland, Meadow & Marsh (M301) (in part)

M301. Western North American Ruderal Wet Shrubland, Meadow & Marsh (in part)



Montour WMA, Payette River, Idaho © 2012 Chris Murphy

Disturbed wetland meadow, marsh, and shrubland habitats of temperate western North America strongly dominated by nonnative weedy species. Native species are low in abundance. Disturbance can include hay cultivation, severe grazing, past land clearing or industry, roads, logging, altered hydrology, and filling or draining. Dominant herbaceous species include introduced grasses, such as bentgrass (*Agrostis* spp.), meadow foxtail (*Alopecurus* spp.), reed canarygrass (*Phalaris arundinacea*), common reed

(*Phragmites australis*), and nonnative bluegrass (*Poa* spp.), and invasive forbs, including Canada thistle (*Cirsium arvense*), paleyellow iris (*Iris pseudacorus*), broadleafed pepperweed (*Lepidium latifolium*), poison hemlock (*Conium maculatum*), purple loosestrife (*Lythrum salicaria*), and others. Common nonnative shrubs include Himalayan blackberry (*Rubus armeniacus*), desert false indigo (*Amorpha fruticosa*), and rose (e.g., *Rosa* spp.).

Foothill & Canyon Meadow & Herbaceous Riparian Vegetation (Gxyz) (in part)

Gxyz. Rocky Mountain & Great Basin Foothill & Canyon Meadow, Seep & Herbaceous Riparian Vegetation (in part)



Middle Fork Boise River, Idaho
© 2004 Lisa Harloe



She Creek, Weiser River near Midvale, Idaho © 2007
Chris Murphy

Nonsaline seasonal wetlands at low elevations, below the transition to montane forests. This group consists of herb-dominated river bars, seep and spring-fed meadows, swales and intermittent drainages, as well as shallowly and seasonally flooded emergent wet meadows. Soils are typically seasonally wet or saturated, often groundwater driven, but completely drying by summer. The hydrology of some meadows is supplemented by irrigation. Graminoid species vary depending on site conditions, but mountain rush (*Juncus arcticus* ssp. *littoralis*), California oatgrass (*Danthonia californica*), sedges (*Carex* spp.), Sandberg bluegrass (*Poa secunda*), common spikerush (*Eleocharis palustris*), Sierra rush (*Juncus nevadensis*), Colorado rush (*Juncus confusus*), western wheatgrass (*Pascopyrum smithii*), meadow barley (*Hordeum brachyantherum*), wheatgrass or wildrye (*Elymus*, *Leymus* spp.), mat muhly (*Muhlenbergia richardsonis*), and threesquare (*Schoenoplectus pungens*) are characteristic. Forbs can be common to dominant, especially camas (*Camassia quamash*), mule-ears (*Wyethia* spp.), tall groundsel (*Senecio hydrophiloides*), slender cinquefoil (*Potentilla gracilis*), white sagebrush

Appendix E. Habitat Target Descriptions. Continued.

(*Artemisia ludoviciana*), horsetails (*Equisetum* spp.), and others. Introduced forage grasses and noxious weeds can be abundant.

Sagebrush Steppe

Tall or low-height sagebrush shrubland found from low elevation, semiarid settings to mesic and montane areas. Dwarf sagebrush steppe occurs on rocky ridges and benches, gravelly fans, and rocky slopes. Taxa includes black sagebrush (gravelly, calcareous soil), little sagebrush (shallow soil, underlain by clay), and scabland sagebrush (shallow, rocky soil, with buckwheat). Taller big sagebrush or threetip sagebrush steppe occurs on plains, alluvial fans, badlands, foothills, ridges, and mountains. Any subspecies of big sagebrush, each with climate and soil preferences, can dominate, sometimes with bitterbrush and rabbitbrush. The herb layer is grass-dominated, with Indian ricegrass, needle-and-thread, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass, and cheatgrass on xeric sites, and basin wildrye and mesic species on moist or montane sites. Forbs are diverse, their cover reflecting moisture availability. Microbiotic soil crust occurs on many sites.

Dwarf Sagebrush Shrubland & Steppe (M170)

M170. Great Basin & Intermountain Dwarf Sagebrush Shrubland & Steppe



Owyhee Mountains, Idaho © 2013 Tim Weekley

Broadly defined semiarid dwarf shrubland and steppe occurs on sites such as windblown ridges and benches, gravelly alluvial fans, hilltops, canyons, and rocky slopes. Soils are typically shallow. The shrub layer is dominated by short-height sagebrush taxa, such as black sagebrush (*Artemisia nova*) and prairie sagewort (*Artemisia frigida*) (on gravelly, calcareous soils), little sagebrush (*Artemisia arbuscula* ssp. *arbuscula*) (on shallow soils underlain by clay), early sagebrush (*Artemisia arbuscula* ssp. *longiloba*) and Owyhee sage (*Artemisia papposa*) (on shallow ± alkaline clay), and scabland sagebrush (*Artemisia rigida*) on shallow, poorly drained, lithic soil, often co-occurring with buckwheats (e.g., *Eriogonum sphaerocephalum*, *E. thymoides*). Characteristic grasses include Indian ricegrass (*Achnatherum hymenoides*), onspike danthonia

Appendix E. Habitat Target Descriptions. Continued.

(*Danthonia unispicata*), Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). Scattered forbs may include onion (*Allium*), pussytoes (*Antennaria*), balsamroot (*Balsamorhiza*), desertparsley (*Lomatium*), phlox (*Phlox*), and stonecrop (*Sedum*).



Camas Prairie near Fairfield, Idaho © 2008 Chris Murphy

Tall Sagebrush Shrubland & Steppe (M169)

M169. Great Basin & Intermountain Tall Sagebrush Shrubland & Steppe



Shoofly Creek, Owyhee Plateau, Idaho © 2013 Chris Murphy

Appendix E. Habitat Target Descriptions. Continued.



Boise River WMA, Lucky Peak Reservoir, Idaho © 2015 Chris Murphy



Hawley Mountain, Lost River Range, Idaho © 2008 Chris Murphy



Raft River, Idaho © 2006 Idaho Natural Heritage Program



South Hills, Idaho © 2004 Idaho Natural Heritage Program

Widely distributed sagebrush shrubland and shrubsteppe vegetation. Sites range from low elevation and semiarid settings to mesic and montane areas. Stands occur on flat to steep uplands and mountains, broad ridgetops, alluvial fans and terraces, draws, badlands, foothills, and plains. Dominance by any of several subspecies of big sagebrush (*Artemisia tridentata*), each with environmental and soil preferences, or threetip sagebrush (*Artemisia tripartita* ssp. *tripartita*) is characteristic.

Antelope bitterbrush (*Purshia tridentata*) is common, while deciduous shrubs, such as Utah serviceberry (*Amelanchier utahensis*) and western snowberry (*Symphoricarpos oreophilus*) co-occur in mesic and montane sites. The herbaceous layer varies, with Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and others on xeric sites, and California brome (*Bromus carinatus*), elk sedge (*Carex geyeri*), basin wildrye (*Leymus cinereus*), and others on mesic or montane sites. Forbs are diverse, ranging from sparse on xeric sites to lush wildflower displays on mesic and montane sites. Common forbs include milkvetch (*Astragalus* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), Indian paintbrush (*Castilleja* spp.), hawksbeard (*Crepis* spp.), fleabane (*Erigeron* spp.), buckwheat (*Eriogonum* spp.), lupine (*Lupinus* spp.), pricklypear cactus (*Opuntia polyacantha*), penstemon (*Penstemon* spp.), phlox (*Phlox* spp.), globemallow (*Sphaeralcea* spp.), and many others. Cheatgrass (*Bromus tectorum*) and other nonnative annuals dominate the understory of disturbed stands. Microbiotic soil crust is also important on many sites.

Semi-Desert Shrubland & Steppe–Saltbush Scrub

Open shrubland, dwarf-scrub, and fire-maintained grassland in semiarid and arid settings such as alluvial fans, canyons, basins, old dunes, benchlands, badlands, break slopes, and playa edges. Soils are sandy and gravelly alluvial or lacustrine deposits (often saline or alkaline). Typical shrubs are shadscale, winterfat, rabbitbrush, horsebrush, and bud sagebrush. The herb layer has low cover of highly drought tolerant bunchgrass and forbs.

Dry Shrubland and Grassland (M171)

M171. Great Basin & Intermountain Dry Shrubland & Grassland



Lower Salmon River, Idaho © 2007 Chris Murphy



Owyhee Front near Oreana, Idaho © 2010 Idaho Natural Heritage Program



Boise foothills, Idaho © 2007 Chris Murphy

Semiarid or arid open shrubland, dwarf-shrub, grassland, and sparse vegetation found throughout the Intermountain West, extending to the western Great Plains. Settings include windswept mesas, canyons, benchlands, colluvial slopes, alluvial fans and flats, basins and sandy plains, and dunes, with sedimentary or volcanic underlying geology. Soils vary from fine-textured to sandy or rocky. Characteristic shrubs are yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush (*Ericameria nauseosa*), and horsebrush (*Tetradymia* spp.).

Wide-ranging shrubs indicative of saltbush scrub or sagebrush steppe may be present but not dominant. This macrogroup includes natural, sometimes fire-maintained grasslands in low elevation, semiarid areas (e.g., hot river canyon bottoms). The herbaceous layer is sparse to moderately dense and characterized by Indian ricegrass (*Achnatherum hymenoides*), purple threeawn (*Aristida purpurea*), needle-and-thread (*Hesperostipa comata*), Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and sand dropseed (*Sporobolus cryptandrus*). Forb cover is sparse.

Saltbush Scrub (M093)

M093. Great Basin Saltbush Scrub



Owyhee Front near Oreana, Idaho © 2010 Idaho Natural Heritage Program



East Canyon, Lemhi Range foothills near Howe, Idaho © 2008 Chris Murphy

Widely occurring semidesert shrublands occurring on arid alluvial fans and terraces, mesas and plateaus, playa edges, and bluff slopes. Soils are typically saline and alkaline, often (but not always) derived from calcareous rock and or alluvium. The soil surface can be barren of litter but are sometimes covered by microbial crust. Dominant shrubs are fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), Gardner's saltbush (*Atriplex gardneri*), winterfat (*Krascheninnikovia lanata*), shortspine horsebrush (*Tetradymia spinosa*), bud sagebrush (*Picrothamnus desertorum*), and spiny

hopsage (*Grayia spinosa*). Indian ricegrass (*Achnatherum hymenoides*), squirreltail (*Elymus elymoides*), needle-and-thread (*Hesperostipa comata*), saline wildrye (*Leymus salinus*), Sandberg bluegrass (*Poa secunda*), and cheatgrass (*Bromus tectorum*) are common grasses, but usually have low cover. Forb cover is sparse.

Sparsely Vegetated Dune Scrub & Grassland

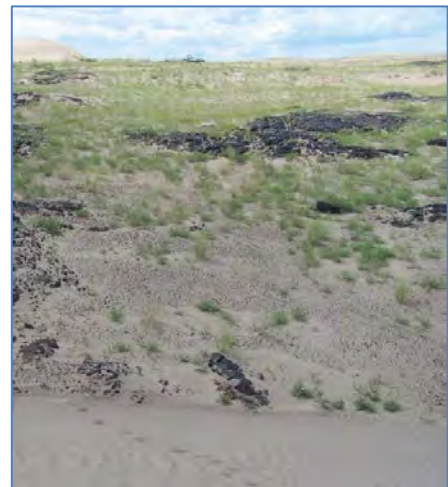
Unvegetated to sparsely vegetated (<10% cover) active and partially stabilized sand dunes. Species are adapted to shifting sand and form patchy grasslands, sparse scrub, or clusters of perennial or annual forbs.

Sparsely Vegetated Dune Scrub & Grassland (G775)

G775. Intermountain Sparsely Vegetated Dune Scrub & Grassland



Bruneau Dunes State Park, Snake River, Idaho © 2007 Idaho Natural Heritage Program



St. Anthony Sand Dunes, Sand Creek WMA, Idaho © 2014 Ty Clayton

Appendix E. Habitat Target Descriptions. Continued.

Unvegetated to sparsely vegetated (<10% cover) active and partially stabilized sand dunes. Species are adapted to shifting sand and form patchy grasslands or sparse scrub. Characteristic species are needle-and-thread (*Hesperostipa comata*), Indian ricegrass (*Achnatherum hymenoides*), yellow wildrye (*Leymus flavescens*), and lemon scurfpea (*Psoralidium lanceolatum*). The most common shrubs are basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), rubber rabbitbrush (*Ericameria nauseosa*), bitterbrush (*Purshia tridentata*), and chokecherry (*Prunus virginiana*). Perennial forbs with low cover include Franklin's sandwort (*Arenaria franklinii*), white sand verbena (*Abronia mellifera*), veiny dock (*Rumex venosus*), common starlily (*Leucocrinum montanum*), evening primrose (*Oenothera* spp.), and Blue Mountain prairieclover (*Dalea ornata*). Annuals occur after periods of favorable precipitation.

Springs & Groundwater-Dependent Wetlands

Wetlands primarily supported by groundwater, either subsurface fluctuations and/or surface discharge. Sites are typically seeps and springs on gentle to steep slopes, but also include high groundwater and upwellings in flat basins. Wetlands include acidic to alkaline peatland fens, forming in cold and persistently saturated settings, supporting specially adapted mosses and plants. Marshes, meadows, and shrublands consisting of salt tolerant plants (e.g., greasewood, saltgrass, etc.) occur on alkaline and/or saline soil with high groundwater. They form where evaporation far exceeds precipitation. Seasonally and shallowly flooded to saturated wet meadows occur in basins and on gentle slopes at all elevations, fed by snow, seeps, and springs. Meadows are often dominated by rhizomatous graminoids, such as sedges, grasses, and rushes. Forbs are diverse and often lush. Swamp forests and wet shrublands (similar to riparian areas) are also supported by seeps and springs.

Bog & Acidic Fen (G284)

M876. North American Boreal & Sub-Boreal Acidic Bog & Fen



Tranquil Basin, Deadwood River, Idaho © 2004 Lisa Harloe

Appendix E. Habitat Target Descriptions. Continued.



Banner Creek Fen, Middle Fork Salmon River, Idaho
© 2004 Lisa Harloe



Lava Butte RNA, Little French Creek, Salmon River, Idaho
© 2005 Lisa Harloe

Bogs and fens with peat depths typically exceeding 30 cm extending south from boreal North America into sub-boreal regions of the Pacific Maritimes and Rocky Mountains, the Great Lakes region, and northeast U. S. The pH of acidic fens ranges from 4 to 6. These fens form on slopes with groundwater discharge (e.g., springs) and on floating or anchored mats in kettle ponds, subalpine lakes, or valley lakeshores. As peat accumulates, ridges or mounds may form, often occurring perpendicular to the direction of groundwater flow. This macrogroup is often dominated by a

layer of *Sphagnum* mosses, often with ericaceous shrubs such as bog blueberry (*Vaccinium uliginosum*) and alpine laurel (*Kalmia microphylla*), thin-leaved graminoids (e.g., *Carex* spp., *Eleocharis quinqueflora*, *Eriophorum angustifolium*), various adapted forbs (e.g., *Menyanthes trifoliata*, *Comarum palustre*, *Tofieldia glutinosa*), and insectivorous plants (e.g., *Drosera anglica*).

Neutral–Alkaline Fen (G285)

M877. North American Boreal & Sub-Boreal Alkaline Fen



Mays Creek Fen, Sawtooth Valley Peatlands RNA, Salmon River, Idaho © 2007 Chris Murphy



Birch Creek Fen, Birch Creek, Idaho © 2008 Lisa Harloe

Groundwater fed peatlands usually occurring on calcareous parent materials found across boreal North America, extending south into sub-boreal regions of the Rocky Mountains, Great Lakes, and northeastern and north-central U. S. These fens have peat depths of at least 30 cm and pH from 6 to 7.5, and develop on sloped springs and basin upwellings. They also occur as floating mats on kettle ponds or lake margins. Some fens with very high pH (>7.5) may accumulate marl. *Sphagnum* peatmoss and ericaceous shrubs are patchy to absent. Brown mosses, broad-leaved non-ericaceous shrubs including, gray alder (*Alnus incana*), bog birch

(*Betula glandulosa*), shrubby cinquefoil (*Dasiphora floribunda*), and willow (*Salix* spp.), thin-leaved graminoids (e.g., *Carex* spp., *Eleocharis quinqueflora*, *Trichophorum* spp., *Triglochin* spp.), and specialized forbs are common.

Alkaline–Saline Wetland (M082)

M082. Warm and Cool Semi-Desert Alkaline–Saline Wetland



Bear Lake NWR, Idaho © 2013 Chris Murphy



Roswell WHA, Snake River near Parma, Idaho © 2012 Chris Murphy

Marshes, wet meadows, and shrublands on alkaline and/or saline soils found throughout much of western North America where evaporation far exceeds precipitation. Sites range from sloped seeps and springs (most commonly) to drainages and pond and playa margins. Flooding or saturation varies, but high groundwater is typical. Vegetation is salt-tolerant. Characteristic shrubs include greasewood (*Sarcobatus vermiculatus*), shrubby cinquefoil (*Dasiphora floribunda*), iodinebush (*Allenrolfea occidentalis*) (locally), and saltbush (*Atriplex* spp.). Abundant herbaceous species are saltgrass (*Distichlis spicata*), alkali sacaton (*Sporobolus airoides*),

bulrush (*Schoenoplectus*, *Scirpus*), clustered field sedge (*Carex praegracilis*), mountain rush (*Juncus arcticus* ssp. *littoralis*), muhly (*Muhlenbergia* spp.), beaked spikerush (*Eleocharis rostellata*), alkaligrass (e.g., *Puccinellia* spp.), barley (*Hordeum* spp.), wildrye (e.g., *Leymus triticoides*, *L. cinereus*), seaside arrowgrass (*Triglochin maritima*), red glasswort (*Salicornia rubra*), and seepweed (*Suaeda* spp.). Disturbed sites have high amounts of nonnative species, such as kochia (*Bassia* spp.), perennial sowthistle (*Sonchus arvensis*), perennial pepperweed (*Lepidium latifolium*), and tall wheatgrass (*Thinopyrum ponticum*).

Montane Wet Meadow (G521)

G521. Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh



Elk Meadows, Little French Creek, Salmon River, Idaho © 2005 Lisa Harloe



Needles RNA, Gold Fork River, North Fork Payette River, Idaho © 2004 Lisa Harloe

Wet meadows in montane to subalpine settings such as glacial outwash basins, glacial trough valleys, beaver ponds, lakeshores, stream terraces, and toeslope seeps and springs. Sites are seasonally shallowly flooded to saturated, often drying by late summer. Wet meadows can be tightly associated with snowmelt and groundwater. Soils are mostly mineral and hydric soil. Meadows are often dominated by tufted hairgrass (*Deschampsia caespitosa*) and/or densely rhizomatous graminoid species, such as water sedge (*Carex aquatilis*), Northwest Territory sedge (*Carex utriculata*) (or other sedges), bluejoint (*Calamagrostis*

canadensis), and mountain rush (*Juncus arcticus* ssp. *littoralis*). Forb species are diverse and include Sierra shooting star (*Dodecatheon jeffreyi*), aster (*Symphyotrichum* spp.), globe penstemon (*Penstemon globosus*), cinquefoil (*Potentilla* spp.), white marsh marigold (*Caltha leptosepala*), camas (*Camassia quamash*), elephanthead (*Pedicularis groenlandica*), and bistort (*Polygonum bistortoides*). Montane marshes, flooded more deeply and persistently than wet meadows can form behind beaver dams and along shorelines of lakes. Shrubs, such as short willows (*Salix* spp.), shrubby cinquefoil (*Dasiphora floribunda*), bog blueberry (*Vaccinium uliginosum*), and bog birch (*Betula glandulosa*), can be locally abundant. Nonnative grasses are common in disturbed meadows.

Foothill & Canyon Seep Herbaceous Vegetation (Gxyz)

Gxyz. Rocky Mountain & Great Basin Foothill & Canyon Meadow, Seep & Herbaceous Riparian Vegetation



Duck Valley Indian Reservation, East Fork Owyhee River, Idaho © 2005 Chris Murphy



Bacon Creek, Weiser River near Cambridge, Idaho © 2007 Chris Murphy

Nonsaline seasonal wetlands at low elevations, below the transition to montane forests. This group consists of herb-dominated river bars, seep and spring-fed meadows, swales and intermittent drainages, as well as shallowly and seasonally flooded emergent wet meadows. Soils are typically seasonally wet or saturated, often groundwater driven, but completely drying by summer. The hydrology of some meadows is supplemented by irrigation. Graminoid species vary depending on site conditions, but mountain rush (*Juncus arcticus* ssp. *littoralis*), California oatgrass (*Danthonia californica*), sedges (*Carex* spp.), Sandberg bluegrass (*Poa secunda*), common spikerush (*Eleocharis palustris*), Sierra rush (*Juncus nevadensis*), Colorado rush (*Juncus confusus*), western wheatgrass (*Pascopyrum smithii*), meadow barley (*Hordeum brachyantherum*), wheatgrass or wildrye (*Elymus*, *Leymus* spp.), mat muhly (*Muhlenbergia richardsonis*), and threesquare (*Schoenoplectus pungens*) are characteristic. Forbs can be common to dominant, especially camas (*Camassia quamash*), mule-ears (*Wyethia* spp.), tall groundsel (*Senecio hydrophiloides*), slender cinquefoil (*Potentilla gracilis*), white sagebrush (*Artemisia ludoviciana*), horsetails (*Equisetum* spp.), and others. Introduced forage grasses and noxious weeds can be abundant.

Swamp Forest (G505) (in part)

G505. Rocky Mountain & Great Basin Swamp Forest (in part)



Moose Creek, Frank Church-River of No Return Wilderness, Idaho © 2006 Kristin Williams



Belvidere Creek RNA, Big Creek, Salmon River Mountains, Idaho © 2008 Chris Murphy

Swamp forests on poorly drained peaty or mucky soils that are saturated or seasonally flooded, occurring in river floodplain oxbows, overflow channels, or glacial kettles, as well as on sloped seeps and springs. Abundant tree species include Engelmann spruce (*Picea engelmanni*), western redcedar (*Thuja plicata*), paper birch (*Betula papyrifera*), lodgepole pine (*Pinus contorta*), and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*). Characteristic shrubs include gray alder (*Alnus incana*), western Labrador tea (*Ledum glandulosum*), devilsclub (*Oplopanax horridus* [Sm.] Miq.), willows (*Salix* spp.), rose spiraea (*Spiraea douglasii*), and bog blueberry (*Vaccinium uliginosum*). Typical herbaceous species include bluejoint (*Calamagrostis canadensis*), sedges (*Carex* spp.), Jeffrey's shootingstar (*Dodecatheon jeffreyi*), field horsetail (*Equisetum arvense*), American skunkcabbage (*Lysichiton americanus*), high mountain cinquefoil (*Potentilla flabellifolia*), groundsels (*Packera* spp., *Senecio* spp.), claspleaf twistedstalk (*Streptopus amplexifolius*), and ferns.

Montane–Subalpine Seep Shrubland (G527) (in part)

G527. Western Montane-Subalpine Riparian & Seep Shrubland (in part)



Crooked Creek, Beaverhead Mountains, Idaho
© 2004 Ed Bottum

Montane to subalpine riparian shrublands on streambanks, springs, seeps, and alluvial terraces. Sites range from steep, narrow mountain valleys to wide, low-gradient glacial trough bottoms. Seasonal flooding from overbank flows and snowmelt is common, and floodplains vary from high energy to low energy, sinuous meadow channels. This type also occurs in springs, avalanche chutes, and lower montane areas with cold air drainage. Many riparian shrublands are associated with beaver activity. The most characteristic shrubs are willow (e.g., *Salix boothii*, *S. drummondiana*, *S. geyeriana*, *S. wolfii*, *S. planifolia*), gray alder (*Alnus incana*),

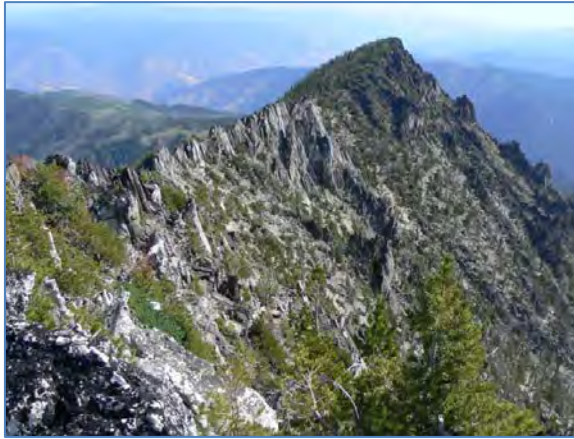
redosier dogwood (*Cornus sericea*), Sitka alder (*Alnus viridis* ssp. *sinuata*), alderleaf buckthorn (*Rhamnus alnifolia*), currants (e.g., *Ribes* spp.), rose spiraea (*Spiraea douglasii*), Rocky Mountain maple (*Acer glabrum*), thimbleberry (*Rubus parviflorus*), twinberry honeysuckle (*Lonicera involucrata*), bog birch (*Betula glandulosa*), and shrubby cinquefoil (*Dasiphora floribunda*). The most important graminoids are bluejoint (*Calamagrostis canadensis*), sedge (*Carex* spp.), fowl mannagrass (*Glyceria striata*), smallfruit bulrush (*Scirpus microcarpus*), mountain rush (*Juncus arcticus* ssp. *littoralis*), and Kentucky bluegrass (*Poa pratensis*). The most characteristic forbs are lady fern (*Athyrium filix-femina*), heartleaf springbeauty (*Claytonia cordifolia*), common cow parsnip (*Heracleum maximum*), leafybract aster (*Symphyotrichum foliaceum*), giant mountain aster (*Canadanthus modestus*), Columbian monkshood (*Aconitum columbianum*), arrowleaf groundsel (*Senecio triangularis*), and Lyall's angelica (*Angelica arguta*).

Subalpine–High Montane Conifer Forest

High elevation montane and subalpine forests and woodland. Dominant trees are subalpine fir, Engelmann spruce, whitebark pine, lodgepole pine, limber pine, subalpine larch (locally), and mountain hemlock (maritime climate areas). Subalpine to treeline is influenced by wind, snow deposition, severe cold, and avalanches; stand-replacing fire is a major disturbance in the upper montane. Most understories include species adapted to dry, cool summers and cold, snowy winters, although wetter sites support heath and mesic herbs.

Subalpine–High Montane Conifer Forest (M020)

M020. Rocky Mountain Subalpine–High Montane Conifer Forest



Patrick Butte RNA, Salmon River, Idaho © 2010 Chris Murphy



Big Windy Peak, Lemhi Mountains, Idaho © 2014 Jessica Irwin



Redfish Lake Moraine RNA, Sawtooth Mountains, Idaho © 2005 Steve Rust



Coolwater Ridge, Selway River ©Kristen Pekas 2014

High elevation montane and subalpine forests and woodland found throughout the mountainous regions of the western U. S. and southwestern Canada. Characteristic trees are subalpine fir (*Abies lasiocarpa*), subalpine larch (*Larix lyallii*), Engelmann spruce (*Picea engelmannii*), whitebark pine (*Pinus albicaulis*), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), quaking aspen (*Populus tremuloides*), and mountain hemlock (*Tsuga mertensiana*) (in maritime-influenced climate areas). Subalpine zones are influenced by wind, snow deposition, severe cold, and avalanches, while stand-replacing fire is a major disturbance in upper montane zones. The understory is a mix of species adapted to dry, cool summers and cold, snowy winters, including common juniper (*Juniperus communis*), grouse whortleberry (*Vaccinium scoparium*), rusty menziesii (*Menziesia ferruginea*), pink mountainheath (*Phyllodoce empetriformis*), bluejoint (*Calamagrostis canadensis*) (where water table is high), pinegrass

Appendix E. Habitat Target Descriptions. Continued.

(*Calamagrostis rubescens*), Geyer's sedge (*Carex geyeri*), Hitchcock's smooth woodrush (*Luzula glabrata* var. *hitchcockii*), white marsh marigold (*Caltha leptosepala*), claspleaf twistedstalk (*Streptopus amplexifolius*), and common beargrass (*Xerophyllum tenax*).



Trinity Mountain RNA, Trinity Mountains, Idaho © 2004 Lisa Harloe



Bruin Mountain RNA, Little French Creek, Salmon River, Idaho ©Chris Murphy 2009

Subalpine–Montane Mesic Meadow

Montane and subalpine meadows on toeslopes and basin margins. They are dominated by perennial graminoids (e.g., grasses, sedges) and a diverse, lush mix of forbs. Sites are seasonally saturated by snowmelt, but are dry by early summer. They are drier than wet meadows and wetter than montane grasslands.

Subalpine–High Montane Mesic Meadow (M168)

M168. Rocky Mountain & Vancouverian Subalpine–High Montane Mesic Meadow

Montane and subalpine mesic meadows from the Rocky Mountains (north and south), west to the Sierra Nevada and eastern Cascades. Sites are seasonally saturated by snowmelt, but are drier than wet meadows (which sometimes occur downslope), yet in wetter positions (e.g., swales, toeslopes, snow accumulation sites) than montane grasslands. Vegetation is composed of low (<1 m) perennial graminoids and/or a diverse and lush mix of forbs. Timber oatgrass (*Danthonia intermedia*), tufted hairgrass (*Deschampsia caespitosa*), and sedges (*Carex* spp.) are characteristic graminoid species. Abundant forbs include yarrow (*Achillea millefolium*), small camas (*Camassia quamash*), fireweed (*Chamerion angustifolium*), fleabane (*Erigeron* spp.), licorice-root (*Ligusticum* spp.), bluebells (*Mertensia* spp.), cinquefoil (*Potentilla* spp.), groundsel

Appendix E. Habitat Target Descriptions. Continued.

(*Senecio* spp.), goldenrod (*Solidago* spp.), aster (*Eucephalus*, *Symphyotrichum* spp.), western meadowrue (*Thalictrum occidentale*), and mountain deathcamus (*Zigadenus elegans*).



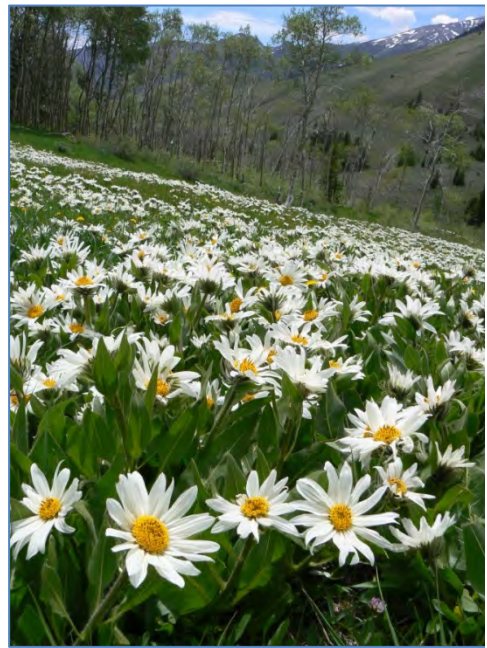
Crane Meadow, Elk Creek, Frank Church-River of No Return Wilderness, Idaho © 2007 Chris Murphy



Sheephorn Mountain, Salmon River, Idaho © 2010 Chris Murphy



Hidden Lake, Little Salmon River, Idaho © 2009 Chris Murphy



Pass Creek, Lost River Range, Idaho © 2008 Chris Murphy