INTRODUCTION

Keys to Ecological Systems

Upland

Upland ecological systems generally occupy drier areas on the landscape, where the surface is wet only for short periods after precipitation events (e.g. rainfall, snowmelt, runoff). Water table levels are usually not near the surface. Dominant plant species are not those usually found in wetland areas..... **UPLAND KEY**

Wetland or Riparian

Wetland ecological systems occur in areas with hydric soils, that are permanently or seasonally saturated with water. Dominant species are those typically associated with wetlands. Riparian ecological systems are directly adjacent to surface waters such as streams or lakes, and dominant species are tolerant of occasional saturated and/or flooded conditions... **WETLAND/RIPARIAN KEY**

UPLAND KEY

1a. Trees present and forming a characteristic part of the system. Trees are generally single-stemmed, woody plants more than 13 ft (4 m) tall, but may occur as dwarf-forms. May be deciduous or evergreen. ..... **Key A - Forest, Woodland and Savanna Systems**

1b. Trees absent, or only a very few widely scattered individuals/clumps present. ..... **(2)**

2a. Systems of high elevation areas (alpine), generally above 11,000 ft. May have snow cover present for much of the year, may be vegetated or essentially barren. ..... **Key B – Alpine Systems**

2b. Systems of lower elevations, generally below 11,000 ft. ..... **(3)**

3a. Vegetation extremely sparse (generally less than 10% cover), bare rock or soil dominant. Vegetation may be confined to small pockets where soil has formed in crevices, or may consist of widely scattered individuals/clumps in an otherwise unvegetated landscape. ..... **Key C – Sparse or barren systems**

3b. Systems generally not dominated by bare rock or soil, generally well vegetated and dominated by shrubs or herbaceous plants, although vegetation may still appear rather sparse in some areas. ..... **(4)**

4a. Systems dominated by woody shrubs (generally multi-stemmed or branched near the base, less than 13 ft tall, but may occasionally appear as tree-form) ..... **Key D – Shrubland and Steppe systems**

4b. Systems dominated by grasses, forbs. ..... **Key E – Grassland systems**

Upland Key A: Forest, Woodland and Savanna

1a. Trees present, with generally closed canopy, may have occasional openings, or form clumps of stunted trees below alpine areas. Dominant species include Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), white fir (*A. concolor*), aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), bristlecone pine (*P. aristata*), limber pine (*P. flexilis*), and Douglas-fir (*Pseudotsuga menziesii*). Elevations generally above 8,000 ft (montane to subalpine)..... Forest -Woodland **(2)**

1b. Tree cover less than above but still forming the characteristic overstory of the system (i.e., not shrub dominated), generally open canopy, frequent openings, or scattered, park-like, etc. Dominant species include Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), limber pine (*Pinus flexilis*), ponderosa pine (*P. ponderosa*), pinyon pine (*P. edulis*), and juniper (*Juniperus* spp.). Elevations generally below 8,000 ft. ..... Woodland - Savanna **(10)**

2a. Conifer dominated – elevations montane to subalpine. ..... **(3)**

2b. Deciduous dominated or mixed coniferous-deciduous (if oak or curl-leaf mountain mahogany is dominant, go to 9). ..... **(6)**

3a. Dominated by Engelmann spruce and/or alpine fir..... **(4)**

3b. Dominated by lodgepole pine, bristlecone pine, or limber pine. (if other conifers such as ponderosa pine, Douglas-fir, white fir, and/or quaking aspen are common, go to 7). ..... **(5)**

4a. Matrix forest of subalpine areas in dry to mesic sites, or large-patch subalpine conifer forests characteristic of relatively mesic local environments (e.g., north-facing slopes, ravines, cold-air drainages, and other locations where available soil moisture is higher or lasts longer into the growing season. Canopy formed primarily by Engelmann spruce (*Picea engelmannii*) with subalpine fir (*Abies lasiocarpa*), some lodgepole pine (*Pinus contorta*) or other conifers may be present. May form scattered clumps of stunted shrub-forms (krummholz) below alpine areas..... **Rocky Mountain Subalpine Spruce-Fir Forest and Woodland**

4b. Wooded areas where snow slides are frequent, characterized by a moderately dense, woody canopy of dwarfed and damaged conifers and small, deciduous trees or shrubs. ..... **Northern Rocky Mountain Avalanche Chute Shrubland**

5a. Dominated by lodgepole pine (*Pinus contorta*), although other conifer species may be present, generally at elevations between 8,000 and 10,000 ft. Lodgepole pine dominated areas may intergrade with forest types of higher or lower elevations. ..... **Rocky Mountain Lodgepole Pine Forest**

5b. Dominated by limber pine (*Pinus flexilis*) or bristlecone pine (*Pinus aristata*, from Clear Creek county south). Generally open (occasionally closed) canopy woodlands of dry, rocky environments at montane to subalpine elevations. May form scattered clumps of stunted shrub-forms below alpine areas. ..... **Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland**

6a. Mixed forests and woodlands of various conifer species and/or aspen..... **(7)**

6b. Closed to open canopy forests and woodlands dominated by quaking aspen (*Populus tremuloides*) without a significant conifer component (<25%). Understory is variable from mesic to xeric herbaceous or shrubby. .....**Rocky Mountain Aspen Forest and Woodland**

7a. Mixed aspen-conifer forests and woodlands of western Colorado plateaus and central Colorado montane slopes where aspen codominates with any of a number of conifers, including Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), alpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), blue spruce (Picea pungens), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), and ponderosa pine. (*Pinus ponderosa*). ..... **Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland**

7b. Mixed conifer forests and woodlands of montane elevations where aspen may be present, but not dominant. ..... **(8)**

8a. Mixed conifer forests and woodlands of dry to mesic environments. Common tree species most commonly include Douglas-fir (*Pseudotsuga menziesii*) and white fir (*Abies concolor*), but these mixed-species forests may also include Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and limber pine (*Pinus flexilis*), blue spruce (*Picea pungens*). Stands may be intermixed with other forest types dominated by ponderosa pine (*Pinus ponderosa*) or quaking aspen (*Populus tremuloides*) ..... **Southern Rocky Mountain Montane Mixed Conifer Forest and Woodland**

8b. Montane or lower elevation (below 9,500 ft) woodlands, canyonlands, or savannas dominated by pines, junipers, oak, mixed montane shrubs, or curl-leaf mountain-mahogany (*Cercocarpus ledifolius*)..... **(9)**

9a. Pine dominated open to closed woodlands of foothills, mountain slopes and western plateaus/valleys. ..... **(10)**

9b. Deciduous dominated large patch woodlands or tall shrublands. ..... **(18)**

10a. Dominated by ponderosa pine (*Pinus ponderosa*), bristlecone pine (*P. aristata*), or limber pine (*P. flexilis*), although other conifer species or occasional stands of quaking aspen (*Populus tremuloides*) may be present..... **(11)**

10b. Dominated by pinyon pine and/or juniper. ..... **(14)**

11a. Limber pine (*Pinus flexilis*) is dominant or codominant with bristlecone pine (*P. aristata*) at higher elevations or juniper (*Juniperus* spp.) at lower elevations. ..... **(12)**

11b. Ponderosa pine (*Pinus ponderosa*) dominant..... **(13)**

12a. Dominated by limber pine (*Pinus flexilis*) or bristlecone pine (*P. aristata*, Clear Creek county and south). Generally open (occasionally closed) canopy woodlands of dry, rocky environments at montane to subalpine elevations. May form scattered clumps of stunted shrub-forms below alpine areas. ..... **Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland**

12b. Bristlecone pine (*Pinus aristata*) absent. Limber pine (*P. flexilis*) dominant to co-dominant with juniper. Open woodlands of lower montane, foothills and scarps of eastern Colorado… ..... **Rocky Mountain Foothill Limber Pine-Juniper Woodland**

13a. Open to closed canopy ponderosa pine (*Pinus ponderosa*) forests and woodlands of montane elevations, or open, park-like savannas, often along the mountain front transition to lower elevation shrublands or grasslands, characterized by widely spaced older ponderosa pines. ..... **Southern Rocky Mountain Ponderosa Pine Woodland and Savanna**

13b. Ponderosa pine dominant in places, but occurring with other tree species, including Douglas-fir (*Pseudotsuga menziesii*), Rocky Mountain juniper (*Juniperus scopulorum*), and limber pine (*Pinus flexilis*). ..... **Southern Rocky Mountain Montane Mixed Conifer Forest and Woodland**

14a. Pinyon pine (*Pinus edulis*) and/or Utah juniper (*Juniperus osteosperma*) dominated woodlands of western Colorado..... **(15)**

14b. Pinyon pine (*Pinus edulis*) and/or one-seed juniper (*Juniperus monosperma*) dominated woodlands or canyonlands of south-central or eastern Colorado. ..... **(16)**

15a. Widespread, characteristic mixed pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) woodlands of warm, dry sites on mountain slopes, mesas, plateaus, and ridges throughout western Colorado. Understories are highly variable and may be sparse, grassy, or shrubby. Trees may be stunted, shrub-form, and generally confined to pockets of soil on rocky substrates (see Key C for very sparsely vegetated areas). ..... **Colorado Plateau Pinyon-Juniper Woodland and Shrubland**

15b. Open savannas or occasionally more dense woodlands of Utah juniper (*Juniperus osteosperma*) in northwestern Colorado where pinyon pine (*Pinus edulis*) is not present. Generally on lower mountain slopes, hills, plateaus, basins and flats, often where juniper is adjacent to semi-desert grasslands and steppe. ..... **Inter-Mountain Basins Juniper Savanna**

16a. Mixed pinyon pine (*Pinus edulis*) and one-seed juniper (*Juniperus monosperma*) woodlands of dry mountains and foothills in southern Colorado, east of the continental divide, generally not extending far from the mountain front. ..... **Southern Rocky Mountain Pinyon-Juniper Woodland**

16b. Juniper dominated woodlands and savannas of eastern Colorado..... **(17)**

17a. Open grassy woodlands and savannas generally of expansive, flatter areas, but also on slopes of small bluffs and outcrops..... **Southern Rocky Mountain Juniper Woodland and Savanna**

17b. Mixed woodlands of the canyons of the Purgatoire River and nearby drainages, and on the Mesa de Maya. Occasional pinyon pine (*Pinus edulis*) or other conifers may be present in the canyons, but one-seed juniper (*Juniperus monosperma*) or Rocky Mountain juniper (*J. scopulorum*) are the characteristic overstory species. Other woody vegetation may include skunkbush sumac (*Rhus trilobata*), currant (*Ribes* spp.), common hoptree (*Ptelea trifoliata*), and littleleaf mock orange (*Philadelphus microphyllus*). ..... **Southwestern Great Plains Canyon**

18a. Open to dense woodlands and shrublands of rocky ridges and scarps, dominated by curl-leaf mountain mahogany (*Cercocarpus ledifolius*). This species is typically shrub-form, but forms dense woodlands of small trees in northwestern Colorado in the vicinity of Dinosaur NM. Scattered individuals of taller tree species including Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), quaking aspen (*Populus tremuloides*), two-needle pinyon (*Pinus edulis*), or Utah juniper (*Juniperus osteosperma*) may be present..... **Inter-Mountain Basins Curl-leaf Mountain-mahogany Woodland and Shrubland**

18b. Open to dense tall shrublands dominated by Gambel oak (*Quercus gambelii*) or mountain shrub species..... **Key D**

Upland Key B: Alpine (above treeline) systems

1a. Vegetated herbaceous and shrubland habitats of high elevations, generally above 11,000 ft. ..... **(2)**

1b. Barren or very sparsely vegetated habitats of high elevations, generally above 11,000 ft. ..... **(4)**

2a. Dominated by woody, dwarf-shrub ericaceous or willow species less than 0.5 m high. ..... **Rocky Mountain Alpine Dwarf-Shrubland**

2b. Dominated by perennial grass and forb species. ..... **(3)**

3a. Wind-scoured, rocky areas with little soil development, dominated by low growing cusion plants. Sparsely vegetated, with stoney pavement, often in matrix with following. ..... **Rocky Mountain Alpine Fell-Field**

3b. Widespread, matrix forming herbaceous habitats of alpine environments, characterized by a dense cover of low-growing, perennial graminoids and forbs. ..... **Rocky Mountain Alpine Turf**

4a. Barren or sparsely vegetated alpine bedrock, talus, or scree slope habitats. Vegetation generally limited to crevices or occurring as non-vascular (lichen) communities..... **Rocky Mountain Alpine Bedrock and Scree**

4b. Alpine habitats dominated by permanent ice and snow cover or generally only exposed for a few weeks. No vascular plants are present. ..... **North American Glacier and Ice Field**

Upland Key C: Sparsely vegetated systems

1a. Sparsely vegetated habitats restricted to washes, flats, or playas that are intermittently flooded. ..... **Wetland/Riparian Key**

1b. Sparsely vegetated habitats of areas not generally subject to inundation. .....**(2)**

2a. Sparsely vegetated habitats characterized by shifting sandy-substrates or fine-textured shales. .....**(3)**

2b. Sparsely vegetated habitats characterized by cliffs, rock outcrops, or shaley breaks. .....**(4)**

3a. Large patch habitats characterized by the presence of actively migrating dunes. System is often a matrix including barren active dunes, sparsely vegetated dunes, and vegetated, more-or-less stabilized dunes. ..... **Inter-Mountain Basins Active and Stabilized Dune**

3b. Barren or very sparsely vegetated, generally rolling to steep areas (base of cliff) where substrates are derived from marine shales. Widely scattered individuals of shrub species as well as occasional bunch grasses may be present. ....**Inter-Mountain Basins Shale Badland**

4a. Cliffs, canyons, and rock outcrops of montane areas or western plateaus and valleys. .....**(5)**

4b. Cliffs, outcrops, breaks and shale hills of the eastern plains. ....**Western Great Plains Cliff, Outcrop and Shale Barren**

5a. Barren and sparsely vegetated landscapes of western Colorado, characterized by eroded plateaus and valleys typically formed in sedimentary rock (sandstones and shales). Vegetation is generally confined to crevices and small pockets of soil, and species are those from neighboring systems, such as pinyon, juniper, and other Colorado Plateau types. .... **Colorado Plateau Mixed Bedrock Canyon and Tableland**

5b. Barren and sparsely vegetated landscapes of foothill to subalpine areas, characterized by steep cliff faces, narrow canyons, and rocky outcrops of various bedrock types. Vegetation is generally confined to crevices, and species are those from surrounding systems, sometimes including scattered trees and shrubs, that are characteristic of the Southern Rocky Mountains. .....**Rocky Mountain Cliff, Canyon and Massive Bedrock**

Upland Key D: Shrubland and Steppe systems

1a. Deciduous shrub species dominate. ..... **(2)**

1b. Evergreen or partially deciduous shrubs dominate. ..... **(4)**

2a. Tall shrublands of upland, generally xeric habitats on dry foothills and lower mountain slopes. Gambel oak (*Quercus gambelii*) is dominant or co-dominant with other deciduous shrubs such as serviceberry (*Amelanchier alnifolia* or *A. utahensis*), big sagebrush (*Artemisia tridentata*), mountain mahogany (*Cercocarpus* spp.), bitterbrush (*Purshia* spp.) or snowberry (*Symphoricarpos* spp). ..... **Rocky Mountain Gambel Oak-Mixed Montane Shrubland**

2b. Oak (*Quercus gambelii*) not present, other deciduous shrubs dominant ..... **(3)**

3a. Shrublands of foothills, canyon slopes and lower mountains of the Rocky Mountains and on outcrops and canyon slopes of the plains. Oak (*Quercus gambelii*) is generally not present. Typical dominant species are mountain mahogany (*Cercocarpus montanus*), antelope bitterbrush (*Purshia tridentata*), chokecherry (*Prunus virginiana*), skunkbush sumac (*Rhus trilobata*), wax currant (*Ribes cereum*), mountain ninebark (*Physocarpus monogynus*), or soapweed yucca (*Yucca glauca*). Understories often grassy. Generally on drier sites than previous. ..... **Rocky Mountain Lower Montane-Foothill Shrubland**

3b. Lower foothills to valley bottom shrublands restricted to temporarily or intermittently flooded drainages or flats and dominated by greasewood (*Sarcobatus vermiculatus*) ..... **Inter-Mountain Basins Greasewood Flat (Wetland/Riparian Key)**

4a. Sagebrush shrubland and steppe. Sagebrush (*Artemisia* spp.) is the dominant or co-dominant shrub, may be dense or open. ..... **(5)**

4b. Other shrub species dominate. ..... **(10)**

5a. Sand sagebrush (*Artemisia filifolia*) shrublands primarily of the eastern plains. Generally on sandy areas associated with stabilized dune fields, river bluffs and terraces, and inactive floodplains etc..... **Western Great Plains Sandhill Steppe**

5b. Sagebrush shrublands and steppe of the mountains and western plateaus/valleys. ..... **(6)**

6a. Shrublands dominated by big sagebrush (*Artemisia tridentata*) ..... **(7)**

6b. Dwarf sagebrush shrublands or shrubby grasslands. ..... **(8)**

7a. Widespread characteristic shrublands of broad intermountain basins, foothills, and lower mountain slopes (generally below 7,500 ft) in the western US dominated by *Artemisia tridentata* ssp*. tridentata* or ssp. *wyomingensis*. ..... **Inter-Mountain Basins Big Sagebrush Shrubland**

7b. Sagebrush shrublands of montane and subalpine elevations, dominated by *Artemisia tridentata* ssp. *vaseyana* (antelope bitterbrush may co-dominate), often with an abundant perennial herbaceous layer. ..... **Inter-Mountain Basins Montane Sagebrush Steppe**

8a. Shrub-steppe dominated by perennial grasses and forbs, with big sagebrush and other shrubs forming a lesser component of the canopy.

..... **Inter-Mountain Basins Big Sagebrush Steppe**

8b. Short or dwarf sagebrush shrublands, uncommon in Colorado. ..... **(9)**

9a. Windswept shrublands characterized by black sagebrush (*Artemisia nova*), little sagebrush (*Artemisia arbuscula* ssp. *longiloba*), and wind-dwarfed Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). Northern Colorado, near Wyoming border.
..... **Wyoming Basins Dwarf Sagebrush Shrubland and Steppe**

9b. Open shrublands and steppe dominated by black sagebrush (*Artemisia nova*) or Bigelow sage (*Artemisia bigelovii*) sometimes with Wyoming big sagebrush (*Artemisia tridentata* ssp*. wyomingensis*) codominant. Western Colorado, near Utah border only.....
..... **Colorado Plateau Mixed Low Sagebrush Shrubland**

10a. Shrublands dominated by saltbush (*Atriplex* species). ..... **(11)**

10b. Shrublands dominated by other shrub species, or by perennial bunch grasses. ..... **(12)**

11a. Open-canopied to moderately dense shrublands typically of saline basins, alluvial slopes and plains, eastern or western Colorado. Shadscale saltbush (*Atriplex confertifolia*) or fourwing saltbush (*Atriplex canescens*), are typical and stands may include winterfat (*Krascheninnikovia lanata*), pale desert-thorn (*Lycium pallidum*), horsebrush (*Tetradymia canescens*), and various sagebrush (*Artemisia*) species.. .....
.....**Inter-Mountain Basins Mixed Salt Desert Scrub**

11b. Dwarf shrublands of shallow, typically saline, alkaline, fine-textured soils developed from shale or alluvium. In Colorado, dominated by mat saltbush (*Atriplex corrugata*) or Gardner's saltbush (*Atriplex gardneri*), with very sparse herbaceous cover, and often intermingled with shale badlands. ..... **Inter-Mountain Basins Mat Saltbush Shrubland**

12a. Shrubby grasslands dominated by bunch grasses including blue grama (*Bouteloua gracilis*), needle-and-thread (*Hesperostipa comata*), James' galleta (*Pleuraphis jamesii*), saltgrass (*Distichlis spicata*), Indian rice grass (*Achnatherum hymenoides*), and alkali sacaton (*Sporobolus airoides*) with an open shrub layer. Winterfat (*Krascheninnikovia lanata*) is characteristic, but now largely been replaced by rabbitbrush (*Ericameria* and *Chrysothamnus*) species and other woody shrubs.....
.....**Inter-Mountain Basins Semi-Desert Shrub-Steppe**

12b. Not as above. Shrublands of short-stature pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees, often occurring with deciduous shrub species such as mountain mahogany (*Cercocarpus montanus*), or Stansbury cliffrose (*Purshia stansburiana*) and other shrubs. Typically confined to xeric sites where soils are shallow. Intergrades with sparsely vegetated bedrock areas supporting similar species. .....
..... **Colorado Plateau Pinyon-Juniper Woodland and Shrubland**

Upland Key E: Grassland systems

1a. Grasslands of montane or subalpine habitats, generally above 7,500 ft. ..... **(2)**

1b. Grasslands of lower elevations. ..... **(3)**

2a. Small-patch grass and forb dominated communities of mesic habitats, often characterized by tufted hairgrass (*Deschampsia caespitosa)* and associated species, but drier than sites supporting Rocky Mountain Alpine-Montane Wet Meadow system (in wetland Key C). .... **Rocky Mountain Subalpine-Montane Mesic Meadow**

2b. Large-patch grasslands, typically intermixed with matrix stands of spruce-fir, lodgepole pine, ponderosa pine, and aspen forests, or, in the ununual instance of South Park, forming the matrix. Characterized by bunch grasses of fescue (*Festuca* spp.), oatgrass (*Danthonia* spp.), or muhly (*Muhlenbergia* spp.). .... **Southern Rocky Mountain Montane-Subalpine Grassland**

3a. Grasslands of the eastern plains, mountain front, and foothills on the eastern side of the continental divide. ..... **(4)**

3b. Widespread characteristic grasslands of the western plateaus and valleys (occasionally be found in small areas on eastern plains), often intermixed with matrix stands of pinyon-juniper, sagebrush, and other shrub-dominated types. Dominant or characteristic grasses include Indian ricegrass (*Achnatherum hymenoides*), threeawn (*Aristida* spp.), blue gramma (*Bouteloua gracilis*), needle-and-thread (*Hesperostipa comata*), muhly (*Muhlenbergia* spp.), or James' galleta (*Pleuraphis jamesii*). .... **Inter-Mountain Basins Semi-Desert Grassland**

4a. Small to large patch grasslands of mid-height grasses. ..... **(5)**

4b. Widespread, matrix-forming grassland of eastern Colorado, but also occurring in smaller patches near the mountain front. Dominated by short-stature perennial grasses, especially blue grama (*Bouteloua gracilis*) and buffalo grass (*Buchloe dactyloides*). .... **Western Great Plains Shortgrass Prairie**

5a. Mixed- to tallgrass grasslands of the mountain front and foothills/hogbacks, but extending further eastward on the Palmer Divide and near the Colorado-Wyoming border. Characteristic species include needle-and-thread (*Hesperostipa comata*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), green needlegrass (*Nassella viridula*), western wheatgrass (*Pascopyrum smithii*), sand dropseed (*Sporobolus cryptandrus*), or New Mexico feathergrass (*Hesperostipa neomexicana*). Small patch grasslands dominated by tallgrass species are included here. ..... **Western Great Plains Foothill and Piedmont Grassland**

5b. Formerly widespread matrix-forming grasslands of extreme eastern Colorado and further east, where it was transitional between tallgrass and shortgrass prairie, may occur in small patches near the mountain front. Generally on loamier soils than previous. Species are similar, but little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), western wheatgrass (*Pascopyrum smithii*), and needle-and-thread (*Hesperostipa comata*), thread are most characteristic for Colorado occurrences. .... **Central Mixedgrass Prairie**