

**APPENDIX A5.** Utah vegetation codes by cover-type. Cover-type categories are listed by *principal* species which define the cover-type. Landscape scale cover-type mapping includes many prevalent *primary associated* species which can occur as substantial parts of the cover-type in localized areas. This is not intended to be a complete species list, but rather an overview of the most common species associated with each cover-type. General descriptions of each cover-type precede descriptions of the associated species. Cover-types are listed in numeric order of coding in the digital data set.

**REFERENCE:**

Edwards, T. C., Jr., C. G. Homer, S. D. Bassett, A. Falconer, R. D. Ramsey, and D. W. Wight. 1995. Utah Gap Analysis: an environmental information system. Technical report 95-1, Utah Cooperative Fish and Wildlife Research Unit, Utah State University, Logan, Utah. 1138pp + 2 CD-ROMs.

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1. WATER

Open water

2. SPRUCE-FIR

Conifer forest principally dominated by combinations of spruce *Picea engelmannii* and *Picea pungens* and sub-alpine fir *Abies lasiocarpa*.

Primary associated tree species include lodgepole *Pinus contorta*, white fir *Abies concolor*, doug fir *Pseudotsuga menziesii*, limber pine *Pinus flexilis* and bristlecone pine *Pinus aristata*.

3. PONDEROSA PINE

Conifer forest principally dominated by ponderosa pine *Pinus ponderosa*.

Primary associated tree species include pinyon *Pinus edulis* or *Pinus monophylla*, juniper *Juniperus spp.*, white fir *Abies concolor* and doug fir *Pseudotsuga menziesii*.

4. LODGEPOLE

Conifer forest principally dominated by lodgepole *Pinus contorta*.

Primary associated tree species include spruce *Picea engelmannii* and subalpine fir *Abies lasiocarpa*.

5. MOUNTAIN FIR

Conifer forest principally dominated by combinations of white fir *Abies concolor* and doug fir *Pseudotsuga menziesii*.

Primary associated tree species include ponderosa pine *Pinus ponderosa*, pinyon *Pinus edulis* or *Pinus monophylla*, spruce *Picea engelmannii* and *Picea pungens* and subalpine fir *Abies lasiocarpa*.

6. JUNIPER

Conifer forest principally dominated by juniper *Juniperus scopulorum*, *Juniperus monosperma* and *Juniperus osteosperma*.

Primary associated tree species include pinyon *Pinus edulis* or *Pinus monophylla* and mountain mahogany *Cercocarpus ledifolius*.

Primary associated shrub species include sagebrush *Artemisa spp.* and blackbrush *Coleogyne ramosissima*.

7. PINYON

Conifer forest principally dominated by pinyon *Pinus edulis* or *Pinus monophylla*.

Primary associated tree species include juniper *Juniperus spp.*, ponderosa pine *Pinus ponderosa*, white fir *Abies concolor*, doug fir *Pseudotsuga menziesii*.

Primary associated shrub species include oak *Quercus gambelii* and sagebrush *Artemisa spp.*

8. PINYON-JUNIPER

Conifer forest principally co-dominated by pinyon *Pinus edulis* or *Pinus monophylla* and juniper *Juniperus scopulorum*, *Juniperus monosperma* and *Juniperus osteosperma*.

Primary associated tree species include mountain mahogany *Cercocarpus ledifolius*.

Primary associated shrub species include sagebrush *Artemisa spp.*

9. MOUNTAIN MAHOGANY

Forest principally dominated by mountain mahogany *Cercocarpus ledifolius*.

Primary associated species include oak *Quercus gambelii*, juniper *Juniperus spp.* and sagebrush *Artemisa spp.*

10. ASPEN

Deciduous forest principally dominated by quaking aspen *Populus tremuloides*.

Primary associated conifer species include spruce; *Picea engelmannii* and *Picea pungens*, fir; *Abies lasiocarpa*, *Abies concolor* and *Pseudotsuga menziesii*, and pine; *Pinus contorta* and *Pinus ponderosa*.

Primary associated shrub species include snowberry *Symphoricarpos spp.* and serviceberry *Amelanchier alnifolia*.

11. OAK

Deciduous shrubland principally dominated by gambel oak *Quercus gambelii*, palmer oak *Quercus chrysolepis*, wavyleaf oak *Quercus undulata* and shrub live oak *Quercus turbinella*.

Primary associated shrub species include maple *Acer grandidentatum* and sagebrush *Artemisa* spp..

Primary associated tree species include juniper *juniper* spp., pinyon *Pinus* spp., ponderosa pine *Pinus ponderosa*, aspen *Populus tremuloides* and mountain mahogany *Cercocarpus ledifolious*.

12. MAPLE

Deciduous shrubland principally dominated by bigtooth maple *Acer grandidentatum*.

Primary associated shrub species include oak *Quercus* spp. and sagebrush *Artemisa* spp.,

Primary associated tree species include rocky mountain maple *Acer glabrum* and aspen *Populus tremuloides*.

13. MOUNTAIN SHRUB

Deciduous shrubland principally dominated by alder leaf mountain mahogany *Cercocarpus montanus*, cliffrose *Cowania mexicana*, bitterbrush *Purshia tridentata*, serviceberry *Amelanchier utahensis* and *Amelanchier alnifolia*, buckbrush *Ceanothus* spp., chokecherry *Prunus virginiana*, snowberry *Symphoricarpos* spp., pointleaf manzanita *Arctostaphylos pungens* and bearberry *Arctostaphylos uva-ursi*.

Primary associated shrub species include sagebrush *Artemisa* spp., oak *Quercus* spp. and maple *Acer* spp.

Primary associated tree species include aspen *Populus tremuloides*.

14. SAGEBRUSH

Shrubland principally dominated by big sagebrush *Artemisa tridentata*, black sagebrush *Artemisia nova*, low sagebrush *Artemisa arbuscula* or silver sagebrush *Artemisa cana*.

Primary associated tree species include juniper *juniperus* spp., pinyon *pinus* spp., mountain mahogany *Cercocarpus ledifolius* and ponderosa pine *Pinus ponderosa*.

Primary associated shrub species include rabbitbrush *Chrysothamnus* spp., snakeweed *Gutierrezia sarothrae*, winterfat *Ceratoides lanata*, shadscale *Atriplex confertifolia*, and bitterbrush *Purshia tridentata*.

15. SAGEBRUSH/PERENNIAL GRASS

Co-dominate sagebrush shrubland and perennial grassland.

Principle shrub species include sagebrush *Artemisa tridentata*, *Artemisa nova* or *Artemisa cana*.

Principle grass species include bluebunch wheatgrass *Agropyron spicatum*, sandburg bluegrass *Poa secunda*, crested wheatgrass *Agropyron cristatum*, needlegrass *Stipa comata*, sand dropseed *Sporobolus cryptandrus*, blue gramma *Bouteloua gracilis*, thurbers needlegrass *Stipa thurberiana*, western wheatgrass *Agropyron smithii*, indian ricegrass *Oryzopsis hymenoides* and galleta *Hilaria jamesii*.

Associated principal shrub species include rabbitbrush *Chrysothamnus spp.*, bitterbrush *Purshia tridentata* and oak *Quercus spp.*.

Associated principal grass species include cheatgrass *Bromus tectorum*.

16. GRASSLAND

Perennial and annual grasslands.

Principle perennial grass species include bluebunch wheatgrass *Agropyron spicatum*, sandburg bluegrass *Poa secunda*, crested wheatgrass *Agropyron cristatum*, basin wildrye *Elymus cinereus*, galleta *Hilaria jamesii*, needlegrass *Stipa comata*, sand dropseed *Sporobolus cryptandrus*, blue gramma *Bouteloua gracilis*, thurbers needlegrass *Stipa thurberiana*, western wheatgrass *Agropyron smithii*, squirreltail *Sitanion hystrix* and indian ricegrass *Oryzopsis hymenoides*.

Principle annual grass species include cheatgrass *Bromus tectorum*.

Primary associated shrub species include sagebrush *Artemisia spp.*, shadscale *Atriplex confertifolia*, greasewood *Sarcobatus vermiculatus* and creosote *Larrea tridentata*.

Primary associated tree species include juniper *Juniperus spp.*.

17. ALPINE

High elevation tundra vegetation, including grasses, forbs, sedges and shrubs.

Principle species include alpine avens *Geum rossii*, sedges *Carex spp.*, tufted hair grass *Deschampsia caespitosa*, *Festuca ovina*, *Koeleria cristata*, *Trisetum spicatum*, *Silene acaulis*, *Paronychia pulvinata*, *Arenaria obtusiloba*, *Trifolium nanum*, *Kobresia myosuroides*, *Polygonum bistortoides*, *Eriophorum chamissonis* and willow *Salix spp.*.

Primary associated species include engelmann spruce *Picea engelmannii* (krumholz).

18. DRY MEADOW

Herbaceous dry meadow, including mostly forbs and grasses.

Principal forb species include yarrow *Achillea millefolium*, dandelion *Taraxacum officinale*, richardson's geranium *richardsonii*, penstemon *spp.*, mulesears *Wyethia amplexicaulis*, golden aster *Chrysopsis villosa*, arrowleaf balsamroot *Balsamorhiza sagittata*, hawkbit *Agoseris pumila*, larkspur *Delphinium spp.* and scarlet gilia *pulchella*

APPENDIX A5. Continued.

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- Principal grass species include wheatgrass *Agropyron spp.*, needlegrass *Stipa spp.*, timothy *Phleum spp.*, poa's *poa spp.*, spike trisetum *spicatum* and some sedges *Carex spp.*
- Primary associated shrub species include sagebrush *Artemisia spp.*, rabbit brush *Chrysothamnus viscidiflorus*, cinquefoil *Potentilla fruitcosa*, snowberry *Symphoricarpos spp.* and elderberry *Sambucus cerulea*.
19. WET MEADOW
- Water saturated meadows, including mostly grasses, forbs, sedges and rushes.
- Principle species include sedges *Carex spp.*, rushes *Juncus spp.*, reedgrass *Calamagrostis spp.*, timothy *Phleum spp.*, alpine poa *spp.*, hairgrass *Deschampsia cespitosa*, willowherb *Epilobium spp.*, cinquefoil *Potentilla spp.* saxifrage *Saxifraga spp.*, etc.
- Primary associated species include willow *Salix spp.*, honeysuckle *Lonicera spp.* and water birch *Betula spp.*.
20. BARREN
- Sand, rock, salt flats, pylas and lava.
21. LODGEPOLE/ASPEN
- Conifer-Deciduous forest with principally Lodgepole *Pinus contorta* dominate or co-dominant with aspen *Populus tremuloides*.
22. PONDEROSA PINE/MOUNTAIN SHRUB
- Conifer forest or woodland with principally Ponderosa pine *Pinus ponderosa* dominate/associate or co-dominate with mountain shrubs.
- Principle mountain shrub associate species include manzanita *Arctostaphylos spp.*, bitterbrush *Purshia tridentata*, oak *Quercus gambelii*, snowberry *Symphoricarpos spp.* and curleaf mountain mahogany *Cercocarpus ledifolius*.
- Primary associated tree species include juniper *juniperus spp.*, pinyon *pinus spp.*, white fir *Abies conocolor* and doug fir *Pseudotsuga menziesii*.
- Primary associated shrub species sagebrush *Artemesia spp.*, and rabbitbrush *Chrysothamnus viscidiflorus*.
23. SPRUCE-FIR/MOUNTAIN SHRUB
- Conifer forest or woodland with Spruce-Fir dominate/associate or co-dominate with mountain shrub.
- Principle tree species include *Picea engelmannii* and *Picea pungens* and sub-alpine fir *Abies lasiocarpa*.

Principle shrub species include ribes spp., snowberry *Symphoricarpos* spp., ninebark *Physocarpus* spp., chokecherry *Prunus virginiana*, maple *Acer glabrum*, mountain lover *Paxistima myrsinites*, blueberry *Vaccinium* spp., elderberry *Sambucus* spp., grape *Berberis repens*, serviceberry *Amelanchier* spp.,  
Primary associated tree species include doug fir *Pseudotsuga menziesii*, lodgepole *Pinus flexilis*, white fir *Abies concolor* and aspen  
Primary associated shrub species include common juniper *Juniperus communis* and sagebrush *Artemesia* spp..

24. MOUNTAIN FIR/MOUNTAIN SHRUB

Conifer forest or woodland with Mountain fir dominate/associate or co-dominate with mountain shrub.

Principle tree species include douglas fir *Pseudotsuga menziesii* and white fir *Abies concolor*.

Principle shrub species include oak *Quercus gambelii*, maple *Acer grandidentatum*, snowberry *Symphoricarpos* spp., grape *Berberis* spp., serviceberry *Amelanchier* spp., mananita *Arctostaphylos* spp., ninebark *Physocarpus* spp. and serviceberry *Amelanchier* spp..

Primary associated tree species include alpine fir *Abies lasiocarpa*, englemann spruce *Picea engelmannii*, limber pine *Pinus flexilis*, ponderosa pine *Pinus ponderosa* and aspen *Populus tremuloides*.

Primary associated shrub species include common juniper *Juniperus communis* and sagebrush *Artemesia* spp..

25. ASPEN/CONIFER

Deciduous forest with principally Aspen *Populus tremuloides* dominant or co-dominant with conifer.

Principle conifer species include alpine fir *Abies lasiocarpa*, englemann spruce *Picea engelmannii*, limber pine *Pinus flexilis*, ponderosa pine *Pinus ponderosa*, douglas fir *Pseudotsuga menziesii* and white fir *Abies concolor*.

26. MOUNTAIN RIPARIAN

Riparian areas generally above 5500 feet.

Principal woody species include willow *Salix spp.*, narrowleaf cottonwood *Populus angustifolia*, thinleaf alder *Alnus tenuifolia*, water birch *Betula occidentalis*, black hawthorn *Crataegus douglasii*, rocky mountain maple *Acer glabrum*, red-osier dogwood *Cornus stolonifera* and wild rose *Rosa woodsii*.

27. LOWLAND RIPARIAN

Riparian areas generally lower than 5500 feet.

APPENDIX A5. Continued.

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- Principal woody species include fremont cottonwood *Populus fremontii*, Salt Cedar *Tamarix pentandra*, netleaf hackberry *Celtis reticulata*, velvet ash *Fraxinus velutina*, desertwillow *Chilopsis linearis*, sandbar willow *Salix exigua* and squawbush *Rhus trilobata*.
28. CLOUD
- Portions of image clouded and unable to be mapped.
- 29 LAVA
- Southern Utah high elevation lava flows.
30. AGRICULTURE
- Row crops, irrigated pasture and hay fields, dry farm crops.
31. URBAN
- Commercial land and high density residential areas.
32. SALT DESERT SCRUB
- Shrublands principally dominated by shadscale *atriplex confertifolia*, gray molly *Kochia vestita*, mat-atrilex *Atriplex corrugata*, castle valley clover *Atriplex cuneata*, winterfat *Ceratoides lanata*, budsage *Artemisia spinescens*, fourwing saltbush *Atriplex canescens*, halogeten *Halogeten glomeratus*, mormon tea *Ephedra spp.*, horsebrush *Tetradymia canescens*, snakeweed *Gutierrezia sarothrae* and rabbitbrush *Chrysothamnus spp.*
- Primary associated shrub species include greasewood *Sarcobatus vermiculatus*, sagebrush *Artemisia spp.* and blackbrush *Coleogyne ramosissima*.
- Primary associated forb species includes halogeten *Halogeten glomeratus*.
33. DESERT GRASSLAND
- Low elevation perennial grassland co-dominate with shrubland.
- Principal grassland species include galleta *Hilaria jamesii*, indian ricegrass *Oryzopsis hymenoides*, three-awn *Aristida glauca* and sand dropseed *Sporobolus airoides*.
- Principal shrub species include shadscale *Atriplex confertifolia*, rabbitbrush *Chrysothamnus spp.*, mormon tea *Ephedra spp.* and winterfat *Ceratoides lanata*.
- Principal forb species include desert trumpet *Eriogonum inflatum*.
34. BLACKBRUSH

Shrubland principally dominated by blackbrush *Coleogyne ramosissima*.  
Primary associated shrub species include spiny hopsage *Grayia spinosa*, mormon tea *Ephedra spp.*, shadscale *Atriplex confertifolia*, snakeweed *Xanthocephalum spp.*, turpentine bush *Thamnosia montana* and creosote *Larrea tridentata*.  
Other associated species include yucca and cacti.

35. CREOSOTE-BURSAGE

Shrubland principally dominated by creosote *Larrea tridentata* and white bursage *Ambrosia dumosa*.  
Primary associated shrub species include blackbrush *Coleogyne ramosissima*, mormon tea *Ephedra spp.*, dalea *Dalea fremonti*, honey mesquite *Prosopis glandulosa* and brittlebush *Encelia farinosa*.  
Other associated species include joshua tree *Yucca brevifolia*, datil yucca *Yucca baccata* and prickly pear *Opuntia engelmannii*.

36. GREASEWOOD

Shrubland principally dominated by greasewood *Sarcobatus vermiculatus*.  
Primary associated shrub species include shadscale *Atriplex confertifolia* and pickleweed *Allenrolfea occidentali*.  
Other associated species include seepweed *Suaeda torreyana* and halogeten *Halogeten glomeratus*.

37. PICKLEWEED BARRENS

Mosaic of sparsely vegetated and barren playa flats.  
Principal shrub species include pickleweed *Allenrolfea occidentalis*.  
Primary associated species include samphire *Salicornia spp.*, mound saltbush *Atriplex foleata*, greasewood *Sarcobatus vermiculatus*, saltgrass *Distichlis stricta* and seepweed *Suaeda torreyana*.

38. WETLAND

Low elevation marsh and wetland areas.  
Principal species include cattail *Typha latifolia*, bullrush *Scirpus spp.* and sedge *Carex spp.*

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