

Knoxville Wildlife Area 2002 Vegetation Map
Crosswalk to the
Knoxville Wildlife Area 2014 Southern Unit Map Classification

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Biogeographic Data Branch
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ABSTRACT

This map of the northern (existing) and southern (new acquisition) portions of the Knoxville Wildlife Area is a subset of the vegetation map and classification produced for Napa County in 2002 (Thorne et al 2004), which used the classification standards as described in the 1995 Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) and followed the National Vegetation Classification Standard (NVCS) of the time. This map includes both the vegetation type as mapped in 2002 and the corresponding vegetation type as defined in an updated and finer-scale classification that was produced in 2014 by the Vegetation Classification and Mapping Program (VegCAMP). The updated classification was used for a fine scale map of the southern portion of the Wildlife Area.

The base imagery used for photointerpretation for this map was the 1993 Digital Orthophoto Quarter Quads for Napa County. The full 2002 Napa County map can be found on BIOS (Vegetation – Napa County and Blue Ridge Berryessa [ds201]) and the associated report can be found at <https://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=14660> (Thorne et.al 2004). The 2014 vegetation map and associated report for the Knoxville Wildlife Area can also be found on BIOS and the report can be found at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=164824>.

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PURPOSE

The purpose of this map is to aid in the development of a management plan for the CDFW Knoxville Wildlife Area. The vegetation classification and mapping provide an inventory of habitat types and a measure of the extent of each type on the property. This information may be used to assess the biological resources present and determine appropriate management strategies.

METHODS

CLASSIFICATION

Both the 2002 Napa County map and the 2014 Knoxville Wildlife Area map use a vegetation classification that is based on the National Vegetation Classification System (Grossman et al. 1998), however in 2002 the vegetation classification for California was relatively young; it has evolved considerably since then. Thousands of field surveys have been analyzed and thousands of additional acres of vegetation have been mapped in California since 2002, and as a result there have been many changes to the classification hierarchy. New vegetation types were added at all levels of the hierarchy, shifts were made in the hierarchical organization of the national classification, and many simple name changes occurred in species and vegetation types. The vegetation classification used on the 2002 Napa County map is included as Appendix A; the 2014 classification is found in Appendix B.

Another difference between the older and current map is the use of types that do not have formal descriptions. Although those types were used for the 2002 vegetation map, they are currently avoided due to the lack of empirical data supporting them. It is now preferred to map to a higher level in the hierarchy (group or macrogroup) rather than try to “guess” what a true classification analysis would determine. Table 1 shows the correspondence, or “crosswalk,” between the 2002 classification and the current classification, including how the types with no formal description (NFD) from 2002 are translated to the current vegetation hierarchy.

For this map layer, there are several polygons assigned to the "McNab Cypress" [sic] map class (*Hesperocyparis macnabiana*). Since the original 2002 Napa map was produced, data was gathered to reveal one of those polygons to instead be Sargent cypress. That one polygon has been crosswalked to be "*Hesperocyparis sargentii*", based on the available data, but still retains "McNab Cypress" as its original map class. Furthermore, please note that the remaining polygons originally mapped in 2002 to

"McNab Cypress" (and crosswalked to the *Hesperocyparis macnabiana* Alliance) were all mapped in 2014 to either "Quercus durata- Adenostoma fasciculatum Association", "Adenostoma fasciculatum Alliance", "Ceanothus oliganthus- Adenostoma fasciculatum Association", or "Umbellularia californica- Quercus wislizeni Association", and that in fact no polygons were attributed to *Hesperocyparis macnabiana* in 2014.

Table 1: Crosswalk of the vegetation mapping classification used for the 2002 Napa County and Blue Ridge Berryessa vegetation map (left) and the vegetation mapping classification used for the 2014 Knoxville Wildlife Area vegetation map (right).

Napa County Map Class (MapClass)	National Vegetation Classification System Name (NVCSName)
(<i>Carex</i> spp. - <i>Juncus</i> spp - Wet Meadow Grasses) NFD Super Alliance	Californian warm temperate marsh/seep Group
Agriculture	Mediterranean California naturalized annual and perennial grassland Group
Black Oak Alliance	<i>Quercus kelloggii</i> Alliance
Blue Oak Alliance	<i>Quercus douglasii</i> Alliance
Brewer Willow Alliance	<i>Salix breweri</i> Alliance
California Annual Grasslands Alliance	California annual herb/grass Group
California Bay - Leather Oak - (<i>Rhamnus</i> spp.) Mesic Serpentine NFD Super Alliance	Californian mesic chaparral Group
Chamise - Wedgeleaf <i>Ceanothus</i> Alliance	<i>Ceanothus cuneatus</i> Alliance
Chamise Alliance	<i>Adenostoma fasciculatum</i> Alliance
Foothill Pine / Mesic Non-serpentine Chaparral NFD Association	Californian mesic chaparral Group
Foothill Pine Alliance	<i>Pinus sabiniana</i> Alliance
Interior Live Oak - Blue Oak - (Foothill Pine) NFD Association	<i>Quercus wislizeni</i> tree Alliance
Interior Live Oak Alliance	<i>Quercus wislizeni</i> tree Alliance
Leather Oak - California Bay - <i>Rhamnus</i> spp. Mesic Serpentine NFD Alliance	Californian mesic chaparral Group
Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance	Californian xeric chaparral Group
MacNab Cypress Alliance	<i>Hesperocyparis sargentii</i> Alliance
MacNab Cypress Alliance	<i>Hesperocyparis macnabiana</i> Alliance
Mixed Oak Alliance	Californian broadleaf forest and woodland Group
Mixed Willow Super Alliance	Southwestern North American riparian/wash scrub Group
Rock Outcrop	California Cliff, Scree, and Other Rock Vegetation

Napa County Map Class (MapClass)	National Vegetation Classification System Name (NVCSName)
Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance	Californian mesic chaparral Group
Serpentine Grasslands NFD Super Alliance	Western dry upland perennial grassland Group
Sparse California Juniper-Canyon Live Oak-California Bay-California Buckeye / Steep Rock Outcrop NFD Alliance	Californian broadleaf forest and woodland Group
Upland Annual Grasslands & Forbs Formation	California annual herb/grass Group
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association	<i>Quercus lobata</i> Alliance
Valley Oak - Fremont Cottonwood - (Coast Live Oak) Riparian Forest NFD Association	<i>Quercus lobata</i> Alliance
Valley Oak Alliance	<i>Quercus lobata</i> Alliance
White Leaf Manzanita - Leather Oak - (Chamise - <i>Ceanothus</i> spp.) Xeric Serpentine NFD Super Alliance	Californian xeric chaparral Group

DELINEATION RULES AND MAP ATTRIBUTES

Minimum Mapping Unit (MMU)

The MMU for this map is 2.5 acres (1 hectare) while the MMU for the 2014 Knoxville Wildlife Area map is 1 acre (0.5 acres for wetland and special types). This difference is not only apparent when you look at the vegetation maps (smaller and more polygons in the 2014 Wildlife Area map, and larger and fewer polygons in the 2002 Napa County map), but it is also reflected in the classifications. A smaller MMU means a finer-scale map which requires a finer-scale classification. Therefore, the 2014 Knoxville Wildlife Area classification includes several Association-level mapping types, whereas the finest hierarchical level that is mapped in the 2002 Napa County map is Alliance. None of the Association-level types appear on this map however, since they have no corresponding type in the coarser scale 2002 classification.

Each mapped polygon has the following attributes:

NVCSName

Standardized name of the vegetation description used in the National Vegetation Classification System

NVCSLevel

The level of the National Vegetation Classification System Hierarchy to which the vegetation type corresponds.

MapClass

Vegetation type mapped in 2002 for the Napa County vegetation map (according to the 1993 imagery)

MapClassCode

The code assigned to the vegetation type of the polygon

Size

Tree size (diameter at breast height)

- | | |
|---|--|
| 1 | Seedlings (less than 1") |
| 2 | Saplings (1–6") |
| 3 | Pole (6–11") |
| 4 | Small (11–25") |
| 5 | Medium – Large (Greater than 25") |
| 6 | Multi Layered (medium to large trees over smaller trees in densities >60%) |
| 9 | Not applicable |

Density

Density of life form being mapped

- | | |
|---|------------------|
| 1 | Greater than 60% |
| 2 | 40-60%, |
| 3 | 25-40% |
| 4 | 10-25% |
| 5 | 2-10% |

CalVegName

A crosswalk to the Classification and Assessment with Landsat of Visible Ecological Groupings (CalVeg) vegetation system (USDA Forest Service). Note that there may be a one-to-many relationship between CalVeg and NVCS.

CalVegCode

The CalVeg code.

CWHRType

A crosswalk to the California Wildlife Habitat Relationships system. Note that there is usually a one-to-many relationship between CWHR and NVCS.

CWHRCode

The CWHR code.

GlobalRank

The global rarity rank of the plant community (only for polygons mapped to the Alliance level)

- G1 fewer than 6 viable occurrences and/or 2000 acres worldwide
- G2 6–20 viable occurrences and/or 2000–10,000 acres worldwide
- G3 21–100 viable occurrences and/or 10,000–50,000 acres worldwide
- G4 greater than 100 viable occurrences and/or greater than 50,000 acres worldwide
- G5 community demonstrably secure due to secure worldwide abundance

StateRank

The state rarity rank of the plant community (only for polygons mapped to the Alliance level). The state rank will always be less than (more rare) or equal to the global rank.

- S1 fewer than 6 viable occurrences and/or 2000 acres statewide
- S2 6–20 viable occurrences and/or 2000–10,000 acres statewide
- S3 21–100 viable occurrences and/or 10,000–50,000 acres statewide
- S4 greater than 100 viable occurrences and/or greater than 50,000 acres statewide
- S5 community demonstrably secure due to secure statewide abundance

Rare

Rarity of the vegetation type

- Y alliances and associations with state rank S1–S3
- N not rare

CaCode

California Natural Community Codes - unique code assigned to Alliances and Associations.

NVCSAlliance

The standardized name for the Alliance within the National Vegetation Classification System.

NVCSGroup

The standardized name for the Group within the National Vegetation Classification System.

NVCSMG

The standardized name for the Macrogroup within the National Vegetation Classification System.

ACRES

Size of polygon in acres.

HECTARES

Size of polygon in hectares.

UID

Unique identifier for each polygon.

REFERENCES

- California Department of Fish and Wildlife, Vegetation Classification and Mapping Program. Vegetation Map and Classification of Knoxville Wildlife Area, Napa, County, California. CDFW, January 2019. (<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=164824>).
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Appendix A

Vegetation Classification used for the 2002 Napa County Vegetation Map

TNC Hierarchy

Class - Subclass (Level 1)

Group - Formations (Level 2)

Alliance – Associations & Mapping Units (Level 3)

FOREST – WOODLAND

1000 – Evergreen Broadleaf Forests & Woodlands

1100 – Winter-Rain Sclerophyll Forests & Woodlands

Stands mapped to 1100 in post-burn settings generally under 15 years old.

1101 – California Bay – Coast Live Oak – (Madrone - Black Oak Big Leaf Maple)

Mapping Unit

Generally occurs as a mix of hardwood species with *Umbellularia californica* dominating the more northerly mesic slopes and *Arbutus menziesii* an important indicator to drier convex upper slopes. *Acer macrophyllum* and *Quercus kelloggii* become more common in the most mesic portions of the stand.

1121 – California Bay Alliance

1122 – Canyon Live Oak Alliance

Uncommon in pure stands, often mixing with other oaks or hardwoods especially *Arbutus menziesii* or *Quercus kelloggii*. Most likely to occur on steep slopes at higher elevations.

1123 – Eucalyptus Alliance

Mapped in small stands primarily in and adjacent to the Napa Valley. Linear rows not mapped.

1124– Tanbark Oak Alliance

Uncommon or rare as mappable stands, usually in close proximity to stands of *Pseudotsuga menziesii* or redwood in mesic concave settings. More often a component to type 1101 or conifer types.

1125– Giant Chinquapin Alliance

1200 – Xeromorphic Sclerophyll Woodlands

1201 – Coast Live Oak – Blue Oak – (Foothill Pine) Mapping Unit

A common type where both oak species contains at least 10-15% relative cover.

Generally found in open settings, although somewhat more closed when *Pinus sabiniana* becomes a component, generally less than 15% relative cover.

1202 – Interior Live Oak – Blue Oak – (Foothill Pine) Mapping Unit

Common; generally replaces type 1201 east of the Napa watershed. Found on somewhat steeper settings than type 3122. Both oak species contain at least 10-15% relative cover. *Pinus sabiniana* is often a co-dominant but is generally under 15% relative cover.

1221 – Coast Live Oak – (Foothill Pine) Mapping Unit

Common at low elevations especially in the southern portion of the Napa watershed. Common on gentle slopes in open to closed settings in the lowest foothills especially on the east side of the Napa Valley. Also fairly common on steep slopes as an emergent to chaparral species on steep southerly slopes at lower elevations. May contain a minor component of other oak species (especially *Quercus lobata* and/or *Quercus douglasii*, *Arbutus menziesii* or *Umbellularia californica*) generally under 10-15% relative cover.

Pinus sabiniana may occur as a minor conifer component although generally less often than types 1201 or 1202.

1222 – Interior Live Oak – (Foothill Pine) Mapping Unit

Uncommon as a sole component to a hardwood canopy, generally found on steep northerly setting in closed stands in the eastern portion of the county. May contain a minor component of *Quercus douglasii* and/or *Pinus sabiniana*. Often transitions to a mesic chaparral containing scrub interior oak, bay, scrub oak, mountain mahogany and chaparral ash. Mapped only east of Lake Berryessa on north trending slopes.

1223 – Mixed Oak – (Foothill Pine - Ponderosa Pine) Mapping Unit

Very common throughout the county, mapped as several different phases where at least two or more oaks co-dominate. Lowest elevations often contain a mix of *Quercus agrifolia* and *Q. lobata*. *Quercus garryana* may be a component to this phase, especially north of Napa. Higher elevations will always have a significant component of *Quercus kelloggii*, with *Quercus chrysolepis* playing an important role in steeper settings with *Quercus kelloggii*. Other hardwoods often occur in the stand as a minor component with *Acer macrophyllum* occurring in more mesic settings, and *Arbutus menziesii* on more xeric sites. At higher elevations in open woodland settings, *Quercus kelloggii* and *Quercus douglasii* may occasionally mix. Conifers, especially *Pinus ponderosa* or *Pseudotsuga menziesii* may occur as a minor component to higher elevation stands generally below 10% relative cover.

1224 – Birch-Leaf Mountain Mahogany Alliance

2000 – Evergreen Needle-leaf Forests & Woodlands

2100 – Rounded Crown Forests & Woodlands (Pines & Cypress)

2104 – Foothill Pine / Mesic non-serpentine chaparral Mapping Unit

Several stands noted in the eastern portion of the county where *Pinus sabiniana* is emergent to non-serpentine chaparral or scrubby bay.

2105 – Foothill Pine / White Leaf Manzanita – Leather Oak – (Chamise - *Ceanothus* spp.) Xeric Serpentine Mapping Unit

Common on xeric serpentine sites, less severe sites will often contain a higher component of *Adenostoma fasciculatum*. This type often forms subtle transitions to the mesic serpentine chaparral mapping unit. Generally contains less than 2-5% emergent cover of *Pinus sabiniana*.

2106 – Foothill Pine – California Bay / Leather Oak – (*Rhamnus* spp.) Mesic Serpentine Mapping Unit

Common on mesic northerly trending serpentine sites, less severe sites will often contain higher components of bay. This type often forms subtle transitions to the xeric serpentine chaparral mapping unit. Generally contains less than 2-5% emergent cover of *Pinus sabiniana*.

2121 – Foothill Pine Alliance

Uncommon as a dominant, *Pinus sabiniana* usually is a component to serpentine chaparrals or oak woodlands. Mapped where *Pinus sabiniana* contains a relative cover of at least 40–50% in association with oak or in pure stands or with other conifers generally less than 40–50% relative cover.

2122 – Knobcone Pine Alliance

Fairly common, especially in the northwestern portion of the county on upper slopes and ridges especially in the vicinity of Detert Reservoir. Mapped as pure stands or where *Pinus attenuata* is a dominant with at least 40–50% relative cover, either as an emergent to chaparral or rarely as a co-dominant with other conifers. Stands vary in structure and size, but crowns are usually closed and quite small.

2123 – Ponderosa Pine Alliance

Rarely mapped in pure stands, usually found as a co-dominant with *Pseudotsuga menziesii* and occasionally with *Pinus attenuata*. Generally found on gentle slopes east of the Napa Valley in small stands near the town of Angwin.

2124 – MacNab Cypress Alliance

Locally common in the northeastern portion of the county on serpentine rocky soils, often forming extensive stands. Serpentine chaparral species sometimes forms a significant understory but not always.

2125 – Sargent Cypress Alliance

Extensive stands mapped on the Cedar Roughs on west facing slopes above Chiles Valley. Stands vary in size, structure and density but are usually dense and stunted. Several stands noted also in riparian settings.

2126 – Sugar Pine Alliance or Sugar Pine / Canyon Oak Mapping Unit

Probably only a component to higher elevation conifer stands in the extreme northern portion of the county above 4000 feet. Not mapped to date.

2200 – Conical-Crown Forests (Firs, Spruces, Douglas Firs, Cedars & Hemlocks)

2201 – Coast Redwood – Douglas-fir – California Bay Mapping Unit

Fairly common but generally limited to slopes west of the Napa Valley in riparian settings and north trending coves and drainages. Uncommon east of the Napa valley restricted primarily to riparian habitats.

2222 – Douglas-fir Alliance

Very common in the western portion of the county, local east of the Napa watershed. Mapped where *Pseudotsuga menziesii* contains at least 10–20% relative cover as an emergent to hardwoods, or in nearly pure stands with a small component of *Lithocarpus densiflorus* or bay.

2224 – Douglas-fir – Ponderosa Pine Alliance

Mapped in several areas where both *Pseudotsuga menziesii* or *Pinus ponderosa* contain at least 10–20% relative cover. Not as common as pure stands of *Pseudotsuga menziesii*, this type was noted in vicinity of Angwin and Detert Reservoir.

2230 – Coast Redwood Alliance

Mapped exclusively west of the Napa Valley, in drainages and very mesic north trending concavities. Stands are uncommon and somewhat less extensive than type 2201. *Alnus rhombifolia* is often a component near drainages, *Lithocarpus densiflorus* and *Umbellularia californica* are generally components to non-riparian stands. Mapped where *Pseudotsuga menziesii* is generally under 20% relative cover of conifers.

3000 – Deciduous Forests & Woodlands

3100 – Cold Season Deciduous Forests & Woodlands

3101 – Valley Oak – (California Bay – Coast Live Oak - Walnut - Ash) Riparian Mapping Unit

Noted in major riparian corridors, especially in the Napa Valley and other major watersheds throughout the county. May transition to alder types as the drainage becomes more confined.

3102 - Valley Oak - Fremont Cottonwood - (Coast Live Oak) Riparian Mapping Unit

Mapped in the Napa river drainage generally south of the town of Napa.

3121 – Black Oak Alliance

Mapped in higher elevations, especially in the Atlas Peak region, on gentle to moderate slopes trending in most directions except south. *Quercus kelloggii* is generally mapped as a component to the mixed oak mapping unit.

3122 – Blue Oak Alliance

Mapped occasionally on slopes just east of the Napa Valley, and extensively east of Chiles Valley to the Yolo County line. Stands vary from nearly closed to very open where *Quercus douglasii* make up at least 80-90% relative cover. Most common associate is *Quercus wislizeni*, but other oaks may play a minor component, especially at higher elevations or in west county stands.

3123 – Valley Oak Alliance

Fairly common, especially in the southern portion of the county, on gently to nearly level slopes in open settings. Generally mapped where valley oak is the dominant species. Mixes most often with *Quercus agrifolia*.

3124 – Oregon White Oak Alliance

Uncommon as mappable stands, generally a component to more mesic mixed oak stands. Several nearly pure stands were mapped on gentle slopes west of the Napa Valley and north of the town of Napa.

3125 – California Buckeye Alliance

3200 -Temporarily Flooded Cold Season Deciduous Forests & Woodlands

3201 – White Alder – (Mixed Willow – California Bay – Big Leaf Maple) Riparian Mapping Unit

Most stands mapped as extremely narrow polygons in steep perennial streamsides, often in association with *Umbellularia californica* or *Salix* spp. Lower elevations may contain a small component of *Quercus lobata*.

3202 – (Brewer Willow) Poorly Developed Serpentine Riparian Mapping Unit

Very limited and mapped only in riparian settings where soils or geology depict serpentine areas.

3221 – Mixed Willow Super Alliance

Most stands are below the minimum mapping size, however several drainages have been mapped generally in the vicinity of small lakes and reservoirs.

3222 – Pacific Willow Alliance

3223 – Red Willow Alliance

3224 – Black Willow Alliance

3225 – Arroyo Willow Alliance

3226 – White Alder Alliance

3227 – Black Cottonwood Alliance

SHRUBLAND - DWARF SHRUBLAND

4000 – Evergreen Shrubland

Mapped in disturbed settings and post fire stands generally less than 15 years old.

4300 – Sclerophyllous Shrubland

4301 – Scrub Interior Live Oak – Scrub Oak – (California Bay – Flowering Ash – Birch Leaf Mountain Mahogany – Toyon - California Buckeye) Mesic East County Mapping Unit

Mapped in dense stands especially in the Blue Ridge, often associated with type 1222.

4302 – Mixed Manzanita – (Interior Live Oak – California Bay – Chamise) West County Mapping Unit

Mapped in a variety of settings usually on slopes not quite as steep or xeric as pure *Adenostoma fasciculatum*. Mesic stands contain more bay, xeric stands generally contain a minor component of *Adenostoma fasciculatum* or *Ceanothus* spp.

4303 – Leather Oak – White Leaf Manzanita – Chamise Xeric Serpentine Mapping Unit

Frequently mapped on xeric serpentine soils where *Pinus sabiniana* is generally below 2-5%. More severe settings contain less *Adenostoma fasciculatum*, however *Adenostoma fasciculatum* may become a substantial component of up to 75% relative cover in less severe settings.

4304 – Leather Oak – California Bay – *Rhamnus* spp. Mesic Serpentine Mapping Unit

Noted on serpentine soils trending concave and northerly. May contain a small component of cypress or brewer willow.

4321 – Chamise Alliance

Mapped frequently throughout the county on xeric slopes where *Adenostoma fasciculatum* makes up at least 70–80% relative cover, generally in a closed chaparral setting.

4322 – Chamise – Wedgeleaf *Ceanothus* Alliance

4323 – Interior Live Oak Scrub Alliance

4324 – Wedge Leaf *Ceanothus* Alliance

4325 – White Leaf Manzanita Alliance

4326 – Scrub Oak Alliance

4327– Leather Oak Alliance

4400 – Temporarily Flooded Shrubland

4425 – Mulefat Alliance

4500 – Microphyllous Shrubland

4501 – Coyote Brush – California Sagebrush (*Lupine* spp.) Mapping Unit

Mapped sparingly only in the extreme southern portion of the county, generally mapped to type 4000 in post disturbance settings elsewhere.

4521– Broom Alliance

4522 – Coyote Brush Alliance

4523 – *Holodiscus* Alliance

4531 – Tamarisk spp. Alliance

5000 – Deciduous Shrubland

5100 – Cold Season Deciduous Shrubland

5121 – Deerbrush Alliance

5122 – Mexican Elderberry Alliance

5200 – Intermittently Flooded to Saturated Deciduous Shrubland

5221 – Narrowleaf Willow Alliance

5222 – Brewer Willow Alliance

HERBACEOUS

6000 – Perennial Herbaceous (Graminoid – Forbs)

6100 – Bunch Forming Grasses

6121 – Creeping Ryegrass Alliance

6122 – Purple Needlegrass Alliance

6123 – One Sided Bluegrass Alliance

6200 – Continuously Forming Sod Grasses

6300 – Temporarily to Seasonally Flooded Grasslands & Forbs

6321 – Giant Reed Alliance

6400 – Semi permanently – Permanently flooded Grasslands & Forbs

6401 (Alkali Bulrush – Bulrush) Brackish Marsh Mapping Unit

Mapped only in areas adjacent to tidal flats south of the town of Napa.

6402 (Bulrush – Cattail) Fresh Water Marsh Mapping Unit

Most mappable stands are found along edges of small ponds and reservoirs.

6403 (Carex spp. – Juncus spp- Wet Meadow Grasses) Mapping Unit

Mapped in swales and low lying areas in most of the major valleys throughout the county.

6420 – Bulrush Alliance

6421 – Bulrush – Cattail Alliance

6422 – Cattail Alliance

6500 – Tidally flooded Grasslands & Forbs

6501 – Saltgrass – Pickleweed Mapping Unit

Extensive areas mapped in tidal regions generally below Cuttings Warf.

6521 – Saltgrass Alliance

6522 – Pickleweed Alliance

6600 – Hydromorphic Rooted Vegetation

7000 – Annual Herbaceous (Graminoid – Forbs)

7100 – Upland Annual Grasslands & Forbs

Generally mapped in stands that are somewhat more disturbed and contain a higher non-native forb component than type 7120. Also mapped in ruderal settings south of Napa.

7101 - Native Grassland Restoration Sites

Noted in association with mining activities near the Knoxville site.

7102 - Native Flower Fields

7120 – California Annual Grasslands Alliance

Mapped in settings where trees make up less than 5–10% emergent cover in fairly natural settings that have not been recently cleared.

7130 - Native Serpentine Grasslands

Mapped using serpentine soils and geology in settings where trees generally make up less than 5–10% emergent cover.

7200 – Seasonally Flooded Grasslands & Forbs (Vernal Pools)

NON VEGETATED

9000 – Sparsely vegetated or non-vegetated

9001 – Rock Outcrop

Mapped where herbaceous or woody vegetation generally is under 5–10% absolute cover.

9002 – Riverine, Lacustrine, and Tidal Mudflats

9100 = Urban or Built-up

9200 = Agriculture

9300 = Vacant

9400 = Water

Appendix B

Vegetation Classification for the 2014 Knoxville Wildlife Area vegetation map

Temperate Forest Subclass

California Forest and Woodland Macrogroup MG009

Californian broadleaf forest and woodland Group

Aesculus californica Alliance

Quercus agrifolia Alliance

Quercus agrifolia / *Ceanothus oliganthus* Association

Quercus agrifolia / *Frangula californica* – *Heteromeles arbutifolia* Association

Quercus douglasii Alliance

Quercus douglasii / grass Association

Quercus douglasii – *Pinus sabiniana* Association

Quercus lobata Alliance

Quercus lobata – *Quercus wislizeni* Association

Quercus lobata – *Salix lasiolepis* Association

Quercus wislizeni tree Alliance

Quercus wislizeni / *Ceanothus oliganthus* Provisional Association

Quercus wislizeni – *Pinus sabiniana* / annual grass – herb Association

Quercus wislizeni – *Pinus sabiniana* / *Arctostaphylos manzanita*

Association

Quercus wislizeni – *Quercus douglasii* – *Aesculus californica* Association

Quercus wislizeni – *Quercus douglasii* – *Pinus sabiniana* / (grass)

Association

Umbellularia californica Alliance

Umbellularia californica – *Quercus wislizeni* Association

Californian evergreen coniferous forest and woodland Group

Callitropsis sargentii Alliance

Southwestern North American Riparian, Flooded and Swamp Forest Macrogroup MG036

Southwestern North American riparian evergreen and deciduous woodland Group

Salix laevigata Alliance

Southwestern North American riparian/wash scrub Group

Salix breweri Alliance

Salix lasiolepis Alliance

Salix lasiolepis Association

Mediterranean Scrub and Grassland Subclass

California Chaparral Macrogroup MG043

Californian xeric chaparral Group

Adenostoma fasciculatum Alliance

Adenostoma fasciculatum – *Heteromeles arbutifolia* / *Melica torreyana*

Association

Ceanothus cuneatus Alliance

Ceanothus cuneatus – *Adenostoma fasciculatum* Association

Eriodictyon californicum Alliance

Eriodictyon californicum / herbaceous Association

Californian mesic chaparral Group

Quercus berberidifolia Alliance

Quercus berberidifolia / *Aesculus californica* Provisional Association
Quercus berberidifolia – *Ceanothus oliganthus* Association
Quercus berberidifolia – *Cercocarpus montanus* Association
Quercus berberidifolia – *Adenostoma fasciculatum* Alliance
Californian pre-montane chaparral Group
Ceanothus oliganthus Alliance
Ceanothus oliganthus – *Adenostoma fasciculatum* Association
Quercus durata Alliance
Quercus durata - *Adenostoma fasciculatum* Provisional Association

California Coastal Scrub Macrogroup MG044

Central and south coastal California seral scrub Group
Eriogonum (elongatum, nudum) Provisional Alliance
Eriogonum nudum Provisional Association
Lupinus albifrons Alliance

California Annual and Perennial Grassland Macrogroup MG045

California annual forb/grass vegetation Group
Eschscholzia (californica) Alliance
Eschscholzia californica Association
Lasthenia californica – *Plantago erecta* – *Vulpia microstachys* Alliance
California perennial grassland Group
Melica (californica, torreyana) Provisional Alliance
Melica californica Provisional Association
Nassella pulchra Alliance
Mediterranean California naturalized annual and perennial grassland Group
Avena (barbata, fatua) Semi-natural Stands
Bromus (diandrus, hordeaceus) – *Brachypodium distachyon* Semi-natural Stands
Centaurea (solstitialis, melitensis) Semi-natural Stands

Temperate and Boreal Shrubland and Grassland Subclass

Western North American Temperate Grassland and Meadow Macrogroup MG048

Western dry upland perennial grassland Group
Thermopsis californica (Alliance unknown) Provisional Association

Western Cordilleran Montane Shrubland and Grassland Macrogroup MG049

Southern Vancouverian montane deciduous scrub Group
Ceanothus integerrimus Alliance

Western North American Freshwater Marsh Macrogroup MG073

Arid West freshwater emergent marsh Group
Typha (angustifolia, domingensis, latifolia) Alliance
Typha domingensis Association

Western North America Vernal Pool Macrogroup MG074

Californian mixed annual/perennial freshwater vernal pool / swale bottomland Group
Eleocharis macrostachya Alliance
Eleocharis macrostachya Association
Eryngium aristulatum Alliance

Western North America Wet Meadow and Low Shrub Carr MG075

Californian warm temperate marsh/seep Group
Carex barbarae Alliance
Carex senta Provisional Association
Carex serratodens Provisional Alliance

Juncus arcticus (var. *balticus*, *mexicanus*) Alliance
Leymus triticoides Alliance
Juncus (*oxymeris*, *xiphioides*) Alliance

Mediterranean, Temperate, and Boreal Nonvascular and Sparse Vegetation Subclass

California Cliff, Scree, and Other Rock Vegetation Macrogroup MG110

Central California Coast Ranges cliff and canyon Group

Allium falcifolium - *Eriogonum* spp. - *Streptanthus* spp. Provisional Semi-natural
Stands