Biological Resources Survey for the Teichert Meadows Preserve, Yolo County, California

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INTRODUCTION

The Teichert Meadows Preserve lies west of County Road 94-B, south of County Road 20, and along the north side of Cache Creek (Figure 1). Teichert Meadows Preserve occupies approximately 105 acres. The purpose of this biological resources survey report is to:

- describe the plant communities and wildlife habitats at the Teichert Meadows Preserve;
- assess wildlife values for each plant community and wildlife habitat type;
- determine whether special-status wildlife species (i.e., state-listed or federally listed wildlife species, candidates for listing as threatened or endangered under the federal Endangered Species Act, and state species of special concern) or their habitats occur there.

STUDY AREA AND SETTING

The Teichert Meadows Preserve consists of 105 acres of natural and agricultural wildlife habitats. The quality of these habitats and minimal human disturbance have encouraged use of the area by many wildlife species. Also, this area is one of the least disturbed areas along lower Cache Creek, which increases its value for wildlife. The most significant features of the preserve are Cache Creek and Gordon Slough, which are along the southern portion of the preserve and north-central portion of the preserve, respectively. The preserve provides important habitat for riverine and riparian wildlife and raptors and potential habitat for several special-status wildlife species.

Methods

Biological resources occurring on the Teichert Meadows Preserve were identified based on a field survey, aerial photograph interpretation, a review of pertinent literature and databases, and information from knowledgeable individuals. A survey for biological resources was conducted on August 20, 1995. During the field survey, habitat types were mapped on an aerial photograph. The survey assessed the quality of wildlife habitats and wildlife use of the preserve. It targeted special-status wildlife species and was conducted on a reconnaissance level.

Plant Communities and Wildlife Habitats

Four primary biological communities occur on the Teichert Meadows Preserve: riverine (Cache Creek and Gordon Slough), riparian forest and scrub habitat, valley oak savanna, and annual grassland. The preserve and surrounding area is relatively flat, except along Cache Creek and Gordon Slough. The preserve has not been cultivated, unlike most of the surrounding region.

Riverine Habitat

Riverine habitats are in two locations at the Teichert Meadows Preserve: Cache Creek and Gordon Slough. Cache Creek drains from the eastern slopes of the Coast Range of northern California onto the plains of the western Sacramento Valley. The creek flows past the preserve along the southern border and discharges into the Yolo Bypass east of the City of Woodland. The creek runs nearly dry in most reaches during the summer and fall, has moderate flows from December to April, and has peak flows between January and February (Brown and Caldwell and Jones & Stokes Associates 1989). However, the reach of Cache Creek bordering the Teichert Meadows Preserve sustains perennial base flow and permanent open water and marsh because of geologic conditions that cause groundwater to surface in the low-flow channels (Jones & Stokes Associates 1995).

Gordon Slough drains from the southern portion of the Hungry Hollow and Dunnigan Hills area and discharges into Cache Creek at the Teichert Meadows Preserve. Water from the West Adams Canal is also discharged into Gordon Slough, substantially increasing flows during the irrigation season.

Vegetation. Vegetation in Cache Creek at the Teichert Meadows Preserve consists of woody and herbaceous species commonly found along low-gradient streams in the western Sacramento Valley (Jones & Stokes Associates 1995). Several vegetation types and substrates are present in the channel of Cache Creek at the Teichert Meadows Preserve. Deposition bars with sparse herbaceous vegetation are found along the creek. Emergent marsh vegetation (i.e., watergrass, smartweed, spikerush, common tule, and broad-leaved cattail) occur in depressions along with riparian scrub species such as Fremont cottonwood and willows. Perennial open water is present in the low-flow channels.

The channel of Gordon Slough is primarily open water with steep banks.

Wildlife. Cache Creek is a locally and regionally significant stream for aquatic and riparian wildlife. The riverine habitat provides important foraging, roosting and resting, and rearing habitats for many wildlife species, especially water birds, amphibians, and aquatic reptiles. Many water birds forage regularly along Cache Creek, including great blue herons, great egrets, snowy egrets, black-crowned night-herons, green herons, killdeer, and spotted sandpipers. Mallards nest in the area and rear their young in the shallow water during the late spring and summer. Lesser nighthawks, an uncommon bird in Yolo County, nests on the gravel bars during spring and summer and forages along

the creek and adjacent fields. These nighthawks were observed nesting on the gravel bars in the preserve in 1995.

Cache Creek in the preserve area is an important breeding and rearing habitat for amphibians and aquatic reptiles. Pacific chorus frogs and western toads lay their eggs in the quiet backwater pools and shallow side channels during spring. After hatching, the tadpoles feed and mature in the warm shallow water until they metamorphose into adults and move to the adjacent land until the next breeding season. Bullfrogs are also a prolific non-native breeding amphibian in the preserve area. Bullfrog eggs and tadpoles are a major food item of wading birds and small mammals. The creek in this perennial flow reach is also an important habitat for the northwestern pond turtle, which is discussed in the "Special-Status Wildlife Species" section.

Riparian Habitats

A band of well-developed riparian and valley oak woodland grows along the north bank of Cache Creek and along both banks of Gordon Slough. Riparian scrub dominates the area around the confluence of Gordon Slough and in the active channel of Cache Creek.

Vegetation. The riparian woodland along Cache Creek is characterized by native deciduous broad-leafed trees and shrubs. Dominant trees along the creek include Fremont cottonwood, Goodding's willow, and yellow willow. Sandbar willow, Oregon ash, and box elder are typical species in the secondary layer. Riparian tree stands exhibit several age classes at the Teichert Meadows Preserve, reflecting past conditions of historic mining, natural regeneration, and undisturbed sites. Several clumps of tamarisk and false bamboo, invasive exotics, also exist along Cache Creek, especially near the bridge at the confluence of Gordon Slough. Horsetails, tules, and cattails occur in the lower terrace of the creek, especially near the confluence of Gordon Slough.

The riparian habitats along Gordon Slough consist of riparian woodland and riparian scrub. The riparian woodland consists of mature and young valley oaks, elderberry shrubs, and willows. The confluence of Gordon Slough is dominated by sandbar willow. Tamarisk and false bamboo also occur in dense patches near the confluence area.

Wildlife. Riparian habitats support the densest and most diverse wildlife communities in the Sacramento Valley. The diversity of plant species and growth forms provides a variety of foods and microhabitat conditions for riparian wildlife along Cache Creek and Gordon Slough. The unique combination of surface water and groundwater, fertile soils, high nutrient availability, and layered vegetation provides diverse conditions for wildlife on the preserve.

The mature cottonwoods and valley oaks along the creek and slough provide suitable nesting and roosting sites for Swainson's hawks, red-tailed hawks, great horned owls, yellow-billed magpies, and American crows. The riparian vegetation supports an abundance of insects and other invertebrates that feed on fresh foliage and stems during the growing season. These insects provide food for many species of resident and migratory birds, such as Nuttall's woodpeckers, northern

flickers, white-breasted nuthatches, yellow-rumped warblers, Wilson's warblers, orange-crowned warblers, warbling vireos, and plain titmice.

Several species of mammals occur in the riparian habitats at the Teichert Meadows Preserve: black-tailed hares, Botta's pocket gophers, coyotes, gray foxes, and bats.

Invasive exotic plants such as tamarisk and false bamboo have low wildlife value, although tamarisk does provide cover for some animals, such as California quail. These exotic plants often displace native plants (e.g., willows, cottonwoods, and ash) that have higher wildlife value. Many federal, state, and local agencies and conservation groups are developing and implementing plans for controlling false bamboo and tamarisk.

Valley Oak Savanna

Valley oak woodlands and savannas are uncommon along Cache Creek downstream of Capay Valley. Because the Teichert Meadows Preserve oak savanna is one of the few oak savannas along lower Cache Creek, it has significant local and regional value for wildlife. Valley oak savanna occurs in the northeastern and western portions of the preserve.

Vegetation. Numerous mature valley oak trees are present in the valley oak savanna area, and black walnut and almond trees are present along the fenceline. The understory vegetation consists of annual grasses and non-native weeds, such as yellow star-thistle. This community is actively regenerating, with many valley oak saplings growing throughout the savanna. At least one snag (i.e., standing dead tree) was observed in the savanna. Large snags are also uncommon along Cache Creek.

Wildlife. The mature valley oaks on the preserve provide suitable nesting and roosting sites for Swainson's hawks, red-tailed hawks, great horned owls, and American crows. Red-tailed hawks, Swainson's hawks, and great horned owls have nested on the preserve in previous years (Jones & Stokes Associates file data). Acorns produced by valley oaks are an important autumn food source for many species at the Teichert Meadows Preserve, including mule deer, wild turkey, California quail, acorn woodpeckers, northern flickers, scrub jays, yellow-billed magpies, and white-breasted nuthatches.

The oak trees and snags provide high-quality nest sites for cavity-nesting wildlife. Cavity-nesting birds, such as acorn woodpeckers, Nuttall's woodpeckers, and Bewick's wrens, nest in the oaks and snags. Because snags are uncommon along lower Cache Creek, their value for wildlife is significant. In addition to cavity-nesting birds, bats probably roost and breed in the oaks and snags. Bats consume large amounts of insects, including many agricultural pests.

Several other species of mammals occur in the valley oak savanna, including black-tailed hares, California voles, California ground squirrels, Botta's pocket gophers, coyotes, and gray foxes.

Annual Grassland

Grasslands are common in northern California. They tend to be dominated by non-native annual grasses and forbs, although many native plants may be present. Annual grassland occurs on the eastern portion of the property. The grassland area appears to have been disturbed in the past, which encourages non-native grasses and forbs.

Vegetation. The annual grassland on the property is dominated by weedy grasses and forbs. Yellow star-thistle, a noxious weed that was accidentally introduced into California in the mid-1800s, is prevalent in this plant community. Other associated forbs include common agricultural weeds such as wild mustard and field bindweed. Also present are elderberry shrubs, poison-oak, tree tobacco, and yerba santa. Large snags are also present in the grassland area.

Wildlife. Although this area appears to be disturbed from natural conditions, the grassland has moderate to high value for some wildlife species. Rodents and some species of birds and snakes are common in the grassland. Pocket gophers and California voles, which are hunted by hawks, owls, coyotes, and gray fox, are common. Swainson's hawks, red-tailed hawks, white-tailed kites, American kestrels, and great horned owls have been observed foraging in the grassland.

Special-Status Wildlife Species

Seven special-status wildlife species potentially could occur at the Teichert Meadows Preserve. These species are the Swainson's hawk, white-tailed kite, tricolored blackbird, valley elderberry longhorn beetle (VELB), valley oak ant, ancient ant, and northwestern pond turtle.

Swainson's Hawk

The Swainson's hawk has generated considerable public interest recently in the Central Valley of California. Urban development is eliminating and fragmenting essential foraging habitat, which could threaten a large segment of the remaining Swainson's hawk population. This has prompted state and federal agencies, local governments, landowners, and developers to work toward solutions to successfully mitigate the losses of habitat and develop conservation strategies, such as county and regional habitat management planning, to maintain and enhance population levels of Swainson's hawks in the Central Valley.

Status and Distribution. The Swainson's hawk is designated as a threatened species under the California Endangered Species Act. The Swainson's hawk historically inhabited the open grassland communities throughout most of lowland California. A variety of habitat changes, including the conversion of native Central Valley grasslands to agriculture (especially vineyards, orchards, and rice), urban and industrial development, and possible disturbances on the species' South American wintering grounds, caused the Swainson's hawk population to decline by more than 90%

from levels at the time of European settlement (California Department of Fish and Game 1992). The current statewide distribution is limited to extreme northeastern California, Central Valley, and portions of southern California. The current statewide population estimate is 550 breeding pairs (California Department of Fish and Game 1992).

Life History and Habitat Requirements. The widespread conversion of native grasslands to agricultural uses has limited Swainson's hawk foraging habitat in the Central Valley to intensively farmed agricultural fields and pasturelands (Estep 1989). These hawks require large, open areas for foraging; agricultural crops that are compatible with their foraging behavior include hay and grain crops, dryland pastures, and certain row crops. Other agricultural uses, such as vineyards, orchards, and rice fields, are of low value and have contributed to the reduction of available Swainson's hawk foraging habitat. Hence, cropping patterns in the Central Valley influence the distribution, foraging behavior, foraging range size, and reproductive success of Swainson's hawks (Estep 1989).

Swainson's hawks in the Central Valley usually nest in large, mature trees. Mature valley oaks, cottonwoods, and black walnuts are the trees most commonly used as nest sites. Nesting habitat in the Central Valley includes riparian habitats, oak groves, and lone oak trees and is usually adjacent to suitable foraging habitat. Eucalyptus trees are also used as nest sites, but to a lesser degree than native trees.

Yolo County supports the highest population density of Swainson's hawks in the Central Valley and perhaps within the breeding range of the species (Estep 1989). Nesting habitat in the form of narrow riparian systems and scattered valley oak trees combined with suitable agricultural foraging habitat provide high-quality habitat conditions for these hawks. Recent countywide surveys indicate that at least 100 pairs nest in the county (Jones & Stokes Associates file data and Natural Diversity Data Base 1995). At least 10 pairs of Swainson's hawks are known to nest along or adjacent to Cache Creek (Natural Diversity Data Base 1995 and Jones & Stokes Associates file data).

Status at the Teichert Meadows Preserve. The Teichert Meadows Preserve supports high-quality nesting habitat for Swainson's hawks. The large valley oaks, cottonwoods, and black walnuts provide suitable nest sites for this hawk.

One Swainson's hawk nest was located at the Teichert Meadows Preserve during a 1994 field survey conducted by Roger Scoonover for the California Department of Fish and Game (Scoonover pers. comm.). In 1995, this pair of Swainson's hawks nested nearby in a black walnut along County Road 94-B, north of County Road 20.

The grassland is considered suitable foraging habitat for this hawk. During the field survey, one Swainson's hawk was observed foraging in the grassland area. Swainson's hawks probably forage regularly at the Teichert Meadows Preserve.

White-Tailed Kite

Status and Distribution. The white-tailed kite (also known as the black-shouldered kite) is designated as a fully protected species by DFG. The kite population in California declined to about 50 breeding pairs in the 1930s, but the population increased substantially through the 1970s. The kite population is variable from year to year, but its population appears to be stable over the long term.

Life History and Habitat Requirements. White-tailed kites nest in trees and large shrubs in riparian habitats, wetland habitats, and oak savannas, and they forage in grasslands, wetlands, and agricultural fields. Kites probably nest along lower Cache Creek and forage in the adjacent grasslands and agricultural fields.

Status at the Teichert Meadows Preserve. The grassland is suitable foraging habitat for kites, and the mature oaks and cottonwoods are suitable nesting trees for kites. One kite was observed foraging in the grassland area. White-tailed kites probably nest in the vicinity of the Teichert Meadows Preserve.

Tricolored Blackbird

Status and Distribution. The tricolored blackbird is a Category 2 candidate for federal listing as threatened or endangered and is a state species of special concern. This blackbird is largely endemic to California (Neff 1937). During the breeding season, tricolored blackbirds occur in the Central Valley, the low foothills of the Sierra Nevada and Coast Ranges from Shasta County south to Kern County, along the coast from Sonoma County south to the Mexican border, and on the Modoc Plateau (Grinnell and Miller 1944, Beedy et al. 1991).

Between the 1930s and the 1980s, the tricolored blackbird population declined by an estimated 90% (Beedy et al. 1991). Grinnell and Miller (1944) noted a general population decline of this species in southern California but a population increase in the Sacramento Valley due to water management practices. Tricolored blackbirds continue to breed throughout their historical range, although populations have declined within this range (McCaskie et al. 1979).

The tricolored blackbird population has declined primarily from conversion of wetland breeding habitats and grassland foraging habitats to agricultural uses. Habitat loss, reduction of food resources, direct poisoning of nesting colonies, nest disturbances by predators and humans, and competition with red-winged blackbirds threaten remaining populations of tricolored blackbirds (Beedy et al. 1991).

Life History and Habitat Requirements. The tricolored blackbird is generally considered a marsh species, nesting primarily in tule and cattail marsh habitats. With the reduction of wetland habitats in California, an increasing percentage of tricolored blackbirds have recently been found nesting in non-marsh habitats, such as blackberry brambles, thistle stands, and nettle (Beedy et al.

1991). Proximity to suitable foraging habitat such as flooded fields, grassy fields, and pond margins is an important factor in nest site selection (Grinnell and Miller 1944, Beedy et al. 1991).

Tricolored blackbirds nest in small to large colonies (up to 50,000 individuals). They often return to the same nesting areas in subsequent years but will occasionally relocate their breeding colonies if suitable habitat is available elsewhere or if their nest site or foraging area is disturbed. Nests are built in dense emergent vegetation or blackberry thickets bordering open water (Neff 1937). Nesting colonies of tricolored blackbirds are highly susceptible to disturbance.

Tricolored blackbirds forage in large flocks and may travel up to 4 miles from nest or roost sites to forage (Orians 1961). In the Central Valley, foraging habitat consists primarily of pastures and certain types of agricultural fields.

In winter, tricolored blackbirds often leave the immediate vicinity of their nesting colonies and concentrate in huge roosts in marsh habitats (Grinnell and Miller 1944).

Status at the Teichert Meadows Preserve. A tricolored blackbird nesting colony was located in 1992 on Cache Creek near the southwestern corner of the Coors property and approximately 4,000 feet west of the Teichert Meadows Preserve site. In 1992, the adult blackbirds were observed carrying food to the nesting area, which indicates nesting activity. (Jones & Stokes Associates 1992.)

In 1992, the colony was estimated to contain 1,000 birds. Additional surveys were conducted in late April 1993. No tricolored blackbirds were observed in the area or foraging in surrounding fields. No tricolored blackbirds were observed nesting or feeding at the Teichert Meadows Preserve during the 1992 and 1993 surveys. (Jones & Stokes Associates 1992.)

The cattail and tule marsh in Cache Creek at the Teichert Meadows Preserve is considered moderate-quality tricolored blackbird nesting habitat, and the grassland is considered low-quality foraging habitat. No tricolored blackbirds were observed during the field survey, but the Teichert Meadows Preserve is considered potential habitat for this species.

Valley Elderberry Longhorn Beetle

The VELB has generated a great deal of interest and controversy in the last 10-15 years because of its presence in riparian habitats, where development, levee maintenance projects, and gravel mining projects frequently occur.

Status and Distribution. The VELB is federally listed as threatened by USFWS. In 1984, the VELB was known to live only in three Central Valley drainages: Merced River, Putah Creek, and American River (U.S. Fish and Wildlife Service 1984). Since designation of the VELB as a federally listed threatened species in 1980, field surveys have detected many locations of the VELB through collection of adult beetles or observations of emergence holes in elderberry stems. VELB is now

known to occur in small numbers in streamside vegetation throughout the Central Valley up to the 2,200-foot elevation (Barr 1991). In recent years, VELB emergence holes have been found on elderberry shrubs along Cache Creek (Brown and Caldwell and Jones & Stokes Associates 1989).

Life History and Habitat Requirements. Although little is known about the life history of the VELB, the sequence of events is believed to be similar to those of several related species (U.S. Fish and Wildlife Service 1984). Females deposit eggs on foliage or leaf petioles at the tips of branches of living elderberry shrubs and in bark crevices of larger stems and trunks. Presumably, the eggs hatch shortly after they are laid, and the larvae bore into the pith.

When larvae are ready to pupate, they work their way through the pith of the elderberry, open an emergence hole through the bark, and then return to the pith for pupation. Adults exit through the emergence holes and then can be found on elderberry foliage, flowers, or adjacent vegetation.

The presence of emergence holes in elderberry stems indicates VELB presence and habitat use; however, there is no way to estimate the number of beetle larvae within each elderberry shrub. Recent fieldwork indicates that larvae galleries sometimes exist in stems with no obvious evidence of emergence holes, and larvae have been found in stems of fairly young plants with no emergence holes (Jones & Stokes Associates 1988).

Status at the Teichert Meadows Preserve. High-quality VELB habitat is present at the Teichert Meadows Preserve. The Teichert Meadows Preserve is probably the highest quality VELB habitat area along the lower Cache Creek area because the shrubs are present in riparian and oak savanna habitats, whereas most elderberries along Cache Creek are isolated and exposed. Potential VELB emergence holes have been detected on previous visits to the Teichert Meadows Preserve (Jones & Stokes Associates file data).

Elderberry shrubs are located throughout the Teichert Meadows Preserve area but are most abundant along Gordon Slough, the northern and eastern fencelines, and around the barn. No emergence holes were detected during this field survey, but not all elderberry shrubs were searched. It was too late in the summer to find adult beetles. VELB could occur in low numbers at the Teichert Meadows Preserve.

Valley Oak Ant and Ancient Ant

Status and Distribution. Two species of rare ants are known to occur along Cache Creek. The ancient ant and valley oak ant are federal Category 2 candidate species for federal listing as threatened or endangered. The ancient ant is known only from its type locality at the intersection of County Road 17 and State Route 113, 2.5 miles east of the town of Yolo (approximately 6 miles east of the Teichert Meadows Preserve) (Ward pers. comm.).

The valley oak ant is known from two locations on Cache Creek and from several other locations in California. The first location is described above for the ancient ant. The second location

is along the west side of County Road 94-B, just south of Cache Creek (Ward 1988, Ward pers. comm.). The County Road 94-B valley ants were found along the side of the road under valley oak trees (Ward 1988, Ward pers. comm.).

Life History and Habitat Requirements. Little is known about the two ants' distribution and habitat requirements. The ants are known only from riparian valley oak woodlands (Ward 1988). The best time to survey for the ants is during spring when the soil is moist and the ants are on the ground surface. As the soil dries out during late spring and summer, the ants retreat into the ground (Ward pers. comm.).

Status at the Teichert Meadows Preserve. The valley oak savanna is considered potential habitat for these ants. No surveys were conducted to determine their status at the Teichert Meadows Preserve. If one or both of the ants occur at the Teichert Meadows Preserve, it would be an important site for the species, especially for the ancient ant, which is known from one location in the world. Specialized surveys would need to be conducted by an entomologist to determine whether these ants occur at the Teichert Meadows Preserve.

Northwestern Pond Turtle

Status and Distribution. The northwestern pond turtle (pond turtle), a subspecies of the western pond turtle, is a California species of special concern and a federal Category 2 candidate species for federal listing as threatened or endangered. The northwestern pond turtle occurs from the American River in California northward to the Columbia River in Oregon.

The pond turtle appears to be declining over most of its historical range. Recent studies indicate that the turtle has declined in more than 75-80% of its range. Many areas support older, nonbreeding individuals that may not be considered viable populations. (Holland pers. comm.)

Pond turtle populations have declined for several reasons, including overexploitation, loss and alteration of stream and wetland habitats, fragmentation of pond turtle habitats (wetlands, streams, and adjacent uplands), and the introduction of exotic fish and wildlife species. Other threats that could have contributed to the decline of pond turtles include water pollution and long-term climate changes (Holland pers. comm).

Life History and Habitat Requirements. The pond turtle is thoroughly aquatic, preferring the quiet waters of ponds, sluggish streams, sloughs, small reservoirs, and wetlands. Pond turtles use rocks and logs for basking. Upland habitat (e.g., streambanks, grasslands, upland scrub habitats, and oak savannas) is required for pond turtle nesting sites. Pond turtles may travel 0.25-0.5 mile upslope from a water source to lay eggs in undisturbed grassland or scrub habitats (Brode pers. comm.), although they often use the banks adjacent to a stream (Hansen pers. comm.).

Most of lower Cache Creek is considered degraded pond turtle habitat, although large numbers of adult turtles could occur throughout the length of the creek (Hansen pers. comm.).

Status at the Teichert Meadows Preserve. Lower Cache Creek has been significantly altered by agricultural activities, water diversion for farming, and gravel extraction projects. Much of the upland habitat has been converted to row, grain, and tree crops, which has eliminated most of the potential pond turtle-breeding habitat adjacent to the creek. The Teichert Meadows Preserve is unique along Cache Creek, in that it is one of the few suitable pond turtle-breeding areas outside of the creek's bank.

No pond turtles were observed during the field survey, but the creek in the study area is considered suitable aquatic habitat. Gordon Slough is considered high-quality aquatic habitat for the pond turtle. Many pond turtles probably use Gordon Slough for foraging and resting (Hansen pers. comm.).

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Appendix A. Common and Scientific Names of Plants Mentioned in the Text or Observed at the Teichert Meadows Preserve

Common Name	Scientific Name
Box elder	*Acer negundo*
False bamboo	*Arundo donax*
Wild mustard	*Brassica* sp.
Yellow star-thistle	*Centaurea solstitialis*
Field bindweed	*Convolulus arevensis*
Watergrass	*Echinochloa crus-galli*
Spikerush	*Eleocharis* sp.
Horsetail	*Equisetum* sp.
Yerba santa	*Eriodyctyon* sp.
Oregon ash	*Fraxinus latifolia*
Black walnut	*Juglans hindsii*
Tree tobacco	*Nicotiana glauca*
Smartweed	*Polygonum* sp.
Fremont's cottonwood	*Populus fremontii*
Almond	*Prunus amygdalus*
Valley oak	*Quercus lobata*
Goodding's willow	*Salix gooddingii*
Yellow willow	*Salix lutea*
Sandbar willow	*Salix sessifolia*
Blue elderberry	*Sambucus mexicana*
Common tule	*Scirpus acutus*
Tamarisk	*Tamarix* sp.
Poison oak	*Toxicodendron diversilobum*
Broad-leaved cattail	*Typha latifolia*

Appendix B. Common and Scientific Names of Animals Mentioned in the Text or Observed at the Teichert Meadows Preserve

Common Name	Scientific Name
Invertebrates	
Valley elderberry longhorn beetle**	*Desmocerus californicus dimorphus*
Valley oak ant	*Proceratium californicum*
Ancient ant	*Smithistruma reliquia*
Amphibians	
Western toad	*Bufo boreas*
Pacific chorus frog	*Pseudacris (Hyla) regilla*
Bullfrog	*Rana catesbeiana*
Reptiles	
Northwestern pond turtle	*Clemmys marmorata marmorata*
Birds	
Great blue heron*	*Ardea herodias*
Great egret*	*Casmerodius albus*
Snowy egret*	*Egretta thula*
Green heron	*Butorides striatus*
Black-crowned night-heron	*Nycticorax nycticorax*
Mallard*	*Anas platyrhynchos*
White-tailed (black-shouldered) kite	*Elanus leucurus*
Swainson's hawk*	*Buteo swainsoni*
Red-tailed hawk*	*Buteo jamaicensis*
American kestrel*	*Falco sparverius*
Wild turkey*	*Meleagris gallopavo*
California quail*	*Callipepla california*

Common Name	Scientific Name
Kildeer*	*Charadrius vociferus*
Spotted sandpiper*	*Actitis macularia*
Great horned owl*	*Bubo virginianus*
Lesser nighthawk*	*Chordeiles acutipennis*
Acorn woodpecker*	*Melanerpes formicivorus*
Nuttall's woodpecker*	*Picoides nuttallii*
Northern flicker*	*Colaptes auratus*
Scrub jay*	*Aphelocoma coerulescens*
Yellow-billed magpie*	*Pica nuttalli*
American crow*	*Corvus brachyrhynchos*
Plain titmouse*	*Parus inornatus*
White-breasted nuthatch*	*Sitta carolinensis*
Bewick's wren*	*Thryomanes bewickii*
Warbling vireo	*Vireo gilvus*
Orange-crowned warbler*	*Vermivora celata*
Yellow-rumped warbler	*Dendroica coronata*
Wilson's warbler*	*Wilsonia pusilla*
Tricolored blackbird	*Agelaius tricolor*
Mammals	
Black-tailed hare*	*Lepus californicus*
California ground squirrel*	*Spermophilus beecheyi*
Botta's pocket gopher*	*Thomomys bottae*
California vole	*Microtus californicus*
Coyote*	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
Mule deer*	*Odocoileus hemionus*

* Observed at the Teichert Meadows Preserve.
** Potential emergence holes.