2007 Habitat Monitoring Report:
Carnegie State Vehicular Recreation Area
and
Prairie City State Vehicular Recreation Area

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Habitat monitoring at Carnegie State Vehicular Recreation Area- 2007

Site Description

Carnegie State Vehicle Recreation Area (CSVRA) encompasses 4,500 acres in the coastal hills of western San Joaquin and eastern Alameda counties (see map in Appendix). This total area includes nearly 3,000 acres east of the original park not currently used for OHV recreation. The topography is steep, with several habitats represented: blue oak woodland and savanna, annual grassland, coastal scrub, and riparian scrub. The climate is Mediterranean, with cool, wet winters and hot dry summers. The unit is open to motorcycle, ATV, and other 4 X 4 vehicle recreation, except in the recently acquired properties. A network of established vehicle trails, along with "volunteer" trails, creates a web over the hills and through the ravines of CSVRA. The non-riding area in the eastern half of the unit includes a high plateau (1500 – 2000 feet elevation) of rolling hills and a long section of Corral Hollow Creek that has remained relatively undisturbed, apart from grazing use.

Grassland habitats cover the steep slopes of the hills and consist mainly of non-native grasses and forbs. However, native species such as purple needlegrass (*Nassella pulchra*), blue wildrye (*Elymus glaucus* ssp. *glaucus*), and California fescue (*Festuca californica*) are also present (unpublished data). Blue oaks (*Quercus douglasii*) are the dominant tree found on both the slopes and ravines, with a wide range of canopy cover, although valley oak (*Quercus lobata*) is found also in lower elevations and near waterways. On the higher slopes conifer species include California juniper (*Juniperus californica*) and foothill pine (*Pinus sabiniana*) and shrub species include California buckeye (*Aesculus californica*), holly-leaf redberry (*Rhamnus ilicifolia*), and toyon (*Heteromeles arbutifolia*). Riparian habitat in the park would best be described as riparian scrub, with Fremont cottonwood (*Populus fremonti*), valley oak, and western sycamore (*Platanus racemosa*) being the dominant tree species, though more sparsely distributed than in Valley-Foothill Riparian habitats found in the Central Valley. The dominant shrub species of the lower drainages is mulefat (*Baccharis salicifolia*), although in the ravines bisecting the hills desert olive (*Forestiera pubescens*) is also found in thickets. Coastal scrub habitat covers much of the hillsides and includes California sagebrush (*Artemesia californica*), black sage (*Salvia mellifera*), flannel bush (*Fremontodendrum californicum*) and bush monkeyflower (*Mimulus aurantiacus*) (unpublished data).

Because of its position in the rain shadow of the Coast Range, CSVRA is unique in that it contains the northernmost range of several arid or desert habitat species, as well as other desert inhabiting species. These include desert olive, desert buckwheat (*Eriogonum faciculatum* var. *polyfolium*), Mormon tea (*Ephedra californica*), western spadefoot (*Scaphiopus hammondi*), glossy snake (*Arizona elegans*), coachwhip (*Masticophis flagellum*), Cassin's kingbird (*Tyrannus vociferens*), greater roadrunner (*Geococcyx californianus*), phainopepla

(*Phainopepla nitens*), desert woodrat (*Neotoma lepida*), and Heermann's kangaroo rat (*Dipodomys heermanni*) (unpublished data).

Other wildlife typically seen at or near the unit includes black-tailed deer (*Odocoileus hemionus*), tule elk (*Cervus elaphus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), red-tailed hawk (*Buteo jamaicensis*), and California ground squirrel (*Spermophilus beecheyi*). In addition, nine special status or listed animal species are known to inhabit CSVRA. These include foothill yellow-legged frog (*Rana boylii*), California red-legged frog (*Rana aurora draytonii*), western pond turtle (*Clemmys marmorata*), western spadefoot toad (*Scaphiopus hammondii*), California tiger salamander (*Ambystoma californiense*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), American badger (*Taxidea taxus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Also, potential habitat exists for Alameda whipsnake (*Masticophis lateralis euryxanthus*) and San Joaquin kit fox (*Vulpes macrotis*). Occasionally mountain lions (*Puma concolor*) pass through the park. Non-native species such as feral pig (*Sus scrofa*) and wild turkey (*Meleagris gallopavo*) are also present, though in small numbers. Part of the purpose for monitoring wildlife in the unit is to maintain a vigil for threatened or endangered species, and to detect any changes in species abundance or general composition.

Survey effort

Surveys were conducted for birds during the winter of 2006 / 2007 (December 29, January 10 & 17) and spring of 2007 (April 23, 24, 25, 30 & May 1), and for amphibians during the winter (January 17) and spring (March 6, 20, 21 & April 23, 30) of 2007. Surveys included between two and four people during any one time; both Parks employees and volunteers were involved with the field work. Training was given to all workers in survey methods and identification of species and life stages.

Each bird survey route was surveyed four times per year (two in winter and two in spring), and a total of 29.7 survey hours were spent by two Parks personnel and other volunteer help (table 1). Out of this total time, 13.2 hours were spent surveying in the riding area and 16.5 hours spent in the nonriding area. The total length of routes for each use area was 2.71 miles for the riding area and 2.74 miles for the nonriding area. A minimum of four people were used for surveys, split into two groups of two or more in order to cover two routes at a time. Two Parks ecologists were present each survey day, and rangers were always made aware of the fieldwork ahead of time.

Table 1. Avian survey schedule and time effort for CSVRA in 2006 - 2007.

Date	Site	Time (min.)	Length
12/29/2006	Corral Hollow	46	1.2 mi.
	Pottery / Franciscan	52	1.0 mi.

	Tesla West	98	1.2 mi.
	Upper Ranch	41	0.63 mi.
	Mitchell Ravine	90	0.92 mi.
1/10/2007	Corral Hollow	68	1.2 mi.
	Pottery / Franciscan	66	1.0 mi.
	Kiln Canyon	74	0.61 mi.
	Tesla West	112	1.2 mi.
	Upper Ranch	42	0.63 mi.
1/17/2007	Kiln Canyon	65	0.61 mi.
	Mitchell Ravine	68	0.92 mi.
4/23/07	Corral Hollow	83	1.2 mi.
	Kiln Canyon	82	0.61 mi.
	Tesla West	100	1.2 mi.
4/24/07	Mitchell Ravine	67	0.92 mi.
4/25/07	Upper Ranch	96	0.63 mi.
4/26/07	Pottery / Franciscan	85	1.0 mi.
4/30/07	Corral Hollow	105	1.2 mi.
	Mitchell Ravine	100	0.92 mi.
	Kiln Canyon	63	0.61 mi.
	Tesla West	70	1.2 mi.
5/1/07	Upper Ranch	110	0.63 mi.
	Total hours / length	**29.7 hrs**	**22.2 mi.**

Amphibian surveys were conducted on six separate days; including one nocturnal survey. A total of 30 surveys were conducted for 23 different sites in the park. Four sites were surveyed twice and two sites were surveyed three times. Each survey consisted of between one and four State Parks personnel, and totaled 10.1 hours (table 2). This year, four additional pond sites in the Upper Ranch area were included in surveys (map & photos in Appendix). These are ponds surveyed originally by Carlos Davidson in 1998.

Table 2. Amphibian survey schedule and time effort for 2007.

Date	Site	Time (hrs)	Length	Area
1/17/07	Stream along west park boundary	0.75	300 yd	
1/17/07	Tesla stock pond	0.25		0.04 ac
1/17/07	Sector office pond	0.25		0.30 ac
1/17/07	Mitchell ravine pond	0.25		0.17 ac
3/6/07	Large pond	0.38		0.36 ac
3/6/07	Small pond	0.18		0.17 ac
3/6/07	Old pipe pond	0.27		0.15 ac
3/6/07	Refrigerator pond	0.38		0.29 ac
3/6/07	Trough pond	0.15		0.09 ac
3/6/07	Lone oak pond	0.13		0.08 ac
3/6/07	Tesla west (stock pond & creek)	0.63	400 yd.	0.04 ac
3/6/07	Sector office pond	0.23		0.30 ac
3/6/07	CTS pond	0.03		0.44 ac

3/20/07	Kiln Canyon basin	0.25		0.15
3/20/07	Corral Hollow- east riding area	0.17	?	
3/20/07	Carroll pond	0.17		?
3/20/07	Tyson's pond	0.17		0.33 ac
3/20/07	Mitchell's ravine pond	0.17		0.17 ac
3/20/07	Mobile home pond	0.20		0.08 ac
3/21/07	Tesla west (stock pond & creek)	1.25	400 yd.	0.04 ac
3/21/07	Sector office pond	0.5		0.23 ac
3/21/07	CTS pond	0.08		0.44 ac
3/21/07	Corral Hollow- riding area	0.33	~1800 yd.	
3/21/07	Tony's pond	0.08		0.03 ac
3/21/07	North parcel pond	0.33		0.5 ac
3/21/07	Hidden pond	0.67		0.4 ac
3/21/07	Ravine ponds	0.08		0.15 ac
3/21/07	Lucky find pond	0.25		0.07 ac
4/23/07	Tesla west- creek upstream	0.5	400 yd.	
4/30/07	Tesla west- stock pond & creek	0.5	400 yd.	0.04 ac
6/27/07	Lone oak pond	0.08		0.08 ac
6/27/07	Trough pond	0.17		0.09 ac
6/27/07	Refrigerator pond	0.25		0.29 ac
6/27/07	Large pond	0.17		0.36 ac
6/27/07	Old pipe	0.17		0.15 ac
9/4/07	Lime kiln pond	0.25		0.01 ac
	Total survey hours	**11.2**		

Small mammal trapping occurred on April 23 – 26, and included three nights. A total of 609 trap nights were documented: 150 trap nights in grassland (both riding and nonriding) and in riparian (riding). Three extra traps were unintentionally set in nonriding riparian habitat, adding up to 159 trap nights. Personnel effort included setting the traps up in the late afternoon of the first day, checking traps all mornings, and resetting them again the same day in late afternoon. A total of 18 hours were spent by a group of four Parks staff to accomplish this.

Table 3. Small mammal survey schedule and time effort for 2007.

Date	Site	Time (min.)	Task
4/23/07	Grassland- riding	45	setup
	Grassland- nonriding	45	setup
	Riparian- riding	45	setup
	Riparian- nonriding	45	setup
4/24/07	Grassland- riding	45	process
	Grassland- nonriding	45	process
	Riparian- riding	45	process
	Riparian- nonriding	45	process
	Grassland- riding	45	setup
	Grassland- nonriding	45	setup

	Riparian- riding	45	setup
	Riparian- nonriding	45	setup
4/25/07	Grassland- riding	45	process
	Grassland- nonriding	45	process
	Riparian- riding	45	process
	Riparian- nonriding	45	process
	Grassland- riding	45	setup
	Grassland- nonriding	45	setup
	Riparian- riding	45	setup
	Riparian- nonriding	45	setup
	Grassland- riding	45	process
	Grassland- nonriding	45	process
	Riparian- riding	45	process
	Riparian- nonriding	45	process
	Total hours	**18**	

During the nocturnal surveys a total of 3.75 hours were spent driving the two routes, and involved four staff. In addition to the nocturnal surveys, two Reconyx ® automatic cameras were set up to record wildlife; one in the Tesla Mine area and the other in Mitchell Ravine. These cameras were left on for three nights (April 23 – 26). Set up time for the camera is minimal: about 10 minutes to set up and 5 minutes to take down.

Methods

Amphibians

Amphibian surveys consisted of area searches of known water bodies in the park. These included stock ponds, sediment basins, rain pools, and sections of Corral Hollow Creek in both riding and non-riding areas. The four new pond sites included Hidden pond, Ravine ponds, Lucky Find pond, and Ravine Corral pond- pond numbers 9, 2 a & b, 4, and 5 of Carlos Davidson's 1998 surveys. The section of Corral Hollow Creek accessed by Upper ranch (from Small / Large ponds) was also surveyed once to confirm California red-legged frog (*Rana aurora draytonii*) or foothill yellow-legged frog (*Rana boylii*).

During surveys, the water body was always approached slowly and quietly at first, and scanned with binoculars for any sign of amphibians on the shoreline. All ponds were systematically dip-netted from the shore for larvae, or adult amphibians and the surveyor would try to cover the whole perimeter of the pond. One of the surveyors (Craig Swolgaard) is permitted by the U. S. Fish & Wildlife Service for surveying both California red-legged frog and California tiger salamander. Pond sampling consisted of carefully dipping the net in the water with a sweeping arc motion, checking the net, and recording any captures by species, including developmental stage. A herpetological field guide (Stebbins 1985) and other identification keys or photographs were used to verify species. Occasionally photographs were taken of a listed species captured in the net. All

amphibians were carefully returned to the water and the observer would walk approximately 5 – 10 yards before dipping again. During nocturnal surveys, headlamps and flashlights were used to scan for amphibians, as well as listening for calls. An audio CD of frog calls (Davidson 2000) was reviewed before going into the field. Care was always taken to record the amount of time spent at each site.

Once a red-legged frog or tiger salamander was detected at a water body site, regardless of developmental stage, that species was considered to be present and the site was not revisited, unless to verify another listed species. All sites were visited at least once in winter / spring of 2007, except for Franciscan, Lower Juniper, and Clear ponds.

Reptiles

Although no formal surveys for reptiles were completed this year, incidental observations of terrestrial and aquatic reptiles were recorded. Photographs were taken in some cases and are stored in the shared drive with other Carnegie photographs (H:\Data\SHARED\NRDcom\Programs\IMAP\imap_photo\Carnegie SVRA\CSVRA_2007).

Birds

Before surveying the unit for birds, the species list that had been compiled in the past for CSVRA was reviewed, along with field guides and audio CDs of birdcalls, to refresh identifications skills. Avian biologist Andrew Engilis, curator of U. C. Davis Vertebrate Museum, was consulted in 2003 for a survey method that would maximize probability of collecting data for inventory and monitoring purposes. He suggested a simple area search along a transect route, that involves walking along a permanent transect and recording all bird species seen or heard at an unlimited distance. Start and end times are recorded to determine amount of time spent on each transect. The transect surveys are to be done in spring and winter, twice in each season. Replicate surveys are separated by at least a week. The results would yield both species richness data and relative abundance data, which could be compared across years. It was decided to adopt this method, rather than the variable circular plot method, since the purpose will be monitoring species richness and relative abundance instead of species population change. Also attractive is the fact that more area is covered by one transect than one point count station, optimizing the probability of adding new species.

For CSVRA, five transects were originally chosen at different parts of the unit to reflect the variation in habitat and topography, three in the riding area and two in the non-riding area. A sixth route (Upper Ranch) was added this year to the non-riding area, in order to have three routes in each use area. See maps in appendix for locations and GPS coordinates of old & new routes.

To best use the time, two groups of at least two people conducted surveys of different routes, with at least one person in each group being experienced in field identification of birds. Surveys for birds began early in the morning- generally at 7 AM- and continued until early afternoon. Timing of transect surveys is always staggered on the second day (i.e. if the first survey begins early AM, the second one will begin late AM). Binoculars, field guides (National Geographic 2002), and an audio CD of bird calls (Keller 2002) are used during surveys and one observer records all birds, along with their numbers and the habitat they occur in. If it is impossible to record the species, then the bird is identified to the closest taxa possible (e.g. *Epidonax* sp.).

In analyzing the data, since the two use areas had nearly equal route distances (2.71 miles for riding and 2.74 miles for nonriding) there was no need to standardize the data based on route distances. In terms of time differences, although 20% more time was spent in the nonriding area, there was 22% more birds counted in that area. Therefore, the slower rate was due to there being more birds, and the actual rate of birds counted per hour was about equal in both areas (76.2 individuals / hr. in riding and 78 individuals / hr. in nonriding). Species diversity was calculated as Shannon- Wiener index (Krebs 1989).

Small Mammals

Trapping was performed for three nights (April 23, 24, 25). The moon was in the first-quarter phase, daytime temperatures were upper 60s to low-70s° F, nighttime temperatures were low-50s° F, skies were generally clear to partly cloudy, and there was a fairly constant wind. Trapping took place in both riparian scrub habitat and annual grassland habitat, with one plot each in riding and non-riding areas. Land use in the nonriding area consists of fairly heavy cattle grazing, attested to by the low density and height of the grasses (personal observation). The same plots as were used in 2005 were used again this year: Corral Hollow Creek riparian plots (riding area and non-riding area), a grassland plot adjacent to CTS pond (riding area), and a grassland plot on the Tesla property (non-riding area) uphill from the cement water trough (see map in the appendix). Twelve-inch Sherman live-traps were employed, and each trap line, containing 50 traps, was set as a meandering line transect in the riparian scrub habitat. In the grassland habitat the traps were set in five parallel rows of 10 traps, with 10 step (meter) spacing. Trap rows were marked in the field with a pin flag at both ends and along the riparian lots by tying brightly colored flagging to brush. Traps were first baited with pressed oats rolled in peanut butter before setting, and were set in the late afternoon, and checked after sunrise the next morning. Some cotton balls were thrown in before setting, to assure that rodents would not become hypothermic. The following day, when an animal was captured, it was identified to species, and then marked with a blue Sharpie® pen for recapture. No vouchers were collected from the unit, though photographs were taken of some animals. No animals were killed during this study (no

incidental deaths occurred). Data was tallied and expressed as captures per trap night.

Nocturnal Surveys

Two nocturnal spotlighting surveys were conducted on April 25 and 30, one each in riding and non-riding areas. The riding survey route was the same one used in 2003 (with a small portion excluded) and is 4.7 miles long. The non-riding survey route (5.0 miles in length) is new and covers the Upper Ranch portion of the Alameda-Tesla property. Refer to the map of the nocturnal survey routes in the appendix. Each route was done once; the riding route on April 25 and the non-riding route on April 30, although it is suggested to do replicate surveys of each route. Each time there was a driver, two individuals on either side of the vehicle with 1 million candle spot lights, and a recorder. The route was driven slowly- under 10 mph- and the vehicle stopped at each observation to confirm species identity. Binoculars were used to identify animals when necessary, with both spot lights focused on the animal.

Photo Monitoring

Set up and take down of the Reconyx® cameras were in accordance with product instructions. Camera stations were selected to be in areas where wildlife will most likely be moving through and be attracted to a spot where they could trip the infrared sensor and be photographed. At Tesla Mine, the camera was set up in a narrow ravine that lead deep into the surrounding hills. The camera was carefully tied and locked to a fence post that was driven into the ground on one side of the ravine. The camera faced upstream at an angle. A can of cat food was poked with holes to let the odor out, and then nailed into the ground directly in line with the camera's lens and sensor, about 8 – 10 feet away. At Mitchell Ravine, the camera was set up in the narrower part of the canyon, under an oak tree. Cat food was also used as an attractant. The digital photos were stored in a 1GB SD card in the camera, and later downloaded onto a computer at the NRD headquarters.

Results

Amphibians

A total of five amphibian species were recorded in all surveys. The most frequently found amphibian was the Pacific chorus frog (*Pseudacris regilla*), followed by California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana aurora draytonii*), California newt (*Taricha torosa*) and western toad (*Bufo boreas*). No spadefoot toads (*Scaphiopus hammondii*) were recorded this year at CSVRA in 2006 - 2007.

California tiger salamander was recorded at eight sites this year and California red-legged frog was present in seven sites. One site, Mitchell Ravine pond, yielded one uncertain observation of a red-legged frog. Another site, Lime Kiln, had two adult California red-legged frogs present in September- this was the first record since the site was included in monitoring.

Reptiles

In 2007 there were seven species of reptiles observed incidentally at Carnegie SVRA, while performing other surveys. They included racer (*Coluber constrictor*), California whipsnake (*Masticophis lateralis*), gopher snake (*Pituophis melanoleucus*), aquatic garter snake (*Thamnophis couchii*), western rattlesnake (*Crotalus viridus*), western fence lizard (*Sceloporus occidentalis*), and western pond turtle (*Clemmys marmorata*). The pond turtle was found both in the Tesla stock pond (an adult) and in one of the nearby pools of Corral Hollow Creek (a juvenile).

The whipsnake was determined to be an intergrade of the chaparral (*M. l. lateralis*) and the listed Alameda (*M. l. euryxanthus*) subspecies (K. Swaim personal communication). Carnegie SVRA in located in one of the critical habitat zones of the Alameda whipsnake and also a hybrid zone for the two subspecies.

In addition to these observations, a San Joaquin coachwhip (*Masticophis flagellum ruddocki*) was seen on Corral Hollow Road about one mile east of the park boundary. This species is listed as a California species of concern.

Birds

Out of 2253 birds counted, a total of 84 bird species were observed in 2006 - 2007, counting nine incidental observations. The riding area had 997 individuals counted and 65 species recorded; the nonriding area had 1256 individuals and 71 species. The ongoing bird list for CSVRA now has 129 species recorded. New species added this year in the park include bufflehead (*Busephela albeola*), Wilson's snipe (*Gallinago gallinago*), double-crested cormorant (*Phalacrocorax auritus*), western screech owl (*Otus kennicottii*), lesser nighthawk (*Chordeiles acutipennis*), hairy woodpecker (*Picoides villosus*), western wood pewee (*Contopus sordidulus*) and hermit warbler (*Dendroica occidentalis*). Seven of these new species were observed in the nonriding area of the park. The bufflehead and snipe were observed at the North Parcel Pond and the hairy woodpecker was seen working on a nest cavity along Corral Hollow Creek, in the deep ravine located in the southwest corner of the park.

A California bird species of concern was observed in the nonriding area of the park: Bell's sage sparrow (*Amphispiza belli belli*). A probable breeding pair was

seen together along the Upper Ranch route in spring. The only other area where this species has been seen in the park was in the riding area at Kiln Canyon.

In terms of the average numbers of species recorded during route surveys, the riding area had a mean species number of 13.8 during the winter and 23 species during the spring. The nonriding area had an average of 16.7 species during the winter and 30.3 species during the spring. The Shannon-Wiener diversity index for the riding area was calculated as 3.31 (pooled seasons), 2.60 in winter, and 3.39 for spring. In the nonriding area, the diversity index was 3.32 for pooled seasons, 2.45 for winter, and 3.70 for spring. In terms of the routes within the park, the highest species richness was found at the Upper Ranch route during the spring (mean = 32.5 species), followed by the Tesla West route during spring (30.5 species), and Mitchell Ravine (28 species), all in the nonriding area.

Small Mammals

A total of five species of rodents were captured in the park in 2007: North American deer mouse (*Peromyscus maniculatus*), California pocket mouse (*Chaetodipus californicus*), San Joaquin pocket mouse (*Perognathus inornatus*), Heermann's kangaroo rat (*Dipodomys heermanni*), and desert woodrat (*Neotoma lepida*). Only 18 individuals were trapped in the two habitats park-wide. The most rodents (13) were captured in the riding riparian plot along Corral Hollow, with three species captured. The nonriding riparian plot had three individuals and two species captured, and each of the grassland plots had only one individual each with one species each in riding and nonriding areas. Out of the five species, desert woodrat had the highest relative abundance (0.016 / trap night), followed by North American deer mouse and Heermann's kangaroo rat (0.005 / trap night), and the two species of pocket mouse (0.002 / trap night).

In addition to small mammal trapping, some incidental observations of larger mammals were made throughout the year. These included a mountain lion (*Puma concolor*), observed by myself in April during a bird survey of the Pottery / Franciscan route. It was located in the coastal scrub area along Franciscan trail, about 100 feet away from me. Although the lion saw me, it avoided me and calmly walked away and over a hill. Also seen during work in the park were tule elk (*Cervus elaphus nannodes*) and feral pig (*Sus scrofa*).

Nocturnal Surveys

A total of nine taxa were recorded during the surveys in riding and nonriding areas. In the riding area western toad (*Bufo boreas*), wild turkey (*Meleagris gallopavo*), black-tailed jackrabbit (*Lepus californicus*), and black-tailed deer (*Odocoileus hemionus*) were observed. That particular night was excessively windy. In the nonriding area great horned owl (*Bubo virginianus*), lesser nighthawk (*Chordeiles acutipennis*), desert cottontail (*Sylvilagus audubonii*),

black-tailed jackrabbit, black-tailed deer, coyote (*Canis latrans*), and bobcat (*Lynx rufus*) were all observed.

Habitat monitoring at Prairie City State Vehicular Recreation Area- 2007

Site description

Prairie City State Vehicular Recreation Area (SVRA) is located about four miles due south of Folsom in the Sacramento Valley of California, and comprises approximately 2800 acres. This State Parks unit includes the original off-highway vehicle (OHV) use areas (approximately 850 acres), former Teichert Materials quarry land, buffer areas and preserves, and some recently acquired property to the south. The topography is undulating grassland at the foot of the Sierra Nevada foothills, and the elevation varies from 240 – 350 feet above sea level. Grassland areas are primarily composed of non-native species, with occasional patches of native grasses such as purple needle-grass (*Nassella pulchra*). The past land uses included grazing and dredge mining, with habitats that consist of annual grassland, blue oak woodland, coyote brush series, and Fremont cottonwood series among dredge tailings (Mayer & Laudenslayer 1988, Sawyer & Keeler-Wolf 1995). Wildlife in this area includes black-tailed deer, coyote, striped skunk (*Mephitis mephitis*), California ground squirrel, black-tailed jackrabbit (*Lepus californicus*), wild turkey (*Meleagris gallopavo*), and red-tailed hawk (*Buteo jamaicensis*). The city of Folsom is encroaching from the north, having expanded its sphere of influence to a 3000 acre parcel just north and east of the PCSVRA property. In the near future housing tracts and businesses will be built there.

One unique natural resource found at Prairie City SVRA is the array of vernal pools located in the northern and eastern portion of the original park property. These areas consist of over 100 vernal pools, along with 63 associated plant species (Jones & Stokes Associates 1994). Some vernal pool associated plant species found at Prairie City SVRA include purple –horned downingia (*Downingia bicornuta*), coyote-thistle (*Eryngium vaseyi*), Fremont goldfields (*Lasthenia fremontii*), white head navarretia (*Navarretia leucocephala*), stipitate pocornflower (*Plagiobothrys stipitatus* var. *micranthus*), and the uncommon Bogg's Lake dodder (*Cuscuta howelliana*). In the upland areas Padre's shooting star (*Dodecatheon clevelandii* cf.) is also found as well as yellow Mariposa lily (*Calochortus* sp.). In addition to plants, the vernal pools host some fairy shrimp species, including California fairy shrimp (*Linderiella occidentalis*) and the listed vernal pool fairy shrimp (*Branchinecta lynchi*) (Michael Brandman Associates 1996).

Prairie City SVRA also has a moderate population of valley elderberry and is considered probable habitat for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

Survey effort

In 2006 – 2007, birds, amphibian, and small mammals were surveyed in the park. Bird surveys were conducted December 18, 2006, January 3, 2007, and May 21 & 24, 2007. A crew comprised of two State Parks ecologists and several volunteers carried out the surveys. Two groups typically split up into two or more observers in order to maximize the use of survey time.
The amphibian surveys were done by two State Parks ecologists during the winter of 2007 (February 14) and the small mammal surveys were conducted from June 5 – 8.

The total time effort for all field work at PCSVRA is presented next:

Table . Avian survey schedule and time effort for PCSVRA in 2005 - 2006.

Date	Site	Time (min.)	Length (mi.)
12/18/06	Chaparral	75	0.53
	Oak Woodland	70	0.42
	Cottonwood	71	0.76
	Vernal Pool	34	0.68
1/3/07	Chaparral	51	0.53
	Oak Woodland	35	0.42
	Cottonwood	47	0.76
	Vernal Pool	38	0.68
5/21/07	Chaparral	58	0.53
	Oak Woodland	60	0.42
	Cottonwood	30	0.76
	Vernal Pool	32	0.68
	DCH Oak	51	0.62
	DCH Grassland	35	0.60
5/24/07	Chaparral	33	0.53
	Oak Woodland	40	0.42
	Cottonwood	44	0.76
	Vernal Pool	27	0.68
	DCH Oak	54	0.62
	DCH Grassland	52	0.60
	Total (hrs) (mi.)	**15.6**	**12 mi.**

Table . Amphibian survey schedule and time effort for PCSVRA in 2007.

Date	Site	Time (min.)
2/14/07	4WD area- NW	25
2/14/07	Ponds # 3 - 5	50
2/14/07	Pond # 6	16
2/14/07	Ponds # 7 & 8	15
2/14/07	DCH small & large ponds	30
	Total (hrs)	**2.3 hrs**

Table . Small mammal trapping schedule and time effort at PCSVRA in 2007.

Date	Site	Time (min.)	Task
6/5/07	Grassland- riding	40	setup
	Grassland- nonriding	40	setup
	Cottonwood- riding	40	setup
	Oak- nonriding	40	setup
6/6/07	Grassland- riding	40	process
	Grassland- nonriding	40	process
	Cottonwood- riding	40	process
	Oak- nonriding	40	process
	Grassland- riding	40	setup
	Grassland- nonriding	40	setup
	Cottonwood- riding	40	setup
	Oak- nonriding	40	setup
6/7/07	Grassland- riding	40	process
	Grassland- nonriding	40	process
	Cottonwood- riding	40	process
	Oak- nonriding	40	process
	Grassland- riding	40	setup
	Grassland- nonriding	40	setup
	Cottonwood- riding	40	setup
	Oak- nonriding	40	setup
6/8/07	Grassland- riding	40	process
	Grassland- nonriding	40	process
	Cottonwood- riding	40	process
	Oak- nonriding	40	process
	Total hours	**16**	

Bird survey effort totaled over 15 hours, amphibian survey effort totaled 2.3 hours for the season. The number of State Parks personnel involved in surveys was between two and four, with two to three volunteers helping with bird surveys. Small mammal surveys were conducted by two State parks ecologists, with help from three State Parks Aides. Total time for all small mammal surveys was 16 hours.

Methods

The same wildlife survey protocols as those used at Carnegie SVRA were used at Prairie City SVRA. Two new bird survey routes were added at the Deer Creek Hills property (a nonriding area); one in grassland and one in oak woodland. For small mammals, 5 x 10 trap grids were used at all plots. In this case, only grassland plots were replicated in different use areas. In the riding area an extra plot was placed in the dredge tailings, which is dominated by grass and cottonwood trees. In the nonriding area (Deer Creek Hills), a plot was placed in the blue oak woodlands. The amphibian surveys were conducted at a series of

catchment basins in riding and nonriding areas of the main park, as well as in two stock ponds and an intermittent stream in the Deer Creeks Hills area.

The six bird survey routes present a problem when making comparisons between use types, as there is not complete equivalence in habitat types in riding and nonriding areas, and the lengths of those habitats that are equivalent do not match closely. The following table illustrates this:

Route name	Dominant habitat (structure)	Length (mi.)
Cottonwood (riding)	Grassland with cottonwood (dredge tailings & some shrubs)	0.76 x4 = 3.04
Vernal Pool (nonriding)	Grassland (no canopy, clay soil)	0.68 x 4 = 2.72
DCH- Grassland (nonriding)	Grassland (some oak canopy)	0.60 x 4 = 2.40
Chaparral (riding)	Coyote bush scrub / lacustrine with some grassland (hilly)	0.53 x 4 = 2.12
Oak Woodland (riding)	Blue oak woodland / grassland (hilly)	0.42 x 4 = 1.68
DCH- Oak Woodland (nonriding)	Blue oak woodland / grassland (hilly)	0.62 x 4 = 2.48

Because of this problem, comparisons of avian abundance, diversity, or habitat use in riding and nonriding areas will not be presented in this report. In addition, the two routes at Deer Creek Hills were only surveyed in the spring this year making time effort and season representation non-equivalent.

Results

Birds

A total of 67 species were recorded out of 1659 observations. The ongoing species list for Prairie City SVRA now stands at 111 species, including birds found at Deer Creek Hills in spring 2007. New species added to the list include osprey (*Pandion haleatus*), wood duck (*Aix sponsa*), olive-sided flycatcher (*Contopus cooperi*), blue-gray gnatcatcher (*Polioptila caerulea*), orange-crowned warbler (*Vermivora celata*), Lawrence's goldfinch (*Carduelis lawrencei*), and grasshopper sparrow (*Ammodramus savannarum*). The observation of grasshopper sparrows (a California species of concern) at Deer Creek Hills is significant because this species is uncommon in California, with a spotty distribution restricted to the Sierra foothills and the Coast Range. This is partly because it is a grassland-obligate bird species which requires large tracts of shorter, patchy grassland which includes bunchgrasses.

The most abundant resident bird at both Prairie City SVRA (year-round) and Deer Creek Hills (spring survey only) was European starling (*Sturnus vulgaris*). This introduced species has increased in numbers in California since it entered the state over 40 years ago. Starlings are colonial nesters that use tree cavities for nest sites, including cavities built by woodpeckers. Hence, this species can displace native cavity nesters. It was over twice as abundant as the second most abundant resident species, and ten times more abundant than other native cavity-nesting species in the park. In contrast, Carnegie SVRA has a very low

number of European starlings, with relatively higher numbers and more species of cavity nesters.

Bird species diversity in Prairie City SVRA did vary between seasons. Pooled surveys in winter had a Shannon-Wiener diversity index of 3.02, while spring had an index of 3.06. However the season-wide diversity index was 3.46, which shows that there was a moderate difference in species composition between the two seasons. The spring surveys at Deer Creek Hills, combining both grassland and oak woodland habitats, had a diversity index of 2.89.

Amphibians

Only two species of amphibian were recorded at both Prairie City SVRA and Deer Creek Hills: Pacific chorus frog (*Pseudacris regilla*) and bullfrog (*Rana catesbeiana*). The bullfrogs were abundant- a total of 79 individuals counted in a string of catchment basins near both the Hangtown event area and the shooting range. Pacific chorus frogs were found mostly in the non-riding area in the vernal pools. At Deer Creek Hills, a total of 20 bullfrogs were counted in both water bodies, as well as in the intermittent creek that was surveyed. No western toads or western spadefoots were seen during the surveys.

Small Mammals

One species was trapped at both Prairie City SVRA and Deer Creek Hills: North American deer mouse (*Peromyscus maniculatus*). Abundance of this species was low in both units, but more mice were trapped in the riding area grassland than in the non-riding grassland area.

Carnegie SVRA
Data

Carnegie SVRA
Maps

Prairie City SVRA
Data

Prairie City SVRA
Maps

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