



2006 Habitat Monitoring Report: Carnegie State Vehicular Recreation Area and Prairie City State Vehicular Recreation Area

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An American kestrel viewed from the Alameda-Tesla property

Carnegie State Vehicular Recreation Area

Site Description

Carnegie State Vehicle Recreation Area (CSVRA) encompasses 4,500 acres in the coastal hills of western San Joaquin and eastern Alameda counties, used for off-highway vehicle (OHV) recreation (see map in Appendix). This total area includes nearly 3,000 additional acres that was recently acquired, 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 (Mayer & Laudenslayer 1988). The climate is Mediterranean, with cool, wet winters and hot dry summers. The unit is open to motorcycle, ATV, and 4 X 4 recreation, except in the newly 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.

Wildlife typically seen on 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, eight special status animal species are known to inhabit CSVRA. These include foothill yellow-legged frog (*Rana boylei*), California red-legged frog (*Rana aurora draytonii*), western pond turtle (*Clemmys marmorata*), western spadefoot toad (*Scaphiopus hammondi*), California tiger salamander (*Ambystoma californiense*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), 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*). 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.

Surveys

Surveys were conducted for birds during the winter of 2005 (December 6 & 14) and spring of 2006 (April 17 & 24), and for amphibians during the winter (January 25) and spring (March 22, April 17, May 12, and June 2) of 2006. 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.

Bird surveys took a total of four work days per year, and a total of 30 hours were spent by two Parks personnel (60 personnel hours), not counting volunteer help (table 1). A minimum of four people were used for each survey, split into two

groups of two or more in order to cover more area. 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 2005 - 2006.

Date	Site	Time	Length
12/6/2005	Kiln Canyon	1028 - 1141	0.61 mi.
	Corral Hollow	0800 - 1000	1.2 mi.
	Pottery/ Franciscan	0812 - 0920	1.0 mi.
	Mitchell Ravine	1305 - 1423	0.92 mi.
	Tesla West	1015 - 1135	1.2 mi.
12/14/2005	Kiln Canyon	1327 - 1424	0.61 mi.
	Corral Hollow	1050 - 1222	1.2 mi.
	Pottery/ Franciscan	1058 - 1212	1.0 mi.
	Mitchell Ravine	0810 - 0920	0.92 mi.
	Tesla West	0756 - 0945	1.2 mi.
4/17/2006	Kiln Canyon	0752 - 0957	0.61 mi.
	Corral Hollow	0738 - 0927	1.2 mi.
	Mitchell Ravine	1101 - 1303	0.92 mi.
	Tesla West	1057 - 1220	1.2 mi.
4/19/2006	Pottery/ Franciscan	0706 - 0900	1.0 mi.
4/24/2006	Kiln Canyon	1022 - 1152	0.61 mi.
	Corral Hollow	1215 - 1340	1.2 mi.
	Pottery/ Franciscan	0756 - 0836	1.0 mi.
	Mitchell Ravine	0740 - 0940	0.92 mi.
	Tesla West	1320 - 1450	1.2 mi.
Total hours		30 hrs	

Amphibian surveys took four days to complete, including one nocturnal survey. Each survey consisted of at least three Parks personnel, and totaled 19 hours (table 2). Total personnel effort was 60.6 hours. This year, six additional pond sites (Upper Ranch) and a new section of Corral Hollow Creek were included in surveys in the more recent addition to the park (map & photos in Appendix).

Table 2. Amphibian survey schedule and time effort for 2006.

Date	Site	Time (hrs)	Persons	Length	Area
1/25/2006	Corral Hollow Creek- riding	1.5	3	3.0 mi	
	Tyson's Pond- riding	0.33	3		0.33 acre
	CTS Pond- riding	0.17	3		0.44 acre
	Corral Hollow Creek- nonriding	1.2	3	1.0 mi	
	West Tesla stock pond- nonriding	0.5	3		1570 ft ²
	North Parcel Pond- nonriding	0.4	3		0.40 acre
	Sector Office Pond- nonriding	0.4	3		0.25 acre
	Tony's Pond- nonriding	0.25	3		1100 ft ²
	Upper Ranch- nonriding	2.0	3		0.58 acre

1/25/2006	Entrance to Mitchell Ravine- nonriding	0.25	3		0.22 acre
	Total	6.8		4.0 mi	
3/22/2006	Corral Hollow Creek- riding	0.8	4	2.0 mi	
3/22/2006	CTS Pond- riding	0.25	4		0.44 acre
	Corral Hollow Creek- nonriding	1.3	4	1.0 mi	
Date	Site	Time (hrs)	Persons	Length	Area
	West Tesla stock pond- nonriding	0.5	4		1570 ft ²
	North Parcel Pond- nonriding	0.6	4		0.40 acre
	Sector Office Pond- nonriding	0.6	4		0.25 acre
	Tony's Pond- nonriding	0.35	4		1100 ft ²
	Entrance to Mitchell Ravine- nonriding	0.6	4		0.22 acre
	Total	5.0			
4/17/2006	Sector Office Pond- nonriding	0.35	1		0.25 acre
	Entrance to Mitchell Ravine- nonriding	0.35	1		0.22 acre
	Total	0.7			
5/12/2006	Upper Ranch- nonriding	3.5	3		0.51 acre
	Total	3.5			
6/2/2006	Corral Hollow Creek- riding	0.5	3		200 ft ²
	Upper Ranch (pond)- nonriding	0.5	3		3230 ft ²
	Upper Ranch (creek)- nonriding	2.0	3	0.75 mi	
	Total	3.0			
	Total hours	19.0			

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. A new survey area was added this year in the Upper Ranch area of CSVRA, which includes six stock ponds and a $\frac{3}{4}$ mile length of Corral Hollow Creek. These ponds were actually part of the original surveys completed by Davidson & Trenham (1998), but it was only recently that we had access to this area. The section of Corral Hollow Creek that was added more recently to Carnegie SVRA includes habitat for foothill yellow-legged frog. Presence of yellow-legged frog was confirmed in 2000, in the upper reaches of Corral Hollow Creek (Jones & Stokes 2000).

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 eggs, larvae, or adult amphibians and the surveyor would try to cover the whole perimeter of the pond. The surveyor (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 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 species. All sites were visited at least twice in winter / spring of 2006.

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 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. 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 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 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. See maps in appendix for locations and GPS coordinates. To save time, two groups of at least two people conducted surveys of different routes. Surveys for birds begin early in the morning- generally at 7 AM- and continue until 12 PM or occasionally until mid-afternoon. Timing of transect surveys is always staggered on the second day. 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 as “unknown” or by a less specific nomenclature (e.g. *Epidonax* sp.).

Results

Amphibians

A total of seven species of amphibians were observed in 2006 (table 3), including bullfrog (*Rana catesbeiana*), Pacific chorus frog (*Pseudacris regilla*), California red-legged frog, California (western) toad (*Bufo boreas halophilus*), western spadefoot, California tiger salamander, and California newt (*Taricha torosa*). The California red-legged frog (a federal threatened species- figure 1 & 2) was found in the pond at the entrance to Mitchell Ravine, as well as in two new ponds in the “Upper Ranch” non-riding area (see the Appendix for maps of all ponds and locations of species). This species was not found in the stock pond or creek area of Tesla West, as it was last year, or in the Sector Office pond where suitable habitat is present. A $\frac{3}{4}$ mile section of Corral Hollow Creek (figure 3) in the southwestern corner of the Upper Ranch area was checked once for amphibians, including foothill yellow-legged frog, but only Pacific chorus frog was found.

The California tiger salamander (a federal threatened species) was present at five ponds in 2006 (figure 4), including the Sector Office, Lone Oak, Refrigerator, Old Pipe, and Large ponds. Most of the tiger salamanders were found in the “Upper Ranch” area (the latter four named ponds). No tiger salamanders were found in the “CTS pond” this year due to lack of water. The species was also found in the Sector Office pond, which is a newly discovered breeding site.

Western spadefoot tadpoles (a California species of special concern) were present in a couple rain pools along Corral Hollow Creek, in the riding area (figure 5). They were not as abundant as they were in 2005, and were not found in any other location outside the riding area. The California toad was detected in the form of eggs or tadpoles in Corral Hollow Creek (in both riding and non-riding areas) and in several ponds- it was widespread throughout the park. The pond by the mobile homes is known to be occupied by bullfrogs but was not checked this year. Bullfrog presence was confirmed in the pond outside of Mitchell Ravine, where red-legged frogs were also found.

Birds

Surveys during the 2005 – 2006 seasons yielded a high number of observed species, with 88 total species being observed including three incidental observations (table 4). For the whole year, a total of 2536 individuals were observed, of which the most abundant species were California quail (*Callipepla californica*), white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Zonotrichia atricapilla*), western scrub jay (*Aphelocoma californica*), common raven (*Corvus corax*), Bewick’s wren (*Thryomanes bewickii*), and California towhee (*Pipilo crissalis*). This year two species, Lincoln’s sparrow (*Melospiza lincolnii*) and Hutton’s vireo (*Vireo huttoni*), were added to the ongoing species list for the park. Lewis’ woodpecker (*Melanerpes lewis*) and grasshopper sparrow (*Ammodramus savannarum*) were also seen incidentally in

the non-riding area. A total of 6 observed species are listed as California species of special concern (table 4) and 7 observed species are on the green list of the American Bird Conservancy (<http://www.dfg.ca.gov/bdb/html/animals.html>).

The two seasons were also pooled and analyzed for both riding and non-riding uses (table 5). The riding area survey, composed of three transects that totaled 4.56 kilometers in length, yielded 1459 observations (80 per km.) and 73 species. The non-riding area survey, composed of two transects that totaled 3.36 kilometers, yielded 1077 observations (also 80 per km.) and 69 species. The species composition of riding and non-riding areas differed somewhat. For instance certain corvids, such as American crow (*Corvus brachyrhynchos*), were altogether absent from the non-riding areas, yet in small numbers in riding areas. Likewise, common raven was much more abundant in riding areas than in non-riding areas. Another corvid, the yellow-billed magpie (*Pica nuttallii*), was absent from the riding areas and fairly abundant in the non-riding area. Golden eagle was seen regularly in the park, especially in the "Upper Ranch" area, where a pair is nesting. Flocking winter sparrows, such as white-crowned and golden-crowned sparrows, were much more abundant in the riding areas. Other species such as western meadowlark (*Sturnella neglecta*), California quail, spotted towhee (*Pipilo maculatus*), and northern flicker (*Colaptes auratus*) were more abundant in non-riding areas. The overall species diversity in the park was 3.48 with an evenness score of 0.78.

Bird species that are totally or nearly endemic to California include five species: California thrasher (*Toxostoma redivivum*), California towhee, oak titmouse (*Baeolophus inornata*), Nuttall's woodpecker (*Picoides nuttallii*), and yellow-billed magpie. Four of these species occur principally in this state, except for a small portion of Baja California or Oregon. Yellow-billed magpie occurs only in California. All five of these species were observed at Carnegie SVRA in moderate to high numbers.

The conservation group Partners in Flight (PIF) has recently published habitat specific avian conservation plans, which are meant to be used as a strategy for conserving habitats in California. These plans include a list of focal bird species for each habitat (table 6). Each of these focal species has particular life history requirements that depend on various habitat attributes being present. If most of these species are present and at normal abundances in a habitat, this conceptually indicates a healthy habitat. Therefore, knowing the presence and abundance of these focal species can serve as an indirect means of assessing habitat health in a State Park. In the context of PIF focal species, there was good representation at Carnegie SVRA in 2005 - 2006. All of the grassland species expected to be represented in grasslands at Carnegie were observed, including one observation of ferruginous hawk (*Buteo regalis*- also a California species of special concern). Western meadowlark was especially abundant. Seven of the eight focal species for oak woodland habitat were observed, some in high abundances (western scrub jay, oak titmouse and western bluebird [*Sialia*

mexicana]). Coastal scrub habitat was represented by 12 species out of the 20 focal species that include Carnegie SVRA in their range. Five of the most abundant species observed in Carnegie SVRA are included in this focal species list. For riparian habitat, only 4 of the 15 focal species were represented at Carnegie SVRA, and in low abundances. It should be noted that the type of riparian habitat present at the park includes a sparser vegetative density, and less complex structure than is found along larger riverine systems.

Incidental sightings

Feral pigs continue to be sighted in the park and can be considered a regular part of the animal community there (figure 6). However, soil disturbance due to rooting has not become a major issue yet. In the “Upper Ranch” section of the Alameda-Tesla acquisition a herd of tule elk (figure 7) is commonly seen during the winter and spring, with an estimated number of 20 elk. Predators, such as bobcat (figure 8), were observed both in the riding area and along Corral Hollow creek in the west Tesla portion of the park. In April a mountain lion was observed from the Franciscan loop trail by Craig Swolgaard, while conducting a bird survey. It was an adult with a length of approximately 6 feet and an estimated weight of 120 – 130 pounds. Several sightings of a mountain lion had been reported by Parks personnel during that time, probably the same individual. With a local population of deer and elk in the area, it is no surprise that a mountain lion should be seen occasionally.

Discussion

Amphibians

Carnegie SVRA continues to support the listed species California red-legged frog (CRLF) and California tiger salamander (CTS), as well as a California species of concern- western spadefoot. The “Mitchell Ravine” pond contained CRLF both in 2003 and in 2006 (it was not surveyed in 2005), and can be considered a dependable breeding location, although the presence of bullfrogs there should be a matter of management concern. This pond has a maximum depth of approximately 10 feet and holds water year round. The Tesla stock pond was used for CRLF breeding in 2005, but not in 2006. It is smaller in size than the Mitchell Ravine pond, but is also deep (maximum depth is about 7 feet) and holds water year round. No bullfrogs have been recorded thus far in the Tesla West area. The Sector Office pond did not contain either CRLF or bullfrogs, but did harbor CTS in 2006. This pond is close to Corral Hollow Creek and holds water year round, but lacks the depth of the other two ponds. However, it contains suitable habitat for CRLF and should be monitored annually. The small water body called “Tony’s pond” contained CTS in 2005, but no listed species were found in 2006. It is small in size and only moderately deep (3 – 4 feet maximum depth), but holds water for the entire season during good rain years, such as in 2005. This pond should also be monitored annually. The catchment basins located throughout the riding area of Carnegie SVRA are usually not good locations for successful breeding of CRLF or CTS. One exception has been the

basin called “CTS pond.” When sufficient rainfall has occurred during the winter and sustains into the late spring, there has been successful breeding of CTS at that site. In 2006, however, the basin never filled and no breeding occurred. It is not the policy of California State Parks to enhance habitat for the purpose of artificially augmenting the breeding of a species. Therefore, no management actions need to be initiated for this basin, other than routine maintenance. Western spadefoot bred in shallow muddy rain pools throughout the riding area of Corral Hollow, but not to the extent that they did in 2005, when a high amount of rain fall came during the early spring. To ensure this species can breed in the park undisturbed, it is possible to erect temporary exclosures around the larger pools containing spadefoot tadpoles until metamorphosis and dispersal are complete.

In addition, newly resurveyed areas have added other known breeding locations for CRLF and CTS that should be monitored in the future. Several of the ponds found in the Upper Ranch area appear to hold water year round, and could be considered consistent breeding sites for both CTS and CRLF. The newly surveyed section of Corral Hollow Creek maintains a swift flow of water well into the spring, with a slow decrease in flow as the water table drops in the summer. This leaves scattered pools of water that could be considered potential breeding sites for foothill yellow-legged frog. Now that this area has been reopened for monitoring, a table has been added to this report (table 7) to standardize the identities of these water bodies, so that comparisons can be made with previous reports. This table also summarizes the results of surveys between 1998 and 2006.

A comparison of amphibian abundances between riding and non-riding areas is tenuous because these surveys are solely for the purpose of confirming presence or absence of amphibian species. The data is useful in terms of knowing where the breeding sites of special status species are located, and tracking year to year patterns for the purpose of mitigating the possible effects of recreational use.

Birds

Carnegie SVRA has consistently harbored both a diverse and abundant bird community (123 species recorded since the park opened), and offers some exceptional habitat for breeding bird species. There is also a high number of special status bird species observed in the park over the years- 29 in all, including 14 listed by California Department of Fish & Game as species of special concern. Of these, about a dozen species are observed on a regular basis.

Statistical comparisons of bird abundance or diversity between riding and non-riding area are only possible after several years of monitoring. Any differences between use types will only be notable if they are of a higher magnitude, because of the inherent limitations in the methods used. For this reason, a

separate report will be added to this one. This supplemental report will cover a four year period of monitoring beginning in 2003, discuss possible effects of OHV use on breeding or foraging birds, as well as review some of the special bird species found in the park. It will also make suggestions on improvements in the present monitoring methodology for birds.

Prairie City State Vehicular Recreation Area

Site Description

Prairie City State Vehicular Recreation Area (PCSVRA) 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, former Teichert Materials quarry land, buffer areas and preserves, and some recently acquired property to the south (figure 9, 10, & 11). The topography is undulating, being close to the Sierra Nevada foothills, and the elevation varies from 240 – 350 feet above sea level. The past land uses included grazing and dredge mining, with habitats that consist of annual grassland, blue oak woodland, coyote brush scrub, 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. 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.

Surveys

In 2005 – 2006, only birds and fairy shrimp were surveyed in the park. Bird surveys were conducted December 2 & 7, 2005 and May 9 & 15, 2006. A crew comprised of two Parks ecologists and several volunteers carried out the surveys. Surveys for fairy shrimp were conducted January 9 & 23 and March 8 & 16, 2006. The fairy shrimp surveys were informal, not protocol-level, and were done by a Parks ecologist certified in fairy shrimp identification, but not yet USFWS-permitted for formal surveys. The purpose of the fairy shrimp surveys was to determine the potential for listed species alongside a proposed road in the northeastern part of the property known as the “4-wheel dive area.”

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

Table 8. Avian survey schedule and time effort for PCSVRA in 2005 - 2006.

Date	Site	Time (hrs.)	Length
12/2/2005	Cottonwood	0930 - 1026	0.75 mi.

12/2/2005	Vernal Pool	0820 - 0900	0.69 mi.
	Oak Woodland	0938 - 1040	0.42 mi.
	Chaparral	0816 - 0913	0.52 mi.
12/7/2005	Cottonwood	0925 - 1010	0.75 mi.
<u>Date</u>	<u>Site</u>	<u>Time (hrs.)</u>	<u>Length</u>
	Vernal Pool	0820 - 0854	0.69 mi.
12/7/2005	Oak Woodland	0933 - 1023	0.42 mi.
	Chaparral	0820 - 0914	0.52 mi.
5/9/2006	Cottonwood	0823 - 0943	0.75 mi.
	Vernal Pool	0721 - 0802	0.69 mi.
	Oak Woodland	0845 - 1007	0.42 mi.
	Chaparral	0726 - 0833	0.52 mi.
5/15/2006	Cottonwood	0825 - 0943	0.75 mi.
	Vernal Pool	0722 - 0800	0.69 mi.
	Oak Woodland	0847 - 0957	0.42 mi.
	Chaparral	0724 - 0835	0.52 mi.
	Total	15.36	2.38 mi.

Table 9. Fairy shrimp survey schedule and time effort for PCSVRA in 2005 - 2006.

<u>Date</u>	<u>Site</u>	<u>Time (hrs.)</u>
1/9/2006	4WD area	1.50
1/23/2006	4WD area	1.50
3/8/2006	4WD area	0.92
3/16/2006	4WD area	0.50
	Total	4.42

Bird survey effort totaled just over 15 hours and fairy shrimp survey effort totaled nearly 4.5 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.

Methods

Birds

The method for surveying birds in PCSVRA was the same as was used for Carnegie SVRA. Four survey routes are used in the park (Appendix), varying from 0.42 mile to 0.75 mile in length, each representing a separate habitat. Surveys were conducted during the winter and spring, twice during each season. Data and photographs are stored both in electronic and printed form at the Natural Resources Division office in Sacramento.

Fairy Shrimp

Visual surveys of natural vernal pools or rain pools created by human disturbance were conducted in winter- two in January and two during March, 2006 (figure 12). All pools within a 25 foot buffer on either side of the proposed road were included. This was the second year that these surveys were conducted.

Surveys consisted of visually scanning the pools, and occasionally scooping pool water in a light colored plastic container, using a 10-power magnifying glass to identify any invertebrates. All water samples were promptly returned to each pool after viewing. Both fairy shrimps and tadpole shrimps are large enough (1/2" – 1" in length) to easily distinguish them from other invertebrates with the naked eye. The difference in length of the second antennae, or "clasper", of male fairy shrimp can help distinguish between those in the genus *Linderiella* and *Branchinecta*. An identification guide was used to determine genus.

Results

Birds

A total of 70 bird species were observed in PCSVRA in 2005 - 2006, including all incidental sightings. During surveys a total of 67 species were recorded (table 10). The ongoing species total for PCSVRA is now 104 species. For pooled seasons and for winter, the five most abundant birds (table 11) were red-winged blackbird (*Agelaius phoeniceus*), white-crowned sparrow, cliff swallow (*Petrochelidon pyrrhonota*), western meadowlark, and savannah sparrow (*Passerculus sandwichensis*). During the spring, the five most abundant species were red-winged blackbird, cliff swallow, lesser goldfinch (*Carduelis psaltria*), European starling (*Sturnus vulgaris*), and mourning dove (*Zenaida macroura*). The overall species diversity for the park in 2005 – 2006 was 3.36, with an evenness score of 0.8.

Uncommon or first time sightings in the park included lazuli bunting (*Passerina amoena*), warbling vireo (*Vireo gilvus*), western wood peewee (*Contopus sordidulus*), and rufous-crowned sparrow (*Aimophila ruficeps*). Flyovers not normally seen included tundra swan (*Cygnus columbianus*), common merganser (*Mergus merganser*), and Caspian tern (*Sterna caspia*). Listed or special status species included Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), Nuttall's woodpecker (*Picoides nuttallii*), horned lark (*Eremophila alpestris*), and lark sparrow (*Chondestes grammacus*). Exotic or parasitic species included brown-headed cowbirds (*Molothrus ater*) and European starling. Both were moderately to extremely abundant in the park.

In terms of represented habitats, the annual grasslands plot ("Vernal Pool") had the least number of species with 7 observed in winter and 15 in the spring. Most of the birds recorded were savannah sparrow or western meadowlark, with far lesser abundances of other species. Both the blue oak woodland habitat and the Fremont cottonwood series / dredge tailings contained about the same number of species: 22 - 24 in winter and 33 – 34 in spring, although the oak woodland transect is shorter in length (0.42 mile) than the cottonwood transect (0.75 mile).

An incidental sighting of a burrowing owl added some interest to the year (figure 13). This individual was seen regularly during the winter, associating with a pile of rocks at the south end of the 4-wheel drive area. The owl eventually left and

most likely was using the park as a wintering location. It should be noted that suitable breeding habitat for this species exists in the park and it would not be surprising to see burrowing owls attempt to breed there.

Fairy Shrimp

The only fairy shrimp species confirmed in the pools was *Lindleriella occidentalis*, a common species of vernal pools in California (table 12). Very few individuals of this species were observed in 2006, most showing up in the large pool at the east end of the sand pit located in the unused "4-wheel drive" area.

Discussion

Since PCSVRA has expanded its parcel to include additional land, it has more than doubled in size since it was first acquired by State Parks. Much of this addition will be left as unused mitigation or conservation land, so for the purposes of future monitoring, these areas can be used as a control plot for the unit. In this way both riding and non-riding areas can be compared over time.

In terms of bird life, PCSVRA supports a fairly diverse community. Many bird species use this park during migration as a stop over to or from nesting sites in California. But many species are found there during the breeding season also, and can be considered breeders in the park. One of the most important birds in the park in terms of concern for future breeding success is the horned lark, a California native. The subspecies found in park is likely *E. alpestris actia*, a California species of special concern. This species has experienced a decline in California in the past 20 years due to habitat loss (see bird population trend website: <http://www.mbr-pwrc.usgs.gov/bbs/htm96/trenlist.html>). These birds are attracted to open, sparse grasslands with bare patches of ground (Beason 1995) which the park provides due to its recreational uses. They nest in open, sparsely vegetated areas, using tufts of grass or other objects as windbreaks. As long as this species has undisturbed habitat in the park, which is currently provided in the northeastern section, it will most likely do well.

Species such as brown-headed cowbird and European starling are exotics and their abundance in the park prevents many of the native birds from breeding successfully. Starlings compete for nest cavities with native birds such as oak titmouse and Nuttall's woodpecker, and their high productivity can make progress slow for native cavity-nesting birds (Cabe 1993). The brown-headed cowbird is a nest parasite and has helped cause the local decline or extirpation of several species of California natives, such as least Bell's vireo (*Vireo bellii*), song sparrow (*Melospiza melodia*), willow flycatcher (*Empidonax trailii*), and yellow warbler (*Dendroica petechia*- Lowther 1993). Future attention should focus on whether these two exotics are increasing in the park over time.

Fairy shrimp have been found in the park during surveys in the 1990s (Jones & Stoke 1994, Brittan 1995), including the federally listed species vernal pool

tadpole shrimp (*Lepidurus packardii*) and vernal pool fairy shrimp (*Branchinecta lynchi*). An informal survey in 2005 confirmed the presence of *Branchinecta* near the sand pit in the non-riding area, but the species could not be confirmed. If surveying for fairy shrimp is going to be a regular part of the monitoring program at PCSVRA, it will be necessary to use trained, 10a (1a) permitted individuals to do the work. This involves getting certified through class training in identification, 20 hours of field training with a permitted biologist, and applying for a permit through the US Fish & Wildlife Service. The other option would be to contract the work to a permitted consultant.

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