Carnegie and Prairie City State Vehicular Recreation Areas

2004 - 2005 Biological Surveys

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Executive Summary

Surveys for vertebrate species were conducted at Carnegie and Prairie City State Vehicular Recreation Areas (SVRA) in spring and winter of 2004 and 2005. For Carnegie SVRA, surveys for amphibians, birds, and small mammals were done. It was the first survey for small mammals done in the park in many years. For Prairie City SVRA only bird surveys were done for the two years, since previous surveys for amphibians found no presence of any listed species.

Breeding amphibians were numerous in Carnegie SVRA and included listed species such as California red-legged frog and California tiger salamander. Also found was a high number of larval western spadefoots in muddy pools of rainwater near Corral Hollow. Bird abundances and diversity were moderate to high for Carnegie SVRA and Prairie City SVRA, with species richness higher at Carnegie and abundances of individual birds higher at Prairie City. A number of California species of concern were found in both parks, including golden eagle, Cooper's hawk, lark sparrow, Lewis' woodpecker. Comparisons of bird abundance in riding and non-riding areas were done, and though abundance was somewhat higher in non-riding areas, the difference was not statistically significant.

Four species of small mammals were trapped at Carnegie SVRA, including deer mouse, California vole, Heerman's kangaroo rat, and desert woodrat. Because of limited data, comparisons were not made of abundances of small mammals between riding and non-riding areas.

Amphibian Surveys- Carnegie SVRA

Introduction

Carnegie SVRA (CSVRA) was surveyed for amphibians in spring 2005, notably to detect presence of the federally threatened species California red-legged frog (*Rana aurora draytonii*) and California tiger salamander (*Ambystoma tigrinum californiense*). Past surveys have detected both species in CSVRA, so these surveys were conducted to confirm continued presence in the park, and to increase knowledge of distribution in the recent property addition to the park.

Surveys were conducted in early spring 2005, after the several rainstorms that occurred during the season. The rainstorms caused Corral Hollow Creek to flow strongly through April, and the water finally dissipated in May. However, by June there was still standing water found in pools in the upper reaches of the creek in the new Tesla acquisition. Water was standing in rain pools throughout the riding area in Corral Hollow until May, offering good habitat for breeding amphibians. Two full surveys of the park were done on March 1 and March 14, with additional

visits on March 31 and April 11. Incidental observations were added on June 15 & 16, while conducting small mammal trapping.

Methods

Two ecologists from Natural Resources Division entered the park on March 1 and began by speaking with one of the rangers at the unit. He shared several observations of amphibian movement during the fall and winter of 2004 / 2005. Notably, he told of several observations of both western spadefoot and California tiger salamander soon after rainstorms and indicated the locations of possible breeding areas.

The creek area of Corral Hollow and upstream in the western Tesla acquisition were searched visually and with dipnets for any amphibian larvae. All ephemeral pools of rainwater seen from the road were searched. Ponds known to hold water in the unit were also searched and netted. All larvae or adults were identified using a field guide and other illustrated keys and the number of each species was estimated and recorded. Sometimes a magnifying lens was used to look at morphological features. The locations and conditions of waterbodies containing detected amphibian species were recorded and later placed as approximate points on an Arcview 3.2 map (figure 1). A total of 11 hours was spent in surveys, covering 8.5 miles and approximately 190 acres of area.

Results

Five species of amphibians were found as a result of these surveys. These include western spadefoot (*Scaphiopus hammondii*), western toad (*Bufo boreas*), Pacific chorus frog (*Pseudacris regilla*), California red-legged frog (*Rana aurora draytonii*), and California tiger salamander (*Ambystoma tigrinum californiense*). Also, an incidental sighting of a reptile- western pond turtle (*Clemmys marmorata*)- was noted in Corral Hollow Creek, in the western part of the Tesla acquisition. Western pond turtles are listed as a species of concern in California.

Western spadefoot is a California species of concern. Most of the western spadefoot larvae found in CSVRA (figures 2 & 3) were in the riding area, in muddy pools along the flood plain of Corral Hollow Creek (table 1). No larvae were found in the creek itself. On an anecdotal note, spadefoot larvae were found in both protected and unprotected areas, but appeared to persist more in the protected areas as pools were checked periodically. A group of pools by the MX tracks and by the eastern boundary supported a large number of spadefoot larvae throughout the season and it is assumed many spadefoot survived. Unprotected pools lost larvae quickly as the riding season got underway and motorcycles were driven through pools. However, several of these breeding pools were in areas surrounded by mulefat brush and not used by off-road vehicles. By the end of the season, many spadefoot larvae in these pools grew in size and developed legs. It can be assumed that many metamorphosed and

survived. Spadefoot larvae were also found in abundance in a pool beside a road in the larger parcel north of Corral Hollow Road and across from the Twin Cities district headquarters office.

California tiger salamander larvae were found in abundance in the “CTS Pond,” located uphill and due east from the maintenance shop (figures 4 & 5). Judging by the numbers found in the net sweeps around the perimeter of the pond, there may have been over a thousand larvae in the pond early in the season. Periodic checks of the pond confirmed that some of the salamander larvae developed to early transformation stage, when the gills are absorbed. Since the pond held water well into May, it is assumed that a number survived and dispersed.

Three different individuals of California red-legged frog were observed in April and June in the western portion of the new Tesla acquisition (figures 6 & 7). Two were seen in a stock pond close to Corral Hollow Creek and one in pool of standing water alongside the creek. All three were juveniles with a snout to vent length of no more than 2.5”.

Three western pond turtles were observed close by the stock pond, in a few deep pools of Corral Hollow Creek (figure 8). The two adults were fairly young, with carapace lengths of ~7”, and one was a juvenile with a carapace length of ~ 2.5”. Since the juvenile was observed within inches of one of the adult turtles, it is assumed that it is an offspring and that the two adults are male and female.

Conclusion

With such a wet winter and spring season, conditions at Carnegie SVRA were improved for breeding amphibians, and the breeding season was extended into the late spring. The park hosts two listed species of amphibians and one species of concern. Attention should be paid to the stock pond located in the western portion of the Tesla acquisition, where California red-legged frogs are breeding. Since the stock pond is deep (6 – 7 feet) and appears to hold water all year, it will provide good habitat for breeding red-legged frogs in the future. It is also close to Corral Hollow Creek, which can provide an avenue of dispersal. The upper reaches of Corral Hollow Creek also appear to be providing enough permanent water to host a breeding pair of western pond turtles, another species of concern.

In the riding area, breeding success for the western spadefoot can be sustained by placing temporary fences around pools found to be supporting larvae in the spring. These pools can be monitored periodically through the spring until the larvae have metamorphosed and dispersed, when the fences can be taken down. This should not interfere with vehicles using the park early in the season.

Bird Surveys- Carnegie SVRA

Introduction

Surveys for land birds were conducted at Carnegie SVRA in spring of 2004 and 2005 and in winter of 2004. Surveys were conducted in two sets for each route in winter 2004 (December 15 & 16) and spring 2005 (April 11, 12 & May 11), but only one set was conducted in spring 2004 (June 9) due to time constraints.

A change was made in survey routes between 2004 and 2005. Surveys of the Los Osos route, which is located in the upper hilly section of the riding area, were completed in 2003 and 2004, but the route was then deleted from future surveys because of the steepness of the terrain and its proximity to the Kiln Canyon route. In addition, a new route through the western portion of the Tesla acquisition became a permanent addition to the park survey. Subsequently, there are now three routes located in the riding area of Carnegie SVRA (total length: 3 miles) and two routes in the non-riding area (total length: 1.8 miles). These include Kiln Canyon, Corral Hollow, Pottery / Franciscan Loop, Mitchell Ravine, and Tesla West (figure 9). Habitats encountered along the five routes include annual grassland, blue oak woodland, coastal scrub, and riparian. The riparian habitat consists of plants associated with intermittent streams in the Coast Range and include Fremont cottonwood (*Populus fremontii*), sycamore (*Planatus racemosa*), and mulefat (*Baccharis salicifolia*).

Another addition to the survey program was the use of Audubon Society volunteers during the winter surveys of 2004. Six birders from the San Joaquin chapter of the Audubon Society were involved in the effort. Two other volunteers, retired State Parks ecologists, assisted in winter of 2004 and spring of 2005.

Methods

Surveys consisted of line transect area searches (Bibby et al 1992, Engilis 2002) along routes of various lengths placed in riding and non-riding areas of Carnegie SVRA. Each route was surveyed twice per season (Dobkin & Rich 1998), except for spring 2004, when each route was visited once. Routes were walked at a leisurely pace by 1 – 4 observers and all birds seen or heard were identified, counted, and recorded as they were encountered. Birds were surveyed between 0730 and 1200, though a few surveys had to be done in mid-afternoon because of time and personnel constraints. Surveys were not conducted in inclement weather. Equipment included a pair of binoculars (minimum power: 8X), an illustrated bird field guide (National Geographic 2002), a CD_ROM set of recorded California bird songs (Keller 2002), and a Sony CD player. Data

recorded included common name of each bird species, the number of individuals of each species, and the habitat they were observed in.
Once the field data was gathered, it was copied over to an Excel spreadsheet. A copy of this database, along with other associated documents and files, is found in the State Parks H drive:
H:\Data\SHARED\NRDcom\Programs\IMAP\Carnegie\2005 Survey results Final Report.
Field data was copied and filed with other Twin Cities projects at the Natural Resources office in Sacramento.

Results

Hour effort for each full survey of the park varied from 4.9 – 7.5 hours. An average park-wide survey took 5.7 hours to complete. Since each survey is replicated, the total effort ranges from 10.9 – 12.7 hours each season. When survey routes were divided between two groups of observers and done concurrently, they were completed by midday. Those surveys done by one group of people extended into the afternoon.

A total of 77 species were recorded in Carnegie SVRA in 2004 and 2005, including incidental observations (table 5). In spring 2004, 41 species were recorded in one set of surveys. In winter 2004, 39 species were recorded in two sets of surveys. The total for the seasons is 59 species. In spring 2005, 66 species were recorded in the unit during two sets of surveys. Some new species were added to the ongoing list for Carnegie SVRA since 2003, including merlin (*Falco columbarius*), American pipet (*Anthus rubescens*), calliope hummingbird (*Stellula calliope*), yellow-billed magpie (*Pica nuttallii*), yellow warbler (*Dendroica petechia*), lazuli bunting (*Passerina amoena*), Lewis' woodpecker (*Melanerpes lewis*), and rock wren (*Salpinctes obsoletus*). The present list includes 111 bird species.

Observations included species of concern for California. Loggerhead shrike (*Lanius ludovicianus*) was seen during every survey, including during the breeding season. A golden eagle (*Aquila chysaetos*) was seen several times in the same area, in the western portion of the new acquisition, near the Tesla mine site. A northern harrier (*Circus cyaneus*) was seen in winter foraging over the hills near Kiln Canyon. Cooper's hawk (*Accipiter cooperii*) and white-tailed kite (*Elanus leucurus*) were both seen foraging in winter and spring. Also recorded were sage sparrow (*Amphispiza belli*), lark sparrow (*Chondestes grammacus*), and sharp-shinned hawk (*Accipiter striatus*).

Other species thought to be less common were observed in various habitats, including hooded oriole (*Icterus cucullatus*), Cassin's kingbird (*Tyrannus vociferans*- breeding on site in 2004 & 2005), and canyon wren (*Catherpes mexicanus*). An incidental sighting of a northern pygmy owl (*Glaucidium gnoma*) in Mitchell Ravine during the winter of 2004 by some Audubon birders was also

of note. During the winter the counts of individual birds increased considerably (figure 10), mainly due to large numbers of flocking white-crowned and golden-crowned sparrows (*Zonotricha leucophrys* and *Z. atricapilla*), which are found mostly in oak woodland and riparian habitats.

State Parks recognizes the importance of biodiversity in its parks, and has made the preservation of biological diversity a part of its mission. In fact, biodiversity has become a metric for the measure of a functioning ecosystem (Wilson 1992). Calculation of the Shannon-Wiener species diversity index (H') for each of the surveys shows that Carnegie SVRA has high overall species diversity (table 4). The diversity indices for spring average 3.35 and for winter they average 2.65. In practice most calculated indices reach a maximum of around 5, depending on the biotic community (Krebs 1989). However, differences in biotic community structures make it difficult to assess the relative importance of the Shannon-Wiener index without relating it to a measure of evenness (J, calculated H'/H_{max}), or the measure of how close each index comes to the maximum possible species number for that location or habitat. Results of the 2004 – 2005 surveys shows that the "J," or evenness, value (measured as a proportion of 1) was 0.73 and 0.78 for winter, and 0.86, 0.88, and 0.91 for spring. Both species diversity and evenness would be expected to be lower during the winter, when many of the breeding species are migrating or dispersing. However, the measure of evenness for spring at Carnegie SVRA is consistently high.

One weakness in using a line transect method in monitoring birds is the difficulty in standardizing counts for statistical analysis (Bumgardner 2005). Even if all routes were of the same length, surveys would not always take the same amount of time, since bird abundance, rough or steep terrain, and observer differences all cause more time to be spent in some areas than in others (see the differences in rate of travel in table 3). However, when pooling data, the total distance surveyed remains the same, while hour effort is variable. Therefore, for these surveys abundance measures were standardized as number of individuals observed per mile (table 3). Results show large differences in bird abundances between routes, depending on which park survey is analyzed. In general the highest average abundances per mile are found in the Los Osos (138 individuals / mile) and Kiln Canyon (105 individuals / miles) routes.

When riding and non-riding abundances are compared using t-tests, the non-riding areas had a higher average number of individuals than riding areas, using pooled data. However, the difference was not statistically significant to support the statement that non-riding areas have greater abundance of birds (table 6). More data will help to clarify any such relationship. The difference in average number of species between riding and non-riding routes was minimal. Part of the reason is seen in the large range of values for all the variables. With such a variation, a higher number of samples are needed to make a statement supported by statistical significance.

Conclusion

Carnegie SVRA has a moderately high species richness and diversity, with a high abundance of birds in both riding and non-riding areas of the park. Several species considered to be species of concern in California are present in the park, and species considered uncommon or at the edge of their geographic range are breeding in the park or utilizing habitat within its boundaries.

In order to more accurately answer the question “how does off-road vehicle use effect bird abundance or the presence of rare or listed species,” a more rigorous study design may be necessary. Either a revision of the line transect method presently being used or switching to use of point count stations using the present routes would increase sample size and resolve the problem of standardization of counts. Although using the present method of line transects for monitoring birds is supported by the scientific community (Verner & Ritter 1985, Bibby et al 1992, Dobkin & Rich 1998, Engilis 2002), it might prove to be inadequate at satisfying certain requirements for statistical analysis for long term data (Bumgardner 2005). Other aspects of methodology also need to be addressed, such as utilizing volunteers for surveys.

Presently, a full analysis of three full years of survey data is being planned after the surveys of winter 2005. During that time, abundances of individual species will be analyzed and compared between riding and non-riding areas. This information will be of more use to park ecologists than simple abundance of individual birds. Habitats within the park will also be analyzed. Concurrently, the scientific literature will continue to be searched and researchers queried to answer questions concerning the appropriateness of the present methodology.

Monitoring methods presently used by Point Reyes Bird Observatory (PRBO) include counts of individual species (Gardali et al 2004) and are used in conjunction with individual habitat conservation plans developed by Partners in Flight which use abundances of focal bird species for specific habitats to judge effectiveness of management decisions. Examples of these conservation plans can be found online at http://www.prbo.org/calpif/plans.html. The full PRBO report can be found online at http://www.watershedportal.org/Files/1462.pdf.

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Bird Surveys- Prairie City SVRA

Introduction

Bird surveys were conducted at Prairie City SVRA (PCSVRA) in spring and winter 2004 and spring 2005. The purpose of these surveys was to identify the bird species using habitats in PCSVRA and to monitor their abundance trends over time. Surveys were conducted in two sets for each route in winter 2005 (January 4 & 5) and spring 2005 (May 25 & 26), but only one set was conducted in spring 2004 (June 12) due to time constraints.

Four routes were surveyed in the park, each passing through representative habitats. One route passed by a mixture of grassland and scattered groups of Fremont cottonwood, in an area of dredge tailings now used by off-road vehicles. A second route passed by flat, treeless grasslands containing numerous vernal pools and is unused by off-road vehicles. A third route is located near the shooting range and passes through a mixture of coyote brush chaparral and two catchment ponds containing a small portion of lacustrine habitat. The fourth route is located on the east side of the park and passes through a small blue oak

woodland and a catchment pond. Both the third and fourth routes are frequently used by off-road vehicles.

Because of the low sample size of surveys in the non-riding vernal pools area and the lack of matching habitats, it was not appropriate to make comparisons of bird abundance between riding and non-riding areas in PCSVRA. An in depth analysis of data will be done in winter of 2005 – 2006 to try to answer that question.

Methods

Surveys consisted of line transect area searches (Bibby et al 1992, Engilis 2002) along routes of various lengths placed in Prairie City SVRA. Each route was surveyed twice per season (Dobkin & Rich 1998), except for spring 2004, when each route was visited once. Routes were walked at a leisurely pace by 1 – 4 observers and all birds seen or heard were identified, counted, and recorded as they were encountered. Birds were surveyed between 0730 and 1300. Surveys were not conducted in inclement weather. Equipment included a pair of binoculars (minimum power: 8X), an illustrated bird field guide (National Geographic 2002), a CD_ROM set of prerecorded California bird songs (Keller 2002), and a Sony CD player. Data recorded included common name of each bird species, the number of individuals of each species, and the habitat it was observed in.

Once the field data was gathered, it was copied over to an Excel database. A copy of this database, along with other associated documents and files, is found in the State Parks H drive: H:\Data\SHARED\NRDcom\Programs\IMAP\Prairie City\2004_05 Bird Survey. Field data was copied and filed with other Twin Cities projects at the Natural Resources office in Sacramento.

Results

A total of 35 species were recorded in spring of 2004, 37 species for the winter of 2005, and 53 species for the spring of 2005. Fifteen new species were added to the ongoing list for Prairie City SVRA, bringing the total to 76 species. These new species include golden eagle (*Aquila chysaetos*), red-shouldered hawk (*Buteo* lineatus), Lewis' and downy woodpeckers (*Melanerpes lewis* and *Picoides pubescens*), olive-sided flycatcher (*Contopus cooperi*), western wood peewee (*Contopus sordidulus*), rufous-crowned sparrow (*Aimophila ruficeps*), orange-crowned, yellow, and yellow-rumped warblers (*Vermivora celata, Dendroica coronata,* and *Dendroica petechia*), western tanager (*Piranga ludoviciana*), white-throated swift (*Aeronautes saxatalis*), Anna's hummingbird (*Calypte anna*), black-headed grosbeak (*Pheucticus melanocephalus*), and an unidentified species of gull (*Larus* sp.). Surveys continued to find grassland obligate or facultative species such as savannah sparrow (*Passerculus sandwichensis*), lark sparrow

(*Chondestes grammacus*), horned lark (*Eremophilia alpestris*), and western meadowlark (*Sturnella neglecta*). As in the 2003 surveys, a willow flycatcher (*Empidonax traili*) was observed in the park, as it passed through to its breeding grounds in the Sierra Nevada. Observed species that are listed or considered to be of special concern include golden eagle, Cooper's hawk, northern harrier, white-tailed kite, Lewis' woodpecker, tricolored blackbird, lark sparrow, yellow warbler, olive-sided flycatcher, and willow flycatcher.

When pooling bird abundances from all survey routes, combined years averaged 137 individuals / mile, with a range of 104 – 222 individuals / mile. Compared with the average pooled bird abundance in Carnegie SVRA (90 individuals / mile), Prairie City was higher. The higher abundances resulted from observations of flocking swallow species in spring 2005, as well as better visibility due to large areas of more open habitat at Prairie City. There was some variation between average bird abundances in different routes, with figures that range from 115 individuals / mile (Oak Woodland) to 168 individuals / mile (Cottonwood). The widest range in values for surveys done in a route was 32.7 individuals / mile to 253 individuals / mile for the Oak Woodland route.

Bird species diversity in PCSVRA is moderate, with indices (H') that range from 2.65 – 3.10 (mean = 2.8) and evenness scores (J) ranging from 0.72 – 0.81. Diversity was higher in the spring (2.87) than in the winter (2.77), though the difference was negligible. Compared with the average diversity index for Carnegie SVRA unit (3.1, range 2.62 – 3.54), bird diversity in Prairie City was slightly lower. This might be due the wider variety of habitats and plant communities found at Carnegie SVRA.

Conclusion

As in Carnegie SVRA, bird surveys at Prairie City SVRA are meant to track trends in bird species abundance over time, as well as answering the question "is there a difference in abundances between riding and non-riding areas?" In order to answer that question for Prairie City, more surveys should be done in non-riding areas that reflect the same habitats as riding areas. At present, that is not possible for this unit.

As stated previously for Carnegie SVRA, a more detailed analysis of data for Prairie City SVRA is also planned to be done in the winter of 2005 – 06. At that time, a clearer picture of bird abundance dynamics will be the focus. It will also be a time to review the methods being used to monitor birds at the unit.

Small Mammal Trapping- Carnegie SVRA

Introduction

Small mammal trapping was conducted at Carnegie SVRA for two nights, June 14-16, 2005. Four trapping sites were surveyed: grassland OHV-use, grassland non-OHV-use, riparian OHV-use, and riparian non-OHV-use (figure 11). The purpose of sampling was to determine small mammal presence for both riding and non-riding areas in the park.

Method

Trapping was performed for two nights (June 14 and June 15). The moon was the first-quarter phase, daytime temperatures were mid-80s° F, nighttime temperatures were mid-50s° F, skies were generally clear, and there was a fairly constant onshore wind. A third night of trapping had been planned, but weather forecasts predicted rain from a late-season storm so the project was terminated after two nights. Trap lines were set on the ground in suitable habitat with approximate 10 m spacing between traps. Twelve-inch Sherman live-traps were employed, and each trap line, containing 50 traps, was set in a meandering line. Traps were baited with oats rolled in peanut butter with a small amount of bird seed, containing millet and sunflower seeds, mixed in. Traps were set in the late afternoon-early evening, and checked at sunrise the next morning. When an animal was captured it was identified to species, the gender was identified (if possible), and females were examined for lactation condition, and then the animal was released. Animals were not marked for recapture assessment. No vouchers were collected from the unit, though photographs were taken of some animals (figure 12). No animals were killed during this study (no incidental deaths occurred).

Results

Table 11 summarizes the animals captured on trap lines in 2005. Two species were captured in grassland habitat in both the OHV-use and non-OHV-use areas: *Peromyscus maniculatus* (deer mouse) and *Microtus californicus* (California vole). Three species were captured in the riparian habitat OHV-use area: *Peromyscus maniculatus* (deer mouse), *Neotoma lepida* (desert woodrat), and *Dipodomys heermani* (Heermann's kangaroo rat). Three species were captured in the riparian non-OHV-use area: *Peromyscus maniculatus* (deer mouse), *Neotoma lepida* (desert woodrat), and *Microtus californicus* (California vole). In view of the species and number of animals captured there is a significant difference between the grassland and riparian habitat types, but no evident difference between the OHV-use and non-OHV-use areas of either habitat type.

Grassland habitat selected for surveys was dominated by exotic annual species (*Bromus hordeaceus*, *Avena barbata*, *Brassica*/*Hirschfeldia***,** *Carduus pycnocephalus*). The OHV-use area was ungrazed by livestock in 2005, and the non-OHV-use area was grazed by cattle in winter/spring 2005 (cattle were not present during the time of small mammal trapping).

The riparian areas occur within the channel of Corral Hollow Creek, and consist of moderately dense mulefat (*Baccharis salicifolia*), with a few scattered cottonwood (*Populus fremontii*), and many annual weedy species. A few chaparral shrubs, including California buckeye (*Aesculus californica*), blue elderberry (*Sambucus mexicana*), and California sage (*Artemisia californica*) grow in the OHV-use riparian area, while the non-OHV-use area has a greater component of larger cottonwood and sycamore (*Platanus racemosa*) trees. As a result of cattle use the riparian area in the non-OHV-use area is not as densely vegetated as the OHV-use area. There was no flowing or standing water in the stream channel in the OHV-use area, although there was standing water near the trap line in the non-OHV-use area.

Table 12 presents a comparison of 2005 small mammal trapping data with results of small mammal trapping studies conducted by others at Carnegie SVRA in 1980 and 1989. In general, these trapping studies did not gather enough data for statistical comparisons, and even though the habitat types were given similar titles by the surveyors (*i.e*., grassland) there may be significant micro-habitat differences between the study sites. Also, trapping was performed at different times of the year, and, in the case of the 1989 study, data was lumped for several seasons and habitat types.

Overall, there does not appear to have been a significant change in small mammal species or abundance over the 25 year period. The 1989 study did not trap in any habitat type they identified as ‘riparian’, and this may explain the absence of desert woodrat from their species list, even though this species was common in 2005. The 1989 study trapped coastal scrub (chaparral) areas not included in the 2005 survey, and this likely explains the presence of species that commonly occur in brushy habitats, such as dusky-footed woodrat and various *Peromyscus* species.