

**Raptor Surveys Conducted at
Lower Cottonwood Creek Wildlife Area, 2006**



Red-tailed hawk nestlings. Photo by Christina Sousa.

Prepared By: Christina L. Sousa
January 2008

Los Baños Wildlife Area Publication #: 37

Status: Final Report

For additional copies, contact: Resource Assessment Program
Ca Department of Fish & Game
18110 W. Henry Miller Rd.
Los Baños, CA 93635
Phone: (209) 826-0463
Fax: (209) 826-1761

Abstract

Lower Cottonwood Creek Wildlife Area is usually grazed from October through January to aid in fire prevention and to assist in the control of non-native grasses. Fenced cattle exclusions were constructed on this property in order to protect portions of grassland from being grazed, thus providing both food and cover for resident wildlife. We conducted small mammal surveys in both grazed and un-grazed portions of the property in order to compare differences in species composition as well as population size. Because such a large portion of the raptor diet consists of small mammals, we also conducted diurnal and nocturnal raptor surveys during 2006. Our goal was to determine which species were using this property and to see what effects, if any, grazing might have on them. We also compared it to former baseline inventory data, which was collected by the Department several years prior when no cattle grazing took place. The effects of grazing on habitat quality and cattle interaction with wildlife were key factors in our monitoring efforts. Further study will give us important insight on the future management of this wildlife area.

Keywords: Raptors, cattle, grazing, small mammal, exclusions, Merced county

Introduction

Cattle grazing contracts are utilized at Lower Cottonwood Creek Wildlife Area (LCCWA) in order to aid in fire prevention and to assist in the control of non-native grasses. The Department of Fish & Game has also constructed several fenced cattle exclusion areas on this property. These exclusions provide refuge to other animals while grazing takes place by protecting portions of grassland habitat. They also provide habitat diversity by having both grazed (740 ha) and ungrazed (129 ha) areas present. We wished to study the relationship between wildlife and their potential use of these exclusions when cattle are present on the wildlife area, as well as once the cattle are removed. In an attempt to further understand the benefits of providing these exclusions, Department personnel initially set out to study two groups of animals. First we wanted to learn if grazing was affecting small mammal populations and species distribution between grazed and un-grazed areas. Second, LCCWA has moderate public use in the form of hunting, so we wished to see if deer remain on the property by using the exclusions when cattle are present. However, because we conducted our deer surveys both day and night, and because small mammals are present and are a primary food source for raptors, this provided an excellent opportunity to concurrently survey for raptor presence while conducting our deer surveys. Baseline avian inventory has been completed on this property years prior (with the

exception of nocturnal surveys), when no grazing was taking place. Therefore our primary objective was to compare the data in order to see which raptor species are still present at LCCWA, and to determine if more thorough raptor surveys would be feasible while conducting deer surveys in the future. Though our surveys were basic and primarily geared toward presence, we also questioned if trends might be present that suggest grazing could have a positive or negative effect on raptor use or behavior.

Study Area

LCCWA (869 ha) is located within Merced County, approximately ten miles west of the city of Los Baños along Highway 152 (Figure 1). California State Parks owns the adjacent land to the south of the property, and land bordering the northern side of the wildlife area is privately owned. Two large bodies of water, the San Luis Reservoir and the O'Neill Forebay, lie to the west and east of the wildlife area respectively. LCCWA is owned and managed by the California Department of Fish and Game, and is one of several properties which make up the Los Baños Wildlife Area Complex. This is a lower foothill property located on the eastern most side of the Coast Range, and the vegetation association consists almost entirely of California annual grassland (Sawyer and Keeler-Wolf 1995). With an average rainfall of 28 cm per year (California Department of Fish and Game unpublished data 1970-2006), the climate includes hot, dry summers, and relatively short and cool winters. Elevation ranges from approximately 90-390 m.

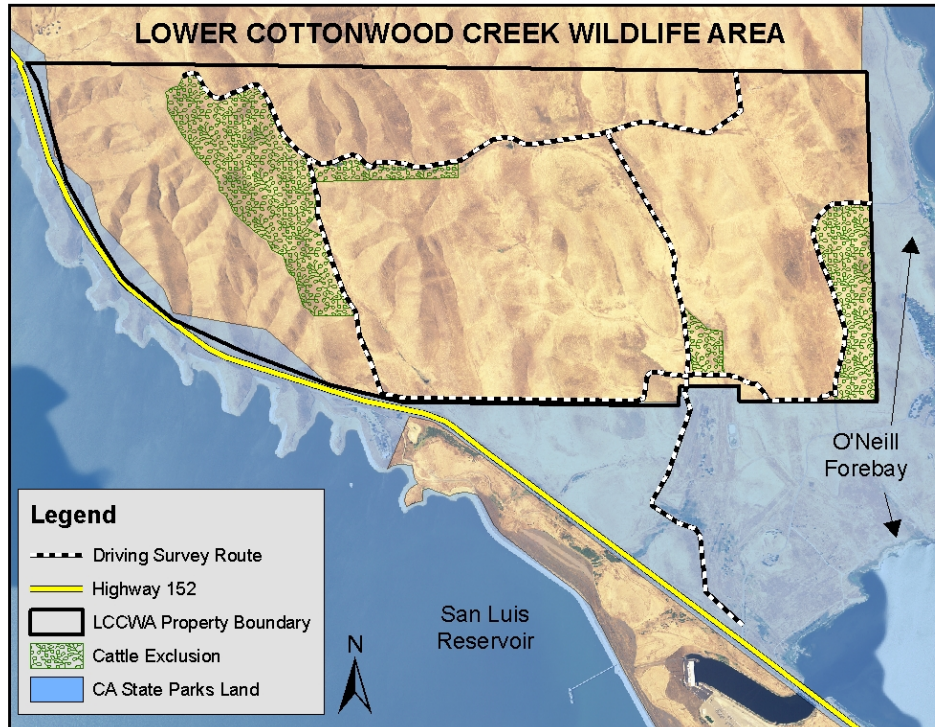


Figure 1. Raptor survey route at Lower Cottonwood Creek Wildlife Area, 2006. Surveys conducted while concurrently driving along deer survey route.

Methods

The raptor survey route, conducted concurrently with the deer survey route, begins to the south of LCCWA, which is owned by California State Parks and then continues onto the wildlife area and runs primarily along firebreaks (Figure 1). Because the bordering Parks land has a riparian area, deer are often seen moving between their property and ours, so we included it as part of our survey route. Though deer data will be presented in a separate report, we recorded the avian species while following the methods for our deer surveys. Each month, a total of two nighttime and two daytime driving surveys were conducted (night surveys never were followed immediately by a daytime survey). During the day, we began 30 minutes prior to sunrise unless inclement weather made visibility difficult, in which case we waited until light levels allowed us to see without the use of vehicle headlights. For our nighttime surveys, we began one hour after sunset and used vehicle high-beams, as well as one-million candle power hand-held spotlights to look for animal eye-shine. Surveying consisted of slowly driving the route with a maximum speed of 10-15 miles per hour. While moving, a minimum of two surveyors (one on each side of the vehicle) scanned the hillsides for deer as well as raptors, and used binoculars to

identify them. Some of the survey route is within open space and other portions run through narrow canyons, therefore surveyors simply scanned as far as they were able to see. Because there are some areas of the driving route where we must double back from a dead end, we took special care in trying not to re-count any animals which may already have been tallied. Though we did record the locations of deer (e.g. located within an exclusion v. not), we found it difficult with raptors as there were often moderate numbers of individuals that continually moved while we surveyed. In addition, they often perch on exclusion fences so we were unable to correlate their direct use of grazed v. non-grazed lands unless they were observed foraging or were perched on the ground. Therefore, we simply identified and counted the number of each species and did not record locations along the route. Also, because of the large home-range of both the deer and raptors, we recorded all that we could positively identify, whether they were using Parks land, the wildlife area, or the adjacent private property.

Our avian species were tallied and recorded in the notes section of our deer data sheet. We collected the beginning and ending time and temperature for each survey and entered our data into an Access database. To summarize and analyze our avian trend data, we used Microsoft Excel.

Results

With the exception of March, when inclement weather and poor road conditions prevented nighttime visits, we conducted two diurnal and two nocturnal raptor surveys each month from January through December of 2006. Cattle grazing took place at LCCWA from October through December. We observed a total of eight diurnal and four nocturnal raptor species. From November of 2000 through October of 2001, Department personnel also conducted baseline avian inventory at LCCWA by way of walking survey routes (no grazing contracts were in effect at this time). Because of differences between surveying techniques, we were unable to compare the numbers they observed for each species with our 2006 data. For example, during inventory efforts they surveyed only once per month, had a shorter route, and did not tally the number of birds that were observed beyond a certain distance from the route (e.g. if a bird was observed outside of the specified survey area, they recorded the species as being present but did not count the number of

individuals seen). However, we were able to summarize which species were observed each month during both survey efforts (Table 1). With the exception of some of the rarer species, and with our increased observations of owls during 2006 due to nocturnal surveys, our species observations this season were often similar to prior inventory. When comparing our data, we were able to see that during both survey efforts, American Kestrels, Northern Harriers, and Red-tailed Hawks comprised the bulk of the diurnal species observed. During the baseline surveys from 2000-2001, Department personnel did record repeated observations of Golden Eagles and Prairie Falcons, however, they never recorded more than one individual at a time. Another difference found between the two seasons of field work was the observation of White-tailed Kites. During 2006, all of our White-tailed Kite observations were made between September and December. However, during the 2000-2001 baseline inventory of LCCWA, surveyors observed this species at an entirely different time of year.

When looking at the most common diurnal raptor species, we found that seasonal trends for our 2006 monitoring surveys show an overall increase in the number of individuals during the fall (Figure 2a). Once nesting is complete and young birds begin to fledge, dispersal of both the young and adults usually takes place at this time of year. With American Kestrels, we noted similar findings in the baseline inventory data. Surveyors observed a lack of Kestrels for the same time period (March - June), and then noted an increase in the total numbers of individuals by July. Of the four owl species we observed during our nocturnal surveys in 2006, they too show an increase in numbers during fall or winter (Figure 2b). Because no prior nocturnal surveys had been conducted on LCCWA, this year provided our first insight as to how many owls were present. A few Short-eared Owls also arrived in winter and had not been previously recorded on this property. Great Horned Owls were the only raptor species that we did not observe on LCCWA, but instead found only on the adjacent State Parks land, which harbors an area of large trees.

Table 1. Raptor species observed at Lower Cottonwood Creek Wildlife Area during monitoring surveys between January and December of 2006, and during baseline inventory surveys between November 2000 and October 2001. (a = species observed during 2006 monitoring; b = species observed during 2000-2001 inventory; c = species observed during both monitoring and inventory seasons.)

RAPTOR SPECIES	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
American Kestrel <i>Falco sparverius</i>	c	c					c	c	c	c	c	c
Barn Owl ¹ <i>Tyto alba</i>	a	a	a	a	a	a	a	a	a	a	a	a
Burrowing Owl ¹ <i>Speotyto cunicularia</i>	a	a						a	a	a	a	a
Cooper's Hawk <i>Accipiter cooperii</i>										a		
Golden Eagle <i>Aquila chrysaetos</i>		b				b						b
Great Horned Owl ¹ <i>Bubo virginianus</i>											b	
Merlin <i>Falco columbarius</i>		a										
Northern Harrier <i>Circus cyaneus</i>	c	c	c	c	c	a	a	c	c	c	c	c
Prairie Falcon <i>Falco mexicanus</i>									b	b	b	b
Red-tailed Hawk <i>Buteo jamaicensis</i>	c	c	c	c	c	c	c	c	c	c	c	c
Sharp-shinned Hawk <i>Accipiter striatus</i>												b
Short-eared Owl ¹ <i>Asio flammeus</i>											a	a
White-tailed Kite <i>Elanus leucurus</i>		b	b	b	b		b		a	a	a	a

¹ = nocturnal surveys were only conducted during 2006.

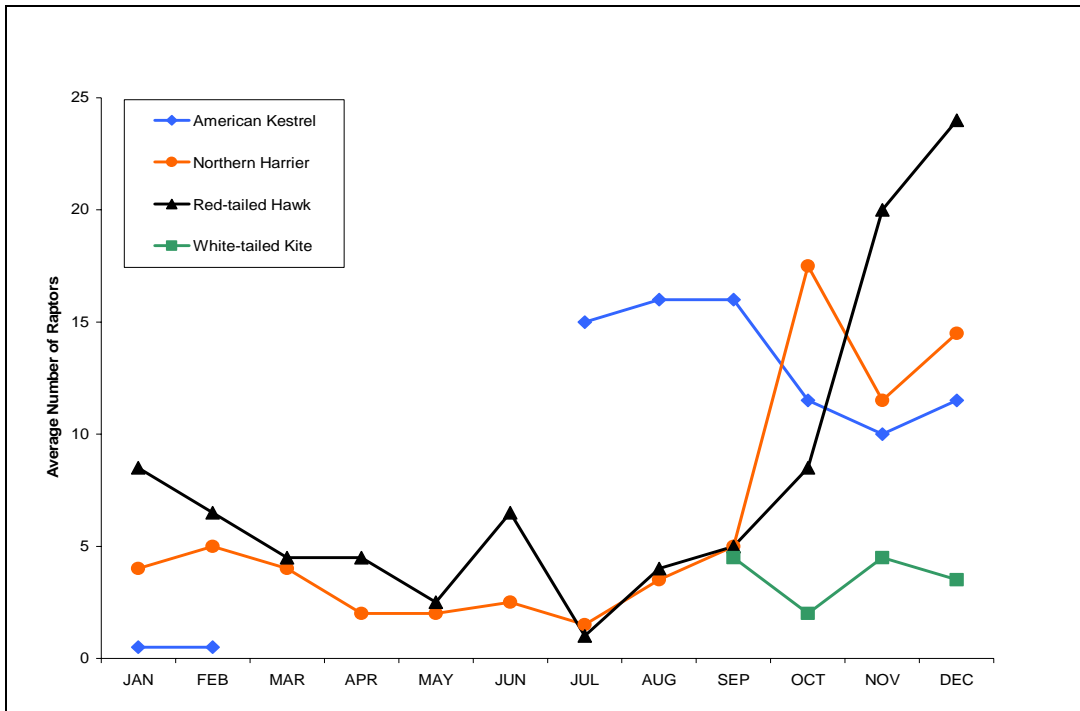


Figure 2a. Average number of common diurnal raptor species observed at Lower Cottonwood Creek Wildlife Area each month during 2006. (Cattle present on property between October and December.)

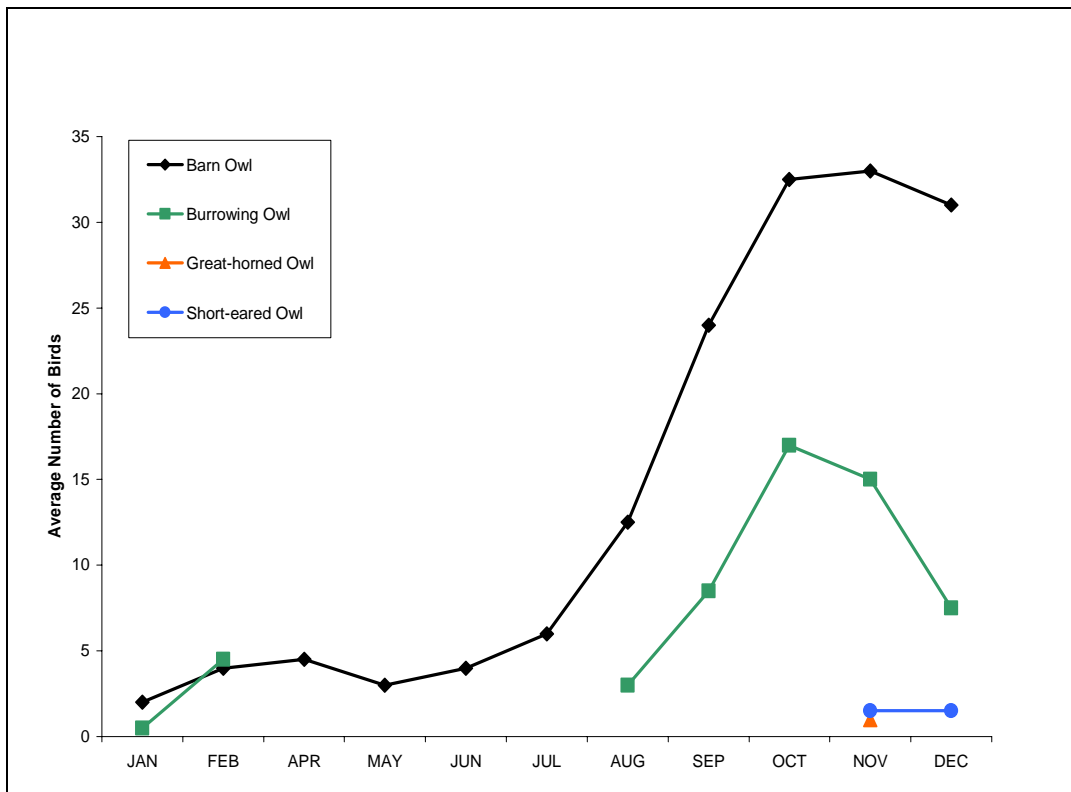


Figure 2b. Average number of nocturnal raptor species observed at Lower Cottonwood Creek Wildlife Area each month during 2006. (Cattle present on property between October and December.)

Discussion

Though we cannot tie cattle presence to that of raptor use on the property, we are able to see that once cattle were placed on LCCWA, we actually found an increase in the number of raptors present. This increase in the fall is likely due to fledged and adult birds dispersing after nesting season is completed. Analyzing the previous small mammal trapping data will be beneficial to see if cattle exclusions during the fall allow for an increase in the small mammal population, and thus may provide better foraging for dispersing raptors. When looking at our avian trend data from 2006, we do see that some species are not present year round. During both our surveys and previous inventory, we found American Kestrels were absent for a portion of the year. LCCWA has only a few trees present on the property, so this species likely nests nearby and thus its numbers suddenly increase during the fall when birds return to forage. Burrowing Owls also appear to nest elsewhere and thus we see the same pattern with an increase in their numbers during the fall. It is unclear why White-tailed Kites were observed at one part of the year during our surveys, and yet at a different time of year during baseline inventory. However, this species and its presence on other properties within in the Los Baños Wildlife Area Complex do seem to fluctuate from year to year. Overall, we found a diverse number of raptor species using LCCWA and were previously unaware that a limited number of Short-eared Owls were present during winter months as well.

Cattle exclusions protect areas of grassland habitat from being grazed, thus creating more food and cover for small mammals, as well as other wildlife. Though small-mammal trapping has been done on both grazed and un-grazed areas, the data has yet to be analyzed. However, it may be possible that these exclusions in combination with grazed areas may benefit raptors by way of increasing the number of small mammals present on the property. Some small mammals may prefer thicker, un-grazed habitat more so than others, and this might benefit a greater variety in overall species composition. Because LCCWA has almost no trees and a minimal number of shrubs, the fenced exclusions also provide excellent perching sites for raptors to forage from. Thick grass and duff make it more difficult for raptors to access small mammals and thus grazing portions of the property likely benefit raptors by promoting better foraging conditions. In combination with that, grazing exclusions may assist in keeping a stable population of small mammals present by

providing them with locations with more abundant food and cover (i.e. grass & seeds) throughout the year.

Currently, the Department has been involved in projects amongst several properties in developing natural springs in order to provide year-round water for both cattle and wildlife. In addition, plans are underway to begin restoration work that will hopefully increase the limited riparian habitat present at LCCWA. We recommend photographing areas of restoration work from year to year to document changes in habitat. We also suggest continuing raptor surveys but perhaps attempting a more thorough survey that might include how the animals are using the habitat. For example, recording when and where raptors are seen and if they are foraging, perched, nesting, etc. If feasible, continued nocturnal surveys will also give us insight as to owl use on this wildlife area. As with raptor surveys, additional monitoring of small mammal populations, deer use, or other wildlife studies should be done while cattle are both on and off the property so that we may better understand the use of cattle exclusions by native fauna. We hope that by increasing the available water on LCCWA, and potentially creating more riparian habitat, it will be beneficial to all wildlife and will perhaps increase the number of animals and species found there. Surveys for avian species such as point counts may also provide excellent baseline data prior to the restoration project. Continued monitoring on this property will help the Department better understand the effects that cattle grazing and changes in habitat may have on wildlife species. Also, analyzing the small mammal data collected previously will give us better insight as to how cattle grazing may be affecting animals that are directly dependent on grassland habitat.

Acknowledgements

Raptor surveys during 2006 were funded by The California Department of Fish & Game Resource Assessment Program. We wish to thank William Cook, the Los Baños Wildlife Area manager, for his support. In addition, L. Connolly, J. Sloan, C. Sousa, E. Edmunds, and L. Sparks contributed in data collection.

Literature Cited

California Department of Fish and Game. 2006. Rainfall data 1970-2006. Los Baños Wildlife Area unpublished data, Los Baños, California.

Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento. 471 pp.