

**Western Riverside County
Multiple Species Habitat Conservation Plan (MSHCP)
Biological Monitoring Program**

Los Angeles Pocket Mouse (*Perognathus longimembris
brevinasus*) Survey Report 2005



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NOTE TO READER:

This report is an account of survey activities undertaken by the Biological Monitoring Program for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June of 2004. The Biological Monitoring Program monitors the distribution and status of the 146 Covered Species within the Conservation Area to provide information to Permittees, land managers, the public and the Wildlife Agencies (i.e. the California Department of Fish and Game and the U.S. Fish and Wildlife Service). Monitoring Program activities are guided by the MSHCP Species Objectives for each Covered Species, the MSHCP information needs identified in Section 5.3 or elsewhere in the document, and the information needs of the Permittees.

The primary preparer of this report was the Field Crew Leader, Debra De La Torre. If there are any questions about the information provided in this report, please contact the Monitoring Program Administrator. If you have questions about the MSHCP, please contact the Executive Director of the Western Riverside County Regional Conservation Authority (RCA). For further information on the MSHCP and the RCA, go to www.wrc-rca.org

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INTRODUCTION

The Los Angeles pocket mouse (*Perognathus longimembris brevinasus*, “LAPM”) is a California species of special concern and is believed to be widely distributed in the eastern two-thirds of the MSHCP Plan Area (Dudek & Associates 2003). Most of the records for this species in the Plan Area are the result of trapping efforts for either Stephens’ or San Bernardino kangaroo rats (*Dipodomys stephensi*, “SKR” and *D. merriami parvus*, respectively). Detailed information on the current status of LAPM populations in the Plan Area is not available from either the literature or local biologists. Detection of the species even when it is present can be problematic because it spends much of the year below ground hibernating or aestivating. The MSHCP identifies seven Core Areas for this species and requires that each of the seven Core Areas supports a stable or increasing population that occupies at least 30 percent of the suitable habitat as measured over any 8-consecutive year period. The seven Core Areas for LAPM are described in the MSHCP as:

- 1) San Jacinto Wildlife Area-Lake Perris Reserve
- 2) The Badlands
- 3) San Jacinto River and Bautista Creek
- 4) Anza Valley
- 5) Lake Skinner-Domenigoni Reserve
- 6) Potrero Valley
- 7) Temecula Creek.

Survey Goals

- A) Develop and test a protocol for detecting LAPM and other Covered small mammal species in the Conservation Area;
- B) Train personnel on identification and handling techniques for small mammals;
- C) Locate populations of LAPM within the MSHCP-identified Cores.

METHODS

Protocol Development

The Biological Monitoring Program protocol for Los Angeles Pocket Mouse was developed in discussion with personnel at the U.S. Fish and Wildlife Service (USFWS) Carlsbad field office who are conducting an ongoing demographic study of the pacific pocket mouse (a different sub-species). The USFWS study includes a 10 consecutive night trapping effort on very large grids with traps spaced 5 meters apart. For the purposes of detection, a five night trapping effort, with 8 x 8 grids with 5 meter spacing, was deemed adequate for the Biological Monitoring Program trapping effort in 2005. It is expected that grid size, trapping duration and/or trap spacing could change based on survey results. The Monitoring Program effort also includes vegetation sampling on the trapping grids.

Personnel and Training

The Monitoring Program conducted small mammal trapping training to ensure proper small mammal handling and identification skills. Surveyors were taught safe handling procedures, with the goal of protecting both the captured animal and the handler. Identification of Covered small mammal species was taught through hands-on training with biologists experienced with Covered Species identification. As it can be difficult to differentiate between the Stephens' kangaroo rat (SKR) and the Dulzura kangaroo rat (*D. simulans*) in the field, training sessions were conducted at multiple locations to expose Monitoring Program staff to a range of population characteristics and identification techniques. Training was conducted at the Potrero Unit of the San Jacinto Wildlife Area (Potrero), the Davis Unit of the San Jacinto Wildlife Area (SJWA), and at the Motte Rimrock Reserve between June and August 2005. Training was provided by USFWS, California Department of Fish and Game (CDFG), Stephen J. Montgomery, and Arthur Davenport.

Surveyors conducting LAPM trapping in 2005 included:

- Debra De La Torre, Field Crew Leader (Regional Conservation Authority)
- Shirley Bartz (Regional Conservation Authority)
- Adam Malisch (Regional Conservation Authority)
- Christine Rothenbach (Regional Conservation Authority)
- Kimberly Oldehoeft (Regional Conservation Authority)
- Yvonne C. Moore (CDFG)
- Rosina Gallego (CDFG)
- Annie Bustamante (CDFG)
- Ricardo Escobar III (CDFG)
- Sarah Bahnson (CDFG volunteer)
- Karen Delaney (CDFG volunteer)
- Robert McKean (CDFG volunteer)
- Esperanza Sandoval (CDFG volunteer)
- Karin Cleary-Rose (USFWS)
- Samantha Marcum (USFWS)

Study Site Selection

Potrero and Silverado Ranch (Silverado) were selected as sites for the LAPM trapping effort (Figure 1). These sites were selected because they are Core Areas and because they are outside of the SKR Habitat Conservation Plan (HCP) Area. The Monitoring Program avoided trapping inside the SKR HCP Area until assured by the USFWS and CDFG that activities would be covered by the MSHCP permit.

Potentially suitable habitat was identified by creating a GIS database that included soil type, vegetation type, and percent vegetation cover from areas within historic LAPM records. Other locations with the same habitat characteristics as those areas within historic LAPM detections were considered suitable habitat. A GIS layer was created and the identified suitable habitat was then divided into 70m x 70m homogeneous grids. Grid locations were chosen

randomly from the GIS layer. Chosen grid locations were visited in the field to assess on-the-ground conditions and to select three homogenous grids at each trapping location. The selection criteria for LAPM grid locations can be found in Appendix A.

Survey Methods

Three 8 x 8 grids with traps placed 10 m apart were trapped for five consecutive nights at each of the selected Core Areas (Potrero and Silverado) from 27 September through 1 October 2005 (Table 1). Sherman folding aluminum live-traps were baited at dusk (approximately 1800 hrs) and checked at approximately 1200 hrs and 0500 hrs. Captured animals were measured, hair clipped, and released at the site of capture. Data collected included species, sex, weight, trap location, age, and reproductive condition. Weather and habitat variables were also collected; these data included moon phase, temperature, cloud cover, and a vegetation Relevé based on the California Native Plant Society protocol (CNPS 2002). A complete description of the trapping and Rapid Assessment protocols can be found in Appendix B and Appendix C, respectively.

Data Analysis

Raw data are stored in both electronic and paper format in the Biological Monitoring Program office. Because of the limited dataset, results were not statistically analyzed. However, data collected on the distribution of all Covered Species are included on maps. These areas may be included in future analyses if they fit future selection criteria.

RESULTS

No LAPM were captured on any of the six trapping grids at either the Silverado or Potrero sites. However, other MSHCP covered mammal species were captured and released. These included San Diego pocket mouse (*Chaetodipus fallax*), long-tailed weasel (*Mustela frenata*), San Diego desert woodrat (*Neotoma lepida intermedia*), Stephens' kangaroo rat, and Dulzura kangaroo rat. Audio and/or visual encounters of coyote (*Canis latrans*), bobcat (*Lynx rufus*), and black-tailed jackrabbit (*Lepus californicus bennettii*) were also recorded during the LAPM trapping effort. A list of Covered small mammal species detected during both training and LAPM trapping in 2005 is shown in Table 2. It should be noted that in August, six individual LAPM were captured at the SJWA during training.

DISCUSSION

The goal of the 2005 trapping effort was to locate LAPM populations in Core Areas for further studies. LAPM were only located at the SJWA during training. While LAPM are known to remain below ground for part of the year, local biologists trapping elsewhere in western Riverside County detected LAPM in late September 2005 (Dan Grout pers. comm. to Karin Cleary-Rose), so they should have been detectable on our grids if they were present.

In order to refine the site selection procedure, Monitoring Program biologists searched small mammal trapping reports housed at the USFWS Carlsbad office for records of LAPM.

These additional records will be used to refine the selection procedure which should result in more accurate predictions of the presence of LAPM in future trapping efforts.

As a separate effort we will be re-trapping the grid at the SJWA where LAPM was detected during training exercises to gain an understanding of the distribution of LAPM at the SJWA, and to track their above/below ground activity cycle. We will continue to monitor the above-ground activities of the LAPM population at the San Jacinto Wildlife Area through 2006. As we detect other populations in the Plan Area, our monitoring effort will expand.

REFERENCES

California Native Plant Society. 2002. Vegetation rapid assessment protocol. CNPS Vegetation Committee. 11 p. (<http://www.cnps.org/vegetation/protocol.htm>).

Dudek & Associates. 2003. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Final MSHCP, Volumes I and II. Prepared for County of Riverside Transportation and Lands Management Agency. Prepared by Dudek & Associates, Inc. Approved June 17, 2003.

Table 1. Dates, locations, and surveyors for Monitoring Program trapping grids in 2005.

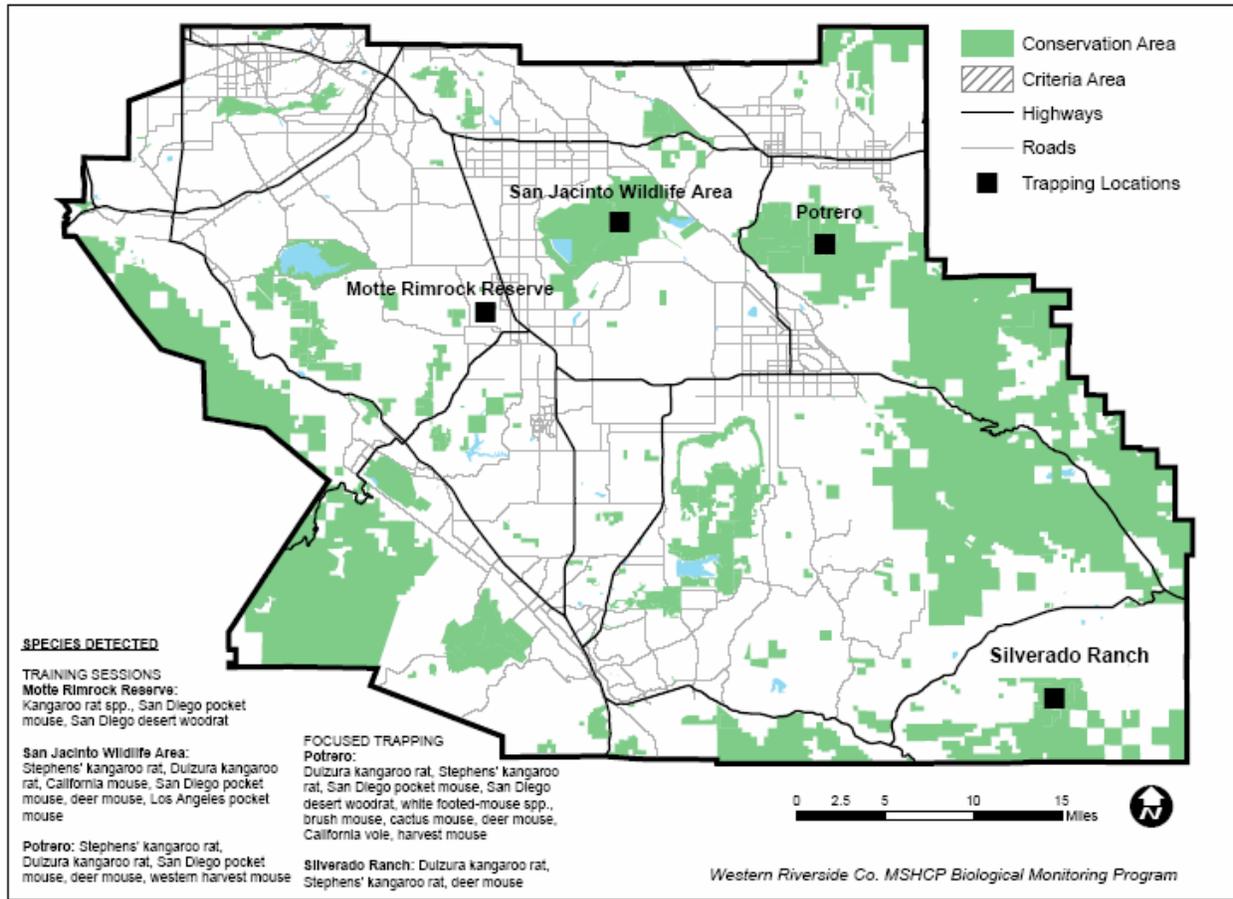
Date	Location	Surveyors
9/27/05	Silverado Ranch	De La Torre, Sandoval*, McKean*, Bartz, Rothenbach
9/28/05	Silverado Ranch	De La Torre, Sandoval*, Bartz, Rothenbach
9/29/05	Silverado Ranch	De La Torre, Oldehoeft, Rothenbach, Markham*
9/30/05	Silverado Ranch	De La Torre, Sandoval*, Rothenbach, Markham*
10/1/05	Silverado Ranch	De La Torre, Sandoval*, Rothenbach
9/27/05	Potrero	Cleary-Rose, Delaney*, Malisch, Escobar
9/28/05	Potrero	Cleary-Rose, Gallego, Bustamante, Malisch
9/29/05	Potrero	Cleary-Rose, Bahnson*, Escobar, Malisch
9/30/05	Potrero	Cleary-Rose, Gallego, Oldehoeft, Bustamante, Malisch
10/1/05	Potrero	Cleary-Rose, Moore, Bustamante

*volunteers

Table 2. Covered Species detected during training and LAPM trapping in 2005.

Location	Common Name	Latin Name
Motte	Kangaroo rat	<i>Dipodomys spp.</i>
Motte	Northwestern San Diego pocket mouse	<i>Chaetodipus fallax</i>
Motte	San Diego desert woodrat	<i>Neotoma lepida</i>
Potrero	Brush mouse	<i>Peromyscus boylii</i>
Potrero	Cactus mouse	<i>Peromyscus eremicus</i>
Potrero	California meadow vole	<i>Microtus californica</i>
Potrero	Deer mouse	<i>Peromyscus maniculatus</i>
Potrero	Dulzura kangaroo rat	<i>Dipodomys simulans</i>
Potrero	Mouse	<i>Peromyscus spp.</i>
Potrero	Northwestern San Diego pocket mouse	<i>Chaetodipus fallax</i>
Potrero	San Diego desert woodrat	<i>Neotoma lepida</i>
Potrero	Stephens' kangaroo rat	<i>Dipodomys stephensi</i>
Potrero	Western harvest mouse	<i>Reithrodontomys megalotis</i>
Silverado	Agile kangaroo rat	<i>Dipodomys agilis</i>
Silverado	Deer mouse	<i>Peromyscus maniculatus</i>
Silverado	Stephens' kangaroo rat	<i>Dipodomys stephensi</i>
SJWA	California pocket mouse	<i>Chaetodipus californicus</i>
SJWA	Deer mouse	<i>Peromyscus maniculatus</i>
SJWA	Kangaroo rat	<i>Dipodomys spp.</i>
SJWA	Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>
SJWA	Northwestern San Diego pocket mouse	<i>Chaetodipus fallax</i>

Figure 1. Training and LAPM trapping locations in 2005.



Appendix A: LAPM Trapping Site Selection Criteria

1. Must be outside the SKR fee area.
2. Must be on MSHCP accessible lands.
3. Must be on one or more of the MSHCP core areas listed below:
 - 1) San Jacinto Wildlife Area,-Lake Perris, 2) the Badlands , 3) San Jacinto River and Bautista Creek, 4) Anza Valley, 5) Lake Skinner-Domenigoni Reserve, 6) Portrero Valley, 7) Temecula Creek, 8) Santa Ana River*, 9) Wilson Creek, 10) Vail Lake, 11) Warm Springs Creek, 12) San Timoteo Creek, 13) San Gorgonio Wash (*NE of Hwy 60 and downstream)
4. Historical LAPM points found in or near accessible areas will be used as a starting point for locating potential trapping grids.
5. A GIS map of these points including soils, vegetation types, percent cover, percent slope, and aerial photos will provide the basis for defining suitable habitat for this species. This method was chosen because LAPM has not been studied sufficiently to provide habitat suitability maps at a scale that is usable for locating populations.
6. Once suitable areas have been located, the areas will be divided into 50 x 50 meter grids and trapping sites will be chosen at random from these grids.
7. The Monitoring Program LAPM trapping protocol will be used to conduct the trapping sessions.

Appendix B:

Western Riverside County MSHCP Monitoring Program

Standard Operating Protocol: Small Mammal Grid Trapping

Goal: To determine presence/absence, species composition, and/or relative abundance of small mammals.

I. Site Selection

A mammal field crew leader will use GIS to search the selected trapping areas for habitat characteristics necessary for the target species. The suitable areas of this map will be divided into 70 x 70 meter grids from which random points will be selected for trapping grids. Grids at random points will be ground-truthed to be sure the selected site conforms to the following site characteristics.

Homogeneous Sites: Vegetation within the grid should include one community type (grassland, sage scrub, consistent mix of sage/scrub, etc). Grid boundaries should lie at least 70 meters from the edge of another kind of vegetation community.

Heterogeneous Sites: Vegetation within the grid should include 2-3 vegetation communities. Grid boundaries should be surrounded by the vegetation communities represented within the grid.

II. Setting out Trap lines

Equipment:

Modified Sherman traps (80 per grid)
Micro-waved Millet
Compass
Pin flags and Sharpie Pens
Trap carrying bags
Handheld GPS unit

Trap Grid Layout:

Determine the placement of a grid corner using the UTM easting and northing of the randomly selected point. From the corner point, use a 100 meter transect tape to lay north and east grid edge lines. Place marked pin-flags every 10 meters along both lines. The north line should be labeled A1, A2, A3, through A8, while the east line should be labeled A1, B1, C1, through H1. Note: because the transect tape will begin at the corner point with the A1 trap flag at "0", each grid line will measure 70 meters. Once north and east grid edge lines are placed, use a 100 meter transect tape to place the B line (lies north-south), the C line, etc. Finish with the H line for a total of eight lines and 80 traps, with one trap every 10 meters. Individual grids should be at least 100 meters apart.

Trap Placement and Setting:

Traps should be placed on level ground so that the entrance of the trap is flush with the ground, and the trap does not teeter. If the trap is on a slope, place the door on the down side of the slope. If necessary, use your boot to scrape out a smooth, level space. Set the trap sensitivity so that it springs shut when tapped lightly on the bottom. Toss approximately 1 teaspoon of millet toward the inside rear of the trap. Make sure that the millet is in the back of the trap, behind the treadle; otherwise an animal is likely to be too close to the door when it shuts, and its tail could get caught by the door.

III. Trap Checks

Equipment:

Pesola Scales: 100g and 300g
Rulers (zeroed)/Scissors for hair clipping
Animal handling bags (ziplock or bread)
Datasheets, trap-check sheets, clipboard, pens
Species field guide/key (Internal version)
Digital camera for photos of unknown animals
Trash bags for used millet

Traps will be checked twice every 12 hours; once at midnight and once at sunrise. While checking traplines, note pin-flag number and whether each trap was open, closed and empty, or closed with a capture. To ensure that no traps are missed, make note of the status of each trap in the appropriate box on your trap-check sheet. Mark “O” for open traps, “X” for closed with no capture, and use the four-letter species code for traps closed with an animal.

Midnight Check:

Open traps: look to see if the seed has been eaten. If so, check the sensitivity of the trap, change the setting, and re-bait and set the trap.

Closed/moved traps, no capture: If a trap is closed but doesn’t feel like an animal is inside, slowly open the trap door to make sure that something small (mouse or pocket mouse) isn’t inside. Gently depress the treadle to check for hiding small mammals. If the trap is empty, reset it.

Closed traps with capture: Secure the handling bag around the “door” end of the trap. Wrap the mouth of the bag tightly around the trap end. With one hand hold the bag in place, and with the other hand, push open the trap door. While holding the door flatly against the bottom of the trap, give the trap a quick up and down shake and swing the mouth of the trap toward the ground. Repeat the up and down shake if necessary to free the animal from the trap. Zip or fold the top of the bag. Although the animal is safely inside the bag, don’t get distracted and let go of the bag; animals can actually run away while in a bag.

Weight:

Weigh the handling bag with animal inside and record the total weight. After processing the animal, remove it from the bag, weigh the bag and record its weight. Do not remove millet, waste, etc. from bag before obtaining bag weight.

Marking:

K-rats: Mark the animal by clipping a small amount of hair on the right hind quarter of the animal. In one cut, clip the hair at the base of the hair shaft, being careful not to slice the skin.

Other rodents: Mark the animal by clipping a small amount of hair on the right hind quarter. Though it is not necessary to clip down to the skin, the mark must be obviously visible.

Sex the animal:

Males and females can be differentiated using the following cues:

- Look first for an enlarged scrotum or signs of lactation (bare skin around enlarged nipples).
- Males have a greater distance between anus and genitals than females (in females the genitalia is typically within 1-2 mm of the anus). Skin between the anus and genitals tends to be hairless in females.
- Check for baculum: Using your finger or the tip of a pencil, gently push the genitalia upward (toward the animal's head). If a tiny boney spur protrudes from the genitalia, the animal is a male.

Note the reproductive status of the animal:

Females: note if the individual is lactating by looking for the presence of enlarged nipples with an area of bare skin immediately surrounding the nipple.

Males: Look for the presence of an enlarged, deflated, or small wrinkled scrotum in males. Only males with an enlarged/inflated scrotum are to be recorded as reproductive.

Measure the animal:

Tail length: from the dorsal base of the tail, measure to the end of the tail bone (not the end of the hair).

Hind foot: from the heel to the tip of the longest claw.

Ear: from the notch to the distal edge of the ear. In kangaroo rats also measure from the back side of the ear to the distal edge (crown).

If necessary for identification purposes, take several photos of the animal for later identification.

Recaptured animals: if the animal has a tuft of hair missing from its right hind quarter, it is a recapture. In this case, record the species, sex, and reproductive condition only.

Morning Check: follow midnight check procedures but do not re-bait or re-set the traps. Instead, empty all bait and waste from the trap into a designated trash bag and leave the trap perpendicular to the trap line.

IV. Picking up Trap lines

Equipment:

Shoulder bags for carrying traps and pin flags

Rubber bands/Trap boxes

After the last morning check, collect traps only after all animals are processed and all traps are closed. Return to the grid to pick up the traps and pin flags. Empty remaining millet and waste into a trash bag, and collapse the trap for easy carrying in the shoulder bags. Collect the pin flags. Count pin flags and traps from every grid to ensure that all have been collected. Return traps to their boxes. Sort pin flags and place rubber bands around sorted groups of pin flags.

V. Cleaning traps

All traps must be cleaned and disinfected before being used at another study area. Make sure all millet and waste material are knocked out of the traps before soaking them in a 10% bleach and water solution for 10 minutes. Rinse the traps with water and allow them to air dry outside.

Appendix C:

Rapid Vegetation Assessment Protocol Used at LAPM Trapping Locations

The purpose of the rapid assessment is to establish certain vegetation parameters for correlation with the presence of certain small mammals. The vegetation sampling will take place in the square or rectangular quadrats that are laid out as part of the mammal trapping protocol. Within each 5x5m quadrat, species diversity will be noted and the percent cover will be estimated. Please review the California Native Plant Society guidelines for estimating percent cover.

1. Enter a unique identifier for the Site ID. Enter names of surveyors, and the date of the survey.
2. Choose the dominant layer, and circle either grass/forb, shrub, or tree. This is the most basic estimate of cover, and should be obvious upon approaching the site.
3. Next you will list the species present in the species column according to their life-form: tree, shrub, or grass/forb. The basic way to separate these, is that if it has woody growth, it is a shrub or a tree. If it has a trunk, it is a tree. If you are uncertain of what the plant is, enter a number that uniquely identifies it with a collection. After you have had someone identify the plant, you can enter the correct identification in the “Corrected ID” column. This list does not need to be exhaustive, nor entirely specific. For these purposes, oak, is as useful as *Quercus berberidifolia*. Additionally, herbaceous vegetation can be broken down into the categories, annual grass, perennial grass, annual forb, and perennial forb.
4. Include a percent cover estimate for litter, bare ground, and rock.
5. Include any additional observations under notes.
6. Lastly, summarize the total vegetation cover, as well as the total vegetation cover by class. The total vegetation cover cannot exceed 100%. However, the sum of the total % cover from each individual class may well be over 100%. (Think in terms of a birds eye view, stripping away each layer as you go. In an oak woodland, you might have 60% from the trees. Stripping this away, you might have 40% shrubs, and lastly 70% herbaceous vegetation. This obviously exceeds 100%. Nevertheless, the total vegetation cover may still be *less than* 100%, especially in the case of some small scale disturbance, or patch of bare ground).

***** Additionally, the total % cover for any of the vegetation classes may or may not be the sum of the percent covers assigned above. It is possible that a quadrat may contain 30% *Encelia farinosa* and 30% *Eriogonum fasciculatum*. If there is no overlap (i.e. if the shrubs are spread out) the total vegetation cover may be 60%. However, in the case that they are all aggregated or clustered in one area, and there is substantial overlap (intertwined branches/dense shrub layer), there may only be a total shrub layer cover of 50%. Perhaps this will be clearer if you think that within the class “shrub,” the height is not uniform, and there may be a tendency for a species to shade or dominate another species, leading to overlap. Think absolute percentages in terms of each individual species. The percent cover from the last column can exceed 100% within each class (tree, shrub, forb), yet the total cover for each class (on the bottom of the page) cannot exceed 100%.