Robert A. Hamilton

Field Methods for 2009 Cactus Wren Study

In 2006 and 2007, I developed methods in conjunction with Milan Mitrovich, then of the Nature Reserve of Orange County (NROC), and Will Miller of the U.S. Fish & Wildlife Service (USFWS) to map and characterize cactus resources in and around the NROC's coastal reserve, and to survey for Cactus Wrens in areas judged to comprise potentially suitable nesting habitat. For the current volunteer-based effort, playback of digital recordings of Cactus Wrens will not be allowed by the California Department of Fish & Game, so the methods have been modified accordingly.

In addition to mapping the boundaries of cactus scrub, these methods identify different types of scrub and document habitat composition at each site, thereby allowing reserve managers to build models of habitat suitability for the Cactus Wren by correlating the species' presence with relevant habitat features.

Identification of Planning Areas

As an initial step, the study area will be divided into a number of Planning Areas, each with an uppercase alphabetical identification. For example, in the NROC's coastal reserve, Turtle Rock open spaces are identified as Planning Area B. The study coordinators will identify the Planning Areas for the current effort.

Data Recording and Archiving Methods

All field data are recorded on data sheets and the information then entered into an Excel spreadsheet by Study Coordinators. You must keep a backup copy of any data sheets you transmit to the Study Coordinators.

Classification of Cactus Resources

Cactus resources are classified as follows:

- **Cactus scrub:** Expanses of mature cactus scrub judged as capable of supporting a Cactus Wren nest.
- **Proto cactus scrub:** Other cactus-containing habitats judged as likely incapable of supporting a Cactus Wren nest.
- **Satellites:** Individual cactus plants growing outside the boundaries of cactus scrub or proto cactus scrub.

Surveyors will be trained to judge the potential of habitat to support a Cactus Wren nest

316 Monrovia Avenue Long Beach, CA 90803 562-477-2181 Fax 562-433-5292

in accordance with the species' known nesting requirements in the region. In general, nesting Cactus Wrens require cactus at least 1 m tall growing in a cactus patch expansive enough to protect the nest against predation or disturbance. An isolated, meter-tall cactus plant does not meet this criterion, and in general a large area of cactus that does not include any meter-tall plants would not meet this criterion. A large patch of low-growing cactus may be suitable for nesting if it contains even one larger cactus plant that is afforded protection by the surrounding cactus.

Maps and Mapping

Albert Lucero at the County of Orange (County) has created a 1 km × 1 km numbered grid system covering the survey areas. Mr. Lucero can provide these maps at an approximate scale of one inch equals 100 feet (one km^2 grid per sheet). You will also receive a master map to help you to orient to the field maps by referring to the master aerial photo referred to above.

Before the start of the survey, overlay the paper aerials with clear acetate. Then draw the mapping Polygons using fine-point *Sharpies*. Use a blue *Sharpie* to map cactus scrub Polygons, a green *Sharpie* to map proto cactus scrub, a red *Sharpie* to map *all* cholla plants (either inside or outside of cactus scrub Polygons) using a small "c", and a black *Sharpie* to map prickly-pear "satellites" outside of cactus scrub or proto cactus scrub using a small "p". Once mapping is completed for an entire square and you have conducted one or two additional visits to re-check and ground-truth the map, turn it in to a Study Coordinator, who will make a copy and return it to you.

At the end of the field season, your maps will be digitized.

Mapping Cactus Scrub

In this study, each contiguous patch of cactus scrub (i.e., scrub with potential to hold a Cactus Wren nest) is referred to as a "Polygon." Each Polygon consists of at least one "Site," and each Site receives a unique "Alpha-numeric-alpha" code. The first part of this code is a capital letter corresponding to the Planning Area where the patch is located; next is a number corresponding to the Polygon; third is a lowercase letter corresponding to the Site. For example, a large Polygon situated in the Turtle Rock Planning Area might be divided into two Sites with codes "B03a" and "B03b." Cactus scrub is mapped according to the following procedure:

- Map the Polygon perimeter, erring on the side of making larger Polygons rather than dividing them into multiple smaller Polygons.
- If the Polygon appears to be large enough to potentially support more than one pair of Cactus Wrens, it should be divided into two or more Sites. The dividing line between Sites should be ridges, streambeds, other topographic features, or breaks in the cactus scrub. To the extent possible, Site boundaries should separate one potential Cactus Wren territory from the next potential territory.

- Finally, indicate the locations of any and all cholla plants within the Polygon. Use a small "c" to note a cholla plant (as opposed to "p" which should be used to denote a "satellite" prickly-pear outside of Polygons).

Mapping Other Cactus Resources

For cactus resources that do not have potential as nesting substrate (i.e., all areas of proto cactus scrub and satellites), you will map the resources but will not give the resources an Alpha-numeric-alpha ID, will not record data, and will not survey for Cactus Wrens. These other cactus resources are regarded as having very low potential for occupancy by Cactus Wrens.

You should, however, check any marginal areas that are on the borderline between proto cactus scrub and cactus scrub. If you find a Cactus Wren or the nest of one, the area should normally be classified as cactus scrub (unless it appears that the wren is simply foraging in the area but nesting somewhere else).

Characterizing Cactus Scrub

Four basic cactus scrub "types" are defined for the purposes of this study:

- **Cactus Scrub Type 1:** Highest quality. Site includes at least 1.0 *contiguous* acre with ≥ 20% estimated areal cover of mature cactus (generally ≥ 1 m tall). Site may also include habitat with sparser cactus cover.
- **Cactus Scrub Type 2:** Site covers ≥ 1.0 acre. Well-developed cactus patches may be present, but Site does not include 1.0 *contiguous* acre with ≥ 20% estimated areal cover of mature cactus (generally ≥ 1 m tall).
- **Cactus Scrub Type 3:** Small, isolated stands of mature cactus *with* cholla. Polygon (a) covers less than 1.0 acre, *and* (b) includes at least one cholla plant ≥ 1 m tall. Density of cactus within the Polygon is irrelevant.
- **Cactus Scrub Type 4:** Small, isolated stands of mature cactus *without* cholla. Polygon (a) covers less than an acre, *and* (b) does *not* include at least one cholla plant ≥ 1 m tall. Density of cactus within the Polygon is irrelevant.

Scrub is then further characterized by the presence or absence of cholla. For Sites that include cholla, three "cholla types" are defined:

- **Cholla Type 1:** High quality. At least one cluster is fully developed, standing ≥ 1.3 m tall and in good health with extensive branching.
- **Cholla Type 2:** Medium quality. At least one plant/cluster is ≥ 1.0 m tall, in good health, with branching extensive enough to readily hold a nest.
- **Cholla Type 3:** Poor quality. Cholla ≥ 1.0 m tall is present, but no plants/clusters appear to have branching extensive enough to readily hold a nest.

Other data on vegetation recorded at each Site:

- Specification of presence/absence of prickly-pear (*Platypuntia littoralis, P. oricola*).
- Specification of presence/absence of Coast Cholla (*Cylindropuntia prolifera*).
- Specification of presence/absence of Mexican Elderberry (*Sambucus mexicana*).
- Specification of what fraction of site, if any, is affected by fuel modification.
- Specification of up to four dominant non-cactus overstory plant species in descending order of abundance.

Methods for Surveying for Cactus Wren Presence or Absence

The following survey method is used:

- Surveys should be conducted primarily during the morning hours, but may extend into the early afternoon (typically no later than 2:00 p.m.).
- Surveys must be conducted in fair weather. Wind speed should not exceed 8 mph and surveys should be suspended during periods of rain or drizzle. When surveying in the afternoon, temperatures should not exceed 85°F.
- Survey all areas that you identify as Sites. First search for Cactus Wren nests and mark them with an "N" on the map. Indicate on data sheet the number of fresh nests and old/disused nests, plus any you are not sure about.
- Do not visit the Sites in the same order, but rather reverse or otherwise vary the order you visit the Sites from one round to the next.
- At very small Sites where you are sure no nests are present, an abbreviated survey of a few minutes may be adequate. At other Sites, spend at least 10 minutes walking through or around the Site, looking for nests and wrens from various angles.
- At most Sites, you will spend at least 10 minutes walking through or around the Site, looking for nests and wrens from various angles. At very small Sites where no nests are present, an abbreviated survey of a few minutes may be adequate.
- You should be quiet for the first 5 minutes of the survey, after which you may "pish" as much as you like without harassing the birds.
- On all surveys after the first visit (which is devoted to mapping and classifying scrub) record the time at which you detect the first Cactus Wren. This will help us to determine how long it typically takes to find Cactus Wrens, and may lead to improved survey efficiency in the future.
- If you have not detected any Cactus Wrens after 20 minutes, you must move on. If you have detected CACW but are attempting to determine numbers, ages, etc., you can remain more than 20 minutes.
- Record and map all adult and juvenile Cactus Wrens detected at the Site, using a "W" to indicate the territory's general location; indicate also the survey round

during which the bird was encountered (1, 2, 3, etc.). If the adults are widely scattered and not definitely paired you may want to use two "W" marks. You need not mark down any more information than this on the map, as the information for that round will be on the data sheet.

- Once it has been firmly established that at least one adult Cactus Wren is present at a given Site, take extra time to try to determine the number of adults and/or juveniles present, especially if there is some question regarding whether one pair is being detected at multiple Sites. During active nesting, however, the female may remain on the nest for extended periods, so you may need to move on before the female is located.
- You may follow a Cactus Wren and find that it is using multiple Sites. This should always be noted on the data sheet for each Site, and later entered into the "Notes" section of data sheet (for each Site involved).
- If only one adult is detected at Site "A" and a second lone adult, with or without young, is detected at an adjacent Site "B" during the same round of surveys, you must search for additional adults at both Sites. If no second adult can be found at either Site within several minutes, you normally should conclude that the two adults probably represent a single pair foraging apart, and thus should recognize only one "likely territory" (at Site "A"). You may recognize two "likely territories" in this situation, but only if evidence suggests that the two adults are not paired. In any case, relevant observations should be recorded in the field and entered into the "notes" section of the data sheet (for both Site "A" and Site "B").
- You must watch and listen for California Gnatcatchers and Brown-headed Cowbirds at each Site. These species shall be counted if the birds are either on or near the Site. Map the locations of California Gnatcatchers using a small "g" and indicate the survey round during which the bird was encountered (1, 2, 3, etc.).

Conducting multiple rounds of surveys is necessary in order to estimate detection probabilities. These surveys are best conducted between 15 February and 15 August.

Conducting multiple rounds of surveys increases the potential for recording a Cactus Wren adult, pair, or family group at more than one Site. In cases where Round 1 yields a wren detection at Site "X" but not at nearby Site "Y," and these results are reversed during Round 2, the surveyor normally should recognize only one "likely territory" (at Site "X"). The surveyor may recognize two "likely territories" in this situation, but only if he/she uncovers evidence suggesting that more than one pair of wrens is involved. In any case, the relevant observations should be recorded in the field and entered in the "notes" section of the Excel spreadsheet (for both Site "X" and Site "Y").

When faced with a potentially confusing situation in terms of judging whether one or two Cactus Wren territories are represented, the rule of thumb is to be conservative and assume the smaller number unless you uncover solid evidence to the contrary.