Cactus Wren Occupancy Protocol Summary

Clark Winchell
US Fish and Wildlife Service
6010 Hidden Valley Road, Suite 101
Carlsbad, CA 92011

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Plot Survey Protocol

The Service will generate GIS files of from mapping cactus in the field that delineate survey plots. Within a plot a point will be randomly selected from where point count style surveys for CACW will be conducted. Only CACW data will be recorded. Thus, this a single species point count. The original point will be randomly positioned, but should positioned such that the field surveyor can observe, or sample, all portions of the survey plot. If, once the field surveyor located the point, the surveyor determines that portions of the survey plot cannot be sampled, then the point may be moved. This new point must be recorded in the Garmin GPS, using the plot number and point number for name, and registered in the *CACW Point* GIS database at CFWO. It is to be moved to the closet position, within the survey plot, from which all portions of the plot can be observed. An observation is both auditory and/or visual. The point is to be marked using either a pin flag or flagging.

Plots will be surveyed 3 times from April 18 to June 18. This is within the prime breeding and territoriality season. Surveys may be conducted on any day of the week between sunrise and sunset. Surveys may not be conducted if the average wind speeds exceed 20 kilometers per hour (12.5 miles/hr), precipitation exceeds a drizzle, or ambient temperatures are less than 4.5°C (40°F). There is no maximum temperature threshold limit. These measurements are recorded during a 1-minute period upon arriving at a sample point. A pocket weather station (Kestrel®) is used to make these measurements.

After the environmentals are recorded within the Trimble Juno, the surveyor will observe the plot for a 5-minute period. Data will be recorded. A stop watch will be used to indicate when the 5-miunte is finished. At the completion of the 5-minute period, the survey will continue for roughly another 5-minutes with the addition of using a tape playback.

During the second phase of the survey, a surveyor will use tape playback of cactus wren song to elicit response of cactus wrens on the plot to aid detectability. Following protocols used in Orange County (Mitrovich and Hamilton (2007)), tape will be played for three 40 second intervals with one minute of silence in between. As the tape is being played and for one minute after each tape playback, the surveyor will carefully listen and watch for cactus wrens. These breaks of silence are recorded into the cactus wren tape

playback. There is a short bell tone at the end of the tape, indicating the survey for that point is complete.

In summary, a surveyor will arrive at the survey point marked within a survey plot and record environmentals. If conditions are right, the surveyor will begin a 5-minute period of observation for cactus wrens. At the completion of that 5-minutes, the surveyor goes straight to the second phase of the survey period and starts a tape playback. When the bell tone is heard on the tape playback, the survey period is over. If birds are observed after the completion of the survey period, that information may only be recorded in the surveyor's field notebook, or the comment field on the Trimble Juno SB®.

The plot visits should be conducted >2 days apart together to avoid possible behavioral bias from the previous survey. Otherwise visits should be as close as possible. Given the logistical situation, the 3 visits should be able to be done within a 9 week timeframe for each plot. In other words, each individual plot should have its 3 visits done within a 9 week timeframe.

Inevitably, some plots will be adjacent to other plots. As a result, surveyors will likely encounter the situation where tape playback elicits a response from a cactus wren on an adjacent plot. The wren may even leave the adjacent plot and enter the surveyor's plot. The surveyor should make every effort to record occupancy as if the survey had no effect. Thus, if the wren is seen to leave the adjacent plot and enter the current plot, it should not be recorded as moving into the current plot. Its location should be noted and the plot it came from, if possible us the comment field for this information.

Surveyors can note whenever cactus wrens are seen, however, this data will not be used in the occupancy. This data type should only be recorded in field notes, not in Trimble Juno SBs®.

Using the Trimble Juno SB

Navigate to survey point and identify plot boundaries.

Turn on the Trimble Juno SB and start by tapping **Forms 5.1**

Select: CACW Survey GPS by tapping.

Enter form by tapping New

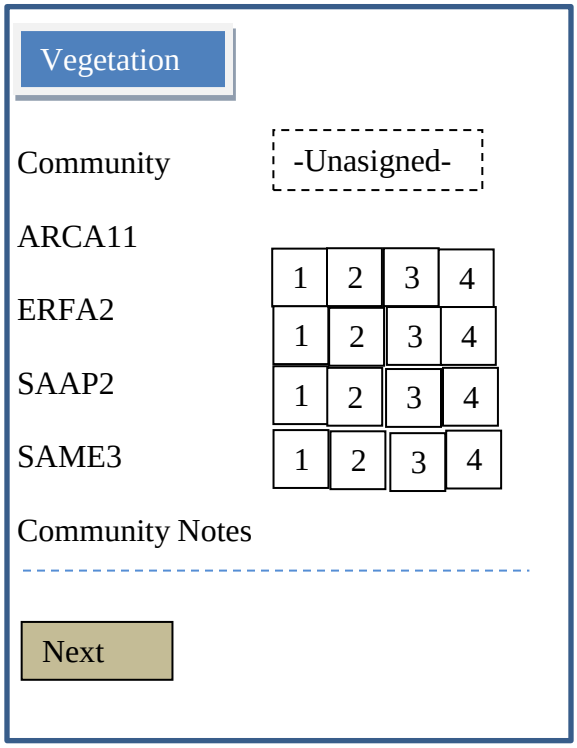
Record position by tapping Acquire to enter the GPS UTM Position Coordinate.

If no coordinate can be obtained due to either a software malfunction or poor satellite reception, then tap Cancel

Once a position is acquired or cancelled, data are to be collected about by vegetation community by tapping Vegetation to record Community Veg(etation) type and going to the next screen.

This is to be done on the first visit. On the second and third visit, this data is not recorded.

The following screen should appear.



From this screen, select one of the communities from the pull down screen by taping:

Community -Unassigned-

You must select one from the list, there is not an option to write in something else. If there are comments regarding how you classified a community, and believe they are important for the analysis, enter the information under Community Notes.

After a community is selected the previous screen automatically appears. Using this screen, complete the ranking profile for these four species (ARCA11, ERFA2, SAAP2, and SAME3). Out of these four species, rank each as to its dominance, with 1 being the highest. If a species is not on the site, it receives no ranking.

If species have that same dominance in the area, then each receives the same ranking. For example, ERFA2, SAAP2, and SAME3 occur on a plot with equal coverage, then each would receive a 3 ranking. If ARCA11 was also on site, but at lower coverage, it would receive a 4.

Another example, if ARCA11 and ERFA2 had equal coverage on a site, and SAME3 and SAAP2 were also present, yet in decrease levels of coverage respectively, then ARCA11 and ERFA2 would each receive a 2 rank, SAME3would receive a 3 rank and SAAP2 would receive a 4 rank.

After ranking these four species, tap the Next and return to the first form where GPS information was acquired.

At this point in the data collection process, tap Next

Of course, if this is the second or third visit to the point, then after acquiring a GPS fix, this is next step in the process, because vegetation data has already been collected. On this screen (not shown here) enter the following data known as environmentals,

Date will enter automatically.

Use the pull down menu to enter Observer.

Enter the Plot Number (not map number).

Enter the Visit Number, which is 1, 2 or 3.

Enter the temperature (^{o}F).

Enter the Average Wind Speed km/hr

NOTE: If conditions exceed wind speeds than 20 km/hr and/or ambient temperatures are less than 4.5°C (40°F), a survey cannot be performed. Average Wind Speed is taken over a 15 second period. Temperature is to be taken in the shade. The easiest way is to hang the Kestrel in the shade of a bush or shrub. It takes almost a minute for the Kestrel to stabilize, therefore upon arriving at a survey point, immediately hang the Kestrel in the shade while other equipment is prepared for the survey. After a minimum of one minute, record the temperature and then record win speed.

Once environmentals are entered, tap Survey Start Time [Click for Start] and begin the survey. After 5 minutes, begin using tape playback.

Record data as appropriate using the following data key definitions. Any data can be left null. Zeros (0) should be recorded.

- **Obs PLOT 0-5 min**: Whether any cactus wrens of any age were observed on the plot at any time during the 0-5 minute survey window.
- **Obs PLOT PLAYBACK**: Check this box if cactus wrens of any age were observed on the plot during playback (5:01-10 minute survey window). Please note: this is only for cactus wren which were already on the plot but not observed during the first 5-minutes auditory/visual survey.
- **MOVED PLOT PLAY**: Check this box if cactus wren WAS NOT previously present and flew into plot during playback.
- **CACW Heard off Plot**: Check this box if cactus wren was observed OFF PLOT during 0-10-minute survey.
- **Number of Adults**: number of adults observed on the plot during the survey period (even if they flew in during the survey period)
- **Number of Juveniles**: number of juveniles observed on the plot during the survey period (even if they flew in during the survey period)
- **Number of Unknown Age**: number of CACW that age could not be determined that were observed on the survey plot during the survey period (even if they flew in during the survey period)
- **Survey End Time**: Click this button at the end of the taped playback (signaled by a bell tone at the end of the mp3 playback.

Now tap [Next] if there are comments to enter regarding the survey.

Or tap [End]

If there are no comments and the survey is complete. Depart the site to the next point and repeat the protocol.