

California Gnatcatcher Regional Survey Protocol

California Gnatcatchers will be surveyed using the wandering transect method, where we cover a 2.25 ha plot by walking slowly and methodically through the sage scrub habitat, looking and listening for gnatcatchers. The point is to determine whether or not the survey plot is occupied (part of a gnatcatcher's territory) or not, so there is no need to spend lots of time determining sex, age, or a count of all gnatcatchers on the plot. Your time will be much better spent making sure you are able to finish all of the surveys that you need to do within the survey period.

Survey Periods:

Each surveyor will be assigned a number of survey plots. Plots will be surveyed once during each of three survey periods:

1. 15 March – 31 March.
2. 1 April – 15 April.
3. 16 April – 30 April.

Vegetation will be quantified during the final 4-week period of the gnatcatcher season (1 May – 30 May.) This period may be extended in 2016 if rainy weather prevents completion of work within the 4-week period.

Survey 1:

1. When you first arrive at the parking spot, exit the car and begin an *optional* General Data record that records weather conditions (Temperature, Wind, Cloud Cover) and the Date and Time the survey day begins. Surveys will not be performed if the wind exceeds 12 mph/20 kph/4 on the Beaufort scale, if the temperature is below 40F/4.5C or above 90F/32C, or if precipitation is stronger than a drizzle. Any General Data you record is for your use; USGS will not be compiling it.
2. Walk/hike to the survey plot boundary, recording any incidental gnatcatchers by mapping them with a GPS or on the Juno (In ArcGIS, open the CAGN2016 YourLocation project, view map, wait for the GPS to register (upper right corner), then select “Tasks>Collect Features>CAGN Species”). Be sure to note that the CAGN was not detected within the plot.
3. At the survey plot boundary make a note of the date and your start time. If you are using a Juno open the CAGN2016 YourLocation project in ArcGIS. Then, while viewing the map, tap the “i” button in the upper right corner of your screen, draw a box around the point in the center of the survey plot, select the point labelled “Survey 1”, select **Edit Feature**, and enter the observer name and enter the date and time start.
4. During this time, listen for gnatcatchers and allow the activity at the plot to settle.
5. Enter the plot and begin slowly and methodically walking through the plot, covering the entire area. Wait to broadcast a gnatcatcher vocalization until reaching the approximate center of one of the four quadrats of the plot (the vegetation plot center). Vocalization broadcasts should be standardized, with each vocalization bout lasting approximately 20 seconds, with a waiting period of approximately 1 minute in-place after broadcast to detect a response. Broadcast towards the center of the plot, not towards the outside boundaries, to minimize the potential for drawing birds in to the plot.

6. If a gnatcatcher is detected within the plot before the broadcast, the survey ends. In this case, make a note of survey end time, number of broadcasts (0 in this case), and record the location of the gnatcatcher, being sure to note that it was detected within the plot boundaries. If you're using a Juno, tap the "i" button on the ArcGIS map, and select the center point of the survey plot and select the survey you are doing (survey 1, survey 2, or survey 3). Select **Edit Feature** again, then complete the survey form, being sure to enter the **time end**, "Yes" for **CAGN observed**, and the number of times the vocalization was broadcast (0 in this case), and any relevant notes.
7. If a gnatcatcher is detected outside of the plot before the vocalization is broadcast, wait for 10 minutes to see if the gnatcatcher enters the plot. If the gnatcatcher is re-detected within 10 minutes, continue to wander the plot waiting for either the gnatcatcher to enter the plot or another gnatcatcher to be detected within the plot but do not broadcast the vocalization as long as <10 minutes have passed since the gnatcatcher was last detected.
8. If the gnatcatcher is not re-detected during the 10-minute waiting period, then the vocalization will be broadcast for approximately 20 seconds at the quadrat center.
9. No more than 4-6 vocalization bouts should be broadcast during the entire survey, generally near the vegetation quadrat centers, avoiding the plot boundaries.
10. Any time a gnatcatcher is detected within the plot, the survey ends, and ending data are entered into the survey plot point feature (for the Juno). Be sure to enter the **end time**, "Yes" for **CAGN observed**, and the number of times the vocalization was broadcast.
11. If no gnatcatcher is detected within the plot, surveys will last 45 minutes. After the 45 minutes, tap "i" on the ArcGIS map, select the plot center point, and enter the survey end time, No for CAGN observed, the number of times the vocalization was broadcast, and any relevant comments.
12. Any time a gnatcatcher is detected, the surveyor will collect a GPS coordinate: Collect Features>CAGN species (for Juno). If the gnatcatcher was detected within the plot, enter "CAGN and plot number" (for example "CAGN065" for a CAGN detected within point 65) for **PointType**, select "Yes" for **InPlot**, and in **Comments**, give specifics (age, sex, number) if known (again, do not spend extra time trying to determine this). If the gnatcatcher never enters the plot, select "No" for **InPlot** field, and simply enter "CAGN" (no plot number) for **PointType**.
13. If the survey ends and as you are walking away you hear a gnatcatcher vocalize within the plot, then that gnatcatcher counts as a detection during your survey. Edit your survey form (center point of the survey plot), update to "Yes" for **CAGN observed**, and update the survey end time. Also, update the CAGN location using your GPS if the CAGN was originally detected outside of the plot.
14. Enter any comments in the comments field that you find interesting/important. For example, nest found (collected GPS point), family group detected, habitat burned, no habitat present, gnatcatcher never entered plot, etc.
15. **DO NOT APPROACH GNATCATCHER NESTS.** We don't have permission to monitor gnatcatcher nests and it is not necessary for this project.
16. Proceed to your next survey plot.

Surveys 2-3:

Follow the same procedure as above, except in 3 (above), select the point for the survey # you

are doing (Survey 2 for 1-15 April, Survey 3 for 16-30 April).

Survey 4 (Vegetation Evaluation):

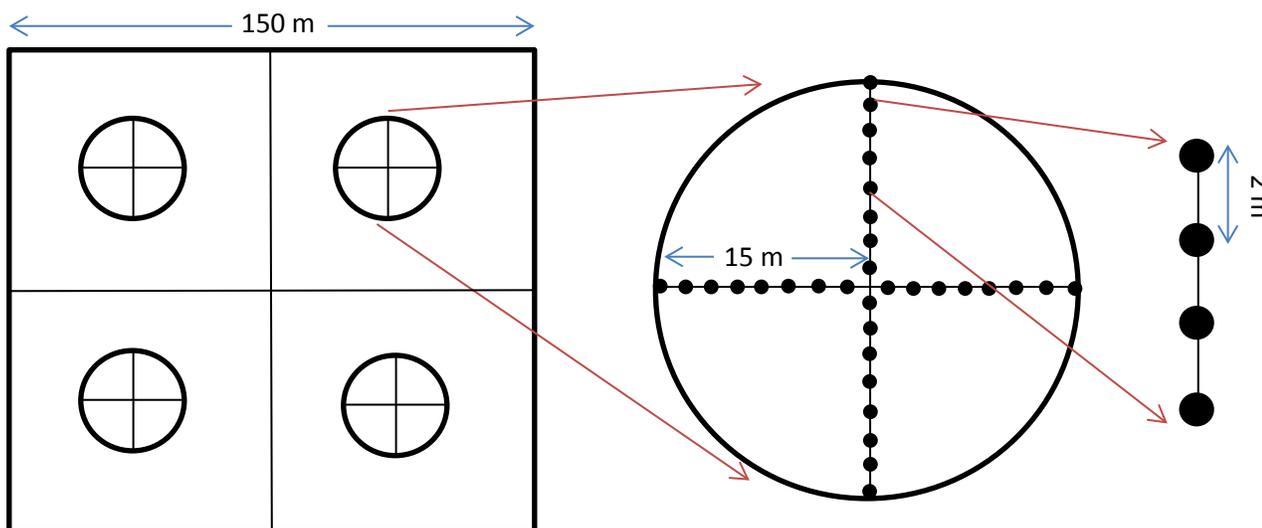
No survey is conducted during period 4, but you will return to your survey plots to collect vegetation information (see California Gnatcatcher Regional Vegetation Sampling Protocol).

California Gnatcatcher Regional Vegetation Sampling Protocol

The California Gnatcatcher Regional Sampling Program includes collection of vegetation covariate data to better understand gnatcatcher habitat relationships and management needs across conserved and participating military lands in southern California. California Gnatcatcher surveys are conducted along a wandering transect through randomly selected 150m x 150m plots (2.25 ha or 5.56 acres) within predicted high and very high suitability habitat (See California Gnatcatcher Regional Survey Protocol).

Vegetation data will be collected using a modified point intercept method. Photo point monitoring will also be conducted at the survey plot (150m x 150m) level.

Each California Gnatcatcher survey plot is subdivided into four 75m x 75m (0.56 ha or 1.38 acres) quadrats. A 15-m radius circular plot is centered in each quadrat. Vegetation will be collected using a modified point-intercept method along perpendicular transects bisecting the circular plots. Transects are oriented north-south and east-west. Vegetation data will be collected at 2-m intervals along each transect, for a total of 128 points per plot, 32 points per circle = 16 points along each transect.



Field maps (hard copy or digital) show the plot boundaries, center points and 15-m radius circular plots overlaid on high resolution aerial photography. Using our modified point-intercept method, the observer will navigate to the beginning of the first transect displayed on a GPS unit and drop a 2-m long measuring stick (hereafter “vegetation pole”) vertically to the ground. The observer will then record the plant species that the vegetation pole passes through and the highest point of the tallest tree (≥ 2 m) and/or tallest shrub (< 2 m) canopy at the vegetation pole. The species recorded does not need to physically hit the vegetation pole (or a vertical line extending upward from the vegetation pole), as long as the line passes through the plant. Many species will occur as both trees and shrubs, depending on their height at the point. We will record height of a species as a tree when it is greater than 2m tall, and as a shrub when it is less than 2m. At points with no vegetation cover, substrate cover will be recorded as bare ground, boulder, or pavement. Vegetation data will be collected between 1 May and 31 May (possibly into mid-June in 2016 if weather conditions prevent completion of vegetation sampling by the end of May), after all three gnatcatcher monitoring surveys (15 March-30 April) are completed. Surveyors will also conduct photo monitoring from the center of each plot during the vegetation sampling period.

Following are instructions for completing the modified Point-Intercept Form:

Site - County where surveys are conducted (Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura).

SubArea- Name of the NCCP/HCP or the County where there surveys are conducted (Fallbrook, Los Angeles, Marine Corps Base Camp Pendleton, Miramar, Nature Reserves of Orange County, Orange other, Riverside, San Bernardino, San Diego other, Ventura, WashPlan HCP).

PermID - Each plot has an ArcGIS-generated number that will be provided to surveyors.

Quadrat # - Quadrats for each plot are numbered 1-4 and are shown on the plot map.

Transect – Orientation of transect within the Quadrat: NS = North/South, EW = East/West.

Date, Surveyors, Affiliation – Complete these fields. Affiliation is the organization conducting the survey (e.g., USGS, consulting firm contracted to do surveys, etc.).

Time Start & Finish - Record when the sampling starts and ends to document the time it takes to complete each quadrat. Record time in 24-hour format without a colon (For example 6:30am would be recorded as 0630 and 2:45pm would be recorded as 1445).

CAGN Detected in Plot? – Indicate whether California Gnatcatchers were detected in the plot during the vegetation sampling (NOT during the previous surveys).

Point data

Surveyor should start at one end of a transect and collect data every 2 meters along the length of the transect for a total of 16 points. Repeat for the perpendicular transect. A total of 32 points are sampled per circular plot.

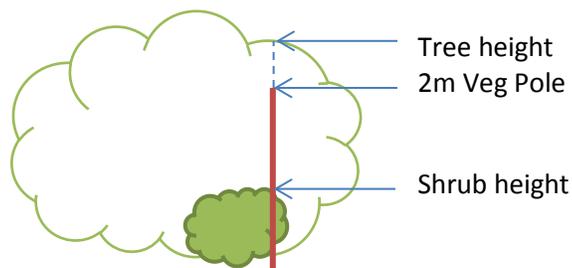
Mark a “1” under each tree/shrub and herbaceous species that touches the vegetation pole dropped on the point. If the species is not listed, mark a “1” under “other tree or shrub” and/or “other herbaceous”.

There can be more than one “other” species in each category at the point; it is not necessary to tally them separately.

For tree height, record the maximum height of any tree (≥ 2 m) canopy above the vegetation pole (not the height of the vegetation where it hits the vertical pole). This is where the level of the tree canopy is in the vicinity of the vertical line extending upward from the vegetation pole and may not actually touch the vertical line. If the tree species has lower hits, do not record them as a shrub. Leave blank if no tree is present.

For shrub height, record the maximum height of any shrub (< 2 m) at the vegetation pole. Leave blank if no shrub is present.

Do NOT record the height of the tallest herbaceous vegetation at a point in the absence of any trees/shrubs.



If there is **no vegetation** at the point, record the substrate (Bare = Bare Ground, Boulder = Boulder, Pavement = Pavement). Do not record substrate if you have recorded any vegetation hits at the point.

Trees/Shrubs (If ≥ 2 m, record height as “Tree”; if < 2 m, record height as “Shrub”). (Four letter codes indicate the corresponding field names in the data entry spreadsheet).

Oak (*Quercus sp.*) / QUER

Laurel sumac (*Malosma laurina*) / MALA

Elderberry (*Sambucus mexicana*) / SAMX

Lemonadeberry (*Rhus integrifolia*) / RHIN

Lilac (*Ceanothus spp.*) / CEAN

California sagebrush (*Artemisia californica*) / ARCA

California buckwheat (*Eriogonum fasciculatum*) / ERFA

Bush sunflower (*Encelia californica*) / ENCA

Brittlebush (*Encelia farinosa*) / ENFA

San Diego sunflower (*Bahiopsis lanciniata*) / BALA

White sage (*Salvia apiana*) / SAAP

Black sage (*Salvia mellifera*) / SAME

Coyote bush (*Baccharis pilularis*) / BAPI

Deerweed (*Acmispon glaber*) / ACGL

Yucca (*Hesperoyucca whipplei* or *Yucca spp.*) / YUCC

Dead shrub / DEAD – entire shrub is dead

Other Shrubs – not listed or unknown

Herbaceous

Black mustard (*Brassica nigra*) / BRNI

Tocalote (*Centaurea melitensis*) / CEME

Artichoke thistle (*Cynara cardunculus*) / CYCA

Fennel (*Foeniculum vulgare*) / FOVU

Non-Native grasses

Other Herbs – not listed or unknown

Substrate (record **only** where there is no vegetation at the point)

Bare - bare ground, consists of sand, silt, soil and dirt, small gravel.

Boulder - large rock that a normal person could not lift.

Pave – Pavement, parking lots, roads, etc.

Instructions for conducting Photo Plot Monitoring:

Photo points are located in the center of each 150m x 150m survey plot. Photos should be taken facing in the four cardinal directions (North, South, East and West) with the picture number recorded for each photo. The coordinates should be recorded in decimal degrees Longitude and Latitude in WGS84 datum. It is important that the coordinates are accurate so pictures can be taken at the same location in subsequent years in order to document environmental change over time.