

Quino Checkerspot Butterfly  
Survey Guidelines

U.S. Fish and Wildlife Service  
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The Quino checkerspot butterfly (*Euphydryas editha quino*, "Quino") was listed as an endangered species on January 16, 1997 (62 FR 2313), and is protected under the provisions of the Endangered Species Act of 1973, as amended (Act). This document provides recommended guidance on presence/absence survey methodology for biologists possessing a current recovery permit for Quino pursuant to section 10(a)(1)(A) of the Act.

We recommend site assessments be conducted for all projects mapped within the potential range of Quino (see attached map: Recommended Quino Survey Area). Site assessments are used to determine if a project site contains areas where surveying for Quino is recommended. If a site does not contain such areas, (i.e., is comprised solely of "excluded" areas as defined below), surveys would not be recommended.

#### SITE ASSESSMENTS

- ❖ Site assessments involve conducting a general field survey of the site and mapping excluded areas and Quino survey areas on a U.S. Geological Survey 7.5' (1:24,000) topographic quadrangle map enlarged 200 percent.
- ❖ The site assessment shall be conducted before the first Quino survey.
- ❖ Excluded Areas not recommended for Quino surveys:
  - Orchards, developed areas, or small in-fill parcels (plots smaller than an acre completely surrounded by urban development) largely dominated by non-native vegetation;
  - Active/in-use agricultural fields without natural or remnant inclusions of native vegetation or that are completely without any fallowed or unplowed areas;
  - Closed-canopy woody vegetation including forests, riparian areas, shrub-lands, and chaparral. "Closed-canopy woody vegetation" describes shrubs or trees growing closely together in which the upper portions of the vegetation converge (are touching) to the point that the open space between two or more plants is not significantly different than the open space within a single plant. Closed canopy shrub-land and chaparral are defined as vegetation so thick that it is inaccessible to humans except by destruction of woody vegetation (branches).
- ❖ Quino Survey Areas are all areas that are not excluded, regardless of the presence or absence of Quino host plants or nectar sources.

## QUINO SURVEYS

- ❖ Quino surveys shall not be conducted concurrently with any other focused survey (e.g. a coastal California gnatcatcher or Quino host plant survey).
- ❖ The entire Survey Area shall be surveyed for Quino each week.
- ❖ The first weekly survey shall begin during the third week of February.
- ❖ The survey season will end the second Saturday in May.
- ❖ Surveys shall be conducted weekly and spaced no closer than 4 days apart (see WEATHER-RELATED CONDITIONS below).
- ❖ At a minimum, surveys shall be conducted for 5 continuous weeks.
  - If no Quino are detected during the first 5 weeks, surveys will continue to the end of the season or until a Quino is detected;
  - If a Quino is detected during any survey within the first 5 weeks, surveys do not need to be conducted after the fifth week;
- ❖ Surveys should be conducted at a rate of approximately 5-10 acres (2-4 hectares) per person-hour. The Service acknowledges that survey rate can depend on topography and other physical factors at the survey site.
- ❖ Survey routes shall be roughly parallel to each other and spaced approximately 30 feet (10 meters) apart.
- ❖ Survey routes shall cover within 15 feet (5 meters) of site boundaries and/or the perimeter of excluded areas.

## WEATHER-RELATED CONDITIONS

Permitted biologists are expected to assess weather conditions during the survey period, and to also assess seasonal weather patterns (e.g. drought) that could lead to inaccurate conclusions regarding the species' presence/absence.

- ❖ Surveys will not be conducted when the following weather conditions exist:
  - Fog, drizzle, or rain;
  - Sustained or gusting winds that average greater than 15 miles (24 kilometers) per hour measured over a 30 second period at a height of 4-6 feet (1.2-1.8 meters) above groundlevel;
  - Temperature in the shade at ground level is less than 60° F (15.5° C) on a clear, sunny day with less than 50 percent cloud cover, or less than 70° F (21° C) on days with 50 percent or more cloud cover;
  - Weather conditions are to be measured on site, using appropriate instrumentation, and are not to be estimated or obtained from internet websites where measurements are recorded off site;

- A weekly survey should only be missed because of week-long adverse weather. If a weekly survey is missed due to weather conditions, two surveys should be conducted on non-consecutive days the following week.

#### 24-HOUR REPORTS

- ❖ First observation(s) (or collection(s)) of a suspected or known Quino checkerspot adult or larva at a survey site shall be reported by the permitted biologist within 24 hours. Subsequent observations at the same site are not reported in a 24-hour report, but in the Final Survey Report.
- ❖ 24-hour reports shall be sent by email to the Carlsbad Fish and Wildlife Office (CFWO) Recovery Permit Coordinator.
- ❖ These reports shall include:
  - Name and permit number of the permitted biologist who made the observation;
  - Date of the observation; and
  - Map. A map shall be submitted as follows:
    - Occurrence location(s) shall be delineated on a 7.5 minute U.S. Geological Survey (USGS) topographic map at 1:24,000 scale. Name of USGS map shall be identified. If the USGS map name is unavailable, graticules or tics shall be used to depict the map location, with the PROJECTION and DATUM of the coordinate system identified; OR
    - Occurrence location(s) on maps generated in the software program “Google Earth” will be accepted for 24-hour reports—but not 45-day reports—and only if the following features are provided: (1) the status bar is turned on; (2) the coordinate system is set to UTM; (3) the scale legend is turned on and set at approximately 4,000 feet or less; and (4) road features are turned on.

#### FINAL SURVEY (OR “45-DAY”) REPORTS

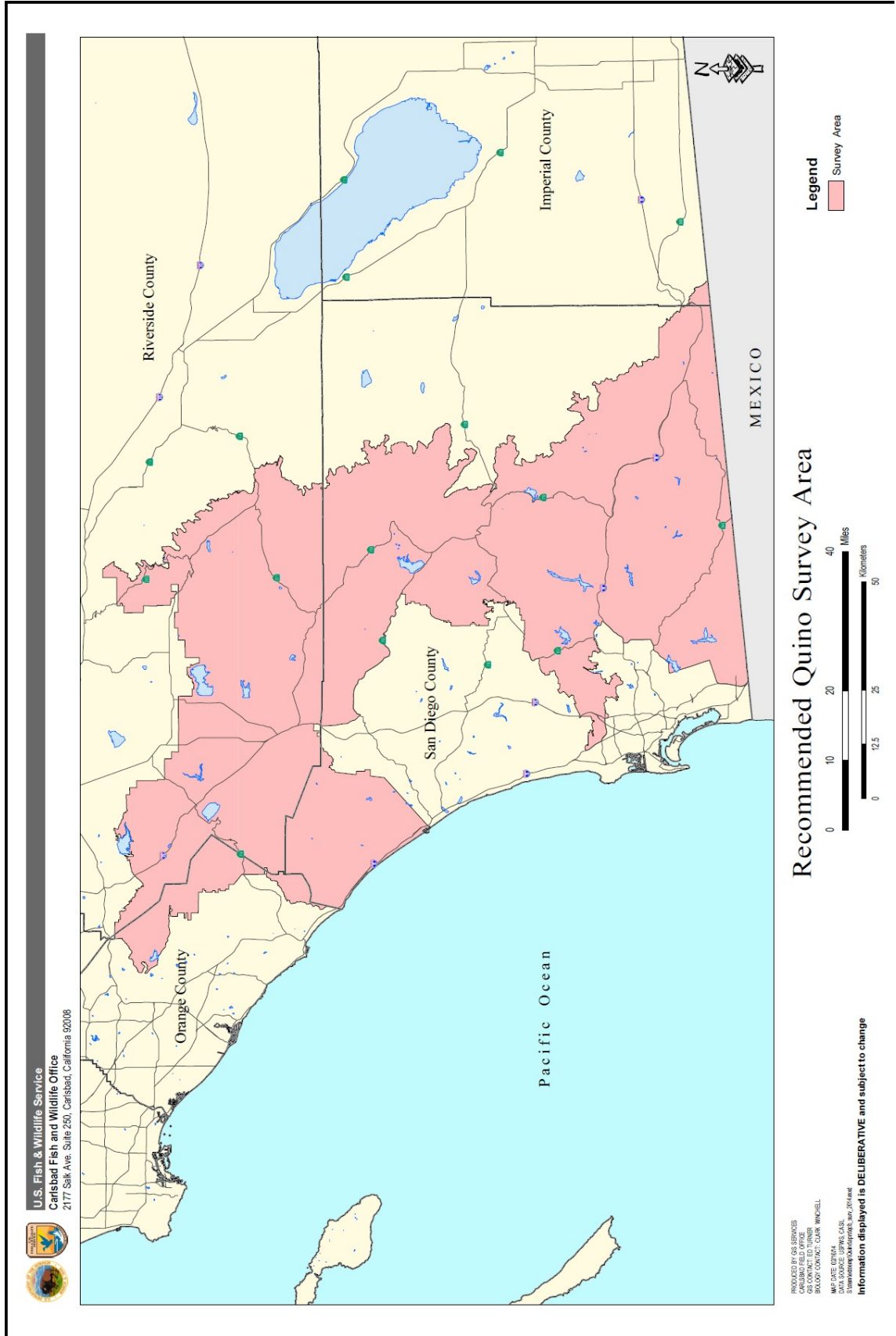
- ❖ Within 45 days of the final survey, permitted biologists shall send a written report signed and certified by each surveyor(s) performing activities in independent status pursuant to a section 10(a)1(A) Recovery Permit.
- ❖ At minimum, a hard copy of the survey report shall be submitted to the CFWO Recovery Permit Coordinator. Additional electronic copies are not required but encouraged, and may be submitted by email to the CFWO Recovery Permit Coordinator.
- ❖ Survey reports shall include:
  - Name, permit number, and legible copies of field notes of the permitted biologist(s) who conducted the surveys;
  - Dates and times (start/stop) of each weekly survey;
  - Air temperature, wind speed, and weather conditions at the start and end of each survey;
  - A list of all species of butterflies observed during each weekly survey;
  - A list of larval potential host and/or nectar plants and plant communities observed on the site.

- ❖ Survey report maps shall include:
  - Location of the survey area delineated on a 7.5 minute USGS topographic map at 1:24,000 scale. Name of USGS map identified. If the USGS map name is unavailable, graticules or tics shall be used to depict the map location, with the PROJECTION and DATUM of the coordinate system identified. See attached “Example 1: Map of survey area.”
  - Data (occurrences, larval host plants, nectar plants, and plant communities) shall be plotted on 1:24,000 or better (e.g., 1:5,000) scale maps, with scale identified on the map. It may be necessary to prepare multiple maps to accurately convey all information. Occurrences shall be labeled such that the reader can associate the map with the findings in the report about individual occurrences. Maps shall be either topographic with elevation contours identified, or aerial photography with locator information identified. Surface features on the occurrence and host plant map(s) shall be readable and not masked out by other supplied information, such as plant communities.
    - All Quino larval and/or adult locations shall be identified.
    - All areas of Quino larval host plants shall be mapped for relative abundance (i.e., less than 10 individuals in this patch vs. more than 100 individuals and less than 500 individuals in this patch) (see attached “Example 2”). Surveyors can define relative abundance using their own scale, and clearly define and mark that scale on the survey map. As of 2014, the list of larval host includes *Plantago erecta*, *Plantago patagonica*, *Antirrhinum coulterianum*, *Cordylanthus rigidus*, *Castilleja exserta*, and *Collinsia heterophylla*. If other potential larval host plants are observed, they should be noted and mapped accordingly. Areas mapped to include larval host plants should delineate which species are present within each mapped area or polygon.
    - Areas with suitable nectar plants and plant communities shall be identified on a separate map (relative abundances not necessary). A list of the nectar plants should be provided.
  - A North Arrow shall be included on all maps.
  - In instances where (optional) GPS-derived coordinates of occurrences are provided in addition to maps, the PROJECTION and DATUM should accompany the coordinates.

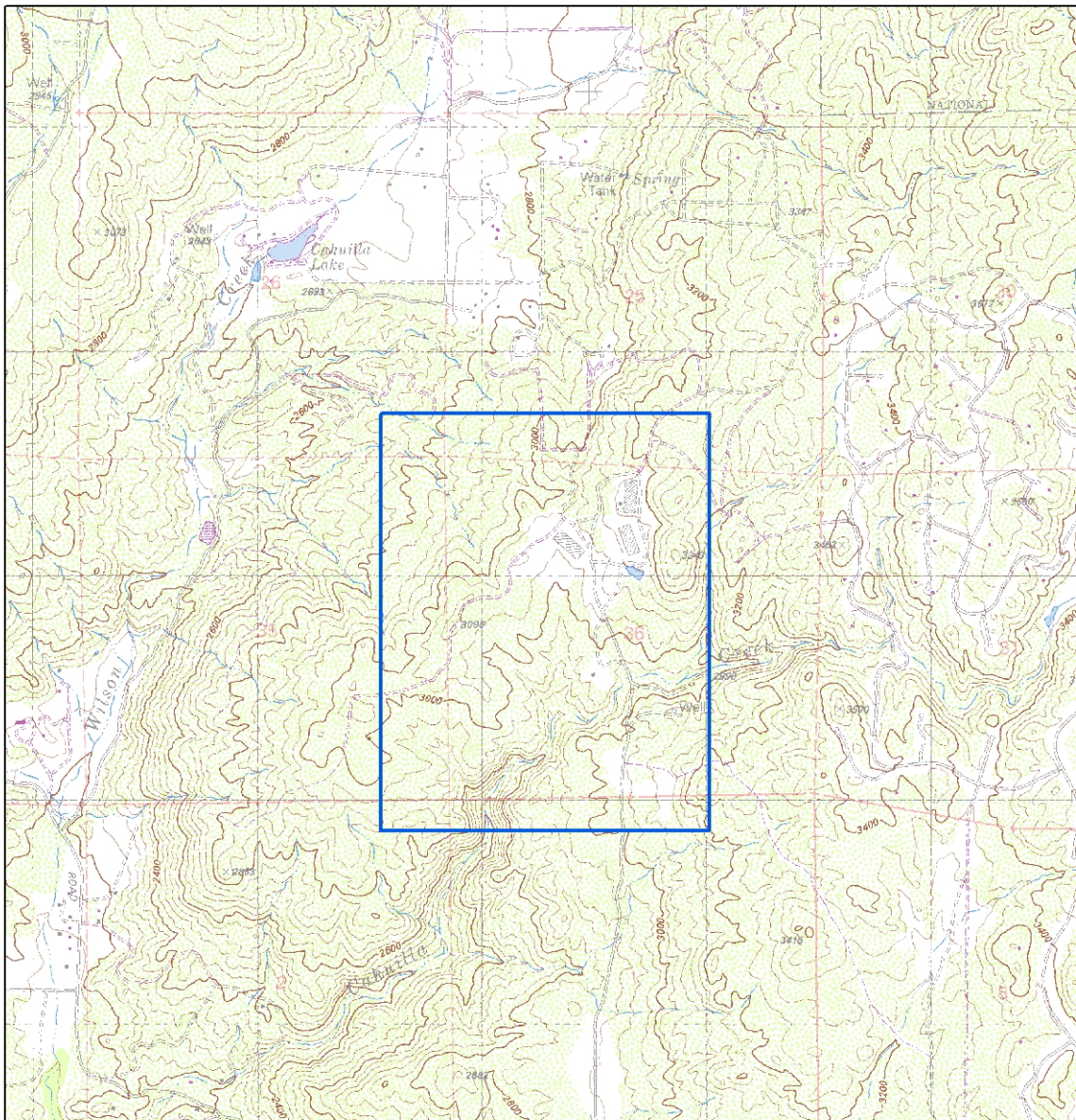
#### DEVIATIONS FROM GUIDELINES


The Service recommends that these guidelines are adhered to for the purpose of collecting data useful to the recovery of Quino. However, permittees may request to deviate from these guidelines depending on various circumstances. One special circumstance is when precipitation recorded within a rainfall year falls within the lower 25<sup>th</sup> percentile, as butterfly detectability may be biased negatively. Questions regarding this document or its application to specific projects, including deviation requests, should be directed to the CFWO Recovery Permit Coordinator at (760) 431-9440, 15 days prior to initiation by email. Each request should provide a full justification, in writing, for any proposed change to these guidelines. **The Recovery Permit Coordinator will coordinate the request with the appropriate staff at the Carlsbad Fish and Wildlife Office.** If Service staff agrees with the request, the Recovery Permit Coordinator will approve the request via email. If the proposed changes are not approved, then the Service will respond to the permittee via email and explain why the request is denied. All transactions are handled by the Recovery Permit Coordinator.

Because Quino adults may not emerge at detectable densities during low rainfall years due to extended larval diapause, lack of adult Quino observation(s) under such conditions may not be considered adequate evidence to conclude a particular site is unoccupied, even if guidelines are followed. Nevertheless, we encourage surveys be conducted regardless of rainfall levels because negative adult data can be useful long-term to support conclusions of population absence.



### Example 1: Map of survey area

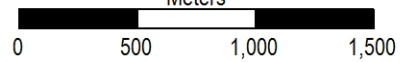


 Survey area

USGS Quadrangle: Wilson Creek



Meters



Example 2: Map showing plant species distribution and relative abundance.

