

COACHELLA VALLEY CONSERVATION COMMISSION

MARCH 2014

BIOLOGICAL MONITORING PROTOCOL

for

Toxostoma crissale

(Crissal Thrasher)

Prepared by the

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Preface

The Coachella Valley Multiple Species Habitat Conservation Plan and Natural Communities Conservation Plan (CVMSHCP/NCCP, or Plan) was established in 2008 to ensure regional conservation of plant and animal species, natural communities and landscape scale ecological processes across the Coachella Valley. Areas where conservation must occur throughout the life of the Plan are designated by a Conservation Area Reserve system which is designed to include representative native plants, animals and natural communities across their modeled natural ranges of variation in the valley. The types and extent of Conservation requirements for covered species, natural communities and landscapes within these reserves are defined by specific goals and objectives that are intended to support the following guiding ecologically-based principles:

- 1) maintaining or restoring self-sustaining populations or metapopulations of covered species;
- 2) sustaining ecological and evolutionary processes necessary to maintain the functionality of the natural communities and Habitats for the species included in the Plan;
- 3) maximizing connectivity among populations and avoiding habitat fragmentation to conserve biological diversity, ecological balance, and connected populations;
- 4) minimizing adverse impacts from off road vehicle use, illegal dumping, edge effects, exotic species and other disturbances;
- 5) ensuring management is responsive to short-term and long-term environmental changes, and new science.

The Plan uses ongoing biological monitoring and land management programs to assure these general conservation principles, as well as species-specific Conservation Goals and Objectives, are met and maintained throughout the life of the Plan. The Biological Monitoring program is novel in that it uses a unique, science-based approach that not only assesses species distributions and population fluctuations but also employs the peer-reviewed scientific research process to develop hypotheses and address information gaps relating to the ecology of covered species. These information gaps are species-dependent and could include (but are not limited to) certain aspects of life-cycle requirements, gene flow barriers, population threats and stressors, resiliency and resistance to threats and stressors, population drivers and responses to drivers, etc... The research element of the monitoring program is therefore value-added, as it provides the additional capacity to revise and refine the Plan's habitat models, survey locations, and develop additional research questions and projects at the same time as population numbers are collected. Data from the Biological Monitoring program also feed into the Land Management program and assist Conservation Reserve managers with developing best management practices that are intended to ensure the Conservation Goals and Objectives for each species are met and maintained. This linkage between the monitoring and management programs enables the capacity to support an adaptive, self-updating process. As management prescriptions are employed and the biological monitoring program continues evaluating Covered Species, the effects from installed management prescriptions can be measured, evaluated, and fed back into the management program so that managers can review and revise conservation practices, as needed.

Introduction

Crissal Thrasher (*Toxostoma crissale*, CRTH) is one of 26 species covered under the CVMSHCP/NCCP. They are widely distributed across arid regions of southwestern Utah, southeastern California, Arizona, and into central Mexico, and are known to prefer habitat consisting of dense vegetation such as riparian scrub thickets and dry wash woodlands. Within southeastern California they have been historically associated with Honey and Screwbean Mesquite stands although they can be commonly found in dry wash woodlands dominated by Ironwood and Palo Verde, saltbush and Tamarisk as well (Rosenberg et al. 1991, Laudenslayer, 1992, Fletcher 2009, Cody 1999). CRTH are currently considered a Priority 3 Bird Species of Special Concern year round, and are included on both prior special concern lists (Remsen 1978, 3rd priority; CDFG 1992).

CRTH are classified as Alluvial Fan and Wash species under the Plan and section 8.4.2.3.3 defines key monitoring objectives for this Natural Community to include:

- 1) estimating distributions or population sizes;
- 2) developing and evaluating ecological models that propose relationships between biotic and abiotic variables and Covered Species;
- 3) learning more about the ecology of the Covered Species,
- 4) identifying and evaluating potential threats to Covered Species, and
- 5) developing effective and efficient non-lethal sampling protocols (CVMSHCP 8-61 to 8-62).

Species-specific monitoring should determine whether Conservation Goals and Objectives for CRTH are attained. Conservation Goals and Objectives include:

- 1) protecting Core Habitat areas to allow for evolutionary processes and natural population fluctuations, minimizing fragmentation, human-caused disturbance and edge effects;
- 2) protecting Other Conserved Habitat to provide sufficient area and variety of Habitat types to accommodate population fluctuations, allow for genetic diversity and to conserve the full range of environmental conditions within which this species is known to occur;
- 3) ensuring conservation by maintaining the long-term persistence of self-sustaining populations and conserving Habitat quality through biological monitoring and Adaptive Management actions in the Plan area.

CRTH are known to be a cryptic species due to their typical thrasher behavior which involves foraging on the ground beneath shrubs and trees (Laudenslayer, 1992; Fletcher 2009). This species has been found to breed from February to July (Cody 1999) along the eastern Coachella Valley plan area in the Dos Palmas and Coachella Valley Stormwater Channel Delta Conservation Area. CRTH primarily consume beetles, and will also subsidize their diet with caterpillars, maggots, grasshoppers, and ants throughout the year (Rosenberg et al. 1991). Water is often present at sites where they are found, although its presence is not thought to be a critical (Dobkin and Granholm 1990, Cody 1999). There are recent occurrence records from eBird (www.eBird.org) and Christmas Bird Counts (www.audubon.org/christmas-bird-count) documenting CRTH in these core areas. No recent occurrence records have been documented west of the Indio Hills, in Willow Hole and Thousand Palms

Conservation Areas that currently have mesquite habitat. One recent record has been confirmed of three CRTH south of the East Indio Hills Conservation Area at the Del Lago Golf Course.

Because the vegetation most often occupied by this species is found in washes and alluvial fans, the Plan also outlines the additional Conservation Goal for CRTH as maintaining Biological Corridors and Linkages among all conserved populations to provide habitat for shifts in species distribution over time. Species population fluctuations could result from natural processes or unnatural pressures, therefore it is important for the monitoring program to identify and measure external threats, stressors and limiting factors, and be able to tease out as possible when observed population declines result from natural processes as opposed to anthropogenic influences. The Conservation Planning process for CRTH began with an inventory of historic occurrences and incidental surveys in 2003-2005, years before the Plan was permitted. Beginning in spring 2003, both CRTH and Le Conte's Thrasher (LCTH) surveys were initiated to visit known locations for these species and begin to describe habitat correlates, so that surveyors could begin to build and refine species distribution models (Allen et al 2005). However, only tests to evaluate different sampling strategies for detection of LCTH and incidental surveys for CRTH were completed (CVMSHCP 8-63). After that survey effort and the recommendations of surveyors, the Plan recommended timing of both LCTH and CRTH surveys to take place from April to June (CVMSHCP Table 8.8, pg 8-35).

Since that period, current survey efforts have updated the LCTH protocol and implemented broadcast surveys throughout the Plan area from late December – mid March in an attempt to capture the peak singing period for LCTH, a species that is rare and has 1% of its overall distribution located in habitat maintained by the Plan. During the 2014 LCTH survey effort, all incidental bird species were recorded, including a January sighting of a CRTH which responded behaviorally to the LCTH call within the Dos Palmas Conservation Area. Broadcast surveys using the LCTH call were completed as well within the Willow Hole, Thousand Palms, and East Indio Hills Conservation Areas, and just south of the Indio Hills Palms Conservation Area in site of Mesquite habitat; however, no CRTH were detected. Surveys will continue for CRTH and intensify a focus on the core habitat conservation areas outlined by the Plan from April through June of 2014. Survey efforts should take into consideration the precipitation regime for the year and can begin as early as possible after LCTH surveys are complete in years the two simultaneously occur. In 2014, significant spring rainfall occurred from late February to mid-March.

Statement of Purpose

Since receiving the Plan's permits in 2008, no monitoring surveys have been performed to determine the distribution of CRTH within the plan area, although incidental data exists through eBird and Christmas Bird Count records. Therefore, for this 2014 survey effort, our primary objective is to reassess the presence and distribution of CRTH within the Plan's Core Conservation Areas identified for this species. A second objective is to collect information about habitat structural attributes and potential threats that may affect CRTH distributions. This information will help CVCC establish real baselines and refine species habitat suitability models, improving correlation information that assists the CVCC in

determining habitat suitability for this species. Results obtained from this effort will also be used to construct additional hypotheses regarding the impacts of stressors on the persistence of CRTH.

Objectives

The CVMSHCP calls for a science-based biological monitoring program. With this baseline assessment effort, our primary objective is to assess the presence and distribution of Crissal Thrasher within the Plan's Conservation Areas, and to collect information about potential habitat attributes that may determine habitat suitability in order to facilitate the development of hypotheses and models. We will employ the California Native Plant Society (CNPS) and CDFW Combined Vegetation Rapid Assessment relevés in addition to species-focused methods to document habitat attributes such as slope and substrate, and measure the presence and extent of invasive plant species. Some variables that will be recorded include adjacent land uses (suburban, agriculture, natural open space) and degrees of anthropogenic alteration (as outlined in the CNPS/CDFW protocol, see addendum), which will assist with determining whether detectable patterns exist that can be tested with future work. Sampling will also document varying densities of invasive species, such as but not limited to Sahara mustard (*Brassica tournefortii*) and tamarisk (*Tamarix ramosissima*), to quantify the levels of invasive plant species infestations, helping to answer research question #2. These data will be collected during this initial year of monitoring and shall be integrated into predictive species models and hypotheses relating distribution to habitat attributes. These predictive species models will require at least 40 independent observations and, once established, will help to facilitate the eventual expansion of survey efforts to population-based levels.

At the time of this 2014 assessment a number of critical questions about the ecology of Crissal Thrasher's in the Colorado Desert remain unanswered, limiting our understanding of suitable habitat, local occupancy patterns and local species drivers and stressors. This survey work will help answer some of these questions and support the development of more focused research and monitoring activities for this species within Conservation Areas of the Coachella Valley Multiple Species Habitat Conservation Plan. Several critical questions are outlined below. These questions are aimed at beginning to develop and test hypotheses between perceived suitable habitat and this species' occupancy patterns.

1. What are the current distribution and anthropogenic impacts associated with this species and their habitat?
2. To what extent are invasive plant species present within occupied and unoccupied habitat? To what extent are other invasive organisms present?
3. Do any invasive species observed within occupied (or previously occupied) habitat have a clear and measurable impact on the occupancy patterns of this species?

Methods

Site Selection

The CVMSHCP/NCCP identifies that at minimum, monitoring for Crissal Thrasher (p 9-156) should be implemented within Core Habitat (C), and could also occur in designated Other Conserved Habitat (O), as these areas provide for essential ecologically linked features.

Table 1: Summary of Crissal Thrasher Core Habitat and Other Conserved Habitat

Species	Dos Palmas	CV Storm-water Channel Delta	Willow Hole	Thousand Palms	Indio Hills Palms	East Indio Hills
Crissal Thrasher	C	C	O	O	O	O

Dos Palmas Conservation Area and the CV Stormwater Channel Delta

Currently, there has not been a baseline monitoring effort for this species that adequately surveys habitat in the core conservation areas. The 2014 effort will focus on the Dos Palmas and CV Stormwater Channel and Delta Conservation Areas as two main sites, with 30 broadcast points at each site, for a total of 60 broadcast points. These two sites represent very different habitat types. Dos Palmas Conservation Area is dominated by California Fan Palms (*Washingtonia felifera*) and Honey Mesquite (*Prosopis glandulosa*), with surrounding salt scrub and dry wash woodlands. The CV Stormwater Channel and Delta Conservation Area is dominated by riparian vegetation and saltscrub, interspersed with natural and agricultural palm oases and dense thickets. Dos Palmas points 1-15 encompass San Andreas Palms and mesquite sites on the western end of Dos Palmas Conservation Area, while Dos Palmas points 16-30 focus on the larger palm oasis and the mesquite sites east of there. CV Stormwater Delta points 31-40 focus on the salt scrub and agricultural palm oases from the Stormwater Channel and Buchanan Street Drain. Points 41-50 focus on the levees of the Stormwater Channel from Buchanan Street Drain to the Lincoln Street Drain, and 51-60 focus on the riparian areas around the Johnson Street Drain south to the Delta.

Data Collection

Between the months of April and June, surveyors will visit 60 points set 250m from each other within the two sites deemed core habitat by the plan, in Dos Palmas Conservation Area (Figure 1) and CV Stormwater Channel and Delta Conservation Area (Figure 2). The 250-m spacing ensures non-redundant spatial resolution between locations so that they will occur in separate 180m x 180m cells used in the construction of habitat suitability models (Barrows et al. 2011). All 60 points at the two sites will be visited three times during the sampling period to maximize detection probability and changes in

vegetation. Using Stokes field recording of a singing male Crissal Thrasher, the recording will be looped to create a 60 second sound file on an mp3 player, which can then be broadcast through an amplified field speaker at 80dB measured at 1m. Winds need to be no greater than 20 km/hr for the surveys to be considered valid, and they should not be done in periods of rain (Conway and Simon, 2003). The field speaker should be elevated at either shoulder height or above to adequately penetrate the dense vegetation and help the broadcast call travel farther. At each broadcast point, two observers will begin with a passive detection period of two minutes where they scan vegetation at the point. Next the 60 second song recording will be broadcast. After each broadcast, a three minute detection period will follow when researchers will scan with binoculars and listen for a vocal response. If no response is detected, researchers will repeat the 60 second playback / 3 minute detection period a total of three times. If CRTH are detected during the playbacks, the playbacks will cease and data will be collected before moving on to the next point. Data collection will include time, date, response time and direction, initial detections, distance, type/duration of vocals, GPS coordinates, and behaviors. At each broadcast point, surveyors will perform a broadcast survey for CRTH and perform a CNPS-CDFW Combined Vegetation Rapid Assessment and Relevé protocol (Buck-Diaz and Evens 2011) to document habitat attributes such as slope and substrate, and measure the presence and extent of invasive plant species, annual herbaceous cover and disturbance. Variables that will be recorded include percent cover, soil characteristics, slope and aspect, adjacent land uses (suburban, agriculture, natural open space), and degrees of anthropogenic alteration which will assist with determining whether detectable patterns exist that can be tested with future work (Buck-Diaz and Evens 2011).

Data Analyses

Given species data is numerous enough to analyze, surveyors will calculate abundance as number of individuals per unit area. Vegetation data collected from this preliminary study will have the relationship between the presence of CRTH and environmental variables analyzed through logistic regression / ANOVA in R or SAS. Environmental variables identified as significant will then be integrated into the principal component analysis CRTH and used to refine species habitat suitability models.

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Figure 1: Dos Palmas Conservation Area Points 1-30

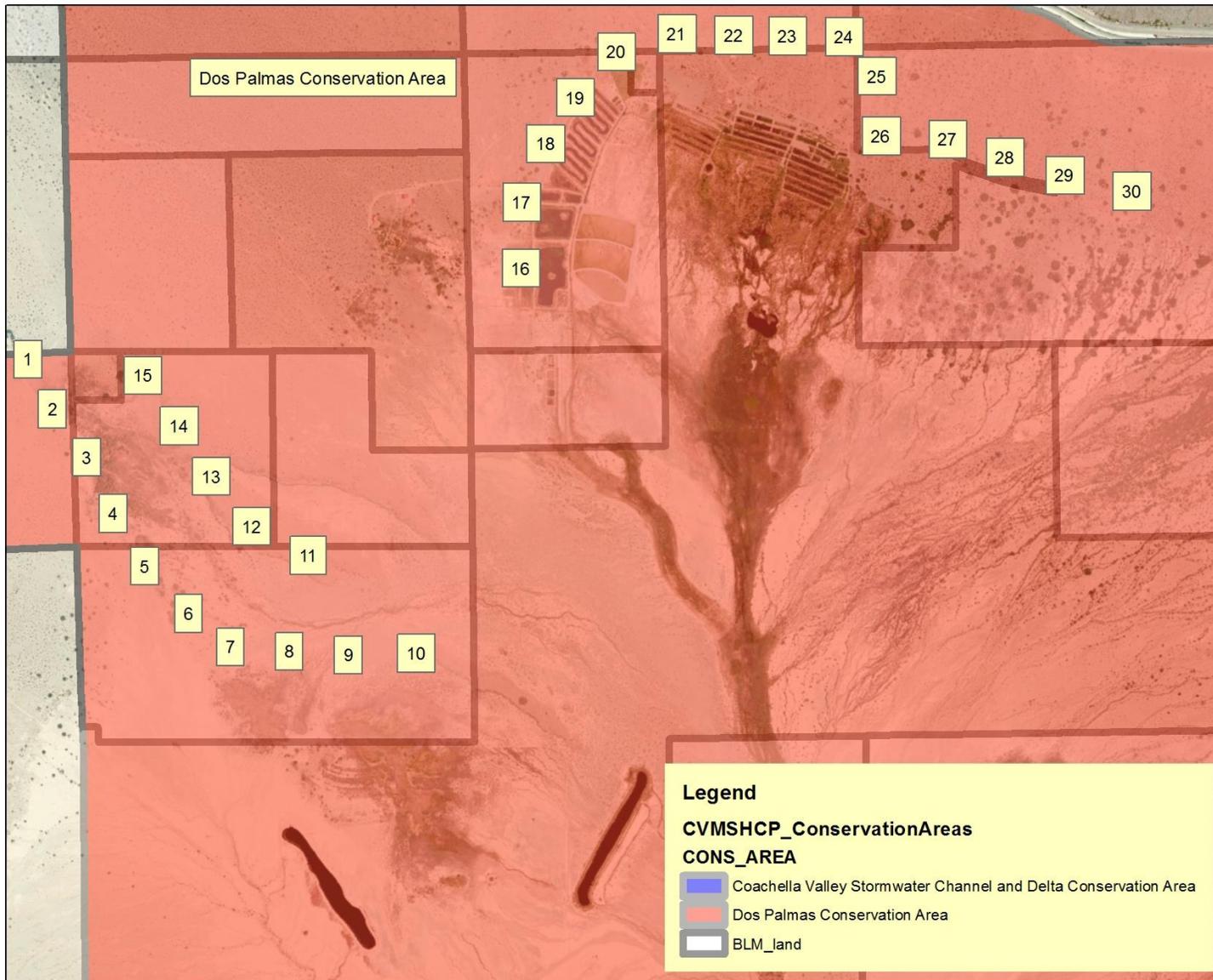


Figure 2: CV Stormwater and Delta Conservation Area Points 31-60

