

**WESTERN RIVERSIDE COUNTY MSHCP
BIOLOGICAL MONITORING PROGRAM
FY 2012-13 WORK PLAN AND COST ESTIMATE**

1.0 INTRODUCTION

The overall goal of the Biological Monitoring Program (Monitoring Program) is to collect data on the 146 Covered Species and associated habitats for the purpose of assessing the MSHCP's effectiveness at meeting conservation objectives and to provide information for adaptive management. The activities described in this work plan for Fiscal Year 2012-13 continue the activities commenced in the previous fiscal year and follow the framework outlined in section 5.3 of the MSHCP. Fiscal Year 2012-13 represents a significant transition period for the Monitoring Program as it shifts from the Initial Inventory and Assessment phase (Inventory phase) to the Long-term Monitoring phase.

2.0 RESPONSIBILITIES

The Monitoring Program is implemented within the MSHCP Conservation Area on lands that are owned and managed by the various MSHCP participants. The Western Riverside County Regional Conservation Authority (RCA) has primary responsibility for funding the Biological Monitoring Program. To ensure consistency in monitoring efforts throughout the Conservation Area, the Monitoring Program is overseen and implemented by a Monitoring Program Administrator selected by the RCA. The duties and responsibilities of the Monitoring Program Administrator are described in Volume 1, Section 6.6.6 of the MSHCP.

As per the MSHCP, the California Department of Fish and Game (DFG) is the Monitoring Program Administrator for the first eight years of the permit (June 2004 – June 2012). In 2007 the DFG received a federal State Wildlife Grant to support its role as the Monitoring Program Administrator and develop a long-term monitoring strategy. A DFG contract with the RCA provided a means to expend the grant while implementing the Monitoring Program and developing the long-term monitoring strategy. This contract expires on June 30, 2012, ending a significant funding source for the Monitoring Program. DFG will continue to provide resources to support the Monitoring Program (vehicles and accessible staff) as available.

The Monitoring Program Administrator works closely with the RCA to develop and implement the annual work plan and budget. The annual work plan is carried out by the Monitoring Program Administrator using staff contracted by the RCA through the Santa Ana Watershed Association (SAWA) and DFG staff.

3.0 IMPLEMENTATION STRATEGY

The Monitoring Program is responsible for monitoring the status and trend of the 146 Covered Species and associated vegetation communities and wildlife habitats over a

500,000 acre Conservation Area. Because there is little existing scientifically-based data for the majority of Covered Species, the first eight years of the Monitoring Program were devoted to an Inventory phase. The purpose of the Inventory phase was to determine where Covered Species occur within the Conservation Area, to gather more information on their activity patterns, and to develop efficient protocols for detecting them. The development of protocols is necessary to test the reliability of survey methods, to determine whether a species is present in an area, and, if not detected, to provide a confidence level that the species is not present.

The transition from Inventory phase to Long-term Monitoring phase will be gradual rather than abrupt. For species with short reporting requirements such as Quino checkerspot butterfly (annual) or coastal California gnatcatcher (every three years) long-term monitoring is already in place. Multiple surveys for species with short reporting requirements have been conducted, providing the initial data points for population trend assessment. For species with longer reporting requirements such as Los Angeles pocket mouse (every eight years) and with species-specific monitoring objectives requiring significant development and testing, the transition from Inventory phase to Long-term Monitoring phase is ongoing.

The transition from Inventory phase to Long-term Monitoring phase will involve developing monitoring metrics that are both efficient to collect, and robust measures of species status and population trend. The baseline monitoring objective for all Covered Species requires at least 75 percent of listed Core Areas or known locations to be documented as occupied at least once every eight years. Whenever possible, long-term monitoring strategies that provide additional information such as relative abundance of populations at occupied locations, reproductive success, or health of observed individuals will be employed to provide the most useful representations of species status possible.

One of the explicit goals of the Monitoring Program is to develop efficient long-term monitoring protocols that reduce redundancies by collecting information on multiple species where possible. For example, bird species co-occurring in similar habitat (e.g., willow riparian) during the breeding season can be detected using the same survey protocols. There will always be some Covered Species that occur in isolated pockets within the Conservation Area or that are difficult to detect using standard survey protocols; for these species a focused survey effort will be required.

4.0 STAFF COMPOSITION

Monitoring Program staff work as a team to coordinate, develop, and implement required monitoring activities for the MSHCP. The Monitoring Program is composed of the following staff positions, which are filled based on availability of funding:

- Monitoring Program Administrator
- Lead Biologist(s)
- Database Manager
- GIS Analyst

- Office Manager
- Taxa Program Leads
- General Field Crew, bird specialization
- General Field Crew, mammal specialization
- General Field Crew, amphibian & reptile specialization
- General Field Crew, invertebrate specialization
- General Field Crew, plant specialization

Currently, the majority of staff are funded by the RCA through a contract with SAWA, a local non-profit agency. Any Monitoring Program staff hired to replace departing staff in FY 2012-13 will be hired through SAWA. One Program Lead is currently provided by the DFG, with funding from Caltrans.

5.0 SPECIFIC TASKS OF THE MONITORING PROGRAM

5.1 Administration & Coordination

Administering and coordinating the Monitoring Program requires a significant amount of effort. Sufficient staff and resources must be acquired, field work must be scheduled, land access must be coordinated with other agencies, and survey activities must take place. The Monitoring Program Administrator, Lead Biologist, and Office Manager carry out the following tasks:

- Develop annual work plans and budgets
- Identify contract needs, write scopes of work, manage contracts
- Advertise, interview, and hire Monitoring Program staff; conduct performance reviews
- Develop and maintain training manuals and training programs for staff
- Direct and schedule staff activities
- Identify field supply and equipment needs; submit orders; maintain inventory, including vehicles
- Identify land access needs and coordinate with agencies on access agreements
- Facilitate monthly reserve management/monitoring coordination meeting
- Attend monthly RCA team meetings and other agency meetings
- Give occasional presentations to the RCA Board
- Coordinate with Wildlife Agencies (DFG and U.S. Fish and Wildlife Service) on survey methodology and monitoring activities
- Develop and maintain Program operations manual
- Oversee production of annual survey reports
- Distribute Monitoring Program data as appropriate

5.2 Biological Surveys

Conducting biological surveys is the most visible part of the Monitoring Program. It is also the component that requires the most staff. Prior to collecting data, all aspects of a project must be developed. This includes identifying the purpose of the survey,

choosing the data collection methods and sampling locations, selecting data analysis methods, and determining what answers the data are expected to provide. The following tasks are carried out by the Monitoring Program Administrator, Lead Biologist, GIS Analyst, Database Manager, Taxa Program Leads, and Field Crew:

- Develop protocols and sampling designs
- Implement focused species surveys
- Conduct field surveys using multi-species protocols when possible, and specific species protocols when necessary
- Conduct vegetation analyses

5.3 Training

The Monitoring Program is required to have a training program approved by the Wildlife Agencies to ensure consistent data collection, uniform implementation of protocols, handling procedures, and appropriate experience with Covered Species (Vol. 1, Sec. 7.0). The type of species training needed in any given year is dependent on the types of survey activities planned; however, safety training (e.g., first aid, CPR) is provided every year. Training is provided both by experienced Monitoring Program staff and by qualified outside entities (e.g., U.S. Geological Survey, U.S. Fish and Wildlife Service). The following training is required of Monitoring Program staff:

- Endangered species identification and handling
- Local flora and fauna identification
- Wilderness first aid and CPR training
- Defensive driver training

5.4 Data Management & Reports

All of the data collected by the Monitoring Program must be carefully managed. Prior to field work, data forms are developed and survey locations are mapped. Field data are collected both on paper datasheets and on Personal Digital Assistants. As data return from the field, they are entered into a database and checked for accuracy. After data collection is completed, the data are analyzed and a report is written describing survey results. The results of each year's monitoring efforts are provided in the Annual Report submitted to the RCA. The Monitoring Program Administrator, Lead Biologist, Database Manager, and GIS Analyst support and oversee the Taxa Program Leads and Monitoring Program staff in the completion of the following tasks:

- Field form and protocol development
- GIS mapping to support surveys, analysis, and reports
- Database development and maintenance
- Data entry and quality control
- Data analysis, statistics
- Survey report writing
- Maintaining computer equipment and digital data collection devices

The Monitoring Program has an internal database, developed and managed by the Database Manager. Monitoring Program datasets that have been thoroughly proofed and certified complete by the Database Manager are submitted to DFG's Biogeographic Information and Observation System (BIOS), as well as to local partnering agencies and Reserve Managers at least once per year.

6.0 MONITORING EFFORTS IN FY 2012-13

Monitoring Program activities planned for FY 2012-13 are largely based on the requirements of the MSHCP species objectives found in Volume 2 of the MSHCP. The species objectives specify time intervals for detecting and reporting on each of the Covered Species in the Conservation Area. When the species objectives do not specify a time interval, the status of the Covered Species must be reported on at least once every eight years as per General Management Measure 7 (Vol. 1 Sec. 5.0). In addition to the species objectives, survey priorities are influenced by the quantity and quality of information available for each species (little or poor information means more survey effort sooner), whether another agency is already conducting surveys (less effort required by the Monitoring Program), relative ease of gathering information (e.g., yellow warbler surveys during least Bell's vireo surveys), and priority of the species to the RCA and Wildlife Agencies (e.g., burrowing owl is a high priority species). Funding availability and extent of effort required is also considered when determining monitoring activity priority.

An overview of the monitoring efforts planned for FY 2012-13 along with a brief rationale for surveys is provided below. Detailed survey methods can be found in the survey protocols available at the Biological Monitoring Program office in Riverside, CA. The Monitoring Program's ability to complete these tasks will be dependant upon continued funding from the RCA and the amount of support provided by the DFG.

6.1 Invertebrates

6.1.1 Quino Checkerspot Butterfly Survey

The species objectives for Quino checkerspot require the documentation of its distribution on an annual basis. The Monitoring Program has surveyed for Quino checkerspot in the Conservation Area during the last eight biological years. In FY 2012-13 survey efforts will focus on monitoring recently occupied locations and surveying for the species in suitable habitat close to occupied areas.

6.1.2 Delhi Sands Flower-Loving Fly Survey

The species objectives for Delhi fly require documenting successful reproduction by this species at all three Core Areas identified in the MSHCP every year for the first five years of the permit and then as determined to be appropriate. Because Delhi fly is an endangered species with an extremely limited distribution within the Plan Area, Monitoring Program biologists have surveyed for Delhi fly within

the lone accessible Core Area during the last eight biological years. Surveys for Delhi fly will continue in FY 2012-13, although previous survey efforts which allowed estimating the density of Delhi fly within its accessible Core Area will be reduced to simply documenting successful reproduction. The resources necessary for the FY 2012-13 effort will thus be greatly reduced compared to previous efforts.

6.1.3 Fairy Shrimp

The species objectives for Santa Rosa Plateau, Riverside, and vernal pool fairy shrimp require the continued use of listed Core Areas at least once every eight years. Surveys on accessible lands within listed Core Areas for covered fairy shrimp were conducted by Monitoring Program biologists in FY 2011-12. The species-specific monitoring objective has been met for Santa Rosa Plateau fairy shrimp but Riverside fairy shrimp and vernal pool fairy shrimp need to be found in additional Core Areas in order for their respective species objectives to be met. While the surveys required as part of the Inventory phase are now complete, fairy shrimp surveys may be conducted in vernal pools within necessary Core Areas if there is adequate rainfall in FY 2012-13 to create new pools in areas already surveyed, or if additional lands are acquired.

6.2 Birds

6.2.1 Mountain Bird Surveys

Northern goshawk, California spotted owl, and Williamson's sapsucker all inhabit mountainous regions within the Plan Area. Northern goshawk and Williamson's sapsucker have historical breeding locations in the San Bernardino and San Jacinto Mountains, while spotted owl is additionally known to occur and breed within the Santa Ana Mountains. There are no species-specific monitoring objectives for the sapsucker or spotted owl so the default monitoring objective of documenting species occurrence at a minimum of 75 percent of known locations applies. There are two historically known nesting locations for Northern goshawk: Lake Fulmor and in the San Jacinto Wilderness Area, both of which require monitoring.

Monitoring Program biologists have incidentally observed Northern goshawk and Williamson's sapsucker during survey efforts targeting other species. No detections of spotted owl have been made by Monitoring Program biologists, although the U.S. Forest Service has reported observations of the species on National Forest land included in the Conservation Area. In the spring of 2013 (FY 2012-13) Monitoring Program biologists will conduct targeted surveys at appropriate locations in order to determine occurrence of these species, and reproduction of Northern goshawk at the two nesting locations reported in the Plan.

6.2.2 Black Swift

The black swift is not a commonly observed species, and no focused monitoring surveys have been conducted by the Monitoring Program for this species to date. The species will forage within a wide variety of habitats but require water, cliffs, and terrain typically associated with mountain waterfalls in order to breed. Two specific locations are listed in the MSHCP as known or potential breeding locations: Tahquitz Creek within the San Jacinto Wilderness Area and the north fork of the San Jacinto River in the San Jacinto Mountains. Monitoring Program biologists will visit these potential breeding grounds to determine whether black swifts are present and appear to be breeding in FY 2012-13.

6.2.3 Burrowing Owl Monitoring

The species objectives for burrowing owl require the conservation of five Core Areas plus interconnecting linkages, all containing a breeding population of 120 owls with no fewer than five pairs in any one Core Area. Several land managers within the Conservation Area have installed artificial burrows and are managing vegetation for burrowing owl.

Focused surveys for burrowing owl within appropriate habitat were conducted by Monitoring Program biologists in spring and early summer 2011 (FY 2010-11). In FY 2012-13 continued monitoring of artificial burrows installed across the Conservation Area will be conducted three times per year as according to the Western Riverside County MSHCP Burrowing Owl Management Plan. Additional surveys to obtain an accurate count of breeding pairs of burrowing owls within Core Areas may also be conducted as needed in FY 2012-13 to document distribution and reproduction of burrowing owl whether at artificial or natural burrow locations. Monitoring Program biologists will coordinate with Reserve Managers to avoid duplication of effort.

6.3 Amphibians and Reptiles

6.3.1 Western Pond Turtle Trapping

The species objectives for western pond turtle require the continued use of at least 75 percent of conserved Core Areas as measured once every three years. Surveys for western pond turtle have been ongoing since FY 2006-07, with early efforts focusing on developing a robust trapping protocol that gives a high level of confidence that individuals will be captured if the species is present at a trapping location.

Western pond turtles have been documented in five of eight Core Areas to date: Cajalco Creek, Murrieta Creek, San Mateo Creek, Santa Ana River, and Santa Rosa Plateau. The Chino Creek, San Jacinto River, and Temecula Creek Core Areas have not been confirmed as occupied by the species during surveys thus

far. Additionally, because the species objectives require 75 percent of Core Areas to be documented as occupied within a given three-year period, some Core Areas previously documented as occupied will need to be re-surveyed in combination with surveys in Cores that have not been confirmed as occupied. For example, the most recent documentation of western pond turtle in San Mateo Creek by Monitoring Program biologists was in 2009. Thus, this Core Area must be reconfirmed as occupied during the current three-year reporting period. Surveys for western pond turtle in FY 2012-13 will be conducted in suitable habitat at locations within required Core Areas.

6.3.2 Targeted Area Searches for Reptiles

San Bernardino mountain kingsnake, San Diego mountain kingsnake, southern rubber boa, and San Diego banded gecko have proven difficult to detect regardless of survey method. The species objectives for all four reptiles require documentation of the continued use of Core Areas at least once every eight years. Transect-based searches for San Diego banded gecko and artificial cover-based surveys for all species listed above proved inefficient at producing necessary species observation data.

Ultimately, there may be no truly efficient means to reliably detect these species as they are highly secretive and not typically found in high numbers. The importance of collecting incidental observations both from Monitoring Program biologists and from partnering agencies will continue to be stressed. Because surveys conducted to date are insufficient to determine that target species are truly absent from Core Areas where they have not been documented to occur, Monitoring Program biologists will also opportunistically search within Core Areas for these species when time and personnel are available. These targeted area searches will be significantly less labor-intensive than previous survey methods.

6.3.3 Western Spadefoot Survey

The species objectives for western spadefoot require maintaining successful reproduction at 75 percent of conserved breeding locations as measured once every eight years. Western spadefoot surveys to date have been conducted as part of vernal pool monitoring also targeting covered fairy shrimp species. Surveys targeting western spadefoot in FY 2012-13 will be decoupled from fairy shrimp/vernal pool surveys to better address the species objectives for western spadefoot. Surveys for western spadefoot beyond strictly vernal pool areas will be conducted in applicable Core Areas and conserved breeding locations to determine presence and breeding activity for this species if there is adequate rainfall in FY 2012-13. Isolated pools, road ruts, and creeks that do not strictly follow the definition of vernal pools will be surveyed in order to capture additional potential habitat for breeding spadefoot. Pending adequate rainfall, western spadefoot surveys in FY 2012-13 will conclude the Inventory phase for this species.

6.4 Mammals

6.4.1 Small Mammal Trapping

Species objective for small mammals (kangaroo rats, pocket mice, and woodrats) vary from baseline objectives requiring at least 75 percent of listed Core Areas to be occupied to more demanding objectives requiring documentation of species occupancy within minimum acreages, minimum densities, or monitoring population trends through time. Monitoring Program biologists have conducted small mammal trapping surveys for Covered Species every year since 2005, with particular target species varying according to priority of the species to the RCA and Wildlife Agencies, and trained personnel availability. FY 2012-13 small mammal trapping efforts will build on the information gained in previous years to continue to address the species-specific objectives for small mammals.

6.4.2 Carnivore Surveys

Species objectives for bobcat, coyote, long-tailed weasel, and mountain lion require the conservation of contiguous-habitat blocks and the maintenance of corridors that provide an effective means for dispersal. Surveys to detect the above-listed mammals in contiguous habitat blocks, linkages, and movement corridors identified by the MSHCP have been ongoing since 2007. Surveys in the contiguous habitat blocks are finished for the current eight year reporting period. Work in the linkages will continue in FY 2012-13, primarily using motion-triggered cameras to record images of target species.

6.5 Plants

6.5.1 Rare Plant Surveys

There are 63 covered plant species with species objectives that require conserving and monitoring known populations within the Conservation Area. Surveys for rare plants in FY 2012-13 will continue efforts to determine the status of Covered Species on accessible lands within the Conservation Area. The focal species in any given year are dependent on weather conditions and accessibility of survey sites. Nearly all historic locations of covered plant species within the Conservation Area have been visited in previous years. Thus, rare plant monitoring efforts in FY 2012-13 will focus on conducting surveys for covered plant species at recently acquired properties, documenting required localities for species not adequately conserved, and revisiting locations previously determined to be occupied by covered plant species in a long-term monitoring context.

6.5.2 Riparian Vegetation Monitoring Pilot Study

The MSCHP requires the Monitoring Program to assess the condition of vegetation communities within the Conservation Area (Vol. 1, Sec. 5.3.2). FY

2011-12 was the final year of a three-year pilot effort to monitor coastal sage scrub, chaparral, and grassland vegetation communities. FY 2012-13 vegetation community monitoring efforts will focus on documenting the status of riparian vegetation within the Conservation Area. Pilot surveys to determine a list of feasible goals, optimal methods, and achievable, useful results will likely be conducted on RCA-owned properties.

6.5.3 Vegetation Surveys

Vegetation surveys are conducted by trained botanists in conjunction with wildlife survey efforts as practicable and appropriate. The purpose of vegetation surveys is to describe the wildlife habitat within survey areas to gain a better understanding of potential drivers for observed species distributions.

7.0 SCHEDULE OF MONITORING EFFORTS FOR FY 2012-13

Below is a tentative calendar of when surveys are planned for FY 2012-13. The “biological year” or “survey season” does not match the fiscal year, thus the calendar represents two different survey seasons. The first half of the calendar continues many of the activities commenced in FY 2011-12.

Survey	Jul 12	Aug12	Sep12	Oct12	Nov12	Dec12	Jan13	Feb13	Mar13	Apr13	May13	Jun13
Quino Checkerspot Survey												
Delhi Fly Survey												
Fairy Shrimp Survey												
Mountain Bird Survey												
Black Swift												
Burrowing Owl Monitoring												
Pond Turtle Trapping												
Reptile Searches												
Western Spadefoot Survey												
Small Mammal Trapping												
Carnivore Surveys												
Rare Plant Surveys												
Riparian Veg Monitoring												

8.0 BIOLOGICAL MONITORING PROGRAM COST ESTIMATE FOR FY 2012-13

The proposed FY 2012-13 Biological Monitoring Program budget is similar to previous budgets submitted to and approved by the RCA Board of Directors. The RCA has primary responsibility for funding the Biological Monitoring Program. The majority of funding is allocated to contracts for monitoring staff. The DFG funds a portion of the Biological Monitoring Program based on the availability of the State’s budget. DFG’s contribution towards the Biological Monitoring Program budget is expected to significantly decrease in FY 2012-13, as their commitment to serve as the Monitoring Program for the first eight years of the Plan expires June 30, 2012. A DFG contract with the RCA which provided a means to expend a federal State Wildlife Grant also expires on June 30, 2012, ending a significant funding source for the Monitoring Program.

ALLOCATION	COST
DFG Funded Labor & Supplies	
Biologist	74,737
Vehicle Usage (Fuel & Maintenance)	42,000
Office Support (GIS licenses, Internet service)	6,000
Subtotal DFG Funded Labor & Vehicles	\$122,737
RCA Funded Contracts	
Santa Ana Watershed Association (staff)	801,749
Santa Ana Watershed Association (staff reimbursements, vehicle fuel and maintenance)	14,000
Subtotal RCA Funded Contracts	\$815,749
RCA Funded Operating Expenses & Equipment	
Rent – Lease Buildings	83,781
Vehicles	66,000
Field Equipment & Misc. (Non-fixed Assets)	4,000
Office Supplies	8,000
Communications (Phones/DSL)	2,000
Maintenance – Computer Equipment	1,000
Capitalized Equipment (GIS Licenses if needed)	15,000
Training – Other	4,000
Subtotal RCA Funded O&E	\$183,781
Total Program Cost	\$1,122,267
Minus Total DFG Cost	- \$122,737
Grand Total RCA Cost	\$999,530

9.0 Contact Info

The FY 2012-13 Work Plan and Cost Estimate was prepared by the Monitoring Program Administrator and was submitted to the Regional Conservation Authority for approval. For more information, contact:

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