

# CLARK COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN

## FINAL PROJECT REPORT

Prepared for:



desert conservation  
PROGRAM

Prepared by:



SCIENCE ADVISOR  
2009-ECO-801A  
D62

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## ACRONYMS AND ABBREVIATIONS

AMR	Adaptive Management Report
BCCE	Boulder City Conservation Easement
DCP	Desert Conservation Program
ECO	Enduring Conservation Outcomes, LLC
IPB	Implementation Plan and Budget
MBP	MBP Consulting, LLC
MSCHP	Multiple Species Habitat Conservation Plan
Permittees	Clark County, Las Vegas, North Las Vegas, Henderson, Boulder City, Mesquite, Nevada Department of Transportation
QA/QC	quality assurance/quality control
USFWS	U.S. Fish and Wildlife Service
WAF	Work Authorization Form



## 1.0 INTRODUCTION

The Clark County Science Advisor for the Desert Conservation Program, project number 2009-ECO-801A, was performed by Enduring Conservation Outcomes, LLC (ECO) from October 2009 to December 2012, with assistance from MBP Consulting, LLC (MBP). This Final Project Report summarizes the accomplishments of the Science Advisor and makes recommendations on how to better utilize the Science Advisor to more fully benefit the Desert Conservation Program (DCP) and implement the Multiple Species Habitat Conservation Plan (MSHCP).

The format of this project report deviates from the DCP standard template because of the nature of the Science Advisor “project”. This introductory section describes the background and need for a Science Advisor, the goals and objectives for science advice, and the role of the Science Advisor as it has evolved during the tenure of ECO. The next section summarizes the different projects and activities (i.e., deliverables) in which Science Advisor participated, prepared, reviewed, and/or developed, along with the resultant recommendations. The report concludes with overall recommendations to improve the future Science Advisor project.

### 1.1 Background and Need for Science Advisor

Section 2.8.2 of the MSHCP was the framework for establishing an adaptive management process with the contracting of scientific staff to develop an adaptive management program. The contracted scientific staff (i.e., Science Advisor) provided the scientific and technical expertise needed to develop such a program and also to provide scientific advice and suggest conservation and management actions (i.e., projects) to conserve species and habitats. The initial Science Advisor both suggested and implemented certain projects that eventually led to concerns of conflicts of interest and less objective and independent advice. Additionally, the adaptive management program evolved from development to implementation, and therefore, the scope and breadth of scientific expertise needed by the DCP started changing more than six years.

### 1.2 Goals and Objectives

The terms and conditions of the Incidental Take Permit require a science-based adaptive management program and the review of management or conservation actions for effectiveness in conserving covered species and habitats. Therefore, the primary goals of the Science Advisor project were to assist the DCP in addressing the permit requirements and recommending measures for implementing the MSHCP. The objectives to achieving these goals included:

- Review land use and habitat loss by ecosystem status.
- Review species status and trends by annual updates of the MSHCP Species Status Database.
- Review current MSHCP implementation status and effectiveness (Project Progress Report Symposia).
- Provide written science-based recommendations and advice.

### 1.3 Role of the Science Advisor

The role of the Science Advisor has evolved from the direction stated in the MSHCP to contract with a specific scientific team to an open, qualifications-based, competitive bidding process. Science advice has been provided by committee (Implementation and Monitoring Committee), by team (Adaptive Management Science Team), and by the Science Advisor. Advice has been provided to committees, federal land managers, and the DCP.



In its role as Science Advisor, ECO strived to provide objective and independent advice that focused on relevant actions to streamline the implementation of the MSHCP and that contributed to the success of the DCP. However, Science Advisor was not fully utilized for ongoing activity and projects within the DCP that would likely be within the purview of an adaptive management program. An emphasis on independence has been placed on the Science Advisor role because of conflict of interest issues with past Science Advisors, and not because of any specific language in the MSHCP, Incidental Take Permit, or guiding documents. It is this Science Advisor's opinion that this independence emphasis has not been beneficial for the Adaptive Management Program, MSHCP implementation, and the overall DCP, and may be a reason for limited involvement with other projects addressing conservation actions and management plans (Incidental Take Permit conditions I and J). In spite of this, ECO made a concerted effort to reach out to DCP staff to offer technical advice and assistance within the scope of its contract. The role of the Science Advisor should be extended to all DCP staff and projects, when beneficial to augment existing staff capabilities and technical expertise.

## **2.0 PROJECT SUMMARIES**

Science Advisor completed 88 deliverables over the contract period of 39 months. This section summarizes the projects and activities (deliverables) that Science Advisor prepared, participated in, or reviewed.

### **2.1 Science Advisor Monthly Meetings**

Science Advisor was required to have monthly meetings with the Adaptive Management Coordinator and to produce the minutes from those meetings. The meetings were a combination of in-person meetings at the DCP office (7 months a year) and web-based conference calls (5 months a year). The objectives of the meetings were to update the Science Advisor on the status of projects being implemented for the MSHCP by DCP staff or contractors, discuss science-based questions facing the adaptive management program, and update DCP staff on the status of ongoing projects (Work Authorization Forms – WAFs) being completed by Science Advisor. Other activities by the Science Advisor associated with the monthly meetings included providing science guidance, working on projects with DCP staff, and visiting properties and sites to discuss management issues.

The monthly meetings were well-structured, productive, and valuable for accomplishing tasks, maintaining momentum on projects, and keeping informed of DCP projects and activities connected to staff and science partners. The monthly meeting minutes proved an excellent process for recording discussions and guidance, keeping track of deliverables, and identifying and addressing action items.

#### Recommendations:

- Maintain the current number of in-person meetings (7) because in-person meetings are extremely valuable for accomplishing tasks and keeping the Science Advisor informed and connected to the program, program staff, and agency partners. Require WebEx to be used for all conference call meetings. Maintain the monthly meeting summaries.
- Expand the Science Advisor role to advise DCP staff on appropriate projects. The Science Advisor should be thought of as an extension of the program and available to provide guidance and comments on any project needing science input and technical expertise.
- Have all DCP staff attend one monthly meeting every quarter to report on ongoing projects. This would greatly increase the Science Advisor's knowledge and awareness of the program, encourage dialogue



among staff and with the Science Advisor, and identify projects that could benefit from Science Advisor assistance.

## **2.2 Adaptive Management Report**

Section 2.12.1.1 of the MSHCP set forth the requirement to report every other year on the adaptive management program activities and the Biological Opinion outlined four objectives and information to be reported. The Science Advisor prepared the draft 2010 Adaptive Management Report (AMR) within five months after contract award and finalized the report three months later. The research and review necessary to prepare the AMR fulfilled a secondary purpose by immersing ECO and MBP into understanding the implementation of the MSHCP and operation of the adaptive management program and the DCP overall.

The 2010 AMR documented the Science Advisor's review of the adaptive management program, status, and implementation of past recommendations, suggested improvements to existing actions, and recommended future efforts. The DCP decided, with concurrence from the U.S. Fish and Wildlife Service (USFWS), to eliminate the 2012 AMR because of limited changes in land use and habitat loss, and lack of new information and projects added to the program.

The 2010 AMR included numerous recommendations for the four objectives and for the overall program. Most of the recommendations pertaining to the species database have been implemented and other recommendations (primarily for implementation status) are no longer applicable because of elimination of tracking tools and/or refocusing of conservation management objectives.

Adaptive management encompasses not only projects identified and planned for species and habitat conservation, but includes the required (non-discretionary) management actions of the MSHCP, such as managing the Muddy River properties and the Boulder City Conservation Easement (BCCE). The usefulness and purpose of an AMR for the evolving program may be better served by comprehensive management plans. The DCP and the adaptive management program are evolving towards managing "reserves", including the BCCE and the Muddy River properties, to meet MSHCP goals and objectives.

### Recommendations:

- Recommendations listed in the 2010 AMR should be reviewed to determine their remaining applicability or viability for MSHCP implementation and compliance, and a plan of action should be developed to address those that contribute to compliance with the MSHCP and Incidental Take Permit.
- Comprehensive management plans should be developed with measurable goals and objectives that focus on purpose, outcomes, uncertainties, and effectiveness of conservation and management actions on priority species and habitat that would be compliant with MSHCP reporting requirements.

## **2.3 Occupancy Sampling and Environmental Covariates Protocols**

Assessing the population status and trends of the Mojave desert tortoise (*Gopherus agassizii*) is essential to determine if the species is continuing to decline or beginning to recover in response to protection and management actions.



Science Advisor developed two monitoring protocols and several supporting products addressing the monitoring of the Mojave desert tortoise in the BCCE. The goals of the monitoring protocols are to assess the status and long-term spatial trends of the desert tortoise in the BCCE and to develop a greater understanding of the habitat requirements of the species at a local scale. The first goal was addressed by the Occupancy Sampling Monitoring Protocol (WAF #6), which assesses the proportion of the habitat within an area that contains evidence of the targeted species, which is a different approach from estimating population size or density. This methodology is being tested to determine if it can provide more precise data on status and trends at smaller spatial scales and within shorter timeframes. The second goal is addressed by the Covariate Monitoring Protocol (WAF #10) that accompanies the Occupancy Sampling Monitoring Protocol, adding the measurement of a range of environmental variables (covariates) hypothesized to be related to the presence of desert tortoise. These covariates include vegetation, substrate (soils), precipitation, disturbances and habitat alterations, and management actions. The covariate data will be used to interpret the occupancy sampling data and to develop a fine-scale conceptual model of the factors that determine the presence of desert tortoise on the BCCE. The correlated causal factors will provide information to managers to develop and evaluate management actions intended to increase tortoise presence.

In addition to the two monitoring protocols, Science Advisor developed:

- Training Module for the Occupancy Sampling Monitoring Protocol: This training module will assist the DCP staff in ensuring that the contractor hired to implement the Occupancy Sampling Monitoring Protocol will accurately collect data.
- Ecological Model for the Mojave Desert Tortoise: Ecological models visually depict the complex causal relationships between a species' life history and its habitat or an ecological system, and how they relate to threats and management actions. This desert tortoise ecological model identifies the pathways and interactions between management actions, key ecological attributes, and the response of the species.
- PRESENCE Software Manual: PRESENCE will be used to analyze data from the occupancy and covariate protocols and the manual will assist both the contractor hired to analyze the data and the DCP staff and Science Advisor in the oversight of the analysis.

The development of these two monitoring protocols has been extremely valuable for the DCP. The protocols represent significant steps in the DCP becoming a leader in implementing the MSHCP. The protocols focus on gathering data needed by land managers to further the goals of the MSHCP.

#### Recommendations:

- Build on the value of the monitoring protocols and continue being a leader in assessing what data are needed and recommending the most effective and efficient ways to obtain that data for all projects related to the MSHCP.
- Maintain active Science Advisor involvement in the implementation of the desert tortoise monitoring plans, including frequent calls with lead DCP staff and site visits to the field during the sampling season. Science Advisor should have an oversight role for these monitoring projects to assist with quality and accuracy of data collection, data management, and data analyses, and to provide Science Advisor with first-hand knowledge of potential adaptations to the monitoring protocols.



## 2.4 Desert Conservation Program Species Status Database

The DCP obtains species data in Clark County from projects funded by the DCP and from other sources including federal and state agency partners, natural resource organizations, and academia. The DCP uses the data to implement and assess the goals of the MSHCP.

Science Advisor evaluated spatial and tabular datasets for the purpose of updating the Species Status Database and developing a new User's Guide (WAFs #4, #5, #7, and #11). Science Advisor completed an evaluation of 71 datasets, noted discrepancies and inconsistencies, provided a list of recommendations to improve future datasets, implemented modifications to the database to improve tracking the status of covered species, and developed a User's Guide to the database.

### Recommendations:

- Establish a minimum set of requirements for all data collected for and by the DCP, including standardized population names and monitoring protocols,
- Require metadata be completed and included with every report for all spatial and tabular files.
- Require standardized project and data folder organization for efficiency and include a ReadMe file with every dataset explaining the organization and structure of the folder.
- Develop and implement a through internal QA/QC process before acceptance of project deliverables, including cross-check of spatial and tabular data with the report, completed metadata, and explanation for any duplicate data

## 2.5 Review of Biennial Implementation Plan and Budget

The DCP develops a biennial Implementation Plan and Budget (IPB) that is responsive to the key provisions outlined in the MSHCP. Although the process of developing the IPB has varied over the past biennia, the general steps of the budget development process are to determine available funding and to identify and recommend actions that further the purpose of the MSHCP. Certain actions are required expenditures to maintain compliance with conditions of the Incidental Take Permit and for management and implementation of the MSHCP, and therefore, are non-discretionary. Other actions that further the goals and objectives of the MSHCP but are not in support of a permit condition are considered discretionary.

Less than 6 months into the contract, Science Advisor was tasked to recommend 3 to 5 conservation projects for the 2011-2013 IPB (WAF #1). Science Advisor developed a list of criteria that were deemed responsive to the broad goals and objectives of the MSHCP and that build on past projects and budget criteria by which to screen prospective projects. Four projects were identified and recommended; one project spawned the occupancy sampling and covariates monitoring described above.

For the 2013-2015 IPB (WAF #12), Science Advisor was provided with project concept summary forms to review for the non-discretionary actions to implement the MSHCP and for possible discretionary projects to implement. The DCP and one agency partner (USFWS) generated the project concept summary forms. The DCP requested Science Advisor review the project concepts against a list of budget principles, identify any deficiencies in the concepts, recommend conditions to correct any deficiencies, identify any gaps in the IPB and describe project concepts to fill the gaps, and rank the discretionary projects based on meeting the budget principles.





### Recommendations:

- Involve Science Advisor in the scoping and development of future project concepts. Continue to have Science Advisor review the draft project concept forms for sufficient information and detail upon which a reasonable conclusion regarding anticipated benefits versus estimated costs can be made. The discussion of project concepts could be accomplished at quarterly meetings (see recommendation for the role of the Science Advisor above) or by having separate meetings focused on the IPB well in advance of permittee, agency, and public review.
- Include Science Advisor in the complete cycle of the IPB process. With the involvement of the Science Advisor in the scoping and review of project concept summary forms, the Science Advisor should be notified of additional edits and the final outcomes of the process.

## **2.6 MSHCP Project Progress Report Symposium**

The DCP has hosted a MSHCP Project Progress Report Symposium each year since 2006 to 2012, except for 2007. The Symposium is a forum to provide permittees, peers, scientists, and the public with information on the progress of implementing the MSHCP. The concept for a symposium resulted from the management analysis of the DCP completed in 2005. The DCP staff and project contractors (agencies and academia) have given presentations and answered questions on the status, results, and next steps of the program and specific projects. The presentations are formally assessed by an invited group of peer reviewers, including the Science Advisor.

The structure of the Symposium has varied over the last 3 years with this Science Advisor's involvement. The 2010 Symposium was 3 days due to the number of contract projects that required presentations. The 2011 Symposium was only 1 day and it included a project poster session and a panel discussion that focused on the restoration of Mojave Desert scrub communities. The 2012 Symposium was only a half-day because only a few projects were presented, but it did include a poster session.

Science Advisor's role is to provide comments on the project presentations and did so over the past 3 symposia, along with observations and recommendations on the symposia objectives, organization, and logistics and presentation content and format. For 2011 and 2012, Science Advisor developed a set of questions to guide peer review comments. These questions were based on observations and comments made on 2010 Symposium presentations and focus on project objectives, MSHCP priorities, study design, analysis, results, conclusions, and presentation organization.

### Recommendations:

- Reassess the purpose and continued utility of the Symposium: With the quarterly project progress reports posted on the DCP website and fewer contract projects underway, the purpose of an annual symposium should be reconsidered. The benefit of a symposium to the program (e.g., updating the public on the MSHCP, leadership value of staff summarizing and presenting the outcome of their work) and the reporting of project results (including both contract and DCP-led projects) should be weighed against the cost of organizing and hosting the symposium. If continued, the symposium should be a vehicle for highlighting the DCP leadership in conservation, mitigation, and restoration in Clark County and as a forum for regional conservation practitioners and scientists.



- Eliminate or reduce peer reviewers: While the peer reviewers have provided excellent comments on the presentations, their input comes too late in the project process to make significant changes to benefit the projects. Thus the resource spent on peer reviewers has no return on investment for the program and rarely has the ability to impact projects.
- Improve presentation quality and content by following the presentation guidelines prepared by Science Advisor in 2011. More effort should be given to both contractors and DCP staff on encouraging them to follow the presentation guidelines, particularly for stating project objectives or providing context for the information presented, and a take home message.
- Focus the presentations on how the outcomes of the projects are advancing the MSHCP instead of emphasizing completion of activities.
- Increase opportunities for attendee interaction through poster sessions and panel discussions, and by providing lunch and sufficient breaks. .

## **2.7 Project and Plan Reviews**

Science Advisor provided reviews of different projects and plans covering a range of scientific and technical issues, including: (1) a review of the progress report on the Rare Plant Modeling Project and a software program (Generalize Tessellation Random Stratified -- GRTS) that allows DCP staff to use a robust method of placing sample units within a sampling universe (both included in WAF #2); (2) a detailed review of the results of a contract with a partner agency (WAF #9); and (3) a review of a draft management plan for restoration on the Muddy River.

These are excellent examples of small projects that Science Advisor can provide valuable assistance.

Recommendations:

- Expand the use of the Science Advisor in the development of proposals, management plans, and review of contracts.

## **3.0 CONCLUSIONS AND RECOMMENDATIONS**

The role of a Science Advisor within the DCP does and can serve many functions to meet specified compliance requirements of the MSHCP, Incidental Take Permit, and guiding documents, and to provide technical assistance to the DCP staff in developing science-based conservation projects. Science Advisor completed a number of deliverables that are readily useable (e.g., species database update and User's Guide) or establish the foundation for developing effective conservation measures (e.g., occupancy sampling/covariates monitoring protocols). Science Advisor also provided unbiased critiques and questioned the usefulness of ongoing projects and processes (e.g., Symposium, IPB) in achieving MSHCP goals and objectives.

ECO and MBP are privileged to have served as the Science Advisor for the MSHCP and the DCP over the past 3 years and appreciate the support of and rapport with Sue Wainscott, Adaptive Management Coordinator, and the other DCP staff. Science Advisor has witnessed the evolving management and implementation of the MSHCP and look forward to continuing in this role to support this evolution towards an improved and manageable program of species and habitat conservation.



The following recommendations would support the evolution of the adaptive management program and MSHCP implementation:

- Expand the Science Advisor role to be more integrated with all projects implementing the entire MSHCP and to the full DCP and staff.
- Include MSHCP non-discretionary requirements within the realm of the adaptive management program.
- Utilize Science Advisor to train, or provide the expertise to train, staff in specific skill sets.
- Utilize Science Advisor to assist with developing or revising conservation management plans (see Incidental Take Permit condition I).
- Utilize Science Advisor to assist with the permit amendment adaptive management and conservation planning.