



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program

Scott Cambrin, Senior Biologist

August 21, 2014





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

Presentation Overview

- Define adaptive management
- What is the adaptive management program?
- How we use adaptive management
- Dissemination of data
- Future projects



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

Presentation Overview

- Define adaptive management
- What is the adaptive management program?
- How we use adaptive management
- Dissemination of data
- Future projects



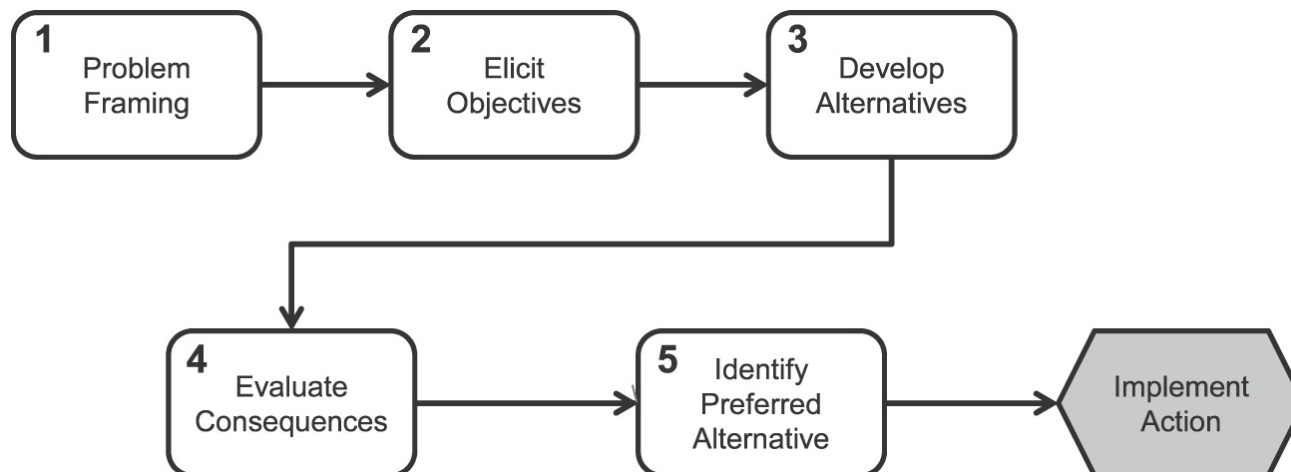
Structured Decision Making

A method for analyzing a decision by breaking the decision into different stages.

Key Elements:

- Problem Decomposition

- Focus on Values



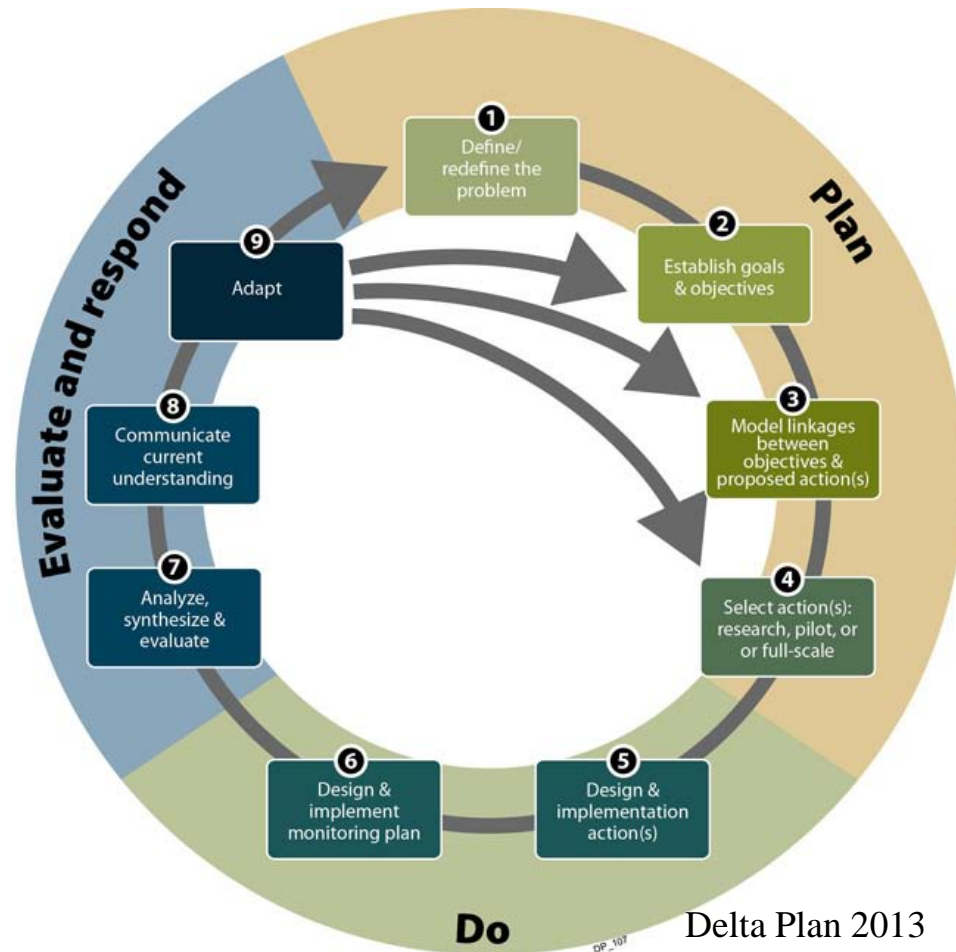


Adaptive Management

A form of structured decision making that promotes flexible decision making that can be adjusted based on uncertainties as outcomes from research and management become better understood.

Differences from structured decision making

- Recurrent decisions
- Uncertainty



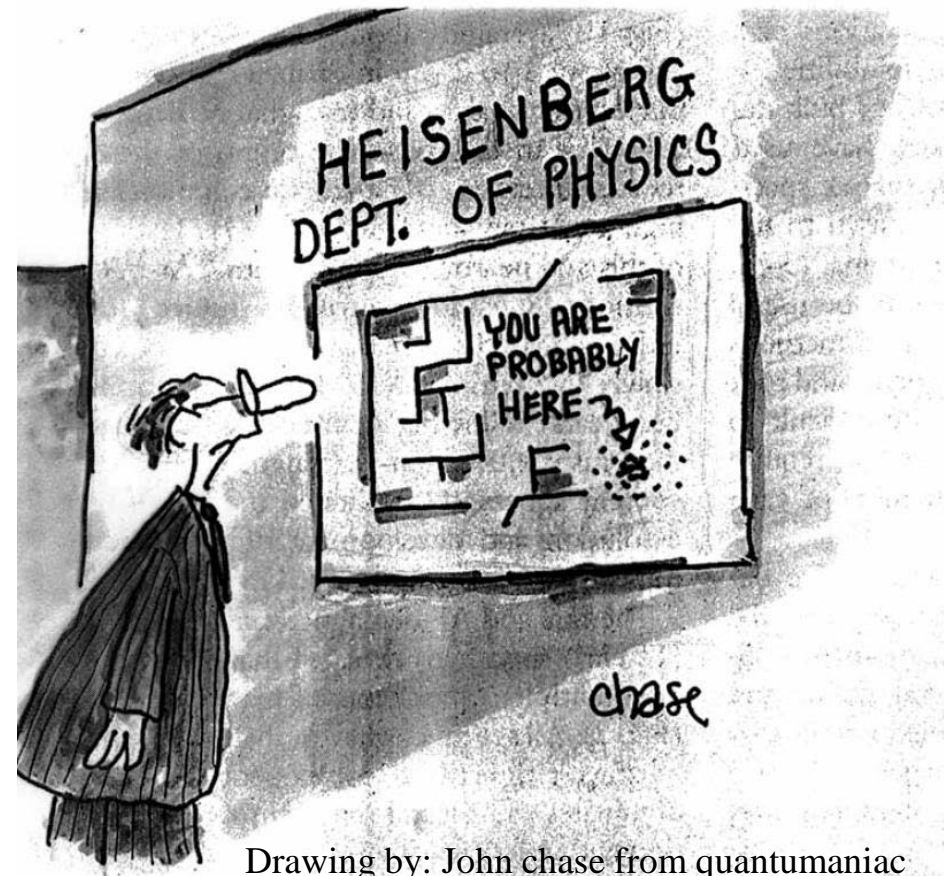


desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Adaptive Management Defined

Four Types of Uncertainty

- Environmental variation
- Partial observability
- Partial controllability
- Structural or process uncertainty



Drawing by: John chase from quantumaniac



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

Presentation Overview

- Define adaptive management
- **What is the adaptive management program?**
- How we use adaptive management
- Dissemination of data
- Future projects

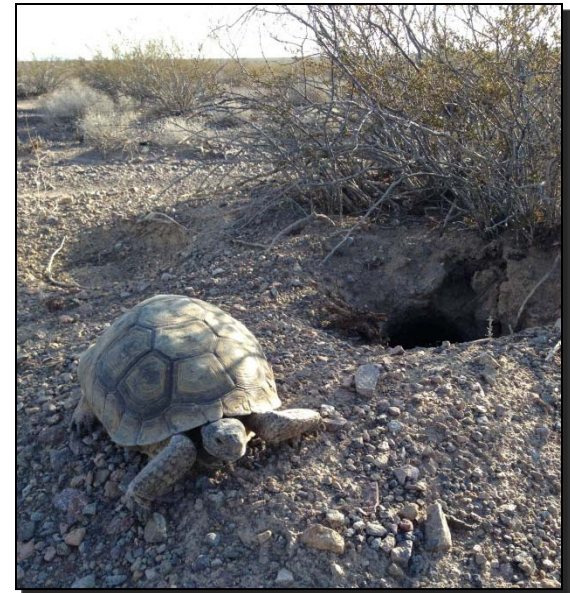


desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: What is the Adaptive Management Program?

Multi-Species Habitat Conservation Plan

“...[Those involved] are proposing an Adaptive Management Process to gauge the effectiveness of existing conservation measures and to propose additional or alternative conservation measures, as the need arises, and deal with changed or unforeseen circumstances.”





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: What is the Adaptive Management Program?

The Adaptive Management Program:

- Provides objective, science-based approach to the implementation of the MSHCP
- Helps direct expenditures
- Leads projects that further the MSHCP
- Maintains a database on all covered species
- Ensures an adaptive management approach to all actions



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: What is the Adaptive Management Program?

Who is Involved

- DCP staff
- Science advisor
- Agency personnel
- Land managers
- Academics



Enduring Conservation Outcomes





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

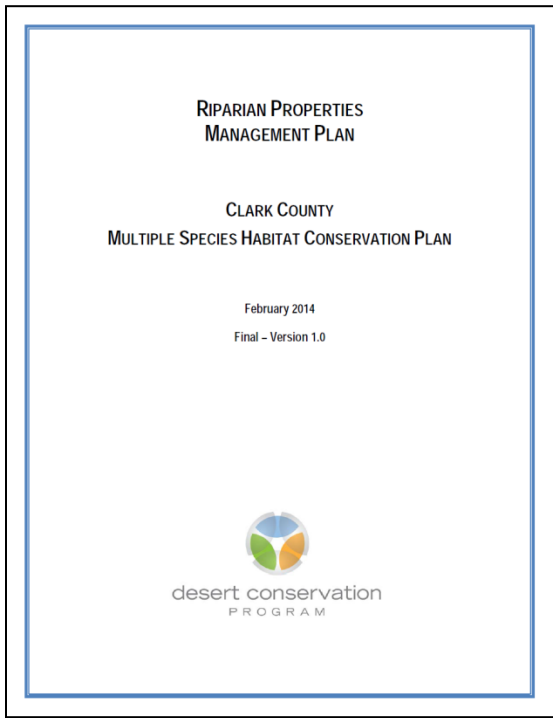
Presentation Overview

- Define adaptive management
- What is the adaptive management program?
- **How we use adaptive management**
- Dissemination of data
- Future projects



Management Plans

- Use in development of restoration plans
- Actions table



BCCE Management Plan									
MANAGEMENT ACTION DESCRIPTION	LOCATION	TIMEFRAME	LEAD	PERMIT(S)	PRIORITY/COST	EFFECTIVENESS MEASURES	FREQUENCY	STATUS	Mandatory/Discretionary
1.0 Restore and enhance habitat for desert tortoise									
1.1 Evaluate easement for the spatial extent and trends of desert tortoise occupancy									
Occupancy sampling pilot study determines spatial extent of desert tortoises and provides a baseline to detect changes in spatial extent and numbers of tortoises by which to identify and prioritize areas for habitat restoration/enhancement.	BCCE; north and south study area plots	Multi-year study, as needed; 2013-2017	DCP, contractor	Boulder City, USFWS	H	VH	No effectiveness measures needed; quality assurance is part of pilot study data collection and management		Year 1 completed; beginning Year 2
1.2 Assess environmental variables that influence the spatial extent and trends of desert tortoise occupancy									
Covariates monitoring project assesses the relationship of desert tortoise occupancy with multiple environmental covariates (vegetation, substrate, topographic features, precipitation, distance to disturbances and habitat alteration, and management actions). The data will be used to develop a prescriptive model of where tortoises are and could be in the BCCE.	BCCE; north and south study area plots	Multi-year study; 2013-2015	DCP, contractors	Boulder City, USFWS	H	VH	No effectiveness measures needed; quality assurance is part of data collection and management		Soils, vegetation, and remote sensing contracts are ongoing
1.3 Identify and prioritize locations for habitat restoration and enhancement									
Statistically analyze data from occupancy sampling and covariates monitoring projects using PRESENCE model to prioritize areas for habitat restoration/enhancement.	BCCE; DCP office	After 1.1 and 1.2 are completed	DCP, contractor		H	L-M	Map of priority areas for habitat restoration	Upon completion of analysis	Not started
1.4 Develop restoration/enhancement plans for priority locations									
Use results from 1.3 to plan location, type, and extent of restoration/enhancement; determine if plans are prepared by DCP staff or by contract	BCCE; locations identified in 1.3	After 1.3 is completed	DCP, contractor(s)		M	M	Plans meet restoration goals and objectives, contract requirements, and are ready for implementation	Upon completion of each plan	Not started



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: How We Use Adaptive Management

Restoration Plans

- Literature search
- Coordination with local agencies





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: How We Use Adaptive Management

Riparian Restoration

- Potentially revise planting plan
- Revise fencing to keep out cattle



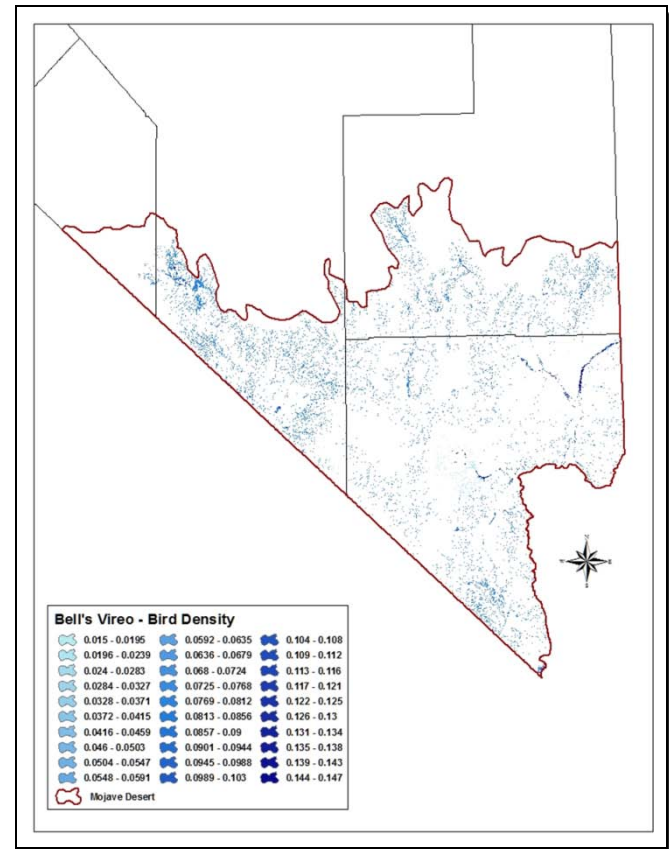


Riparian Monitoring

- Vegetation photo points
- Baseline bird surveys



photo by: Martin Meyers



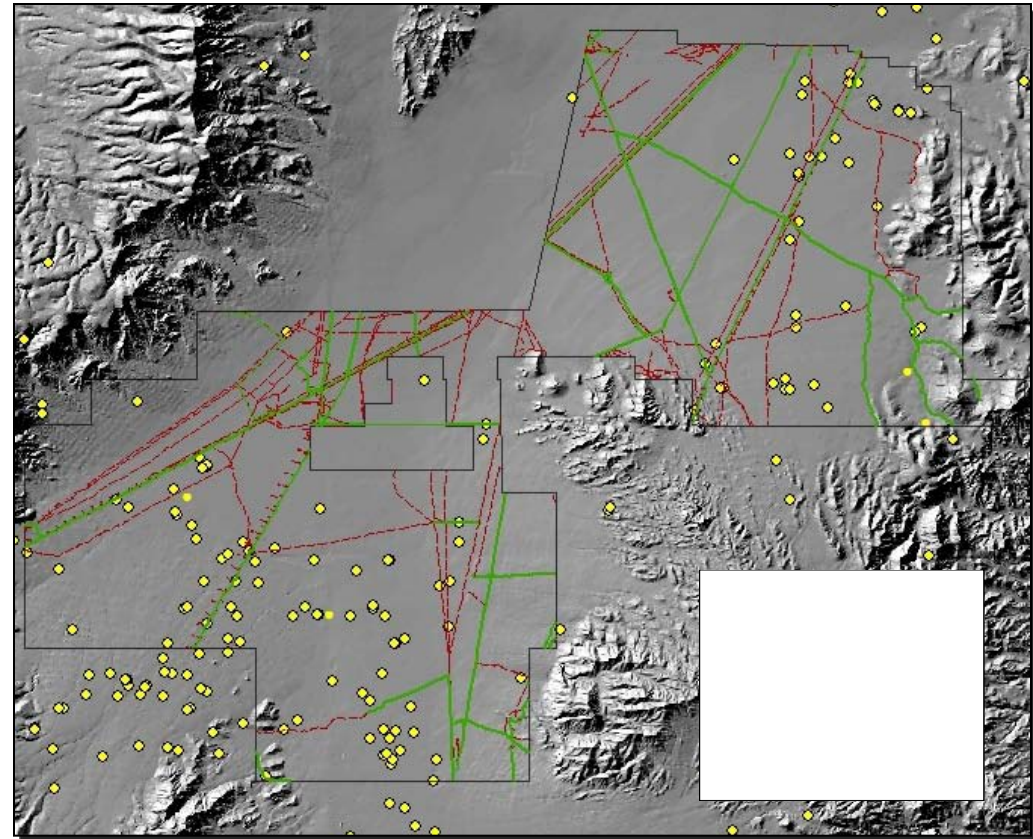


desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: How We Use Adaptive Management

BCCE Restoration

- Prioritizing using tortoise locations
- Focus on closing roads





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: How We Use Adaptive Management

BCCE Fire Management

- Determine fuel loads
- Treat weeds

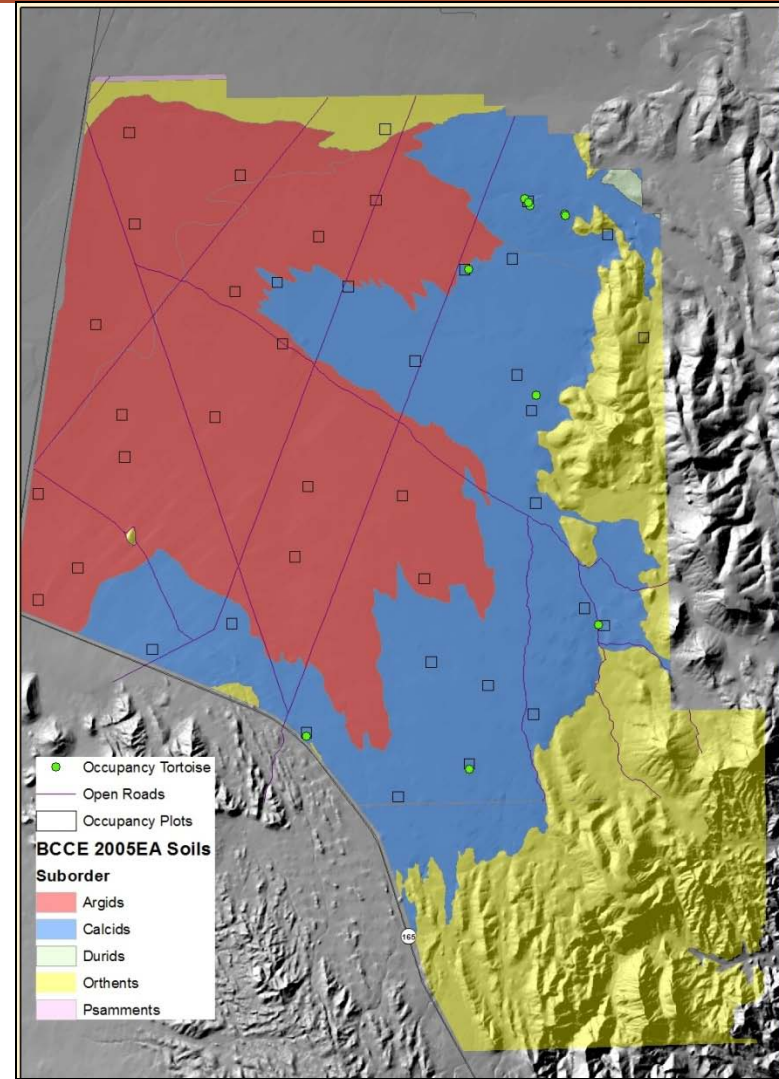


Photos by: LA DeFalco



Tortoise Translocation

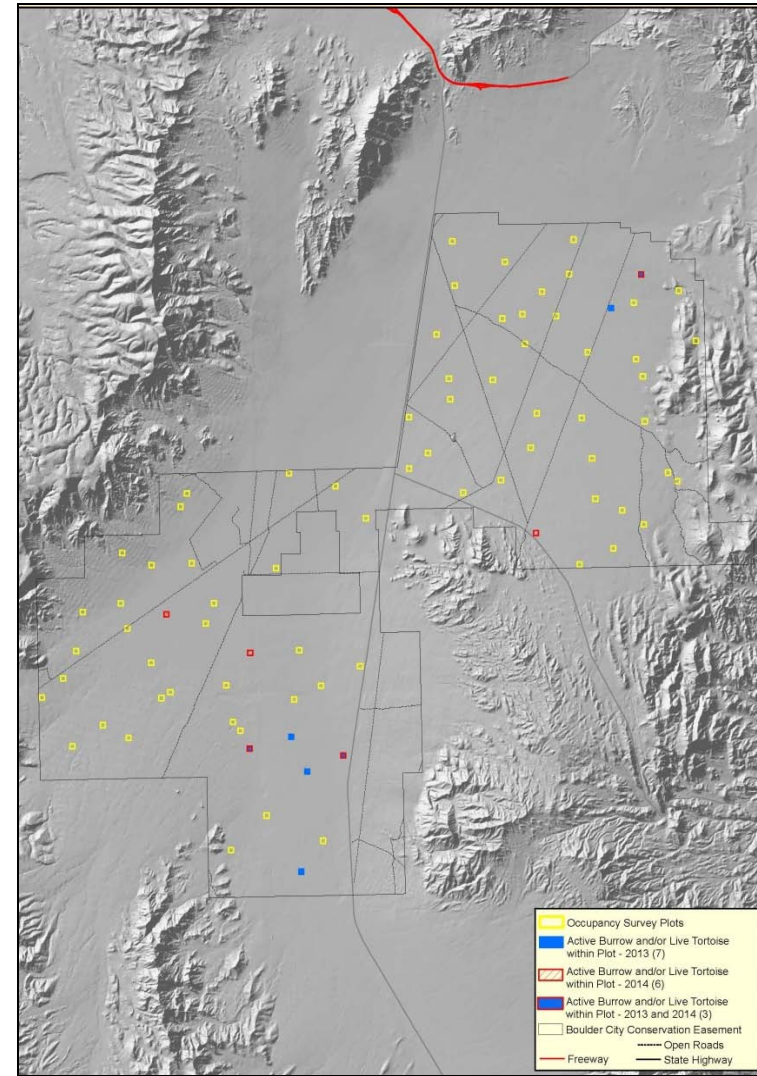
- Tortoise occupancy
- Covariates





Tortoise Occupancy Surveys

- 2 years of field data
- Eldorado pre-translocation surveys





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

Presentation Overview

- Define adaptive management
- What is the adaptive management program?
- How we use adaptive management
- **Dissemination of data**
- Future projects



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Dissemination of Data

- DCP Website

<http://www.clarkcountynv.gov/depts/dcp/Pages/DCPReports.aspx>

- Symposium





desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Overview

Presentation Overview

- Define adaptive management
- What is the adaptive management program?
- How we use adaptive management
- Dissemination of data
- **Future projects**



desert conservation
PROGRAM
respect, protect and enjoy our desert!

Adaptive Management Program: Next Steps

- Modeling tortoise habitat
- Connectivity
- Range-wide monitoring
- Further restoration on the BCCE and riparian properties





desert conservation

PROGRAM

respect, protect and enjoy our desert!

Adaptive Management Program:

Questions?

