Biological Goals and Objectives for the Clark County, NV Multiple Species Habitat Conservation Plan - Final

Prepared for the:

desert conservation PROGRAM

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Contents

Acronyms and Abbreviations

BGOs	Biological goals and objectives
DCP	Clark County Desert Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
TerraGraphics	TerraGraphics Environmental Engineering, Inc.
USFWS	U.S. Fish & Wildlife Service

Section 1.0 Introduction

Habitat Conservation Plans, including Multiple Species Habitat Conservation Plans (MSHCP), must establish biological goals and objectives as stated in the five point policy adopted by U.S. Fish & Wildlife Service (USFWS) (65 Fed. Reg. 35242 [USFWS 2000]). Biological goals and objectives (BGOs) form the basis for developing, administering, and evaluating conservation measures undertaken as part of implementing an MSHCP. BGOs aim to create a framework that links a program vision and plan requirements with on-the-ground conservation measures, programs, and actions. The challenge in creating BGOs is for them to provide specific, realistic, and achievable goals that fit the conservation program vision without inherently basing them on existing or preferred conservation actions. In an effort to further develop the BGOs in the current Clark County, NV MSHCP (Clark County 2000), the independent Science Advisor Panel and Clark County Desert Conservation Program (DCP) staff conducted a joint workshop on April 11th and 12th, 2016. We used an unbiased approach to revise existing and develop new BGOs meant to be biologically relevant, meaningful, and achievable. This ensures the effectiveness and continuity of conservation measures, biological goals, and objectives now and in the future. The workshop participants considered BGOs that are appropriate for both the current and the proposed amendment to the MSHCP.

This report discusses the development of the BGOs and describes the draft BGOs for DCP review. This report will be used by the DCP staff as a guiding factor in funding future projects as well as an assessment tool at the conclusion of projects (or for biennium reporting) to determine if BGOs are being met. Conservation measures and other quantifiable actions will be listed and described in the Adaptive Management Monitoring Plan, to be authored by the Science Advisory Panel in 2016.

Section 2.0 Process for Developing Biological Goal and Objectives

Biological goals are the broad, guiding principles for the operating conservation program of the MSHCP. Biological goals are intentionally broad and general as they describe the desired future state of a species or biological system, and because of their descriptive nature they are not directly quantifiable. They provide the rationale for the conservation actions needed to minimize and mitigate adverse effects on the covered species to the maximum extent practicable.

To achieve the biological goals, manageable and measurable biological objectives are developed. A biological objective is the specific, concrete, and quantifiable target that leads to achieving the biological goal.

Objectives are achieved via conservation measures, which are the measures, programs, and actions that are implemented on the ground. Together, the biological goals and objectives also provide the rationale behind the MSHCP's terms and conditions, guide monitoring, and, when appropriate, inform adaptive management. This report discusses the development of the BGOs; conservation measures will be listed and described in the Adaptive Management Monitoring Plan.

2.1 Definitions

Here we define four specific biological terms and concepts used to generate the following list of BGOs:

- Reserve system – Those lands over which the Clark County Desert Conservation Program has direct control of management activities, including via direct acquisition, easements, or future cooperative management agreements.
- Ecological resilience – The capacity of a system to withstand acute and diffuse stressors without experiencing widespread negative regime changes, such as species extirpation or a fundamental loss of ecosystem function. Ecological resilience can be increased through maintaining spatial connectivity, spatiotemporal variability in ecological processes, and adaptive management (Gunderson 2000, Kondoh 2012).
- Habitat-based surrogate – habitat attributes that are used as proxies for the presence, abundance, or diversity of particular elements (e.g., animal species, vegetation structure or composition) of the biota at both site- and landscape-levels (Lindenmayer et al. 2014).
- Surrogate species – subsets of species which are representative of multiple species or aspects of the environment. These include umbrella, focal, keystone, indicator, and flagship species. Surrogate species are commonly used for comprehensive planning that supports multiple species and habitats within a defined landscape or geographic area (USFWS 2012).
- Species occupancy – Whether or not a covered species is present in appropriate habitat during part or all of the year.

2.2 Framework for Biological Goals and Objectives Development

To ensure an objective and thorough process for creating and evaluating the BGOs, the workshop began by comparing potential frameworks for generating biological goals, falling into two general types: unstructured and structured.

An unstructured goal-generating framework is free-form and places no constraints on developing BGOs. It may include either a single over-arching goal, or multiple unrelated goals. The benefit to this type of framework is the lack of any restrictive structure on the relationships among goals, with the drawback that an important goal may be overlooked or this framework may result in a set of biological goals that do not reflect the ecological or policy implementation structure of the MSHCP. In contrast, a structured framework follows a specific organizational structure or method to classify each goal (e.g., categories). The benefit of a structured framework is that it guides goal generation to ensure all important goals are identified and are related to underlying ecological or policy structures. The challenge to a structured framework is to ensure that the structure aligns with ecological or policy factors and that it is sufficiently, but not overly, specific in the number of goals generated.

2.3 Biological Goals and Objectives Workshop

To guide the development of BGOs, DCP staff and the Science Advisor Panel members proposed six criteria for the goals and objectives. These criteria included: the adopted goals and

objectives must (1) pertain to and support the MSHCP, (2) be achievable, (3) be affordable, (4) be on land on which the county can ensure durability, (5) be easily measured, and (6) provide high quality biological information. As each BGO was developed, it was evaluated against each of the six criteria, and modified as needed.

At the April 2016 workshop, DCP staff and the Science Advisor Panel members agreed that a structured goal-generating framework was optimal and chose to use 'categories', such as species, time frames, and habitats, as the structure. Group consensus amongst participants was that this approach was closely aligned with the vision outlined in the MSHCP, with a focus on covered species and their habitats. This approach also allowed for developing habitat or population goals that encompassed multiple covered species, a benefit that increases the effectiveness of conservation measures. The two chosen habitats that were used as structural categories were Riparian and Desert Upland.

Development of the biological goals and the objectives followed separate, but parallel processes. The workshop attendees brainstormed potential biological goals in each category in reference to the MSHCP-covered species list and information on potential future covered species under the proposed plan amendment. Attendees then listed potential drawbacks for each goal and finally re-assessed the list to condense it to the most relevant, meaningful, and achievable goals. Additional points of focus were to create biological goals that appropriately mitigate for impacts of development, that facilitate prioritization of conservation measures, and that can serve as future benchmark standards to verify the success of the MSHCP and associated conservation actions. After finalizing and achieving group consensus on the content and wording of the biological goals, the workshop attendees conducted the same brainstorming, drawback critique, and final assessment process for objectives within each goal. This process resulted in 4 biological goals and 11 objectives total in the Riparian category and 4 goals and 13 objectives total in the Desert Upland category

Section 3.0 Draft Biological Goals and Objectives

3.1 Riparian Biological Goals and Objectives

The Riparian BGOs were developed with the intent that acquiring (where feasible), maintaining, enhancing, and restoring functioning riparian habitat will benefit MSHCP-covered riparian species, particularly covered avian and mammal species. Species-based surrogate and habitat-based surrogate concepts were used to guide the development of the BGOs. Goals and objectives that aim to directly benefit certain species will also benefit other species that co-occur in riparian areas. For example, certain riparian obligate bird species (southwestern willow flycatcher [*Empidonax trailii extimus*] and yellow-billed cuckoo [*Coccyzus americanus*]) are considered surrogate species; habitat improvements that benefit these species will also benefit MSHCP-covered species such as those species dependent on cottonwood-willow habitat. For rare or elusive species (i.e., those that are difficult to detect), the concept of a habitat-based surrogates can guide conservation or habitat restoration efforts with the intention of maximizing opportunities for the species to occupy the area. The following goals and objectives were developed specifically for conservation actions that will benefit riparian-associated MSHCP-covered species in current or future Riparian Reserve Units. A list of MSHCP-covered species that occur in riparian habitat is shown in Appendix A.

Goal R 1. Maintain, improve, and expand habitat for the MSHCP-covered species on riparian reserve system lands

Objectives:

R 1.1: Monitor MSHCP-covered species occupancy

R 1.2: Maintain and/or increase suitable breeding habitat for MSHCP-covered birds

R 1.3: Incorporate elements of natural riparian processes into restoration design and implementation

R 1.4: Inventory, remove, and control invasive and non-native plant species

R 1.5: Reduce habitat fragmentation and/or improve connectivity and habitat quality through restoration design and implementation

R 1.6: Acquire riparian property at an equivalent rate as take (i.e., habitat conversion)

Goal R 2. Maintain stable or increasing populations of federally-listed threatened and endangered (T&E) species on riparian reserve system lands

Objectives:

R 2.1: Monitor and adaptively manage for breeding bird populations

Goal R 3. Foster community and stakeholder engagement to benefit covered species

Objectives:

R 3.1: Collaborate with other stakeholders on project/mitigation work (e.g., agencies, permittees)

R 3.2: Promote responsible recreation (e.g., signage, education)

Goal R 4. Promote ecological resiliency on riparian reserve system lands

Objectives:

R 4.1: Identify critical uncertainties and address these through planning and adaptive management, when feasible (e.g., land use changes, catastrophic events—fire, climate change)

R 4.2: Identify critical connectivity corridors for covered species and prioritize acquisition and/or conservation where feasible

3.2 Desert Upland Biological Goals and Objectives

The Desert Upland BGOs were developed with a focus on managing existing reserve system lands, and additional land that may be added to the reserve system in the future, for the benefit of covered species and their habitats. The primary focus is on Mojave desert scrub and mesquite/acacia habitats. The Desert tortoise (*Gopherus agassizii*) is considered to be a surrogate species for other MSHCP-covered species that rely on similar habitat components. Species that rely on this habitat for foraging only, such as peregrine falcon (*Falco peregrinus*) and crevice and cavity roosting bats may also benefit from implementation of the BGOs in this category. A list of MSHCP-covered species that occur in desert upland habitat is shown in Appendix A.

Goal D 1. Maintain, improve, and expand habitat for MSHCP-covered species on desert upland reserve system lands

Objectives:

D 1.1: Monitor MSHCP-covered species occupancy

D 1.2: Maintain existing intact functioning habitat and restore degraded habitat (use Objective D 1.1 to determine if habitat qualifies as functioning)

D 1.3: Protect and conserve habitat for covered plants (i.e., physical protection of plants with specific requirements)

D 1.4: Inventory, remove, and control invasive and non-native plant species

D 1.5: Reduce habitat fragmentation and/or improve connectivity through restoration design and implementation

Goal D 2. Maintain stable or increasing populations of Federal T&E-listed species on desert upland reserve system lands

Objectives:

D 2.1: Monitor and adaptively manage for desert tortoise populations

D 2.2: Augment populations through translocation programs when appropriate

Goal D 3. Foster community and stakeholder engagement to benefit covered species

Objectives:

D 3.1: Collaborate with other stakeholders on project/mitigation work (e.g., agencies, permittees)

D 3.2: Promote responsible recreation (e.g., signage, education)

D 3.3: Provide law enforcement within reserve system

D 3.4: Educate project proponents and construction personnel about procedures for reporting desert tortoises that occur on project sites and provide a mechanism for collection and relocation of tortoises in collaboration with the US Fish and Wildlife Service

Goal D 4. Promote ecological resiliency on desert upland reserve system lands

Objectives:

D 4.1: Identify critical uncertainties and address these through planning and adaptive management, when feasible (land use changes, catastrophic events—fire, climate change)

D 4.2: Identify critical connectivity corridors for covered species, prioritize conservation and/or acquisition of corridors, and increase permeability for species movement where feasible

Section 4.0 References

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Appendix A

List of current covered species under the Multiple Species Habitat Conservation Plan and whether they are addressed by Riparian or Desert Upland Biological Goals and Objectives.

Common Name	Scientific Name	Riparian / Desert *
COVERED SPECIES		
Birds		
Yellow-billed cuckoo	*Coccyzus americanus*	Riparian
Southwestern willow flycatcher	*Empidonax traillii extimus*	Riparian
American peregrine falcon	*Falco peregrinus anatum*	Desert
Blue grosbeak	*Guiraca caerulea*	Riparian / Desert
Phainopepla	*Phainopepla nitens*	Riparian / Desert
Summer tanager	*Piranga rubra*	Riparian
Vermillion flycatcher	*Pyrocephalus rubinus*	Riparian / Desert
Bell's vireo	*Vireo bellii*	Riparian
Mammals		
Silver-haired bat	*Lasionycteris noctivagans*	Riparian
Long-eared myotis	*Myotis evotis*	N/A
Long-legged myotis	*Myotis volans*	Riparian / Desert
Palmer's chipmunk	*Neotamias palmeri*	N/A
Amphibians		
Relict leopard frog	*Rana onca*	N/A
Reptiles		
Glossy snake	*Arizona elegans*	Desert
Western banded gecko	*Coleonyx variegatus*	Desert / Riparian
Sidewinder	*Crotalus cerastes*	Desert
Speckled rattlesnake	*Crotalus mitchellii*	Desert
Mojave green rattlesnake	*Crotalus scutulatus scutulatus*	Desert
Great Basin collared lizard	*Crotaphytus bicinctores*	Desert
Desert iguana	*Dipsosaurus dorsalis*	Desert
Large-spotted leopard lizard	*Gambelia wislizenii wislizenii*	Desert
Desert tortoise	*Gopherus agassizii*	Desert
California kingsnake	*Lampropeltis getulus californiae*	Desert
Western leaf-nosed snake	*Phyllorhynchus decurtatus*	Desert

Common Name	Scientific Name	Riparian / Desert *
Western red-tailed skink	*Plestiodon gilberti rubricaudatus*	Riparian / Desert
Western long-nosed snake	*Rhinocheilus lecontei lecontei*	Desert
Sonoran lyre snake	*Trimorphodon biscutatus lambda*	Desert
Invertebrates		
Spring Mountains acastus checkerspot	*Chlosyne acastus robusta*	N/A
Dark blue butterfly	*Euphilotes ancilla purpura*	N/A
Morand's checkerspot butterfly	*Euphydryas anicia morandi*	N/A
Spring Mountains comma skipper	*Hesperia colorado mojavensis*	N/A
Spring Mountains icariodes blue	*Icaricia icarioides austinorum*	N/A
Mt. Charleston blue butterfly	*Icaricia shasta charlestonensis*	N/A
Nevada admiral	*Limenitis weidemeyerii nevadae*	N/A
Spring Mountains springsnail	*Pyrgulopsis deaconi*	N/A
Southeast Nevada springsnail	*Pyrgulopsis turbatrix*	N/A
Carole's silverspot butterfly	*Speyeria zerene carolae*	N/A
Plants		
[No common name]	*Anacolia menziesii*	N/A
Rough angelica	*Angelica scabrida*	N/A
Charleston pussytoes	*Antennaria soliceps*	N/A
Sticky ringstem	*Anulocaulis leiosolenus*	Desert
Las Vegas bearpoppy	*Arctomecon californica*	Desert
White bearpoppy	*Arctomecon merriamii*	Desert
Rosy king sandwort	*Arenaria kingii* ssp. *rosea*	N/A
Clokey milkvetch	*Astragalus aequalis*	N/A
Threecorner milkvetch	*Astragalus geyeri* var. *triquetrus*	Desert
Clokey eggvetch	*Astragalus oophorus* var. *clokeyanus*	N/A
Spring Mountains milkvetch	*Astragalus remotus*	N/A
Alkali mariposa lily	*Calochortus striatus*	Desert
Clokey paintbrush	*Castelleja martinii* var. *clokeyi*	N/A
Clokey thistle	*Cirsium clokeyi*	N/A
No common name	*Claopodium whippleanum*	N/A
Blue Diamond cholla	*Cylindropuntia multigeniculata*	Desert
No common name	*Dicranoweisia crispula*	N/A

Common Name	Scientific Name	Riparian / Desert *
Jaeger whitlowgrass	*Draba jaegeri*	N/A
Charleston draba	*Draba paucifructa*	N/A
Inch high fleabane	*Erigeron uncialis* ssp. *conjugans*	N/A
Forked (Pahrump Valley) buckwheat	*Eriogonum bifurcatum*	Desert
Sticky buckwheat	*Eriogonum viscidulum*	Desert
Clokey greasebush	*Glossopetalon clokeyi*	N/A
Smooth pungent (dwarf) greasebush	*Glossopetalon pungens* var. *glabrum*	N/A
Pungent dwarf greasebush	*Glosspetalon pungens* var. *pungens*	N/A
Red Rock Canyon aster	*Ionactis caelestis*	N/A
Hidden ivesia	*Ivesia cryptocaulis*	N/A
Jaeger ivesia	*Ivesia jaegeri*	N/A
Hitchcock bladderpod	*Lesquerella hitchcockii*	N/A
Charleston pinewood lousewort	*Pedicularis semibarbata* var. *charlestonensis*	N/A
White-margined beardtongue	*Penstemon albomarginatus*	Desert
Charleston beardtongue	*Penstemon leiophyllus* var. *keckii*	N/A
Jaeger beardtongue	*Penstemon thompsoneae* var. *jaegeri*	N/A
Parish's phacelia	*Phacelia parishii*	Desert
Clokey mountain sage	*Salvia dorrii* var. *clokeyi*	N/A
Clokey catchfly	*Silene clokeyi*	N/A
Charleston tansy	*Sphaeromeria compacta*	N/A
Charleston kittentails	*Synthyris ranunculina*	N/A
No common name	*Syntrichia princeps*	N/A
Charleston grounddaisy	*Townsendia jonesii* var. *tumulosa*	N/A
Limestone violet	*Viola purpurea* var. *charlestonensis*	N/A

*Species marked with 'N/A' are not addressed by either Riparian or Desert Upland Biological Goals or Objectives because they occur at high elevations that are not impacted by private land development within Clark County or they are covered by other existing regulatory mechanisms.