

## RAC AGENDA – December 2022



1. Welcome, RAC Introductions and RAC Procedure  
- RAC Chair
2. Approval of Agenda and Minutes  
- RAC Chair **ACTION**
3. Wildlife Board Meeting Update  
- RAC Chair **INFORMATIONAL**
4. Regional Update  
- DWR Regional Supervisor **INFORMATIONAL**
5. Utah Prairie Dog Conservation Strategy  
R657-19 Rule Amendments  
- Kim Hersey, Wildlife Coordinator **INFORMATIONAL ACTION**
6. Utah Black Bear Management Plan, R657-33 Rule Amendments  
and 2023 Recommendations  
- Darren DeBlois, Mammals Coordinator **ACTION**
7. 2023 Furbearer and Bobcat Season Dates  
- Darren DeBlois, Mammals Program Coordinator **ACTION**
8. Cougar Update  
- Darren DeBlois, Mammals Coordinator **INFORMATIONAL**

### Meeting Locations

**CR RAC** – Nov. 29th 6:00 PM  
Wildlife Resources Conference Room  
1115 N. Main Street, Springville  
<https://youtu.be/BwcSvzLe0nc>

**SER RAC** – Dec. 7th 6:30 PM  
John Wesley Powell Museum  
1765 E. Main St., Green River  
<https://youtu.be/y0m2LastEj0>

**NR RAC** – Nov. 30th 6:00 PM  
Weber County Commission Chambers  
2380 Washington Blvd. Suite #240, Ogden  
[https://youtu.be/J\\_WiuSPjzU](https://youtu.be/J_WiuSPjzU)

**NER RAC** – Dec. 8th 6:30 PM  
Wildlife Resources NER Office  
318 North Vernal Ave., Vernal  
<https://youtu.be/wfkD3WVWz7E>

**SR RAC** – Dec. 6th 6:00 PM  
DNR Richfield City Complex  
2031 Industrial Park Rd., Richfield  
<https://youtu.be/9e5CrfqdeJs>

**Board Meeting** – January 3rd 9:00 AM  
Eccles Wildlife Education Center, Farmington Bay  
<https://youtu.be/000ZmJ3A5zQ>



SPENCER J. COX  
Governor

DIEDRE M. HENDERSON  
Lieutenant Governor

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

JOEL FERRY  
Executive Director

### Division of Wildlife Resources

J. SHIRLEY  
Division Director

## MEMORANDUM

TO: Wildlife Board and Regional Advisory Council Members

FROM: Kimberly Hersey, Mammal Conservation Coordinator

DATE: 18 November 2022

### **SUBJECT: Utah prairie dog conservation strategy**

The Utah prairie dog has been listed under the Endangered Species Act since 1973. Conservation, management, monitoring, research, and public outreach actions by state and federal agencies, local governments, nonprofit organizations, and private landowners initiated in the 1970s and continuing today facilitated a rebound in the abundance and distribution of Utah prairie dogs. Long-term data demonstrate that the range-wide population of the Utah prairie dog, while variable year-to-year, has been stable or increasing over a period of nearly three decades. Thus, UDWR maintains the species should be federally delisted. The Utah Prairie Dog Conservation Strategy (Conservation Strategy) and associated Utah Division of Wildlife Resources (UDWR) administrative rule afford protection to Utah prairie dogs while providing tools to prevent excessive depredation and allow landowners to manage prairie dogs as populations grow. While we continue to focus recovery efforts on public lands, the strategy acknowledges the conservation value of Utah prairie dogs on private lands.

The Conservation Strategy establishes biological goals and objectives and an adaptive framework to implement conservation and management. It prescribes actions based on the best available science to maintain and grow Utah prairie dog populations. Through Memorandums of Agreement, UDWR and partners commit to conservation actions in three management areas spread across the range of the species – the West Desert, Paunsaugunt, and Awapa Plateau. Each area will be managed at population levels that are both achievable and adequate to ensure long-term viability. The Conservation Strategy also prescribes ongoing monitoring to inform annual adaptive management decisions and continues to build the existing datasets that track long-term trends.

Taken together, this will ensure Utah prairie dogs occur in multiple resilient populations found in a variety of environmental settings distributed across the historical range – and no longer meet the threshold for federal listing.

The duration of this Conservation Strategy and partnership is long term and will remain in place so long as active management is needed. The Conservation Strategy is also a living document, and UDWR and the conservation partners commit to review and update the plan and the Memorandum of Agreement. Working with federal, local, and nonprofit partners, UDWR feels secure that the future for the Utah prairie dog continues to be bright. With adaptive management, monitoring, research, and coordination, this conservation strategy carries forward the effective program that led to the currently improved status. We expect that upon state management, not only will long-fought gains be maintained, but also without the stigma of Endangered Species Act listing, additional opportunities for collaborative conservation will be realized.



**UTAH DIVISION  
OF WILDLIFE  
RESOURCES**

FINAL

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*1594 West North Temple  
Salt Lake City, Utah  
84116*



# Utah Prairie Dog (*Cynomys parvidens*) Conservation Strategy

January 2023



**UTAH PRAIRIE DOG  
(*CYNOMYS PARVIDENS*)  
CONSERVATION STRATEGY**

**Utah Division of Wildlife Resources**  
1594 W North Temple  
Salt Lake City, Utah 84116

Prepared with support from

**SWCA Environmental Consultants**  
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Salt Lake City, Utah 84111  
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[www.swca.com](http://www.swca.com)

January 2023



## EXECUTIVE SUMMARY

When first listed under the Endangered Species Act in 1973, there was little doubt that the Utah prairie dog was threatened with extinction. Population distribution had declined by an estimated 87% over the preceding 50 years and declines were ongoing. As with other prairie dog species, agricultural producers in southwestern Utah generally felt that the Utah prairie dog was a nuisance and with federal assistance worked towards its elimination. By 1971 there were only 48 colonies known with 6 colonies exterminated the previous year through poisoning with treated grain. Similar control was planned for 34% of the remaining population. At the time of listing that continued, unregulated effort to eradicate the Utah prairie dog was the greatest threat to its existence.

50 years since listing, the Utah prairie dog population has made extraordinary strides toward recovery. Conservation, management, monitoring, research, and public outreach actions by state and federal agencies, local governments, nonprofit organizations, and private landowners initiated in the 1970s and continuing today facilitated a rebound in the abundance and distribution of Utah prairie dogs. Long-term data demonstrate that the range-wide population of the Utah prairie dog, while variable year-to-year, has been stable or increasing over a period of nearly three decades. The total number of counted Utah prairie dogs has tripled from the levels reported when the species first received federal protection. Distribution has also expanded with Utah prairie dogs currently found in 391 occupied colonies throughout portions of 426 sections across the species' range in 2022. Whereas early recovery gains were concentrated on private lands with higher levels of conflict, around half of Utah prairie dogs are now found on public or protected lands. Moreover, citizens of southern Utah now recognize the need to co-exist with the Utah prairie dog. This Utah Prairie Dog Conservation Strategy (Conservation Strategy) and associated Utah Division of Wildlife Resources (UDWR) administrative rules afford protection to Utah prairie dogs while providing tools to prevent excessive depredation and allow landowners to manage prairie dogs as populations grow. While we continue to focus recovery efforts on public lands, the strategy acknowledges the conservation value of Utah prairie dogs on private lands.

### Gains in abundance and distribution of the Utah prairie dog 1971-2022.

Population Metric	1971	3-year average (2020-2022)
Spring Count	2,190	5,760
Number of Colonies Occupied	48	391
Sections Occupied	96	389
Acres of Occupied Habitat	2357	11,004
Percent on Public/Protected	37%	47.6% (58% including SITLA)

Source: Collier (1975), UDWR (2021, 2022, 2023)

While old threats have receded, new threats have emerged. The Conservation Strategy establishes biological goals and objectives and an adaptive framework to implement conservation and management. It prescribes actions based on the best available science to maintain and grow Utah prairie dog populations. Through the signed Memorandums of Agreement, UDWR and partners commit to conservation actions in three management areas spread across the range of the species – the West Desert, Paunsaugunt, and Awapa Plateau. Each area will be managed at population levels that are both achievable and adequate to ensure long-term viability. The Conservation Strategy also prescribes ongoing monitoring

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to inform annual adaptive management decisions and continues to build the existing datasets that track long-term trends.

Taken together, this will ensure Utah prairie dogs occur in multiple resilient populations found in a variety of environmental settings distributed across the historical range – and no longer meet the threshold for federal listing.

<b>Management Concerns and Actions</b>	
Plague	Apply insecticidal dust to Utah prairie dog burrows Continue to advance and implement new plague control methods Translocate Utah prairie dogs to reestablish or supplement colonies affected by plague
Human-caused mortality	Protect Utah prairie dogs under Utah wildlife code on all lands Investigate and prosecute illegal killing Regulate agricultural take through a tiered system
Habitat loss	Provide tools to landowners to encourage coexistence Establish and maintain colonies on public and protected lands Conduct habitat treatments to improve conditions for Utah prairie dogs
Drought	Continue translocations and management actions on climate resilient sites, such as the higher elevation habitats of the Paunsaugunt and Awapa Plateau Enhance water sources such as natural springs, wet meadows, or low-flow wells to provide succulent vegetation In years without monsoonal moisture, provide supplemental food to translocation and/or other high-value colonies Conduct habitat treatments to improve conditions for Utah prairie dogs
Genetic diversity	Maintain populations at levels sufficient to retain genetic variation Conduct translocations between colonies to facilitate gene flow Promote connectivity between colonies

The partners in Utah prairie dog management recognize that delisting does not equate to stepping away – rather stepping up. Much like many other species under the state’s authority, Utah prairie dogs will remain management dependent. The duration of this Conservation Strategy and partnership is long term and will remain in place so long as active management is needed. The Conservation Strategy is also a living document, and UDWR and the conservation partners commit to review and update the plan and the

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Memorandum of Agreement. Working with federal, local, and nonprofit partners, UDWR feels secure that the future for the Utah prairie dog continues to be bright. With adaptive management, monitoring, research, and coordination, this conservation strategy carries forward the effective program that led to the currently improved status. We expect that upon state management, not only will long-fought gains be maintained, but also without the stigma of Endangered Species Act listing, additional opportunities for collaborative conservation will be realized.

## **ACKNOWLEDGMENTS**

In order to develop the Utah Prairie Dog Conservation Strategy and define goals, objectives, adaptive management triggers, and management actions and thresholds, the Utah Department of Natural Resources gathered input from numerous local entities to ensure cooperation and support for its implementation. Representatives from the groups listed below contributed greatly to the development of this conservation strategy.

### **Participants**

Beaver County

Brigham Young University

Bureau of Land Management

Garfield County

Iron County

National Park Service

The Nature Conservancy

United States Fish and Wildlife Service

United States Forest Service

Utah Department of Natural Resources

Utah Division of Wildlife Resources

Utah School and Institutional Trust Lands Administration

Wayne County

## DEFINITIONS

Agriculture areas – any property that is used or has been used in the previous two (2) years for production of a cultivated crop or irrigated pasture that is harvested or grazed.

Colonies – Groups of Utah prairie dogs with associated burrows, mounds, and food resources that are within calling distance of each other. Colonies are genetically similar and are vulnerable to local catastrophes, including sylvatic plague (*Yersinia pestis*) outbreaks.

Complexes – Groups of colonies that are generally within 2 miles of each other, exchange migrant prairie dogs every one to two generations, and are not separated by geographic barriers such as mountain ranges, towns, or major waterways.

Certificate of Registration – means a paper-based or electronic document issued under this title, or any rule or proclamation of the Wildlife Board granting authority to engage in activities not covered by a license, permit, or tag. For the purposes of this conservation strategy they are permits issued by the Utah Division of Wildlife Resources (UDWR) to allow lethal control of Utah prairie dogs.

Developable areas – Any area zoned by local governments for commercial, industrial, or residential uses that does not have structures or improvements on the surface of the property, excluding utilities.

Federal land – Land that is administered by federal land management agencies such as the BLM, the U.S. Forest Service, and the National Park Service.

General Conservation Plan – A streamlined habitat conservation plan process whereby the USFWS prepares a master conservation plan, completes National Environmental Policy Act (NEPA) requirements, and issues permits to individual developers or landowners (i.e., project proponents).

Habitat Conservation Plan – A planning document designed to accommodate economic development to the extent possible by authorizing the limited and unintentional take of listed species when it occurs incidental to otherwise lawful activities. The plan is designed not only to help landowners and communities but also to provide long-term benefits to species and their habitats.

Human health, safety, and welfare concern areas – 1) Public use areas, such as parks, golf courses, sports fields, playgrounds, airports, schools, churches, cemeteries, archaeological and historical sites, areas of cultural or religious significance, and improved roads; and 2) residential and commercial areas within 50 feet of an occupied establishment and beyond 50 feet on developed portions of ground around the occupied establishment, such as lawns, landscaping, gardens, driveways, etc.

Major development areas – Non-federal lands that are already developed, adjacent to built-out areas, in areas of dense human activity, or areas projected for development in the near future. The spatial extent of the major development areas are adopted from the 2018 *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* (USFWS 2018) and maintained with periodic review by UDWR.

Management areas – Three independent areas of Utah prairie dogs that occur across the range of the species, represented by the three recovery units (West Desert, Paunsaugunt, and Awapa Plateau) defined in the 2012 U.S. Fish and Wildlife Service Recovery Plan.

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Mapped habitat – All areas within the range of the Utah prairie dog with current or historic documentation of occupancy by Utah prairie dogs since 1972. The spatial extent of mapped habitat is maintained by UDWR and is updated annually.

Minor development areas – Non-federal lands that are less likely (when compared to major development areas) to experience large-scale development such that they are more likely to function as suitable habitat or to support population connectivity. The spatial extent of the minor development areas are adopted from the 2018 *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* (USFWS 2018) and maintained with periodic review by UDWR..

Non-federal land – Land that is privately owned; state-administered lands; and county, municipal, and tribal lands.

Occupied habitat – Areas of known Utah prairie dog mapped habitat that, at the time of survey, support Utah prairie dogs. Occupied habitat is determined by surveys conducted according to UDWR (1999) and where visual or auditory detection of Utah prairie dog is documented. Occupied habitat includes the boundaries of the colony plus an additional area that represents the foraging distance of prairie dogs. For colonies within major development areas, a 100-foot foraging distance is applied, and for all other colonies a 250-foot foraging distance is applied (Wright-Smith 1978).

Populations – Groups of prairie dog complexes within a geographic area that are typically separated by distances greater than 2 miles but are not separated by a geographic feature or land use that reduces connectivity between prairie dog complexes.

Non-federal protected land – Non-federal property that is protected specifically or primarily for the purpose of conserving the Utah prairie dog. Protective mechanisms can include conservation easements, fee title purchases, regulatory designations, etc.

Recovery plan required habitat – Includes the boundaries of all occupied colonies plus a 730 ft. buffer which represents the best understood science of the foraging distance of prairie dogs at the time the Recovery Plan was developed. This acreage specifically references the 2012 USFWS Revised Recovery Plan's definition of occupied habitat.

Regulated control – Under UDWR management, the lethal and non-lethal control of Utah prairie dogs for human health, safety, and welfare concerns, and agricultural and rangeland conflicts.

Spring count – The total number of adult Utah prairie dogs observed on a colony basis across the range-wide distribution of species following the UDWR 1999 *Survey Protocol for Annual Spring Counts of Utah Prairie Dogs (Cynomys parvidens)*.

Take – Defined under the Endangered Species Act as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

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## **ABBREVIATIONS**

BLM – Bureau of Land Management

COR- Certificate of registration

GCP – General conservation plan

HCP – Habitat conservation plan

RMP – Resource Management Plan

SHA – Safe Harbor Agreement

SITLA – Utah School and Institutional Trust Lands Administration

SUU – Southern Utah University

UPDOG – Utah Prairie Dog Oversight Group

UPDRIP – Utah Prairie Dog Recovery Implementation Program

UPDRIT – Utah Prairie Dog Recovery Implementation Team

UDWR – Utah Division of Wildlife Resources

USFS – United States Forest Service

USFWS – United States Fish and Wildlife Service

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## CHAPTER 1. INTRODUCTION AND BACKGROUND

### 1.1 PURPOSE

The Utah prairie dog (*Cynomys parvidens*) is a rodent species endemic to Utah that has demonstrated resilience in the face of historic reductions in range and abundance. Populations have rebounded, and the current status of the species has been aided by decades of cooperative conservation efforts and management by state and federal agencies, local governments, nonprofit organizations, and private landowners. Continued conservation and management of the Utah prairie dog will be essential for maintaining prior conservation gains and to ensure that the status of the species remains secure into the future.

The purpose of this Utah Prairie Dog Conservation Strategy (Conservation Strategy) is to provide a clear plan of action for the parties that together have the authority, mission, resources, and technical knowledge to take effective action for the long-term conservation and management of the Utah prairie dog. The Conservation Strategy outlines a partner-supported, scientifically defensible framework for ongoing management and monitoring of Utah prairie dogs and their habitat, led by the Utah Division of Wildlife Resources (UDWR). The Conservation Strategy is based on the best available science and includes input from a variety of conservation partners to determine the best strategies for the conservation, management, and monitoring of the Utah prairie dog and its habitat. With the partner commitments to implement this Conservation Strategy, threats to Utah prairie dogs will be managed to the extent that the species will no longer meet the definitions of threatened or endangered, as defined by the Endangered Species Act (ESA), and therefore should be considered for delisting.

This Conservation Strategy 1) describes and summarizes manageable threats to the persistence of Utah prairie dog populations and habitats; 2) describes and summarizes the conservation strategies and actions to manage Utah prairie dog populations and habitats; 3) specifies the metrics and actions that will lead to the survival and viability of the Utah prairie dog for the foreseeable future; and 4) documents the commitment of the participating agencies and stakeholders toward managing the species.

### 1.2 HISTORY OF UTAH PRAIRIE DOG CONSERVATION AND MANAGEMENT

#### 1.2.1 Regulatory History

Prior to European settlement of southwestern Utah, Utah prairie dogs were found in colonies scattered among the grasslands and shrublands of Beaver, Iron, Piute, Sevier, Garfield, Wayne, Sanpete, Millard, Kane, Washington, and Juab Counties (Collier 1975). Intensive direct control campaigns, disease (i.e., sylvatic plague [*Yersinia pestis*]), and loss of habitat to intensive agriculture and development contributed to extensive population declines by the 1960s (U.S. Fish and Wildlife Service [USFWS] 1991). By 1972, researchers estimated that only 3,300 Utah prairie dogs remained in 37 separate colonies, and the species was expected to be extinct by the year 2000 (Collier and Spillett 1972, 1973; USFWS 1991). In response to this steep population decline and dire outlook, the Utah prairie dog became the subject of federal and state regulatory protections and has been under such management for nearly 50 years.

Milestones in the regulatory history of the Utah prairie dog include the following:

- The USFWS listed the Utah prairie dog as an endangered species on June 4, 1973 (38 *Federal Register* [FR] 14678), pursuant to the Endangered Species Conservation Act of 1969.
- The USFWS listed the Utah prairie dog as an endangered species on January 7, 1974 (39 *FR* 1171), under the ESA of 1973 due to threats from habitat modification and destruction, disease, predation, and overexploitation.
- The USFWS downlisted the Utah prairie dog to threatened status on May 29, 1984, with a special rule to allow regulated take of the species in Cedar and Parowan Valleys (49 *FR* 22330). The special rule allowed for the annual lethal take of up to 5,000 animals from pasture lands or irrigated agriculture areas between June 1 and December 31 under a state permit system (Rule R657-19 Taking Nongame Mammals) administered by UDWR (49 *FR* 22330).
- The USFWS amended the special rule on June 14, 1991, to expand the area of lethal Utah prairie dog take to include all non-federal lands within the species' range and increased the amount of annual lethal take to 6,000 animals (56 *FR* 27438).
- Iron County and UDWR developed the *Habitat Conservation Plan for Utah Prairie Dogs in Iron County, Utah* in 1998 (amended in 2006) to address conflicts between the development of non-federal lands and Utah prairie dogs, requiring applicants to obtain a Section 10(a)(1)(B) Incidental Take Permit from the USFWS. The goal of the Iron County habitat conservation plan (HCP) was to allow continued economic growth and development in the county while conserving and recovering the Utah prairie dog on public lands (Iron County Commission and UDWR 2006).
- The USFWS again amended the special rule on August 1, 2012 (77 *FR* 46158). Revisions to the special rule consisted of restricting the annual amount of allowable lethal take to no more than 7% to 10% of the range-wide population (depending on the location of the take); limiting allowed lethal take to those Utah prairie dogs causing damage to agricultural lands, occurring within 0.5 mile of a Utah prairie dog conservation area, or disturbing the sanctity of significant human cultural or burial sites or causing serious human safety hazards; and exempting incidental take associated with normal agricultural practices.
- The U.S. District Court for the District of Utah ruled on November 5, 2014, that the Utah prairie dog (known only to occur within the state of Utah) could not be listed under the federal ESA, giving authority for management of the species on non-federal lands to the state of Utah (*People for the Ethical Treatment of Property Owners (PETPO) v. U.S. Fish & Wildlife Serv.*, 57 F. Supp. 3d 1337 [D. Utah 2014]).
- The U.S. Tenth Circuit Court of Appeals overturned the 2014 U.S. District Court opinion on March 29, 2017, reinstating federal regulation of the Utah prairie dog under the ESA (*PETPO v. U.S. Fish & Wildlife Serv.*, 852 F.3d 990, 1004 [10th Cir. 2017]) (USFWS 2017a). Today, the Utah prairie dog is listed as threatened under the ESA and the 2012 special rule remains effective.
- The USFWS approved the *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* in 2018 (USFWS 2018). This range-wide general conservation plan (GCP), implemented by the USFWS and UDWR, replaced the previous HCPs that were at or nearing expiration and eliminated the need for individual developers to prepare HCPs for separate take permits for each project. Under the GCP, project proponents work with UDWR to determine project impacts, mitigation requirements, and appropriate conservation strategies.

### **1.2.1.1 Conservation and Management History**

Regulation of the Utah prairie dog prompted the development and implementation of recovery and conservation plans to improve the status of the species. These planning efforts provided the strategic guidance and implementation framework for conservation, management, and monitoring actions by a variety of conservation partners that contributed to an increase in the range-wide Utah prairie dog population.

#### **1.2.1.1.1 RECOVERY AND CONSERVATION PLANS**

##### **Utah Prairie Dog Recovery Plan**

The initial 1991 *Utah Prairie Dog Recovery Plan* (Recovery Plan) established targets for Utah prairie dog populations on federal lands across three recovery units: West Desert, Paunsaugunt, and Awapa Plateau (USFWS 1991). The 1991 Recovery Plan set a minimum population abundance goal of 813 spring-counted adult prairie dogs on federal and other non-federal protected lands for each of the three recovery units and established a formal agreement for the future management of each population (USFWS 1991).

In 1997, the *Utah Prairie Dog Interim Conservation Strategy* (Interim Conservation Strategy) was completed to accompany the 1991 Recovery Plan. The Interim Conservation Strategy identified priority habitat improvement projects, translocation research topics, and education and public involvement activities (Utah Prairie Dog Recovery Implementation Team [UPDRIT] 1997). UPDRIT became part of the Utah Prairie Dog Recovery Team, a multi-agency and multi-organization team, in 2006.

The USFWS revised its Recovery Plan in 2012 with input from Utah Prairie Dog Recovery Team members and other agency participants (USFWS 2012). The 2012 Recovery Plan's delisting criteria are as follows:

- Protect in perpetuity at least 5,000 acres (2,023 hectares) of occupied habitat in each of the three recovery units. Protected occupied habitat is spatially distributed to provide sufficient connectivity and gene flow within each recovery unit.
- Each recovery unit contains at least 2,000 adult animals (i.e., corresponding to at least 1,000 spring-counted adults) occupying protected habitat for 5 consecutive years.
- Management strategies are established to prevent and respond to threats from disease.
- State and/or local regulations, public relations programs, and education and outreach efforts are in place to sufficiently minimize illegal take, promote habitat management, and manage post-delisting legal lethal control of the species.
- Adaptive management strategies are in place on federal and other non-federal protected lands to improve habitat in a way that addresses changing climatic conditions and other potential threats that are challenging to predict.

The Utah Prairie Dog Recovery Implementation Program (UPDRIP) was established in 2010 as a partnership between public and private entities to recover the Utah prairie dog while balancing ongoing development. UPDRIP was restructured into the Utah Prairie Dog Oversight Group (UPDOG) in 2015. UPDOG is a more inclusive, multi-stakeholder partnership for coordinated implementation of the Recovery Plan. The UPDOG partnership consists of representatives from the Utah Department of Natural Resources, UDWR, the USFWS, the U.S. Forest Service (USFS), the Utah School and Institutional Trust Lands Administration (SITLA), the Bureau of Land Management (BLM), Utah State University, Garfield County, Iron County, The Nature Conservancy, Utah Farm Bureau, National Park Service (NPS), Southern Utah University (SUU), local municipalities, and environmental interests.

## **Other Conservation Strategies**

In 2018 the Utah Prairie Dog Conservation Agreement and Strategy on Federal Lands in the Paunsaugunt Recovery Unit was finalized as a guide to manage the Utah prairie dog population on USFS and NPS lands in the species' Paunsaugunt Recovery Unit. The document identifies and implements land use and conservation measures to achieve and maintain recovery of the Utah prairie dog. This included a monitoring and adaptive management component to allow for changes or implementation of new conservation actions, based on best available information and agreement by the signatories.

## **Habitat Conservation Plans**

Habitat Conservation Plans (HCPs) are planning documents under Section 10(a)(1)(B) of the ESA that accompany applications by non-federal entities for incidental take permits issued by the USFWS. An HCP identifies conservation actions that mitigate and minimize the impact of authorized take to the maximum extent practicable. The USFWS has approved a number of HCPs for the Utah prairie dog and issued corresponding incidental take permits.

The first Utah prairie dog HCPs were developed in 1995 for development projects in Iron County. Since then, the USFWS has approved multiple individual and county-wide HCPs. In 2018, the USFWS approved the *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* (USFWS 2018). This range-wide GCP replaced the previous HCPs that had or were nearing expiration (USFWS 2018).

Under the 2018 GCP, the USFWS estimated a loss of up to 1,594 Utah prairie dogs associated with land development activities after minimization measures are applied over a 10-year plan duration based on historical averages (1,419 individuals in the West Desert Recovery Unit, 128 in the Paunsaugunt Recovery Unit, and 47 in the Awapa Plateau Recovery Unit) (USFWS 2018). Using a stepped-up estimate that accounts for increases above the historical take due to the potential increase in development projects, the USFWS estimated a loss of up to 7,152 Utah prairie dogs associated with land development activities after minimization measures are applied over a 10-year plan duration (6,366 individuals in the West Desert Recovery Unit, 589 in the Paunsaugunt Recovery Unit, and 197 in the Awapa Plateau Recovery Unit) (USFWS 2018). Under the GCP's program for translocations independent of development, the USFWS estimated 10,500 prairie dogs would be captured and translocated from the major development areas over the 10-year term of the GCP (USFWS 2018). The USFWS estimates that the incidental take from injury or mortality of translocated prairie dogs would be 9,045 prairie dogs over a 10-year period (90% of 10,050 prairie dogs) (USFWS 2018). The USFWS issues incidental take permits to master permittees (such as counties or cities, which then may enroll non-federal participants) or individual permittees. The UDWR; the BLM; the USFS; and Beaver, Garfield, Iron, and Wayne counties in Utah, are all signatories of the GCP Implementation Agreement.

The GCP contributes to the recovery of the species by minimizing the impacts of take through the translocation of animals, when feasible, from non-federal lands subject to development to federal or protected lands and by restoring occupied habitats subject to temporary impacts. Translocations authorized under the GCP, especially into vacant colonies, help offset the effects of plague by reinvigorating known colonies following large-scale die-offs. Funds generated through mitigation payments under the GCP can be used to purchase valuable Utah prairie dog habitat. Doing so will protect animals which would otherwise not be credited towards recovery, thus edging the species closer to meeting currently established goals. Also, as part of the GCP, UDWR has committed to funding recovery actions such as habitat treatments through the Watershed Restoration Initiative, as well as plague abatement and translocations to offset impacts from development.

## **Safe Harbor Agreements**

Safe Harbor Agreements (SHAs) are voluntary agreements between the USFWS and private landowners to encourage the implementation of land use activities that improve the status of listed species on the enrolled property. In return, property owners receive an enhancement of survival permit from the USFWS that authorizes incidental take that could result from actions by the landowner under the SHA, including returning the property to the baseline conditions of the agreement. Through the voluntary restoration and enhancement of habitat and the management of farm and ranchlands, the SHA program promotes range-wide conservation of Utah prairie dogs.

As of 2017, five Utah prairie dog SHAs were in place, covering 1,230 acres of mapped habitat (USFWS 2017b). The USFWS has been working with SITLA to draft an SHA for Utah prairie dogs found on SITLA lands in the Awapa Plateau and Paunsaugunt Recovery Units. With a SHA in place, the USFWS would consider SITLA lands to be protected habitat, thereby allowing Utah prairie dogs on SITLA lands to be credited toward recovery (personal communication, Jessica Kinross, Biologist, UDWR, 2021).

## **Section 7 Consultations**

Section 7 of the Endangered Species Act requires federal agencies to consult with the USFWS on any action they fund, permit, or carry out to assure that it does not jeopardize the existence of any listed species or adversely affect critical habitats. The process can vary depending on the scope of the project, but may contain steps such as an informal consultation, review, determination, formal consultation (if needed) and finally a biological opinion from the USFWS. Most development activities that occur throughout the range of the Utah prairie dog take place on private lands, and are therefore covered by the various mechanisms in place such as the GCP. When a project takes place on federal lands, or uses federal funds or permitting, a section 7 consultation is triggered.

Many such consultations have taken place since the Utah prairie dog was federally listed. Two such instances are noted below:

In 2010 the USFWS concluded a programmatic Section 7 consultation with the Federal Aviation Administration for the effects of airport maintenance and development activities on Utah prairie dogs until 2025. In 2013, the USFWS published a final programmatic biological opinion for impacts to the Utah prairie dog from the Utah Department of Transportation Highway Safety Improvement Program for sections of existing interstates and highways and their associated rights-of-way over 20 years (USFWS 2013). The USFWS Environmental Conservation Online System (ECOS) provides more information on ESA Section 7 consultation for the Utah prairie dog (USFWS 2021a).

## **State Management Plan**

In response to the 2014 U.S. District Court opinion withdrawing the Utah prairie dog from federal ESA protection, UDWR developed a management plan for the species on non-federal lands. The goal of the management plan was “[t]o remove restrictions from private property through a timely and structured process while assisting in the conservation of populations on designated ‘federal’ and protected non-federal lands” (UDWR 2015). The 2015 state plan outlined management objectives and strategies to achieve this goal while also addressing regulated take of Utah prairie dogs for the purposes of development; agricultural and rangeland conflicts; and human safety, health, and welfare (UDWR 2015).

## **1.3 CONSERVATION, MANAGEMENT, AND MONITORING ACTIVITIES**



The recovery and habitat conservation plans described in Section 1.2.1.1.1 apply a suite of conservation, management, and monitoring activities to conserve the Utah prairie dog. These activities consist of annual spring counts, translocations, plague prevention and management, habitat protection, education and public outreach, habitat management, and research and are discussed in more detail in the sections below.

### 1.3.1.1 Annual Spring Counts

Since 1976, UDWR, the BLM, NPS and the USFS have conducted annual counts of adult Utah prairie dogs at all accessible colony locations across all land ownerships. Count data show considerable fluctuations in Utah prairie dog populations from year to year but stable to increasing trends over the long term (UDWR 2016, 2017, 2018, 2019, 2020, 2021, 2022). Annual counts are conducted in the spring, before the young are above ground, by counting the number of adult prairie dogs observed at each colony. It is estimated that only 40%–60% of individual prairie dogs are above ground at any one time (Crocker-Bedford 1975). Spring population estimates (adults only) are calculated as two times the spring count (USFWS 2017b). Total population estimates are calculated using a formula that accounts for the spring count adult population estimate and the estimated reproduction:

$$\text{Population estimate} = [(2 \times \text{spring adult count}) \times 0.67 \text{ (proportion of adult females)} \times 0.97 \text{ (proportion of breeding females)} \times 4 \text{ (average number of young per breeding female)}] + (2 \times \text{spring adult count}).$$

For example, if a spring count on a particular colony is 35, then the total summer population estimate for that colony would equal  $[(2 \times 35) \times 0.67 \times 0.97 \times 4] + (2 \times 35) = 252$ .

The spring counts and population estimates provide valuable information on long-term population trends. Figure 1-1 depicts the adult spring counts of Utah prairie dogs from 1976 to 2022.

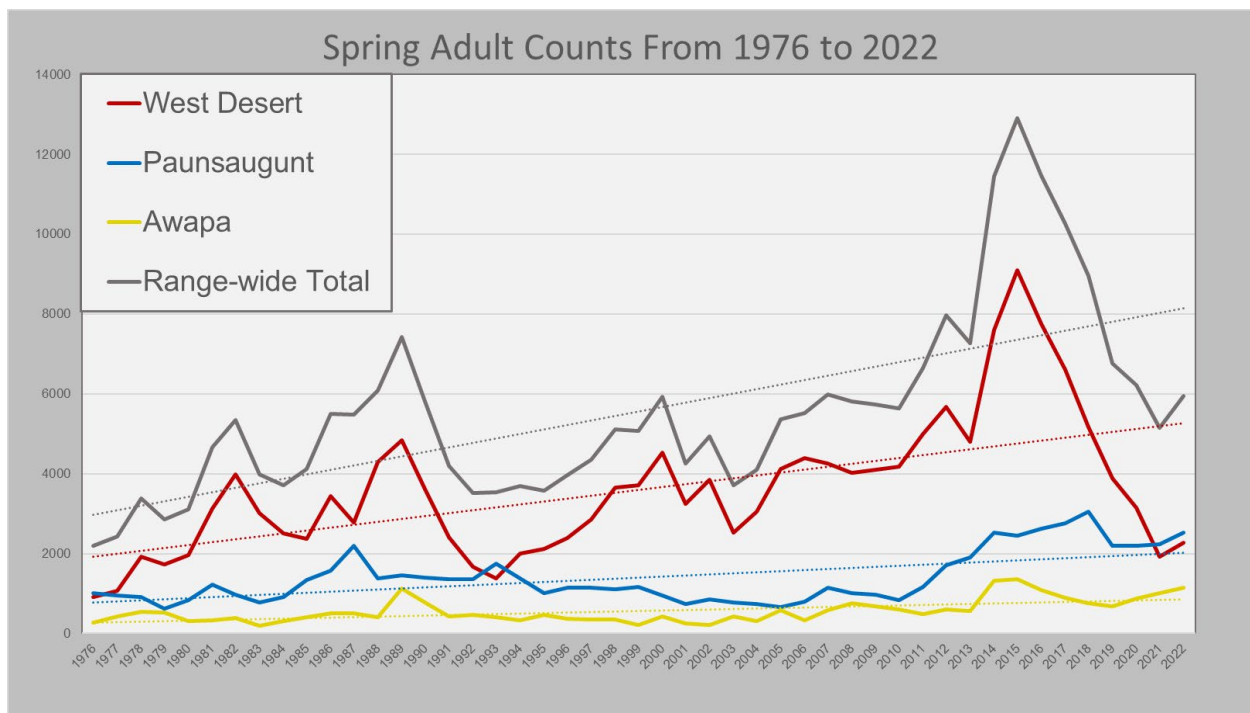


Figure 1-1. Utah Prairie Dog Adult Spring Counts 1976-2022.

### **1.3.1.2 Translocations**

The Utah prairie dog translocation program was initiated by UDWR in 1972 with mixed success over the years (USFWS 2012). Translocation protocols have been improved through an adaptive management process since the early experimental efforts. Translocations have been used to establish new colonies in historically occupied parts of the species' range; to reduce or address conflicts with landowners in agricultural, urban, and developed areas; and to mitigate for urban expansion and land development activities. The 2011 *Recommended Translocation Procedures for Utah Prairie Dog*, updated in 2011, outlines the procedures for translocation site selection and preparation; the setting of traps; handling, transport, and releasing of prairie dogs; and translocation site management and prairie dog monitoring (USFWS 2011). From the inception of the program in 1972 to 2022, UDWR, the BLM, and the USFS have translocated 41,274 Utah prairie dogs to sites on federal and non-federal protected lands. Since 2012 a total of 15,499 Utah prairie dogs have been translocated to sites on federal and non-federal protected lands in the West Desert, Paunsaugunt, and Awapa Plateau Recovery Units (UDWR 2016, 2020, 2023).

### **1.3.1.3 Plague Prevention and Management**

Plague is a threat to the Utah prairie dog, and the long-term management of plague outbreaks is a recovery priority (USFWS 2012). Deltamethrin and Pyreperm® insecticides have been used to manage plague outbreaks and increase Utah prairie dog survival on federally managed lands (USFWS 2017b). Annual plague abatement on federal and non-federal protected lands has been coordinated and jointly funded by UDWR and partner land management agencies (BLM, USFS, and NPS) (USFWS 2017b). Plague management has been prioritized at large colonies that are at a high risk and at colonies that experience plague outbreaks (USFWS 2017b).

A research project was initiated in 2009 by the U.S. Geological Survey National Wildlife Health Center in Madison, Wisconsin, to develop an oral sylvatic plague vaccine for prairie dogs. UDWR participated in field trials to test the efficacy of the vaccine in preventing plague outbreaks in prairie dog colonies. The field trials and other studies determined that the vaccine is somewhat effective at increasing resistance to plague and partially protects prairie dogs from plague outbreaks but is not as effective or cost effective compared to Deltamethrin and Pyreperm (Rocke et al. 2017; Roth 2018; UDWR 2019). New studies and plague management tools, such as edible fipronil pellets or FipBit pellets, could lead to additional effective plague management options in the future (personal communication, Adam Kavalunas, Biologist, UDWR, 2021).

### **1.3.1.4 Habitat Protection**

Multiple types of land protection tools have been used for Utah prairie dog conservation efforts, including land use planning on federal lands, state-owned conservation lands, and conservation banking.

Certain federal lands have been designated for the conservation of the Utah prairie dog and are managed to promote the recovery of the species (USFWS 2012). Federal lands expressly contributing to the recovery of the Utah prairie dog are managed by the BLM, USFS, and NPS. Federal agency land management plans identify population focus areas and management units to provide the necessary habitat, populations, and connectivity to help sustain the species across its range (USFWS 2017c).

As of 2022, 3,930 acres of non-federal land have been secured as protected conservation areas for the Utah prairie dog. These acquisitions include those associated with conservation banks, the Utah Prairie Dog Credit Habitat Exchange, and other non-federal land easements or acquisitions (USFWS 2017a, 2017c; personal communication, Adam Kavalunas, Biologist, UDWR, 2021). Table 1-1 lists existing acquisitions and easements on non-federal lands supporting Utah prairie dog recovery.

**Table 1-1. Non-Federal Lands Acquisitions Supporting Utah Prairie Dog Recovery**

Purchase Name	Landowner	Easement Holder	Recovery Unit	Acres
Utah Prairie Dog Habitat Credit Exchange Program (four parcels)	Private	Resource Conservation and Development Council	Awapa Plateau (two parcels), Paunsaugunt (one parcel), West Desert (one parcel)	280
SITLA Conservation Banks (three parcels)	SITLA	UDWR	Awapa Plateau	761
Bryce Airport/Willis Draw	Garfield County	UDWR	Paunsaugunt	403
Johnson Bench (one parcel)	The Nature Conservancy	–	Paunsaugunt	803
Rollermill	Garfield County	UDWR	Paunsaugunt	645
The Nature Conservancy – Autumn Buttercup	The Nature Conservancy	–	Paunsaugunt	43
Parowan Valley Wildlife Management Area (one parcel)	UDWR	–	West Desert	181
Second Mound	Iron County	The Nature Conservancy	West Desert	291
Wild Pea Hollow, Little Horse Valley Conservation Banks (two parcels)	Iron County	UDWR	West Desert	524

Source: USFWS (2017c), (personal communication, Adam Kavalunas, Biologist, UDWR, 2021)

Conservation banks are a tool used to mitigate and offset the impacts of Utah prairie dog habitat loss by permanently protecting other important habitat across the species’ range (USFWS 2012). To date, five Utah prairie dog conservation banks - the SITLA conservation banks (three parcels), and the Wild Pea Hollow and Little Horse Valley conservation banks (two parcels) - have been approved to offset incidental take (USFWS 2012, 2017c).

The Utah Prairie Dog Habitat Credits Exchange Program is a programmatic conservation mechanism, similar to conservation banking and recovery credit trading, whereby developers and others are able to offset negative impacts to Utah prairie dogs or their habitat by funding conservation and management actions on other private lands (USFWS 2012).

In 2001, UDWR and Iron County, with additional funds from the USFWS and The Nature Conservancy (TNC), purchased 181 acres to establish the Parowan Valley Wildlife Management Area for the protection of a large Utah prairie dog colony. To gain the support of neighboring landowners, the USFWS issued a Section 10(a)(1)(A) permit, authorizing the control of prairie dogs above the 2001 baseline number on properties within 0.5 miles of the Parowan Valley Wildlife Management Area (USFWS 2012).

The Rollermill Willis Draw UPD Conservation Easement comprises two properties totaling 1,040 acres purchased from SITLA in 2017. The Second Mound Conservation Easement, a 291-acre property with 15 acre feet of water in Iron County, Utah, was purchased by the county in 2018. The easement was purchased with funds from the USFWS, the State of Utah and TNC for the conservation of Utah prairie dogs.

### **1.3.1.5 Education and Public Outreach**

The 1997 Interim Conservation Strategy and 2012 Recovery Plan identify the need for community involvement, education, and Extension offices to assist with the recovery of Utah prairie dogs. Beginning in 1995, SUU and UDWR have provided educational opportunities and field-based activities for students and civic groups using Utah prairie dog colonies near Cedar City. The purpose of this conservation

outreach program is to educate local residents about the Utah prairie dog and foster a more tolerant perception of the species (USFWS 2012). In 2007, the Utah Farm Bureau sponsored community meetings to educate landowners about conservation programs for Utah prairie dogs on non-federal lands. Bryce Canyon National Park hosted its first Utah Prairie Dog Day in 2010. During this and subsequent events, park rangers engaged the public about Utah prairie dogs and their role as a keystone species. The USFS has also conducted education and outreach efforts to teach people about Utah prairie dogs on the lands they manage. In recent years, community outreach and education efforts by UDWR have focused on changes in regulations, state management initiatives, and the range-wide GCP. UDWR personnel have made presentations and performed other outreach efforts to the Cedar City Lions Club, the Iron County Board of Realtors, the Iron County Homebuilders Association, Iron County, Garfield County, the St. George News, the UDWR Wild podcast series, and a local radio show. In addition, Bryce Canyon National Park had an exhibit for Utah prairie dogs at their visitors center, and regularly utilizes their prairie dog mascot uniforms at events.

### **1.3.1.6 Habitat Management**

Ongoing habitat management is important on federal and non-federal protected lands to support the conservation of the Utah prairie dog. Habitat management and enhancement of occupied and suitable habitat can benefit Utah prairie dogs on both federal and non-federal protected lands. Habitat management tools include: sagebrush removal or thinning, seeding, weed removal, landscape-scale habitat treatments, prescribed fire treatments, and grazing management. These strategies can provide increased forage quantity, quality, and availability as well as improve visual surveillance capability. Federal lands are managed according to their land use plans and include the BLM *Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah* (BLM 1997), and USFS *Land and Resource Management Plan for the Dixie National Forest* (USDA 1986a) and rangeland management handbooks (USFS 2005). Habitat management practices such as planting and seeding, prescribed grazing, and brush management are employed to increase plant species' richness and ground cover, reduce canopy cover and noxious weeds, and remove vegetation barriers. Over the past several decades, a total of 20,500 acres of habitat treatment projects have been conducted on federal and non-federal lands, often in collaboration with the Watershed Restoration Initiative. Of this total, 4,478 acres of habitat enhancement projects were conducted in Utah prairie dog colonies - 2,302 acres on BLM-administered lands, 2,206 acres on USFS-administered lands, 262 acres on TNC administered lands, 209 acres on non-federal lands, and 30 acres on state lands. In addition to Watershed Restoration Initiative projects, habitat treatment projects have been conducted on approximately 400 acres of USFS-administered lands in the Dixie National Forest and 140 acres of NPS-administered lands.

## **1.4 STAKEHOLDER COORDINATION**

Without the contributions from federal partners under their respective mandates and authorities, success in Utah prairie dog conservation and recovery would not be possible. Federal partners (USFS, BLM, NPS, USFWS) have made significant contributions through collaborative planning and adaptive management, habitat restoration and enhancement, plague abatement, translocations and site development, research and monitoring, conflict resolution, and public outreach and education. Section 7(a)(1) of the Endangered Species Act mandates that “[a]ll federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species. . .” For the recovery of the threatened Utah prairie dog, federal partners have invested considerable funding and effort in fulfilling their obligation under Section 7(a)(1).

The state’s perspective that federal protection under the ESA is no longer necessary for Utah prairie dog fostered the development of this Conservation Strategy intended to guide conservation efforts in a post-delisting environment under the umbrella of the Utah Wildlife Action Plan. With delisting the state would regain management authority over Utah prairie dog; and, as a result, federally mandated safeguards provided through Section 7(a)(1) would no longer apply.

The state has no authority to mandate that federal agencies continue to proactively contribute to Utah prairie dog conservation once it becomes delisted. There are, however, several conservation efforts for state-managed species (i.e. not federally listed), managed under the umbrella of the Utah Wildlife Action Plan, where UDWR has partnered with federal agencies on the implementation of species-specific conservation strategies intended to maintain the viability of target species such that protection under ESA is unnecessary. Through these voluntary efforts, federal partners have made significant contributions to species’ conservation under their respective authorities in the absence of ESA mandates. These efforts represent a model for voluntary collaboration in conservation of state-managed species that sets the stage for how Utah prairie dogs would be managed in a post-delisting environment.

Although the delisting of Utah prairie dog would be a huge milestone demonstrating that partner contributions to recovery have not been in vain, delisting by no means represents a finish line in species conservation. Once delisted, Utah prairie dog would be managed as a Species of Greatest Conservation Need (SGCN) under the umbrella of the Utah Wildlife Action Plan. The intent of the UWAP is to guide partnership-driven, landscape-scale conservation work to help maintain the full array of Utah’s wildlife, and also improve habitat health with the ultimate goal of reducing the number of federally listed species in Utah. Utah prairie dog conservation would be specifically driven using this Conservation Strategy as a guiding document.

Although UDWR would be the lead agency for managing Utah prairie dog after they are delisted, this Conservation Strategy is not a single-agency strategy. UDWR does not bear the sole responsibility for its successful implementation. Ultimately, success in preserving and managing Utah prairie dog and their habitat depends on the many partners that have contributed to the successful track record of recovery under ESA listing. It is the intent of UDWR under this Conservation Strategy to continue to foster this successful collaboration and partnership.

Recognizing the continued need to work with stakeholders, UDWR engaged with members of UPDOG to participate in the development of this Conservation Strategy. UDWR solicited input, review, and comment from these stakeholders on specific questions related to each task, as outlined in Table 1-2. The questions listed under each task were the primary drivers of the agendas for the stakeholder coordination meetings. Table 1-2 also outlines the topics discussed, number of work sessions, and approximate number of hours spent to address tasks and meeting topics.

**Table 1-2. Stakeholder Topic Engagement**

<b>Task and Questions/ Meeting Topics</b>	<b>Subtopics</b>	<b>Number of Work Sessions and Approximate Total Number of Hours Spent</b>
Task 1—Reviewing the Status of the Species	<ul style="list-style-type: none"> <li>● Status and Regulatory Actions</li> </ul>	1 session, 2 hours
Task 2—Prioritizing Future Conservation Actions for Maintaining Recovery	<ul style="list-style-type: none"> <li>● Disease Management</li> <li>● Translocation</li> <li>● Habitat Protections</li> <li>● Habitat Management</li> <li>● Education and Outreach</li> </ul>	3 sessions, 6 hours

Task 3—Monitoring and Adaptive Management	<ul style="list-style-type: none"> <li>● Monitoring Protocols, Data Synthesis, and Reporting</li> <li>● Biological Goals and Objectives / Adaptive Management Triggers</li> <li>● Adaptive Management Process and Responses</li> <li>● Research Program</li> </ul>	4 sessions, 7 hours
Task 4—Securing Commitments and Planning for Implementation	<ul style="list-style-type: none"> <li>● Coordination</li> <li>● Funding</li> <li>● Agreements</li> </ul>	1 session, 1 hour
Task 5—Consistency with Regulatory and Policy Standards	<ul style="list-style-type: none"> <li>● Status and Regulatory Actions</li> </ul>	1 session, 1 hour

## CHAPTER 2. SPECIES ECOLOGY AND STATUS

### 2.1 LIFE HISTORY

The Utah prairie dog is one of five species of prairie dogs in North America, most closely related to white-tailed prairie dog (*Cynomys leucurus*) and Gunnison prairie dog (*Cynomys gunnisoni*) and is the westernmost member of the genus *Cynomys*. This burrowing member of the squirrel (*Sciuridae*) family occurs only in arid grasslands in southwestern Utah (UDWR 2015).

Utah prairie dogs spend 4 to 6 months underground during harsh winter months and emerge in late February or early March. Temperature is thought to trigger emergence from hibernation. Mating occurs soon after emergence, generally mid-March to mid-April (USFWS 2012). Adult males typically cease surface activity during August and September, although weather conditions influence timing. Adult females cease surface activity several weeks later (Hoogland 2003; McDonald 1993). Juvenile prairie dogs remain active as late as November.

Approximately 67% of the Utah prairie dog adult population is female (Wright-Smith 1978). Each female produces an average of 3.88 pups that are born in April after a 30-day gestation period (Hoogland 2001; Mackley et al. 1988; Pizzimenti and Collier 1975; Wright-Smith 1978). Young Utah prairie dogs appear above ground at 5 to 7 weeks of age; juveniles are full grown by October of their first year and reach sexual maturity at 1 year. Less than 50% of male and female Utah prairie dogs survive the first year, and only about 20% of females and less than 10% of males survive to age 4 (Hoogland 2001). Due to their limited reproductive rates, short lifespan, and high mortality rate, numbers of individuals within a colony fluctuates throughout the year, with population peaks in early summer, when adults and pups are above ground (USFWS 2012).

Young male Utah prairie dogs disperse in late summer; average dispersal events range from 0.35 mile to 0.75 mile, with unusually long-distance dispersals of 4 miles (Brown et al. 2011; Mackley et al. 1988). In the summer of 2014, UDWR documented a recently translocated individual traveling upwards of 10 miles (USFWS 2012); although unusual, this finding may indicate the dispersal potential of the species.

Utah prairie dogs are organized into social groups called clans (sometimes called coterries), consisting of an adult male, several females, and their young (Wright-Smith 1978). Geographic boundaries of clans remain constant within a colony, and young prairie dogs are the only ones to regularly cross clan boundaries. Prairie dog colonies are formed of one or more clans. Social behaviors, especially vigilance and warning vocalizations, are important to the survival of individuals and to the colony. The adult females play the primary role in caring for young and typically provide warning to the colony of danger (Wright-Smith 1978).

Mean foraging distances for Utah prairie dogs (adults and juveniles) are inversely related to their density (Wright-Smith 1978). Higher density sites have smaller foraging ranges (100 feet), and lower density sites have larger foraging ranges (250 feet) (USFWS 2018; Wright-Smith 1978). Foraging distances are applied radially to Utah prairie dog colony boundaries (USFWS 2018). The retrospective analysis conducted by Larsen et al. (2021), and described in Section 3.1, found that the mean colony count increased when suitable habitat or irrigated lands were present within a 250-foot (76-meter [m]) radius (average foraging distance) of the colony (Wright-Smith 1978). Conversely, the presence of development (e.g., housing, and other infrastructure such as roads) within the foraging buffer was negatively associated with occupancy.

## **2.2 HABITAT CHARACTERISTICS**

Utah prairie dogs occur in semiarid shrub-steppe and grassland habitats (Bonzo and Day 2003; McDonald 1993; Roberts et al. 2000). Within these habitats, they prefer swale-type formations where moist herbaceous vegetation is available even during drought periods (Collier 1975; Crocker-Bedford 1976; Crocker-Bedford and Spillett 1981). Plentiful high-quality food found in swales enables prairie dogs to attain a large body mass, thus enhancing survival and increasing litter sizes and juvenile growth rates (Hoogland 2001). Utah prairie dogs are also commonly found in developed urban or disturbed habitats such as golf courses, cemeteries, residential areas, and irrigated agricultural fields (USFWS 2012).

Utah prairie dogs forage primarily on grasses and forbs and tend to select those with higher moisture content (Crocker-Bedford 1976). Vegetation must be of short stature to allow the prairie dogs to see approaching predators and to maintain visual contact with other prairie dogs in the colony (Collier 1975; Crocker-Bedford and Spillett 1981). Prairie dogs will avoid areas where brushy species dominate and will eventually decline or disappear from areas invaded by brush (Collier 1975; Player and Urness 1982; USFWS 2017b).

A suitable habitat model described by Ikeda (2010) found that Utah prairie dog occurrences coincide with habitats found in valleys, plateaus, and terraces. Tree or shrub height above 1.5 feet (0.5 m) correlated with unsuitable habitats. Suitable habitat contained a higher percentage of sand in the soil, as opposed to silt or clay, as well as deeper soils (Ikeda 2010). Soil characteristics are an important factor in the location of Utah prairie dog colonies. Well-drained soils are required to support burrow systems with deep burrows (at least 3.3 feet [1 m]) to protect prairie dogs from predators and temperature extremes (USFWS 2012).

## **2.3 DISTRIBUTION AND ABUNDANCE**

### **2.3.1 Recovery Units**

Utah prairie dogs occur in three geographic areas within southwestern Utah, associated with the West Desert, Paunsaugunt, and Awapa Plateau Recovery Units (USFWS 2012). Within their current range, Utah prairie dogs are found at elevations from 1,646 m on valley floors, and up to 2,896 m elevation in mountain habitats (USFWS 2012) (see Figure 2-1).

The West Desert Recovery Unit is primarily within Iron County but extends into southern Beaver County and northern Washington County, Utah. However, no Utah prairie dogs currently occur in Washington County. Prairie dog habitat on federal and state lands in the West Desert Recovery Unit is primarily managed by the BLM Cedar City Field Office (FO) and SITLA. UDWR manages prairie dog habitat on non-federal lands, which is considerable in the West Desert Recovery Unit. The West Desert Recovery Unit includes habitats from 1,500 m to 1,800 m in elevation and consists of arid, low-productivity habitats

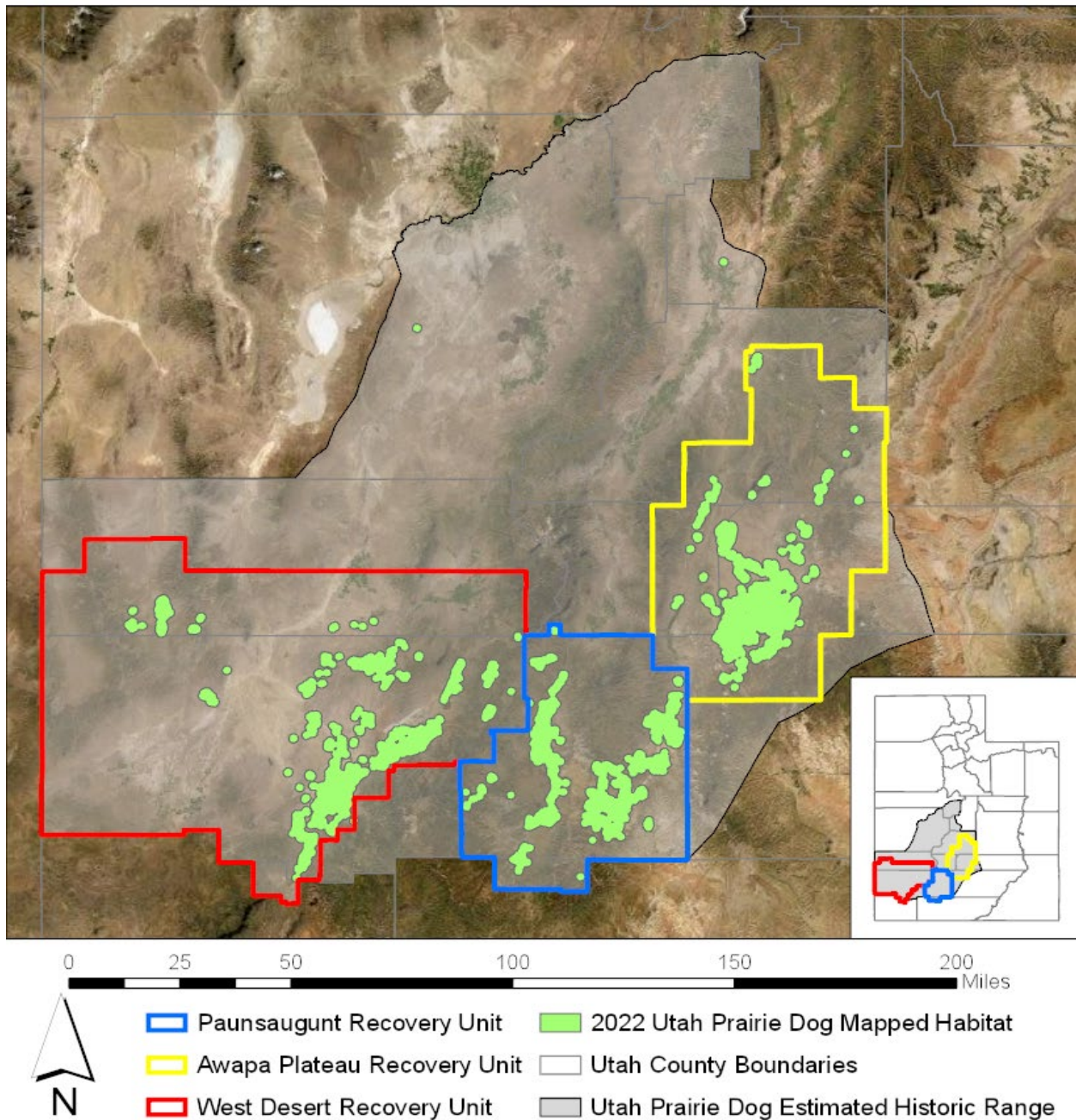
on federal lands as well as extensive agriculture and urban development around Cedar City and Parowan. Mean minimum temperatures in this recovery unit average 2.2 degrees Celsius (°C) (range 2.4°C–5.1°C), with maximum temperatures averaging 18.6°C (range 11.4°C–21.2 °C) (Thornton et al. 2016). Average annual precipitation was estimated at 366.2 millimeters (mm) (range 131.0 mm–880.0 mm) (Thornton et al. 2016). Prairie dog colonies in the West Desert Recovery Unit primarily occur on non-federal lands, where irrigated agricultural lands provide increased water and forage in comparison to federal lands (Larsen et al 2021).

The Paunsaugunt Recovery Unit is primarily within Garfield County, with small areas in Piute and Kane Counties, Utah. Prairie dog habitat on public lands in the Paunsaugunt Recovery Unit is primarily managed by the Dixie National Forest (NF), the BLM Kanab FO, and Bryce Canyon National Park. The Paunsaugunt Recovery Unit includes habitats from 1,800-2,400 m in elevation and is primarily composed of high-desert habitats. Compared to the West Desert Recovery Unit, the Paunsaugunt Recovery Unit experiences shorter and cooler summers due to the high elevation. Mean minimum temperatures in this recovery unit averages -1.1 °C (range -3.1 to 1.5 °C) with maximum temperatures averaging 15.9 °C (range 10.9 to 20.1 °C) (Thornton et al. 2016). Average annual precipitation was estimated at 360.1 mm (range 153.0 to 820.0 mm) (Thornton et al. 2016). The majority of prairie dog colonies in the Paunsaugunt Recovery Unit occur on federal lands managed by the USFS (Larsen et al. 2021).

The Awapa Plateau Recovery Unit is within portions of Garfield, Piute, Sevier, and Wayne Counties. Prairie dog habitat in the Awapa Plateau Recovery Unit is primarily managed by the Fishlake and Dixie NFs, the BLM Richfield FO, and SITLA. The Awapa Plateau Recovery Unit includes habitats from 2,100 to 3,000 m in elevation and is composed of high-elevation grasses and short shrubs. The Awapa Plateau Recovery Unit experiences the coolest temperatures in comparison to the other recovery units and has the shortest growing season due to the elevation of the plateau. Mean minimum temperatures in this recovery unit average -1.4 °C (range -4.0°C–to 2.3°C), with maximum temperatures averaging 13.4°C (range 9.5°C–18.6°C) (Thornton et al. 2016). Average annual precipitation was estimated at 438.5 mm (range 282.2mm–658.0 mm) (Thornton et al. 2016). Prairie dog colonies in the Awapa Plateau Recovery Unit primarily occur on lands administered by the BLM and USFS, with some colonies on private and SITLA lands.



## 2022 Utah Prairie Dog Distribution Map



**Figure 2-1. The estimated historic range and the 2022 mapped habitat (buffered to protect exact locations) of the Utah prairie dog.<sup>1</sup>**

<sup>1</sup> Utah prairie dog historic range is estimated based on Allen (1905), Kelson (1951), Hardy (1937), and Pizzimenti and Collier (1975). It should be noted that not all areas within the historic range were likely occupied at all times and likely experienced population variability and population shifts over time (see Figure 2-1).

### 2.3.2 Mapped and Occupied Habitats

Habitat mapping and Utah prairie dog counts were first initiated by UDWR in 1972 and 1976, respectively. All habitat occupied by Utah prairie dogs since 1972 is referred to as “mapped habitat.” Maps are updated annually to document colony expansions and the establishment of new colonies. However, lands associated with abandoned or historic colonies are not removed from the database. In 2022, UDWR identified 66,569.6 acres as mapped habitat for the Utah prairie dog (UDWR 2023).

Occupied habitat includes areas where Utah prairie dog surveys confirmed visual observations of Utah prairie dogs. With recent advances in technology, UDWR began mapping active portions of colonies beginning in 2018. Prior to that, only colony counts were recorded. In some instances, colonies that were historically very large may only contain prairie dogs in small portions of the mapped colony today. These discrepancies often created difficulty in determining the amount of mapped habitat the animals were actually using from year to year. By documenting the occupied portions of each colony, management agencies are better able to quantify the amount of habitat prairie dogs are using in any given year. UDWR occupied habitat equates to active colony areas buffered by a 100-foot foraging distance buffer in the major development zone and a 250-foot foraging distance buffer in the minor development zone. The major and minor development zones are adopted from and described in the 2018 *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* (USFWS 2018).

One of the goals set forth in the Recovery Plan is 5,000 acres of occupied habitat on federal and protected lands in each of the three management areas. As originally defined in the Recovery Plan, occupied habitat included the active colonies buffered by a 730-foot foraging distance buffer (USFWS 2012). This habitat calculation is no longer the best available science; however, it is practical for comparing the current habitat calculations to the habitat criteria stipulated in the 2012 USFWS Recovery Plan concerning species recovery.

The breakdown of mapped, occupied, and Recovery Plan required habitat by management area and land ownership is summarized in Table 2-1.

**Table 2-1. 2022 Utah Prairie Dog Mapped and Occupied Habitat by Land Ownership**

Land Ownership and Location	West Desert Management Area (acres)	Paunsaugunt Management Area (acres)	Awapa Plateau Management Area (acres)	Total (acres)
<b>Mapped Habitat</b>				
Federal lands	7,157.8	6,939.8	15,882.6	<b>29,980.2</b>
Non-federal protected lands	496.1	819.7	567.4	<b>1,883.2</b>
Non-federal unprotected lands	13,697.9	12,023.2	8,985.1	<b>34,706.2</b>
<b>Subtotal mapped habitat</b>	<b>21,351.8</b>	<b>19,782.7</b>	<b>25,435.1</b>	<b>66,569.6</b>

<b>Occupied Habitat*</b>				
Federal lands	817.4	3,695.2	2,678.7	<b>7,191.3</b>
Non-federal protected lands	398.3	297.3	167.2	<b>862.8</b>
Non-federal unprotected lands	1,388.8	1,450.3	1,152.2	<b>3,991.3</b>
<b>Subtotal occupied habitat</b>	<b>2,604.5</b>	<b>5,442.8</b>	<b>3,998.1</b>	<b>12,045.4</b>
<b>Recovery Plan Required Habitat**</b>				
Federal lands	8,280.4	11,802.4	22,603.8	<b>42,686.6</b>
Non-federal protected lands	742.9	1,347.2	709.6	<b>2,799.7</b>
Non-federal unprotected lands	21,399.4	15,799.5	10,239.0	<b>47,437.9</b>
<b>Subtotal occupied habitat</b>	<b>30,422.7</b>	<b>28,949.1</b>	<b>33,552.4</b>	<b>92,924.2</b>

Source: UDWR (2023)

\* UDWR Occupied acreage equates to mapped active areas buffered by 100 feet in the major development zone and 250 feet outside the major development zone.

\*\* USFWS Occupied acreage equated to mapped active areas buffered by 730 feet rangewide.

In 2022, mapped habitat, occupied habitat, and Recovery Plan required habitat on federal and non-federal protected lands totals 31,863.4 acres, 8,054.1 acres, and 45,486.3 acres, respectively. These mapped habitat, occupied habitat, and Recovery Plan required habitat areas on federal and non-federal protected lands, represent 47.9%, 66.9%, and 48.9% of the respective totals, and are either fully protected or receive management benefiting Utah prairie dogs in ways that actively support the long-term conservation of the species. These areas are distributed across the three management areas, such that each management area contains a substantial share of the total. According to the 2012 USFWS Recovery Plan, the 2022 total Recovery Plan required habitat acreage of 45,486.3 acres exceeds the recovery goal of 15,000 acres of the Recovery Plan’s required rangewide total. In addition, the West Desert, Paunsaugunt, and Awapa Plateau management areas each had federal and non-federal protected lands totaling more than 5,000 acres for the Recovery Plan required habitat, specifically 9,023.3 acres, 13,149.6 acres, and 23,313.4 acres, respectively.

### 2.3.3 Abundance and Density

The range-wide, average annual Utah prairie dog spring count between 2020 and 2022 was 5,760 (ranging from 5,161 in 2021 to 6,173 in 2020) (UDWR 2023). Although Utah prairie dog counts have slightly declined from 2020 to 2022, annual variability is typical of the species, and long-term trends since 1972 are stable to increasing (Larsen et al. 2021). Utah prairie dog spring counts in 2022 and 3-year averages across land ownership and recovery unit are presented in Table 2-2.

From 2019 to 2022 (2018 data was incomplete), the average density of prairie dogs in occupied habitat was approximately 0.507 prairie dog per acre (i.e., 0.783 prairie dog per acre in the West Desert Recovery Unit, 0.434 prairie dog per acre in the Paunsaugunt Recovery Unit, and 0.318 prairie dog per acre in the Awapa Plateau Recovery Unit) (UDWR 2023). The average density of Utah prairie dogs per acre within occupied habitat was calculated using mapped active habitat plus a 250-foot buffer representing the average foraging distance when in the minor development area and 100-foot buffer when in the major development area (Wright-Smith 1978).

**Table 2-2. 2022 Spring Counts of Utah Prairie Dogs and 3-Year Averages**

Land Ownership and Location	West Desert Recovery Unit		Paunsaugunt Recovery Unit		Awapa Plateau Recovery Unit		Total counts	
	2022 spring count	3-year average	2022 spring count	3-year average	2022 spring count	3-year average	2022 spring count	3-year average
Federal lands	516	414	1,167	1,269	545	520	2,228	2,203
Non-federal protected lands	302	289	200	179	82	72	584	540
Non-federal unprotected lands	1,463	1,743	1,153	868	518	406	3,134	3,017
<b>Total counts</b>	<b>2,281</b>	<b>2,446</b>	<b>2,520</b>	<b>2,316</b>	<b>1,145</b>	<b>998</b>	<b>5,946</b>	<b>5,760</b>

Source: UDWR 2023.

Note: Reported values include the 2022 spring count of adults and the 3-year average between 2020 and 2022. Non-federal lands include state, county, municipal, private, and tribal lands.

The number of small, medium, and large colonies varies from year to year. Large colonies have a high conservation value and tracking colonies that are large can inform management practices moving forward. Table 2-3 below shows the number of colonies that have greater than 50 Utah prairie dogs, greater than 23 Utah prairie dogs, and greater than 15 Utah prairie dogs between 2020 and 2022 (UDWR 2021, 2022, 2023).

**Table 2-3. Number of Utah Prairie Dog Colonies with Greater Than 50, 23, and 15 Spring Counts of Utah Prairie Dogs Between 2020 and 2022, Along With a 3-year Average**

Utah Prairie Dogs Within the Colony	Number of Colonies			
	2020	2021	2022	3-year average
> 50	24	19	19	21
> 23	60	60	65	62
> 15	100	89	101	97

Source: UDWR 2021, 2022, 2023.

## 2.4 RETROSPECTIVE ANALYSIS OF COUNT DATA

Larsen et al.’s (2021) *A Retrospective Analysis of 28 Years of Count Data for Utah Prairie Dogs: Influences of Climate, Land Use, and Management Actions* analyzed historical data collected over nearly three decades to evaluate the influence of colony size, climatic conditions, urban development, and management actions on annual counts of Utah prairie dogs. That effort was undertaken to help managers understand the relative role of factors influencing Utah prairie dog populations, and consequently inform conservation decisions. The annual count data demonstrates that the range-wide population of Utah prairie dogs has increased over the last 30 years, with each recovery unit demonstrating stable or increasing long-term population trends. Figure 2-2 shows the number of colonies counted each year steadily increased from under 200 per recovery unit in 1992 to between 240 and nearly 500 in 2019, depending on the recovery unit (Larsen et al. 2021).

Furthermore, the data suggest that the increases in Utah prairie dogs and the number of colonies over the last 30 years was not only a function of increased survey effort (i.e., surveying more small colonies), but that the mean number of Utah prairie dogs within surveyed colonies has also increased or remained steady over time (Figure 2-2). Mean count was steady to increasing for the Awapa Plateau Recovery Unit and the Paunsaugunt Recovery Unit irrespective of the increase in colonies counted, while the West Desert Recovery Unit experienced a recent decrease in the mean count from 2016-2021 during a period of extreme drought. Mean lambda, or transition (i.e., a representation of year-to-year changes in counts), across units was consistently above 1.0 between 1992 and 2019 and averaged between 1.2 during the early years and around 1.0 toward the end of the years counted (Figure 2-3). The mean occupancy rate of individual colonies varied between units and fluctuated between 0.65 and 0.85 across years (see Figure 2-3).

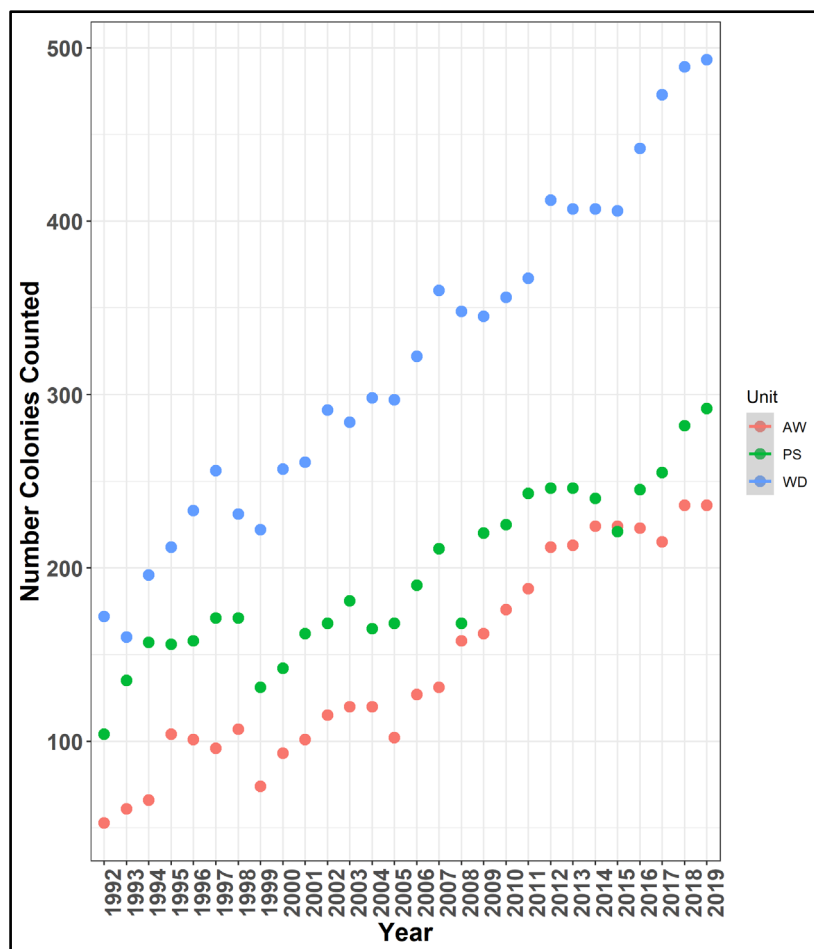
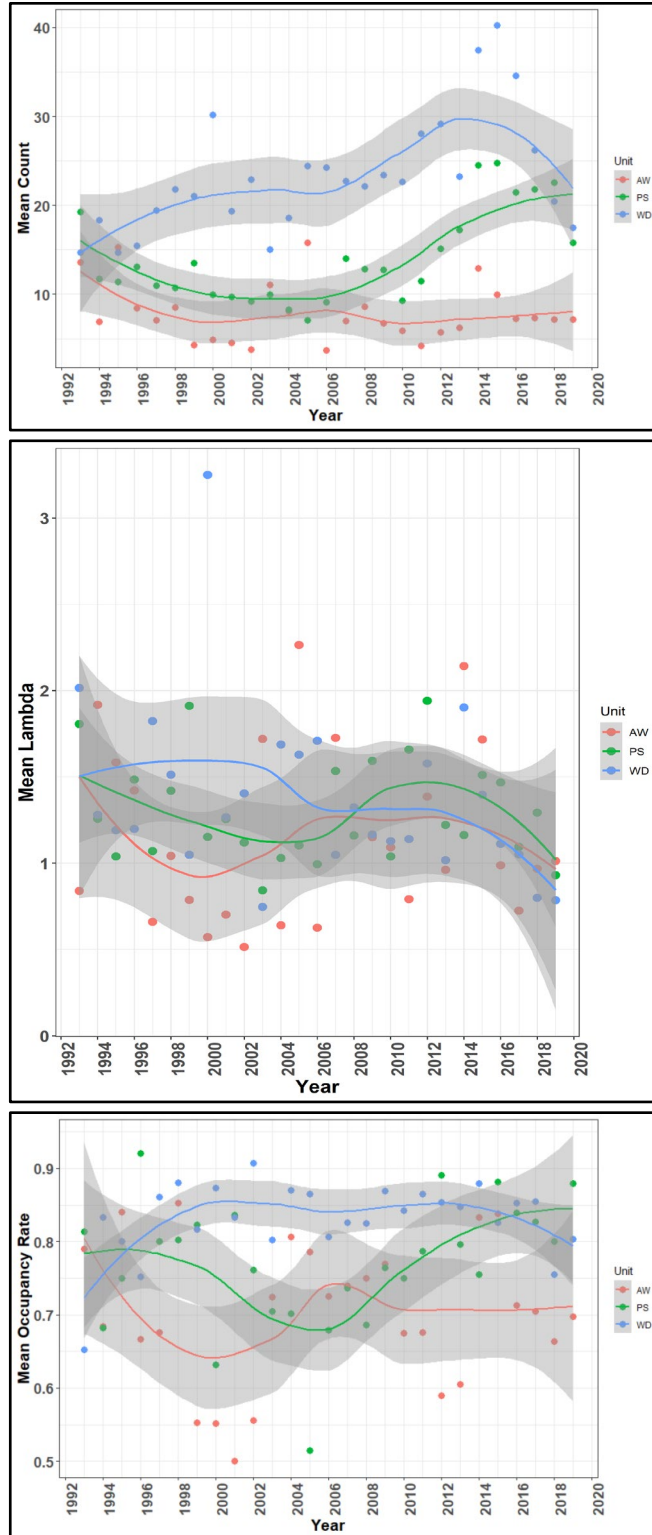


Figure 2-2. Number of Utah prairie dog (*Cynomys parvidens*) colonies counted between 1992 and 2019 in Utah. AW = Awapa Plateau Recovery Unit; PS = Paunsaugunt Recovery Unit; WD = West Desert Recovery Unit (Larsen et al. 2021).



**Figure 2-3. Mean count, mean lambda, and mean occupancy for Utah prairie dog (*Cynomys parvidens*) colonies within each of the three recovery units in southern Utah, 1992–2019 (Larsen et al. 2021).**

A 1995 analysis of count data (Ritchie 1995) suggested that colonies and complexes of Utah prairie dogs experience population fluctuations and extirpations that are not related to colony size, but Brown and Ritchie (2011) later found that large colonies had a high probability of long-term persistence. Colonies exhibit frequent extinctions that appear to be primarily deterministic rather than occurring at random (UDWR 2019). Larsen et al. (2021) found that colony size influenced the likelihood of colony extirpation. When a median colony count was  $\geq 15$ , the colony had a 95% probability of being occupied in a given year, and colonies with a mean count of  $\geq 23$  had a 99% probability of being occupied in a given year. This reinforces the concept that colonies of  $\geq 15$  counted individuals are more persistent and resilient in the face of deterministic conditions.

The retrospective analysis also evaluated the effects of climate conditions, urban development, and management activities on Utah prairie dog populations. Larsen et al. (2021) found that certain landscapes and management activities had a measurable influence on colony occupancy and colony size. For instance, “dusting” (applying deltamethrin to active burrows), translocation into a colony, percentage of suitable habitat (within 750 m and 1,500 m), and colony proximity to irrigated lands (76 m [250 feet]) positively influenced colony occupancy and counts, while percentage of developed lands, translocation out of a colony, and control permits (i.e., authorized direct lethal take) negatively influenced occupancy and counts.

Habitat treatments were not found to influence occupancy and counts, a finding that may be a result of limited data from habitat treatments within occupied Utah prairie dog colonies. However, much other research has stressed the importance of succulent vegetation to Utah prairie dogs and that increased plant diversity at the colony level dramatically decreases the frequency of extinction events (Ritchie 1999). UDWR and its partners realize the importance of maintaining suitable habitat for Utah prairie dogs and will continue to sustain and restore such habitats.

Precipitation had a positive influence on counts and occupancy, whereas increased temperatures associated with drought conditions had a negative influence (Larsen et al. 2021). Summer monsoonal moisture was found to be of particular importance. Forage production increases with precipitation and elevation and leads to better body condition, reproduction, and population growth (Biggins et al. 2021). Declines in the West Desert from 2016–2021 corresponded to a period of historic summer drought whereas the populations in the higher elevations and wetter habitats of the Paunsaugunt and Awapa Plateau were more resilient through that period. Other findings (Biggins et al. 2021) suggest that during wetter years, flea abundance is also greater, potentially setting the stage for large-scale plague outbreaks. Therefore, plague management remains important even during periods of favorable climate conditions.

The spatial distribution of Utah prairie dogs is also of importance. Analyses showed that colonies within 3,000 meters tended to show similar growth rates and thus likely had some level of connectivity. That is also consistent with documented dispersal distances. USFWS analysis found colonies in the Paunsaugunt management unit were spatially configured to provide connectivity. In isolated colonies, translocation can be used to provide genetic mixing. Marxan software can be used to inform spatial decisions related to conservation and adaptive management strategies for Utah prairie dogs. The goal of a Marxan analysis is based on optimization and works to target priority prairie dog colonies for management actions that meet conservation objectives for the species at the lowest cost and lowest risk. The analysis uses inputs from spring counts and colonies, with each colony quantified by the number of individuals contained, the probability of its survival, and the total area or size of the colony. A series of targets is established, including the number of counted individuals to conserve and cost estimates for conserving colonies. The Marxan analysis accounts for potential risks by identifying a set of colonies that would result in a 95% chance of maintaining the targeted number of counted individuals going forward (Hammill n.d. [2021]) and will also be used to prioritize the location conservation actions.

## CHAPTER 3. MANAGEMENT CONCERNS

Threats to Utah prairie dog are identified and described in *Utah Prairie Dog (Cynomys parvidens) Final Revised Recovery Plan* (USFWS 2012) and *Utah Prairie Dog (Cynomys parvidens) Status of the Species* (USFWS 2017b). Since the Utah prairie dog was federally listed in 1973, mean counts have been steady to increasing through 2022, lending support to the effectiveness of conservation actions for this species. However, conservation actions have not eliminated some of these threats, and continued implementation of certain actions to address manageable threats is necessary. The Utah prairie dog is likely to remain a conservation-reliant species in the future (Larsen et al. 2021). The retrospective analysis by Larsen et al. (2021) suggested that management actions aimed to address plague concerns, drought, and habitat loss or control may minimize or alleviate threats to the Utah prairie dog. Public support, predation, and genetic diversity are additional management concerns for the species and are described below.

### 3.1 PLAGUE

Utah prairie dog populations are susceptible to sylvatic plague, a bacterium introduced to the North American continent in the late 1800's (Cully 1993). Plague presents a severe threat that occurs across the entire range of the Utah prairie dog, both as enzootic and epizootic events, and has the potential to result in severe reduction or complete loss of colonies (USFWS 2012). Fleas, the most common vector for plague (Biggins and Kosoy 2001) are brought into the vicinity of a prairie dog colony by a suite of mammals and may survive for over a year after their hosts have died off (Gage and Kosoy 2005).

Occurrence of epizootic plague outbreaks may be dependent on the density of the host population (i.e., prairie dogs) or flea density (Barnes 1993; Biggins et al. 2021a; USFWS 2012). Continued existence of chronic enzootic plague within colonies can result in long colony recovery periods—up to 10 years—following plague outbreaks (Cully and Williams 2001). High population densities also make colonies susceptible to plague epizootics due to increased opportunities for the exchange of fleas, which affects the rate plague can move through a colony (Barnes 1993).

Plague abatement efforts by UDWR, USFS, BLM, and NPS have increased, and in 2021 a total of 4,267 acres of occupied Utah prairie dog habitat was dusted range-wide (UDWR 2022). Larsen et al. (2021) found that dusting has had a positive and cumulative effect on both the count response and occupancy response and supporting data show that dusting leads to increased Utah prairie dog survival up to 2 years after treatment (Biggins et al. 2021a; Larsen et al. 2021). Disease management and disease monitoring is discussed further in Sections 5.3.1 and 6.1.3.

### 3.2 DROUGHT

Natural drought cycles have continued to be a threat for the Utah prairie dog, particularly regarding the potential for increased and prolonged drought cycles and heavy precipitation and flooding events (USFWS 2012; Karl et al. 2009). Shifts in vegetation associated with climate change may result in a reduction or changes in the distribution of prairie dog habitat quantity and quality.

Compared to a 1960–1979 baseline period, the average temperature in the Southwest (including the range of the Utah prairie dog) has increased roughly 1.5 degrees Fahrenheit (°F) (0.8°C). By 2100, the average annual temperature is projected to rise approximately 4°F to 10°F (2.2°C to 5.6°C) above the historical baseline, averaged over the Southwest region. Extreme heat events are projected to occur more frequently, and some lower elevation portions of southern Utah are projected to have up to 105 days above 90°F by 2100 (U.S. Global Change Research Program 2009; USFWS 2012). The Southwest is projected to experience a 10%–20% reduction in precipitation in mid-latitude western North America by



mid-century (Milly et al. 2005; USFWS 2012). Spring precipitation in southern Utah is projected to decline by 25%–35% by 2100 under the higher emissions scenario that was analyzed in *Global Climate Change Impacts in the United States* (Karl et al. 2009).

The retrospective analysis conducted by Larsen et al. (2021) found that climatic factors, specifically drought conditions and higher minimum air temperatures, had a negative influence on Utah prairie dog counts. Indirect impacts to Utah prairie dog from drought include the reduction of quality forage leading to reduced prairie dog abundance and reductions in prairie dog distribution, particularly at lower elevations (Collier and Spillett 1975; Crocker-Bedford and Spillett 1981). Likewise, on the Awapa Management Unit, adult body condition, reproduction, and population growth increased with elevation and precipitation (Eads and Biggins 2021). Larsen et al. (2021) supports this finding by detecting a positive influence in prairie dog colony size from proximity to irrigated land. Provisions of supplemental food and water at translocation sites (USFWS 2011) works to manage stressors on newly translocated prairie dogs in particularly dry conditions. Complimentary management actions, such as provision of supplemental food and water, are described in Section 5.3.6.

### **3.3 HABITAT LOSS**

Vast amounts of federal land are found within the range of Utah prairie dog, and these lands offer protection and management opportunities for the species through resource management planning (Section 7.3.1). An average of 52% of Utah prairie dogs occur on private or SITLA (non-federal) lands based on the range-wide prairie dog counts from 2020 through 2022. Non-federal lands are or may be subject to development or conversion to intensive agricultural use. Such land uses can permanently reduce the amount of habitat available to the species and fragment remaining habitats. Habitat fragmentation diminishes the species' ability to disperse and exchange genetic material, thereby reducing genetic variation, all of which are critical factors to maintain viable populations (Brown et al. 2016; Ritchie and Brown 2005). The threat of habitat loss from development and intensive agriculture is regional and is more prevalent in the West Desert Management Area, where a substantial portion of the population occurs on non-federal lands. The range-wide GCP predicted a loss of occupied habitat from land development activities in each management area over a 10-year period. The GCP estimated there would be between 256 to 1,278 acres of occupied habitat lost from development in the West Desert Management Area, 49 to 244 acres of lost occupied habitat in the Paunsaugunt Management Area, and 45 to 228 acres of occupied habitat lost to development in the Awapa Plateau Management Area (USFWS 2018).

Multiple land protection tools have been used for Utah prairie dog conservation efforts, including land use planning on federal lands, state-owned conservation lands, and conservation banking. As described in Section 1.2.2.4., nearly 4,000 acres of non-federal land have been secured as protected conservation areas for the Utah prairie dog. Alteration of Utah prairie dog habitat due to agricultural activities is another cause of the species' reduced historic range (USFWS 2012). Approximately 70% of mapped Utah prairie dog habitat occurs on non-federal lands, and many of these lands are in or adjacent to agricultural production and irrigated fields (USFWS 2012). Utah prairie dogs prefer areas with deep soils and moist vegetation, which coincide with irrigated fields and areas preferred for agricultural production (USFWS 2012).

Prairie dogs in agricultural fields can cause conflicts for farmers, and prairie dogs can be subject to negative impacts, including increased mortality from vehicles, urban predators, legal and illegal control measures, and habitat fragmentation from fences and roads (Elmore and Messmer 2006a, 2006b; Seglund and Schnurr 2010; USFWS 2012). Conversely, agricultural areas can benefit Utah prairie dogs by providing accessible and highly nutritious forage (Crocker-Bedford 1976; Seglund and Schnurr 2010). Larsen et al. (2021) found that mean counts increased for colonies within 250 feet of irrigated lands,

where colonies without irrigated lands within 250 remained steady. Irrigated lands become increasingly important to the conservation of Utah prairie dogs during periods of drought (Larsen et al. 2021).

Habitat loss can also occur through natural vegetation succession. Utah prairie dogs forage on grasses and forbs and prefer habitats with vegetation that is low or sparse, which enhances prairie dog survival due to increased visibility for vigilance (Collier 1975; Crocker-Bedford and Spillett 1981). Vegetation community changes can be attributed to the lack of, or suppression of, naturally ignited fires and use of fire as a vegetation management tool. Historically, wildfires and fire management have served to maintain open, grassy areas within the shrub-steppe ecosystem and control the expansion of Utah juniper and two-needle pinyon into shrub-steppe vegetation communities (USFWS 2012).

Habitat management, including vegetation treatments, fire, weed treatments, and seeding, works to enhance habitat suitability for Utah prairie dogs. Further, the percentage of suitable habitat surrounding a colony has been found to have a positive influence on the subsequent year's spring count (Larsen et al. 2021). Sections 5.3.3 and 6.1.4 describe habitat management and monitoring efforts.

### **3.4 DIRECT TAKE UNDER THE 4(D) RULE AND REGULATED CONTROL**

Lethal control of Utah prairie dogs (i.e., shooting or other lethal control practices that directly remove individuals from the population) is managed to help resolve conflicts with agricultural and rangeland uses and development on non-federal land by issuing control permits or Certificates of Registration (CORs) (Section 5.3.4 and Section 5.3.5). Under the ESA, the term *take* means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (USFWS 2018). To minimize conflicts between cultivated agricultural land use and Utah prairie dog conservation, the USFWS established a special 4(d) rule in 1984 that allows regulated take of Utah prairie dogs on privately owned agricultural lands where damage from prairie dogs has occurred and where prairie dogs create serious human safety hazards or disturb human cultural or human burial sites (49 *FR* 22330, May 29, 1984). The 4(d) rule was amended in 1991 and again in 2012 (56 *FR* 27438, June 14, 1991; 77 *FR* 46158, August 2, 2012). The 2012 amended 4(d) rule states that UDWR or other approved entities can allow the take of up to 6,000 animals annually, from June 15 to December 31, with restrictions on the methods of allowed take on agricultural lands (77 *FR* 46158, August 2, 2012). From 1985 to 2021, a total of 2,074 take permits were issued, resulting in a total reported take of 46,468 individuals. From 2019 to 2021, 104 take permits were issued, resulting in a total reported take of 2,122 individuals (1,327 in the West Desert Management Area, 771 in the Paunsaugunt Management Area, and 24 in the Awapa Plateau Management Area) (UDWR 2023).

With the introduction of the 4(d) rule and regulated take, Utah prairie dog conflicts in agricultural and range lands have been successfully managed. Under state management of the regulated control of Utah prairie dogs, discussed in Section 5.3.5, control allowances are based on management scenarios where Utah prairie dog spring counts are below, at, or above target numbers. Management of control is closely tied to translocations, and where staff and time allow, translocation will continue to be used to move prairie dogs out of conflict to areas where they are desired on federal and non-federal protected lands.

### **3.5 PUBLIC SUPPORT**

Public concern and opinion toward Utah prairie dogs pose a threat to conservation of the species, and conflicts have resulted in illegal or unauthorized control or poaching, both of which are challenging to quantify and monitor. Conflicts arise when prairie dogs are present in agricultural fields, obstructing farming operations, and when occupying residential, commercial, or developable properties (USFWS 2017c). The existence of adequate regulatory mechanisms to authorize legal killing of Utah prairie dogs

in certain situations, such as conflicts with agricultural land uses and development, has likely decreased the incidence of poaching of Utah prairie dog.

The *Utah Prairie Dog Issues Status Report* (UPDRIP 2012) was developed in response to a senatorial request for status updates on a compiled list of “Utah prairie dog issues” gathered from various constituents. In 2010, UPDOG, formerly UPDRIP, created a document to describe public concerns and UDWR and its conservation partners’ progress in addressing these concerns. Concerns included Utah prairie dogs posing public health and safety concerns and Utah prairie dogs occupying non-federal lands and potentially impeding private land development. Public concerns were largely resolved with implementation of the *Range-Wide General Conservation Plan for the Utah Prairie Dog in Residential and Commercial Development Areas* (USFWS 2018) and other management actions and county-specific HCPs (UPDRIP 2012).

### **3.6 PREDATION**

Normal levels of predation are not considered a threat to healthy Utah prairie dog colonies; however, in fragmented colonies or at new translocation sites where an established social system or burrow system is not yet present, predation can impact Utah prairie dog populations (USFWS 2012). Predators of Utah prairie dogs include badger (*Taxidea taxus*), coyote (*Canis latrans*), raptors (e.g., *Buteo* spp. [*Aquila chrysaetos*]), red fox (*Vulpes vulpes*), and snakes (*Crotalus* spp., *Pituophis* spp.). Effective predator control programs can manage the threat of predation but require timely response and action. UDWR, working with the U.S. Department of Agriculture, coordinates predator control for translocation sites. Risk of predation will likely decrease as translocation procedures are developed and implemented to actively manage predators that pose a threat to newly translocated Utah prairie dogs and colonies. Predator control and translocation site preparation have been adopted as a management action to reduce impacts to prairie dogs from predation and are described in Sections 5.3.6.1 and 5.3.2.

### **3.7 GENETIC DIVERSITY**

Genetic viability is a concern for the persistence of species, with small populations at greater risk of extinction. The Utah prairie dog likely evolved from an isolated population of the white-tailed prairie dog, and thus has lower levels of diversity than the more wide-ranging abundant species. Additionally, there is evidence of genetic bottlenecks, suggesting small founder populations (Brown et al. 2016, Giglio et al. 2021). Because of those concerns, recovery goals have focused on maintaining Utah prairie dog populations at levels that will maintain genetic diversity and long-term adaptive potential.

Effective population size is a measure of the number of individuals in a population that contribute genetic material to the next generation. For Utah prairie dogs, 4 adult prairie dogs roughly contribute one animal towards the effective population. In conservation planning, a goal is to maintain an effective population size large enough to prevent inbreeding and the loss of genetic diversity. A commonly applied genetic guideline is to maintain an effective population size greater than 500 to maintain evolutionary potential. Brown and Ritchie (2011) also applied several methods to determine a minimum viable population needed to retain genetic diversity in Utah prairie dogs and determined 1000 spring-counted prairie dogs would be sufficient to avoid deleterious genetic consequences. Additional conservation actions that facilitate the retention of genetic diversity in Utah prairie dogs include configuring colonies to provide connectivity and translocations to isolated colonies and between recovery areas.

## CHAPTER 4. UTAH PRAIRIE DOG CONSERVATION STRATEGY

Herein, UDWR outlines a conservation strategy for the Utah prairie dog that incorporates concepts and findings from the 2012 Recovery Plan, the retrospective analysis by Larsen et al. (n.d. [2021]), the USFWS framework for Species Status Assessments, and the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) (68 *FR* 15100, March 28, 2003). PECE “applies to conservation efforts identified in conservation agreements, conservation plans, or similar documents developed by federal agencies, state and local governments, tribal governments, businesses, organizations, and individuals.” Under PECE, whether or not the USFWS may consider the benefits of ongoing or future conservation efforts for listed species depends on 1) certainty that the conservation effort will be implemented, and 2) certainty that the conservation effort will be effective.

This Conservation Strategy is based on the following understandings of the best available science and application of policies related to species status (in particular, the concepts of representation, redundancy, and resilience) and the reliability and effectiveness of future conservation actions. The key tenets of this Conservation Strategy are as follows:

- Conservation actions, including limiting lethal control, habitat protection and management, plague management, translocations, resource supplementation, community education and outreach, and research increased the number of Utah prairie dogs substantially since the species was listed as endangered in 1973 (i.e., an approximate doubling of the range-wide population by 1990 and continuing maintenance of a steady to increasing population [USFWS 2012]). These conservation actions alleviated or minimized many of the originally identified threats to the species described in the listing rule.
- Three presumably independent populations of Utah prairie dogs occur across the range of the species, represented by the three recovery units defined in the 2012 Recovery Plan. Stable to increasing long-term trends in total abundance and the number of active colonies have been reported for each of these populations (herein, management areas), as documented by the retrospective analysis. The long-term data indicate that each management area contains a robust population that creates redundancy across the range.
- The 2012 Recovery Plan set recovery thresholds at levels to ensure population viability and the retention of genetic variability. For the plan, Ritchie and Brown (2011) determined that 1,000 spring-counted Utah prairie dogs would equate to an effective population size of 500 and be sufficient to maintain genetic diversity. That population goal was replicated across the recovery areas to provide redundancy and representation. The three year average count in the West Desert and Paunsaugunt management areas more than doubles that goal, and the Awapa Plateau has reached that threshold.
- The retrospective analysis by Larsen et al. (2021) indicates that individual prairie dog colonies with a median count of at least 15 individuals had a 95% probability of being occupied in any given year. Likewise, colonies with a median count of at least 23 individuals had a 99% probability of being occupied. Similarly, Ritchie and Brown (2011) determined a single colony with greater than 50 spring-counted Utah prairie dogs has a 95% probability of persisting for 200 years. Colony sizes meeting or exceeding these long-term abundance metrics have proven resilient to stressors and can be reasonably expected to remain so in the future. Resilient colonies occur on federal or non-federal protected lands in each of the management areas.
- Stressors on the Utah prairie dog remain and warrant continued monitoring and management to maintain and secure for the foreseeable future the significant conservation gains realized since protections were first established in 1973. The retrospective analysis by Larsen et al. (2021) indicates that plague management, translocation, and resource supplementation (such as nearby

irrigated lands) have beneficial effects on the abundance of the species and help maintain resilient colonies. Other habitat management activities, such as vegetation management to maintain or restore grassland conditions or predator management at translocation sites, are also believed to be important management actions. The population trend data reviewed in the retrospective analysis demonstrate that management activities are effective at conserving the Utah prairie dog.

- Under ESA listing, federal and state land management agencies, local communities, nonprofit organizations, and academic institutions have demonstrated commitments to the conservation and management of the Utah prairie dog, resulting in decades of coordinated planning and implementation of conservation activities with positive outcomes for the species. These commitments persisted across a period of state management on non-federal lands from November 2014 to August 2017, when federal protections under the ESA lapsed, further demonstrating the reliability of conservation partnerships for the Utah prairie dog and what can be expected to continue in a post-delisting environment.

This Conservation Strategy for the Utah prairie dog builds on the gains achieved during the prior decades of a) federal protection and multi-stakeholder management, with defined biological goals and objectives, b) adaptive management with quantifiable decision triggers, c) monitoring to demonstrate effectiveness and support decision-making, and d) support and secured commitments from conservation partners to implement the strategy. This Conservation Strategy will be implemented primarily by the state under Utah Code Title 23, Wildlife Resources Code of Utah, and with support from its conservation partners.

## **CHAPTER 5. CONSERVATION STRATEGY**

### **5.1 BIOLOGICAL GOAL AND OBJECTIVES**

#### *Biological Goal*

The biological goal of the Utah Prairie Dog Conservation Strategy is to secure viable Utah prairie dog populations that will persist into the foreseeable future. The following management and monitoring activities will be conducted by UDWR and its conservation partners:

#### *Objectives*

- Manage Utah prairie dog populations through commitments by UDWR and its conservation partners to address ongoing concerns on federal and non-federal lands.
- Monitor key population metrics at a level of intensity and frequency to allow for detection of changes outside the normal range of Utah prairie dog population variability and to inform adaptive management.
- Implement an adaptive management program to maintain the number of Utah prairie dogs occupying each management area within a target range by adjusting the management focus and level of effort in response to new information, as dictated by yearly monitoring efforts.

### **5.2 ADAPTIVE MANAGEMENT TRIGGERS**

The selected metric for triggering adaptive management in each management area is spring-counted individuals. Utah prairie dog spring counts are conducted annually, on federal and non-federal lands where possible, and the 3-year average of spring-counted Utah prairie dogs are used in trend analysis. The actual springtime population of Utah prairie dog is estimated by multiplying spring-counted dogs by a factor of 2 to account for the Crocker and Bedford (1976) finding that only 40%–60% of Utah prairie dogs are above ground at any one time (see Section 1.2.2.1 for the total population estimate equation). For

convenience, the Utah prairie dog population is described herein in terms of spring-counted individuals and not the estimated actual springtime population size.

UDWR set spring count minimums and objectives based on the 3-year average of spring-counted Utah prairie dogs within each management area for use in triggering management actions described in Section 5.2. The 3-year average as a population metric is supported by the retrospective analysis conducted by Larsen et al. (2021) (see Section 3.1). The target values set for each management area take into consideration USFWS (2012) recovery plan objectives (i.e., 1,000 spring-counted individuals within each population), long-term observations of relative abundance among the management areas, recent 3-year average population sizes (see Table 2-2), the distribution of individuals among land ownership types (see Table 2-2), and the total population size. The USFWS (2012) recovery plan objective of 1,000 spring-counted individuals within each management area is a target based on numbers believed necessary for maintaining genetic viability but excluded gene flow and genetic viability within non-federal lands. Utah prairie dogs occupying non-federal lands will contribute to the spring-count objectives as protection will be provided in the form of state regulations regardless of land ownership.

The spring count minimums and objectives were selected based on the desire to retain viable Utah prairie dog populations across the species' range. In contrast to the Recovery Plan, objectives vary between the management areas based on historical counts, available habitat, and anticipated future management concerns. The combined spring count minimum and objective exceed the Recovery Plan targets by approximately 25% and 40% respectively.

The West Desert has supported the greatest number of Utah prairie dogs through the ESA-listed period. However, that was not the case historically and much of the population growth has occurred on human-altered landscapes. This management area also faces greater long-term threats from habitat loss and drought. The objectives reflect ongoing conservation actions on BLM and protected lands as well as the management of Utah prairie dogs on private lands.

Through the efforts of partners in Utah prairie dog conservation, especially the USFS and Garfield County, the Utah prairie dog population in the Paunsaugunt management area has grown over the last decade and is largely found on public lands. Additionally, populations have remained largely stable through a period of historic drought. Population minimums and objectives for the area reflect the goal of maintaining stable to increasing populations.

The Awapa Plateau has had the smallest counted population through the ESA-recovery period. However, surveys likely undercount Utah prairie dogs relative to the other management areas due to limitations in our survey techniques. Surveyor access to habitats is limited due to few roads, the dominance of sagebrush communities makes observation of Utah prairie dogs difficult, and spring snow cover and wind result in reduced accessibility and reduced survey suitability for spring counts. With the high elevation of the management unit, the population is more susceptible to over-winter mortality and higher variation in counts. Although populations have grown over recent years, it is still unknown if those levels can be sustained through hard winters. Conversely, the majority of Utah prairie dogs in the unit are on public and protected lands and face fewer threats from habitat loss and drought.

Table 5-1 identifies the spring count population minimums and objectives for triggering management actions within each management area on all lands. These spring count minimums and objectives will inform management actions, as outlined in the sections below.

**Table 5-1. Spring Counted Utah Prairie Dog Minimums and Objectives by Management Area**

Management Area	Spring Count Minimums	Spring Count Objectives
West Desert	2,500	3,000
Paunsaugunt	1,250	1,500
Awapa Plateau	625	750
<b>Total</b>	<b>4,375</b>	<b>5,250</b>

### 5.3 MANAGEMENT ACTIONS AND THRESHOLDS

The retrospective analysis by Larsen et al. (2021) indicates that management actions such as plague management and translocation have beneficial effects on the abundance of Utah prairie dogs and help maintain resilient colonies. The population trends described in the retrospective analysis demonstrate that management activities are effective at conserving the Utah prairie dog and are important to continue so a secure and viable population may persist into the foreseeable future.

The actions described below will guide the management of Utah prairie dogs across the three management areas. UDWR and its conservation partners propose a tiered approach to adaptive management wherein spring counts of Utah prairie dogs specific to each management area determine the level of management action necessary in the respective management area. The tiered approach was proposed due to the many aspects of prairie dog management that are needed to maintain populations at sufficient levels. Managing a conservation-reliant species based on only one objective would not provide the level of adaptivity needed for both proactive and reactive strategies. By using a tiered approach, management agencies will have the flexibility to tailor their efforts relative to fluctuations across specific management areas and tiers.

Management activities include a set of core activities (i.e., disease management, translocation, habitat protection and management, regulated control, public outreach and education, and research) intended to maintain current population trends and a set of additional complementary activities (i.e., predator control and provision of supplemental food or water) intended to boost populations if trends decline. Specific thresholds for adjusting management actions within each management area are as follows:

- At Tier 1,<sup>2</sup> the annual spring count indicates that the population is below the minimum value. Core management activities are implemented to their fullest, and complementary management actions are implemented to address the relevant stressors.
- At Tier 2, the annual spring count indicates that the population is between the minimum and objective values. Core management activities are implemented at their fullest.
- At Tiers 3, 4, and 5, the 3-year average spring count indicates that the spring count objective is exceeded, and core management activities may be scaled back.

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<sup>2</sup> At Tiers 1 and 2, the annual spring count indicates a management area is below the minimum and objective values, rather than a 3-year average, to proactively apply management actions.

- When there are three successive years with a 10% annual decrease in spring count, complementary management actions are implemented to address the relevant stressors.
- When the 3-year average spring counts are at Tier 5, complimentary management actions may not be necessary, and core management activities can be scaled back.

**Table 5-2. Spring Count Thresholds for Each Management Area and Associated Adaptive Management Tier**

Tier	West Desert Management Area	Paunsaugunt Management Area	Awapa Plateau Management Area
1	< 2,500	< 1,250	< 625
2	2,500–3,000	1,250–1,500	625–750
3	3,000–4,000	1,500–2,000	750–1,000
4	4,000–5,000	2,000–2,500	1,000–1,250
5	> 5,000	> 2,500	> 1,250

The following subsections describe the application of specific management activities for each management tier.

### 5.3.1 Disease Management

Sylvatic plague outbreaks associated with bacterial infection from *Yersinia pestis* have been associated with declines of Utah prairie dog colonies. Insecticides such as Deltamethrin and Pyreperm have been used to manage sylvatic plague and increase Utah prairie dog survival for over a decade (USFWS 2017b). Use of a 0.05% Deltamethrin dust has been shown to improve survival of prairie dogs. A study by Biggins et al. (2021b) within plague-affected colonies found that the mean change in population increased by 88% in dusted plots, whereas non-dusted plots showed a 97% decline in mean population change. The study found that epizootics occurred on prairie dog colonies with low prairie dog count densities as well as higher count densities (Biggins et al. 2021b). Between 1996 and 2008, Utah prairie dog colony dusting efforts were limited to colonies following plague events but dusting efforts range-wide have increased in recent years as a proactive strategy to limit the occurrence of plague outbreaks. In 2021, a total of 4,267 acres of Utah prairie dog habitat, or approximately 41.6% of occupied acres, were dusted by UDWR, the BLM, and the USFS on federal and non-federal lands with conservation easements.

The retrospective analysis by Larsen et al. (2021) indicates that dusting has a positive and cumulative effect on counts and occupancy and supporting data show that dusting leads to increased Utah prairie dog survival up to 2 years after treatment (Biggins et al. 2021a; Larsen et al. 2021). UDWR and its conservation partners will continue to manage plague on all accessible federal and non-federal lands in each management area using Deltamethrin, or other approved methods (i.e., vaccine, insecticide baits, fipronil), and will continue to coordinate plague abatement activities based on the tiered approach outlined in Table 5-3. In Tiers 1 and 2, efforts will be made to treat all colonies on accessible federal and non-federal lands each year. In Tier 3, colonies on non-federal protected lands that contain  $\geq 15$  spring-counted animals will be treated each year. In Tier 4, colonies on non-federal protected lands that contain  $\geq 23$  spring-counted animals will be treated each year. When a management area is in Tier 5, plague abatement efforts will be made at a 2-year interval within protected colonies  $\geq 23$  spring-counted animals.



**Table 5-3. Plague Thresholds for Management Actions**

<b>Tier</b>	<b>Plague Abatement Management Action Thresholds</b>
1	All protected colonies
2	All protected colonies
3	All protected colonies $\geq$ 15 animals
4	All protected colonies $\geq$ 23 animals
5	Two-year interval at protected colonies $\geq$ 23 animals

If continued research and field studies indicate that other plague prevention methods are effective at increasing resistance to plague and protecting prairie dogs from outbreaks, they may be used in addition to or as an alternative to dusting. Use of other plague abatement techniques by UDWR and its conservation partners will be employed, as determined by supported research.

### **5.3.2 Translocation**

Since 1972, UDWR has implemented a translocation program to move Utah prairie dogs from non-federal lands to occupied or historically occupied colonies on non-federal protected lands and to new translocation sites on federal lands. From 2020 through 2022, a total of 3,509 Utah prairie dogs were translocated to approved translocation sites from private and federal lands (UDWR 2021, 2022, 2023). Larsen et al. (2021) found support for translocation as an effective management action that had a positive influence on the following year's spring count.

Translocation of Utah prairie dogs is a management action used to 1) relocate Utah prairie dogs from areas with conflicting health and safety issues and land use issues (agriculture and development) to areas where they are afforded more protections and contribute to the long-term recovery goal of increasing numbers on non-federal protected lands; 2) create new colonies or recolonize areas that have experienced plague die-off (after at least one winter has elapsed and following dusting of translocated Utah prairie dogs); and 3) manage genetic viability and effective population size across management areas. UDWR and its partners will apply the best available science when using translocation as a tool to potentially limit density-related plague die-offs. While a variety of factors play a role in the occurrence and extent of plague events, such as host density, flea abundance, and climatic conditions, plague is more likely to occur and spread more easily in large colonies compared to small colonies (Cully et al. 2010, Eads 2014; Cully and Williams 2001; Collinge et al. 2005). The BLM is currently conducting a study in which Utah prairie dogs from large colonies are translocated to unoccupied areas on BLM-administered lands. That work is being done in the hope of preventing plague die-offs in densely populated colonies (personal communication, Derek Christensen, Wildlife Biologist, and Dustin Schaible, Wildlife Biologist, BLM Cedar City Field Office, 2021). In this study, translocation actions are triggered within a 20% range of the recommended threshold number.

Within residential and commercial development areas, trapping and translocation is preferred and encouraged as a resolution for land use conflicts. The 2018 GCP (USFWS 2018) categorizes development activities into major and minor development areas, a concept that has been adapted for use in this Conservation Strategy. Major development areas are non-federal lands that are already developed, adjacent to already developed areas, within city boundaries, or areas that have been identified in city planning for future development. Minor development areas are non-federal lands that are less likely (when compared to major development areas) to experience large-scale development such that they are more likely to function as suitable habitat or to support habitat connectivity. To ensure the continued effectiveness of this plan's minimization and mitigation strategy, the boundaries of the Major and Minor

Development Areas will be maintained by UDWR and evaluated periodically by UDWR and its conservation partners to determine if any adjustments are necessary.

When the annual spring counts in a management area are within Tiers 1 and 2, trapping and translocation efforts will be a priority only within major development areas (Table 5-4). When the 3-year average spring counts in a management area are within Tiers 3 and 4, translocation will occur as needed, new translocation sites on non-federal protected land will be identified, and existing translocation sites will be rejuvenated. New translocation sites will be selected, prepared, and maintained in accordance with *Recommended Translocation Procedures for Utah Prairie Dog* (USFWS 2011) by UDWR and its conservation partners. In Tier 5, and when the 3-year average spring counts exceed the objectives within a management area, trapping and translocating efforts will be employed at as many sources as are available (staff capacity dependent), especially within development areas, to increase distribution, maintain genetic diversity, and bolster Utah prairie dog populations range-wide, especially on non-federal protected lands.

**Table 5-4. Translocation Thresholds for Management Actions**

Tier	Translocation Management Action Thresholds
1	Translocate only from conflict and development within major development areas using supplemental translocation sites
2	Translocate only from conflict and development within major development areas using supplemental translocation sites
3	Translocate as needed and prepare new sites
4	Translocate as needed and prepare new sites
5	Trap as many sources as available

Translocation in response to development (see Section 5.3.2) and regulated control (see Section 5.3.5) are based on thresholds specific to each management area.

### 5.3.3 Habitat Management

Habitat management activities, such as two-needle pinyon/juniper removal, sagebrush thinning, grass/forb seeding, and landscape-scale habitat treatments are important management tools that benefit Utah prairie dogs. The retrospective analysis (Larsen et al. 2021) found that the percentage of suitable habitat in proximity of a colony (at the 750-m and 1,500-m extent) had a positive influence on the subsequent year's spring count, whereas development at and adjacent to Utah prairie dog colonies had a negative influence. Improving, maintaining, and expanding suitable habitat within and between Utah prairie dog colonies secures habitat and habitat connectivity on the landscape. Habitat management activities are required as follows:

- When in Tier 1, and when vegetation objectives as defined in translocation procedures (USFWS 2011) are not met within a translocation site or within colonies on non-federal protected lands with  $\geq 15$  animals, every reasonable effort will be made by UDWR, in coordination with conservation partners, to actively manage and manipulate habitat to enhance suitability for Utah prairie dog.
- When in Tier 2, and when vegetation objectives as defined in translocation procedures (USFWS 2011) are not met within a translocation site or within colonies on non-federal protected lands with  $\geq 23$  animals, every reasonable effort will be made by UDWR, in coordination with conservation partners, to actively manage and manipulate habitat to enhance suitability for Utah prairie dog.
- When in Tiers 3 and 4, new translocation sites will be prepared on federal lands, and every reasonable effort will be made by UDWR, in coordination with conservation partners, to actively

manage and manipulate habitat to meet vegetation objectives, as defined in translocation procedures (USFWS 2011) (see Table 5-4).

- When in Tier 5, habitat management activities outside of translocation sites are not required.

Habitat manipulation includes removal and/or thinning of shrubs and other woody vegetation, treatment of weed species, and/or seeding of herbaceous vegetation. It can also include the manipulation of water to create mesic areas.

### 5.3.4 Development

Loss of habitat because of development (e.g., commercial development, energy projects, residential housing) within Utah prairie dog colonies was found to negatively influence the subsequent year's Utah prairie dog spring counts (Larsen et al. 2021). Pre-disturbance surveys are required within development areas, as outlined in Table 5-5. Pre-development surveys for Utah prairie dog will follow the *Utah Prairie Dog General Conservation Plan Clearance Area Survey Protocol* (USFWS 2021b), which is subject to revision as new information becomes available.

In developable areas (commercial/industrial and residential development), UDWR and its conservation partners will conduct an occupancy survey prior to commencement of ground-disturbing activities according to the thresholds outlined in Table 5-5. If no Utah prairie dogs are found during the survey, UDWR will issue the project an approval letter. If Utah prairie dogs are observed during the occupancy survey, UDWR will perform an impact assessment, and the project proponent will receive a Certificate of Registration (COR) (UDWR 2015). Following issuance of the COR, the project proponent may begin construction. If UDWR staff are available, and the project time frame allows for it, UDWR and its conservation partners will trap and translocate Utah prairie dogs out of development project areas during the approved trapping season. UDWR and its conservation partners will work with willing landowners and developers to identify where trapping and translocation efforts are to take place during the impact assessment.

In Tiers 1 through 4, Utah prairie dog surveys are required in major development areas and/or minor development areas prior to development activities that may result in the loss of Utah prairie dogs and their habitat. In Tier 5, no pre-disturbance surveys are required, and impacts to Utah prairie dog will be tracked using spring count data from the subsequent year (see Table 5-5).

**Table 5-5. Development Thresholds for Management Actions**

Tier	Loss of Habitat/Development Management Action Thresholds
1	Surveys required for all projects within major and minor development areas
2	Surveys required for all projects within major and minor development areas
3	Surveys required for all projects within minor development areas
4	Surveys required for all projects within minor development areas
5	No surveys required; development impacts will be tracked using spring count data

### 5.3.5 Regulated Control

UDWR will manage lethal and non-lethal control of Utah prairie dogs to help resolve conflicts with agricultural and rangeland uses on non-federal land by issuing control permits or CORs, as outlined in

Table 5-6. UDWR’s authority for regulating control of Utah prairie dogs arises from UDWR Rule R657-70 Taking Nongame Mammals. If annual spring counts for a management area are below the established population minimum (i.e., Tier 1 conditions), UDWR will first be given the opportunity for live-capture before lethal control will be authorized, and Utah prairie dogs will be translocated to approved translocation sites on federal or other non-federal lands to help abate the conflicting land use activity. In Tiers 2 through 5, when Utah prairie dog counts meet or exceed the population minimums, the amount of lethal control allowed within a management area will be calculated as a percentage of Utah prairie dog productivity.

**Table 5-6. Control Allowances for Permits Per Colony**

Tier	Amount of Control Allowed*
1	Up to 25% productivity
2	Up to 50% productivity*
3	Up to 75% productivity
4	Up to 100% productivity
5	Up to 100% productivity + 50% adults

\* Calculation of productivity = spring count × 2 (sightability) × 6.7(% of females) × 9.7(% of females that breed) × 4 (average litter size) = spring count × 7.2.

In circumstances where Utah prairie dogs create hazards for human health, safety, and welfare, Utah prairie dogs can be controlled using any legal method without first acquiring a COR. In these circumstances, UDWR must be notified prior to removal of Utah prairie dogs. Control of Utah prairie dogs for human health, safety, and welfare hazards will not be limited based on the thresholds identified in Table 5-6. UDWR will target trapping and translocation efforts in areas where Utah prairie dogs have the potential to create human health, safety, and welfare concerns.

In agriculture and rangeland areas, a COR may be issued for the lethal control of Utah prairie dogs, and no minimum number of Utah prairie dogs is required to pursue a COR. Lethal control allotments for CORs will be calculated according to the sliding scale for Tiers 2 through 5, and authorized control will be deducted from the control allotment for each colony/parcel. Trapping can occur during the approved trapping season if UDWR time and personnel permits, and the number of Utah prairie dogs trapped will not be deducted from the yearly control allotment or the individual COR control limit for each respective management area (UDWR 2015).

### 5.3.6 Complementary Management Actions

When the annual spring count in a management area declines to Tier 1 or Tier 2 thresholds corresponding to the spring count minimums, complimentary management actions, described below, will be employed by UDWR and its conservation partners. Specific complimentary management actions will be determined based on monitoring data indicating which stressor(s) is driving the need for additional management actions. Complimentary management actions include predator control and providing supplemental food and water but may be expanded to include additional management actions if deemed necessary in the future.

#### 5.3.6.1 Predator Control

While translocation procedures have been established to minimize predation on Utah prairie dogs in newly established colonies using nest boxes and tubes, predation remains a threat to Utah prairie dog (Section 4.6), especially within newly translocated colonies. Predator control is a complimentary

management action to be implemented by UDWR and its conservation partners at translocation sites (see Section 6.1.2) and at protected colonies as follows:

- When in Tier 1, perform predator control at approved translocation sites and at protected colonies with  $\geq 15$  animals.
- When in Tier 2, perform predator control at approved translocation sites.
- When in Tiers 3, 4, and 5, predator control is not required.

Predator control at translocation sites follows the *Recommended Translocation Procedures for Utah Prairie Dog* (USFWS 2011), which recommends that sites are visited weekly from April 1 to September 30, if possible (see Section 6.1.2). Predator control for management areas in Tiers 1 and 2 will follow recommendations for translocated colonies.

### **5.3.6.2 Supplemental Food and Water**

Truett et al. (2001) found that supplemental food and water increased survival rate at translocation sites, likely because prairie dogs experience stress when they are trapped, transported, and introduced into a new environment and social structure. Some declines in spring counts may also be attributed to natural drought cycles during years with below-average precipitation, resulting in a strain on resources available to Utah prairie dogs.

To provide resource support for prairie dog colonies, supplemental food and water will be provided by UDWR and its conservation partners to Utah prairie dogs at translocation sites (see Section 6.1.2) and at protected colonies based on range conditions and food availability as follows:

- When in Tier 1, provide supplemental food and water at approved translocation sites and at protected colonies with  $\geq 15$  animals.
- When in Tier 2, provide supplemental food and water at approved translocation sites and at protected colonies with  $\geq 23$  animals.
- When in Tiers 3, 4, and 5, supplemental food and water provisions are not required.

### **5.3.7 Public Outreach and Education**

Public outreach opportunities will be evaluated annually by UDWR and its outreach program manager. Public education and outreach needs will be high, especially in the early stages of the implementation of the Conservation Strategy. Public outreach efforts may be adapted to address specific concerns that arise but should generally be pursued based on the following tier thresholds.

When in Tiers 1 and 2, and Utah prairie dog spring counts within management areas are below spring count objectives, public outreach and education efforts are important for conserving Utah prairie dogs on the landscape. The following are public outreach and education efforts UDWR and its conservation partners will employ when management areas are in Tiers 1 and 2:

- Increase public awareness of species status and continued protections through the distribution of fact sheets and the increased availability of accurate, clear, and consistent messaging about state management of the species.
- Encourage the public to work with stakeholders on conserving the species into the future and take ownership of the solutions, including fostering habitat management practices.
- Provide counties with printed materials for use in public outreach.
- Post signage at colonies easily accessible to the public.

When in Tiers 3, 4, and 5, and Utah prairie dog spring counts within management areas meet or exceed the spring count objectives, the following efforts will be employed:

- Increase public awareness of species status and continued protections through the distribution of fact sheets and the increased availability of accurate, clear, and consistent messaging about state management of the species.
- Post signage at colonies easily accessible to the public.
- Work with developers to coordinate protections and conservation options for resolving conflicts.
- Coordinate with private landowners and facilitate public input on Utah prairie dog management.

UDWR and its conservation partners will continue to seek opportunities to employ the public outreach and education efforts listed above.

## **CHAPTER 6. MONITORING PROGRAM**

Utah prairie dog conservation is predicated on a long-term adaptive management approach to ensure the species continues to persist. Management actions and thresholds identified in Chapter 5 require targeted monitoring to trigger management responses, evaluate the effectiveness of management actions, and identify stressors that should be addressed.

The Utah prairie dog conservation monitoring program as defined here has the following primary objectives:

- Monitor range-wide population trends as well as population trends in each management area
- Monitor residual or emerging threats that could affect the sustainability of the recovery of Utah prairie dogs
- Monitor the effectiveness of translocation and other conservation efforts
- Inventory and monitor the extent of suitable habitat throughout the range
- Identify threats requiring complimentary management action

### **6.1 MONITORING METHODS**

Various agencies, including the Natural Resources Conservation Service, the USFWS, the BLM, the USFS, and UDWR, have developed and implement monitoring protocols for the Utah prairie dog, and this Conservation Strategy will continue to use these methods going forward, as appropriate. However, the purpose and need for the monitoring protocols has shifted to prioritize data for the intent of evaluating status related to management thresholds. This is an active monitoring approach where data points trigger specific response(s); therefore, the methods used must ensure that adequate information is collected to inform decisions related to management actions and thresholds. Monitoring protocol documents and methods are subject to revision as new information becomes available.

#### **6.1.1 Spring Counts for Adaptive Management and Population Trend Monitoring**

Utah prairie dog spring counts are currently conducted annually by UDWR, the BLM, the USFS, and the NPS within the lands that they manage, and UDWR also conducts spring counts on non-federal lands for the purpose of monitoring Utah prairie dog colony numbers and track spring count trends. The methodology for conducting spring counts is well established and has proven effective over many years of monitoring. Spring-count efforts will continue and will occur for all known Utah prairie dog colonies annually and every sixth year at vacant colonies (UDWR 1999). However, these range-wide efforts are labor intensive. Effective ways of monitoring population for future long-term adaptive management will concentrate on efficient sampling of representative colonies within management areas.

In the first 5 years after implementation, UDWR will analyze a subset of the annual spring count data to determine if data from a sample of colonies can accurately predict the total population. If the subset analysis proves successful in estimating Utah prairie dog population, a scaled-back approach to conducting spring counts will be implemented by counting a sample of colonies when management areas are in Tiers 3, 4, and 5; however, annual spring counts are required for all colonies when management areas are in Tiers 1 and 2 to best apply management actions.

Spring counts are the most effective approach to monitoring population trends, but the nature of the spring count methodology also allows biologists to collect data regarding new or recurrent threats to the

populations, identify the drivers of population changes, and assess the effectiveness of management actions intended to address threats. Increasing population numbers would inherently indicate effective management actions, while decreasing population numbers would indicate threats to colonies. Additional data could identify threats such as habitat suitability, predation, disease, or habitat loss and would trigger appropriate management actions to address these threats. Disease monitoring and habitat monitoring are specific tools required to evaluate status of thresholds associated with each of those management actions and are described below.

### **6.1.2 Translocation Monitoring**

Utah prairie dog translocations conducted by UDWR and its partners follow the *Recommended Translocation Procedures for Utah Prairie Dog* (USFWS 2011, or as revised) for site selection and preparation as well as transport and release of Utah prairie dogs (USFWS 2011). Establishing a colony at a new translocation site is often a multi-year process and requires adequate disease, predator, and vegetation management.

Due to the tenuous nature of translocations, post-release monitoring will be conducted as defined in the translocation procedures (USFWS 2011) and in addition to the spring count monitoring described above. The site visits will also record observations of predator activity and signs of disease. The existing protocol describes the methods by which these observations will occur with the intent of identifying any threats to active translocation sites quickly so that the appropriate corrective actions (dusting, predator control, habitat manipulation) can be implemented to support protection and establishment of the translocation site.

UDWR and its conservation partners will rely on monitoring data to determine the need for complementary management actions such as predator control, supplemental feeding and watering, and disease management. These actions will be undertaken by UDWR and its conservation partners, as determined by the extent of support needed and the number of colonies requiring support. UDWR and its conservation partners will establish roles, responsibilities, and dedicated funding, as indicated by monitoring data.

Predator control is a specific management action defined in Chapter 5 to address the ongoing threat of predation at newly translocated colonies. Monitoring of predation is a feature of the USFWS (2011) translocation procedures. Annual reports describing translocation success will evaluate the need for and recommend adjustments to procedures monitoring predation at translocated colonies if it is determined that existing procedures are not sufficient to capture predation trends.

Translocation monitoring procedures will remain consistent with existing methods of translocation and will remain in place as long as translocations continue and unless UDWR and its cooperators determine an adjustment to the methodology, frequency, or duration of the monitoring is necessary.

### **6.1.3 Disease Monitoring**

Plague control effectiveness at dusted colonies on non-federal protected lands will be monitored using trends in spring count data. UDWR and its conservation partners will continue researching and monitoring plague control techniques and apply the best strategies for controlling plague (e.g., dusting, sylvatic plague vaccine, fipronil) based on emerging science.



## **6.1.4 Habitat Monitoring**

Habitat monitoring is a multi-factor evaluation of habitat suitability, availability, and connectivity throughout the Utah prairie dog's range. These three factors taken together provide the necessary data to determine appropriate management actions identified in Section 5.3.3.

### **6.1.4.1 Habitat Management**

Habitat suitability monitoring will occur within occupied habitat. Vegetation composition and landscape disturbance data will be collected during base year one using the methodology for monitoring habitat suitability within translocation sites (USFWS 2011). "Base year one" serves as the evaluation point against which subsequent annual monitoring data will be compared. Monitoring of habitat suitability is a preemptive approach to ensuring habitat suitability is maintained where landscape conditions may change over time. Arid landscapes in Utah have been subject to shrub and two-needle pinyon-juniper encroachment, often shifting vegetation community composition over brief periods of time and reducing habitat viability for species such as Utah prairie dog. Outside of specifically designated translocation sites, habitat suitability monitoring serves to identify and document existing conditions at both the local and macro scales. Early identification of landscape succession, including juniper and shrub encroachment within suitable habitat, indicates the need for active vegetation management, as discussed in Section 5.3.3.

Monitoring will be accomplished efficiently by adding a vegetation rating system and photograph fields to the prairie dog spring count data collection methods. Spring counts occur at known prairie dog colonies annually. Data collection on non-federal protected lands will occur within predetermined habitat locations and be repeated using established plots and transects to evaluate change over a multi-year period. Adding photograph collection and vegetation rating to the spring count protocol allows annual monitoring of habitat suitability and documentation of potential impacts to suitability, including hydrologic change, shrub encroachment, and shifts in vegetation composition. Documentation of changes in habitat suitability will be addressed by the management actions described in Section 5.3.3 as well as future management actions as new approaches to habitat management are developed.

Vegetation composition objectives are as follows:

- Warm season grasses: 1%–20% ground cover
- Cool season grasses: 12%–40% ground cover
- Forbs: 1%–10% ground cover (perennial, non-noxious)
- Shrubs: 0%–8% ground cover and < 10% canopy cover
- Minimum number of plant species: 10 (> 20 plant species preferred)

### **6.1.4.2 Habitat Availability**

Through the half-century-long effort to protect and conserve Utah prairie dogs, federal and state land and wildlife management agencies mapped habitat throughout the species' range. Long-term monitoring of habitat availability should utilize the existing mapped habitat database, including maintenance of this database to track where mapped habitat is no longer available for use by Utah prairie dogs (i.e., no longer suitable due to development, shrub encroachment). This database provides a tool by which UDWR and other land managers are able to identify landscape-level changes in habitat suitability that trigger habitat protection and management and complementary management actions needed to address any negative trends observed in the data evaluation.

## **6.2 DATA EVALUATION AND REPORTING**

UDWR will evaluate the monitoring results each year to determine if changes to the monitoring protocols are necessary. Following monitoring events, UDWR will compile and evaluate the monitoring results and prepare an annual monitoring report. The monitoring report will include monitoring methods and results and will determine whether changes to the data collection protocols are needed and if any threats warrant further evaluation.

## CHAPTER 7. IMPLEMENTATION OF THE CONSERVATION STRATEGY

### 7.1 CONSERVATION PARTNER COORDINATION

Implementation of this Conservation Strategy is the responsibility of the Conservation Strategy partners in accordance with the authorities granted to each. This Conservation Strategy and the conservation efforts described herein will be closely coordinated among Utah prairie dog Conservation Strategy partners in the form of UPDOG, or a similar group, that is composed of federal, state, and county partners for the purpose of effectively coordinating Utah prairie dog conservation efforts. The Utah prairie dog Conservation Strategy partners will continue to meet on an annual basis, and the structure and collaboration of the working group will remain in place during implementation of this Conservation Strategy. Meeting frequency may increase on an as-needed basis. UDWR will facilitate Conservation Strategy partner coordination for the duration of this plan.

The Conservation Strategy partners are:

- Utah Division of Wildlife Resources
- U.S. Fish and Wildlife Service
- Bureau of Land Management
- U.S. Forest Service
- Beaver County, Utah
- Garfield County, Utah
- Iron County, Utah
- Kane County, Utah
- Piute County, Utah
- Sevier County, Utah
- Wayne County, Utah
- National Park Service
- Utah School and Institutional Trust Lands Administration
- The Nature Conservancy

### 7.2 CONSERVATION PARTNER ROLES, RESPONSIBILITIES, AND AUTHORITIES

The Conservation Strategy partners are listed in Table 7-1 and are committed to work cooperatively to conserve the Utah prairie dog throughout its range. The primary role of each Conservation Strategy partner is to participate in a coordinated effort alongside UDWR in implementing their responsibilities within the scope of their management authorities. The secondary role for each Conservation Strategy partner is to support other conservation partners in implementing their primary role. Table 7-1 and Section 7.2.1 summarize the responsibilities and authorities under which the Conservation Strategy partners contribute to the biological goals and objectives of this Conservation Strategy. Specific details regarding authorities and assurances for each Conservation Strategy partner occurs throughout this document and in the sections below.

**Table 7-1. Utah Prairie Dog Conservation Partners, Responsibilities, and Programs**

<b>Conservation Partners</b>	<b>Conservation Strategy Roles and Responsibilities</b>	<b>Programs and Actions in Place</b>
Utah Division of Wildlife Resources (UDWR)	<p>Implement this Conservation Strategy to guide species-specific management</p> <p>Implement and oversee the Wildlife Action Plan</p> <p>Dedicate resources and staff, including technical biologists, for implementation of this Conservation Strategy</p> <p>Coordinate management actions and monitoring with conservation partners</p>	<p>Utah Wildlife Action Plan</p> <p>Conservation easement holder in West Desert Management Area, Paunsaugunt Management Area, and Awapa Plateau Management Area</p>
U.S. Fish and Wildlife Service (USFWS)	<p>Conduct a Species Status Assessment and determine if Utah prairie dog can be considered for a change in regulatory status</p> <p>Engage in appropriate NEPA analysis for Utah prairie dog habitat projects, when needed</p>	<p>General Conservation Plan (USFWS 2018)</p> <p><i>Utah Prairie Dog (Cynomys parvidens) Final Revised Recovery Plan</i> (USFWS 2012)</p> <p>Endangered Species Act</p>
Bureau of Land Management (BLM)	<p>Maintain Utah prairie dog as a BLM special status species (SSS)</p> <p>Maintain enough Utah prairie dog suitable habitat to support the population goals and objectives</p> <p>Manage BLM-administered land for uses compatible with Utah prairie dog</p> <p>Coordinate management actions and monitoring with conservation partners</p> <p>Engage in appropriate NEPA analysis for Utah prairie dog habitat projects, when needed</p>	<p>Signatory on Wildlife Action Plan</p> <p>Approved resource management plans (refer to Table 7-2)</p> <p>Maintains SSS list</p>
U.S. Forest Service (USFS)	<p>Maintain Utah prairie dog as a USFS SSS</p> <p>Maintain enough Utah prairie dog suitable habitat to support the population goals and objectives</p> <p>Manage USFS-administered lands for uses compatible with Utah prairie dog</p> <p>Coordinate management actions and monitoring with conservation partners</p> <p>Engage in appropriate NEPA analysis for Utah prairie dog habitat projects, when needed</p>	<p>Signatory on Wildlife Action Plan</p> <p>Maintains SSS list</p> <p><i>Land and Resource Management Plan for the Dixie National Forest</i> (refer to Table 7-2)</p> <p><i>Fishlake National Forest Land and Resource Management Plan</i> (refer to Table 7-2)</p>
County governments	<p>Manage conservation easement properties per the management action thresholds outlined in Section 5.3. in coordination with UDWR</p> <p>Require Utah prairie dog consideration prior to issuing building and development permits per Table 5-5</p>	<p>County resource management plans (various)</p> <p>Conservation easements (various)</p>
National Park Service (NPS)	<p>Coordinate with UDWR on NPS-owned land occupied by Utah prairie dog within management areas</p> <p>Support population monitoring and dusting efforts</p>	<p><i>Foundation Document Bryce Canyon National Park Utah</i> (NPS 2014) and <i>Final Environmental Impact Statement, General Management Plan, Development Concept Plan: Capitol Reef National Park</i> (NPS 1998)</p>
School and Institutional Trust Lands Administration (SITLA)	<p>Coordinate with UDWR on SITLA-owned land occupied by Utah prairie dog within management areas</p>	<p>Conservation easements on Parker Mountain, Awapa Plateau Management Area</p>
The Nature Conservancy (TNC)	<p>Coordinate with UDWR on TNC-owned land occupied by Utah prairie dog within management areas</p>	<p>Conservation easements in Paunsaugunt Management Area and West Desert Management Area</p>

## **7.2.1 Authorities**

The Conservation Strategy is subject to and is intended to be consistent with all applicable state and federal laws. Under their respective authorities, the Conservation Strategy partners below have some ability to influence the occurrence and intensity of threats to the Utah prairie dog and its habitat. The authorities, legislations, directives, and plans for involved Conservation Strategy partners are outlined below.

### *Utah Division of Wildlife Resources*

UDWR's mission is "to serve the people of Utah as trustee and guardian of the State's wildlife, and to ensure its future and values through management, protection, conservation, and education." As the trustee and custodian of wildlife within its borders, Utah has a sovereign interest in the regulation and management of the Utah prairie dog under the Wildlife Resources Code of Utah, Utah Code Title 23-13-3 and 23-14-1. Under Utah Code Title 23, UDWR, as the wildlife authority for Utah, is authorized to "protect, propagate, manage, conserve, and distribute protected wildlife throughout the state." The State of Utah, in cooperation and in coordination with federal agencies, has implemented cooperative agreements for a variety of fish and wildlife programs on federal lands, as applicable under Title 23-22-1 of the Utah Code. Title 23-22-1 states that the "Utah Division of Wildlife Resources may enter into cooperative agreements and programs with other state agencies, federal agencies, states, educational institutions, municipalities, counties, corporations, organized clubs, landowners, associations, and individuals for purposes of wildlife conservation." Utah Code Title 23-13-2 does not designate land ownership or location requirement for a protected species to be considered "protected."

### *U.S. Fish and Wildlife Service*

The mission of the USFWS is "Working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people." The ESA of 1973 provides a framework to conserve and protect endangered and threatened fish, wildlife, and plant species and their habitats. Section 6 of the ESA provides for the cooperation with states in conserving endangered species, including delegation of permitting authority and matching federal funding.

### *Bureau of Land Management*

The BLM is a federal land management agency responsible for the management of federal lands in accordance with the Federal Land Policy and Management Act of 1976. The BLM's mission is "to sustain the health, diversity, and productivity of federal lands for the use and enjoyment of present and future generations." The BLM manages sensitive species, designated by the BLM state director, and their habitats to minimize or eliminate threats affecting the status of the species or to improve the conditions of the species' habitat on BLM-administered lands under BLM Manual 6840 (BLM 2008a).

### *U.S. Forest Service*

The USFS was established in 1905 and 193 million acres of federal lands in the form of NFs and grasslands. The mission of the USFS is to "sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations." The National Forest Management Act of 1976 was designed to protect biodiversity in NFs while ensuring federal involvement in forest planning and management. The National Forest Management Act requires the USFS to manage and protect natural resources on USFS-administered lands and manage habitats to maintain viable populations of plants and animals.

### *Counties*

Each county in Utah maintains and enforces a Code of Ordinances and has the authority to enact policies and procedures that are lawful, accessible, and subject to periodic and consistent review. Counties may propose policies for review and approval prior to implementation. Under county management, buildings, construction, subdivisions, use, and zoning are among the activities that are subject to the Code of Ordinances. Countywide policies may vary across Beaver, Garfield, Iron, Kane, Piute, Sevier, and Wayne Counties, Utah.

### *National Park Service*

The NPS was established under the Organic Act of 1916 with a mission to “conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations” in areas under their jurisdiction. Under NPS Management Policy 4.1.4, parks are encouraged to pursue cooperative conservation with federal agencies, tribes, and private landowners to improve natural resource management within parks. As such, parks will develop agreements with federal, state, tribal, and local governments and organizations, and private landowners, when appropriate, to coordinate plant, animal, water, and other natural resources management activities in ways that protect and maintain park resources and values.

### *School and Institutional Trust Lands Administration*

In 1994, the Utah Legislature created SITLA as an independent agency to manage and develop trust land assets. SITLA’s duty includes the responsibility to preserve these resources for the long-term support of trust beneficiaries, primarily Utah’s schoolchildren of today and tomorrow. SITLA works to ensure that agencies and businesses working on trust lands comply with the Utah Code. The SITLA Board of Trustees, created by Title 53C of the Utah Code, is authorized to make policies for the benefit of the trust beneficiaries (Utah Code 53-C-1-102-2d). Since 1998, SITLA has been involved in transactions and projects to preserve and protect more than 560,000 acres of Utah lands, including lands that support Utah prairie dogs.

### *The Nature Conservancy*

TNC was officially formed in 1954, and its mission is to “conserve the lands and waters on which all life depends.” TNC works with landowners, communities, cooperatives, and businesses to establish local groups that can protect land. Some of the main tools used to achieve these goals are land trusts, conservation easements, private reserves, and incentives. TNC has authority to guide the conservation and management of the lands it owns.

## **7.3 ASSURANCES**

The Conservation Strategy partners provide assurances that this Conservation Strategy will be implemented by signing the Memorandum of Agreement (MOA) (Section 7.6), thus providing certainty that the adaptive management and monitoring activities described in this Conservation Strategy will be implemented. The long-term track record of coordination and collaboration among the Conservation Strategy partners implementing actions consistent with those described in this Conservation Strategy demonstrates that these assurances are reliable. Long-term population trends and analyses indicate that the conservation and management actions described in this Conservation Strategy are likely to be effective at maintaining or improving the status of the Utah prairie dog. Adaptive management, monitoring, and ongoing coordination provide further assurance that this Conservation Strategy is likely to achieve the biological goal. Funding mechanisms are discussed in Section 7.3.2.

In addition to the extensive conservation actions undertaken by UDWR and its Conservation Strategy partners (discussed in Chapter 1), implemented actions that demonstrate the long-term track record of coordination and collaboration among UDWR and its Conservation Strategy partners are outlined below.

- UDWR has implemented a Wildlife Action Plan since 2005 to manage wildlife species and their habitats and continue to participate in the State Wildlife Grants program. Under state management, Utah prairie dog will be managed as a SGCN under the Wildlife Action Plan into the foreseeable future.
- The BLM and USFS have readily engaged in necessary NEPA analysis for habitat improvement projects and will continue to do so for Utah prairie dog as a special status species (SSS). They also perform NEPA analysis to assess impacts outside development projects may have on wildlife, including Utah prairie dogs. These federal agencies have implemented translocation programs, dusting programs, and spring counting efforts. The BLM and USFS will continue to manage lands for multiple and compatible land uses according to the land protections in their existing Resource Management Plans (RMPs) and land and resource management plans (Section 7.3.1).
- SITLA, TNC, and Garfield and Iron counties in Utah all hold conservation easements for properties which they own or manage. State, county, and federal land managers have worked with the Watershed Restoration Initiative for habitat improvement projects that benefit Utah prairie dog. These habitat improvement projects prioritize SGCNs and include projects that benefit greater sage-grouse habitat, and grazing land uses (when effectively managed), both of which can be beneficial to Utah prairie dog habitat throughout its range.
- Acquisition of non-federal lands for protection and conservation easements is not the priority of the habitat management action but will continue as an opportunistic management tool that conservation partners will pursue when practicable (grant opportunities, willing sellers, etc.). Section 1.2.1.1.1 details the history of non-federal land acquisitions that work to support Utah prairie dog recovery by conserving and protecting lands within each management area.

### 7.3.1 Federal Land Protections

Land use planning guidance for BLM and USFS-managed lands include avoidance and minimization measures for Utah prairie dog (Table 7-2). RMPs for the USFS and BLM, as they are amended in the future, will continue to include measures to conserve and protect Utah prairie dog as an SSS to prevent the species from listing under the ESA.

**Table 7-2. Utah Prairie Dog Avoidance and Minimization Measures on Federal Lands**

Federal Agency	Land Planning Document Reference*	Excerpt of Resource-Specific Language
BLM Cedar City FO	<i>Cedar Beaver Garfield Antimony Resource Management Plan</i> (BLM 1984), page 52	Program coordination will be required with the wildlife and watershed programs in assessing the effects of the [off-road vehicle] ORV limitation on riparian areas, crucial deer winter range, Utah prairie dog sites, and raptor nesting areas.
BLM Cedar City FO	<i>Cedar Beaver Garfield Antimony Resource Management Plan</i> (BLM 1984), pages 1.7-1.8	Threatened, endangered, sensitive, status review, and other protected plant and animal species would continue to receive protection under the law and application of special restrictions for oil, gas, and geothermal leasing and ORV use. Transplant programs leading to the delisting of the Utah prairie dog would be continued.
BLM Cedar City FO	<i>Cedar Beaver Garfield Antimony Resource Management Plan</i> (BLM 1984), page 5.15	Long-term productivity of sensitive species such as Utah prairie dog, golden and bald eagles, and sage grouse would be protected by implementing the oil, gas, and geothermal leasing systems.

Federal Agency	Land Planning Document Reference*	Excerpt of Resource-Specific Language
BLM Cedar City FO	<i>Cedar City Field Office Resource Management Plan: Analysis of the Management Situation</i> (BLM 2019), page 258	Management Opportunities to be Considered in Land Use Plan Alternatives: Year-round stipulation for rights-of-way for electrical transmission lines on BLM lands within Utah prairie dog town sites.
BLM Cedar City FO	<i>Cedar City Field Office Resource Management Plan: Analysis of the Management Situation</i> (BLM 2019), page 276	Management Opportunities to be Considered in Land Use Plan Alternatives: Consider the identification of core habitat areas for the Utah prairie dog and connectivity corridors.
BLM Cedar City FO	<i>Cedar City Field Office Resource Management Plan: Analysis of the Management Situation</i> (BLM 2019), page 288	Management Opportunities to be Considered in Land Use Plan Alternatives: Implement Utah prairie dog terms and conditions on all grazing allotments with Utah Prairie Dog habitat in accordance with the USFWS-issued biological opinion (08-F0248) issued on October 8, 2008, to ensure consistency across all grazing allotments that are in Utah prairie dog habitat.
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), pages 22–23	Permit no surface disturbing activities or surface occupancy within ½ mile of active, suitable (currently inactive), or potential reintroduction (BLM 2002b) Utah prairie dog habitats/sites.
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-22: Implement conservation measures (Appendix 9) on actions affecting Utah prairie dogs or their habitat.
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-23: Permit no surface disturbing activities or surface occupancy within ½ mile of active, suitable (currently inactive), or potential reintroduction (BLM 2002b) Utah prairie dog habitats/sites. Seismic activities would avoid these areas, particularly during the active season (April 1 to September 30).
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-24: Allow introduction, augmentation, restocking, translocations, transplantation, and/or reestablishments of special status species in cooperation and collaboration with USFWS, UDWR, and other agencies as necessary, subject to guidance provided by BLM's 6840 policy and by existing or future memoranda of understanding (MOU[s]).
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-25: Require deterrent devices designed to prevent raptors from perching on powerline structures on all new construction (including upgrades and reconstruction) to discourage predation on Utah prairie dogs.).
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-26: Reroute renewed or amended ROWs on federal land that have the potential to disturb active and inactive Utah prairie dog colonies.
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-27: Preclude cross-country OHV use in occupied or inactive Utah prairie dog colonies.
BLM Kanab FO	<i>Kanab Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008b), page 62	SSS-28: Allow for the treatment of plague and other diseases that may impact Utah prairie dogs.
BLM Richfield FO	<i>Richfield Field Office Record of Decision and Approved Resource Management Plan</i> (BLM 2008c), page 44	Management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat, maintaining the integrity of SSS habitat, and habitat improvements will benefit SSS. The decision to limit surface-disturbing activities in sage-grouse habitat will benefit sage-grouse, prairie dogs, and pygmy rabbits. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for power line construction) will be employed to protect raptors and their habitat. These actions will minimize or eliminate impacts to the SSS relevant and important values.



<b>Federal Agency</b>	<b>Land Planning Document Reference*</b>	<b>Excerpt of Resource-Specific Language</b>
BLM Richfield FO	<i>Richfield Field Office Record of Decision and Approved Resource Management Plan (BLM 2008c), page 90</i>	Allow translocations of listed and non-listed SSS to aid in conservation and recovery efforts. Implement necessary habitat manipulations and monitoring in translocation plans and allow identification and manipulation of Utah prairie dog translocation sites to achieve suitable conditions for successful translocations.
BLM Richfield FO	<i>Richfield Field Office Record of Decision and Approved Resource Management Plan (BLM 2008c), page 91</i>	Monitoring of known populations of SSS and their habitats (e.g., Mexican spotted owls, Utah prairie dogs, greater sage grouse, Wright fishhook cactus) would continue in conjunction with federal, state and private agencies or organizations.
BLM Utah State Office	<i>Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015), page 2-3</i>	Manage activities that result in habitat loss and degradation to provide a net conservation gain of greater sage-grouse habitat. Exceptions to net conservation gain for greater sage-grouse will be made for vegetation treatments to benefit Utah prairie dogs.
BLM Utah State Office	<i>Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015), pages 2-5–2-6</i>	Areas where Priority Habitat Management Areas (PHMAs) and General Habitat Management Areas (GHMAs) overlap mapped Utah prairie dog habitat will be managed for both species, developing conservation and recovery objectives that will benefit both greater sage-grouse and Utah prairie dogs.
BLM Utah State Office	<i>Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015), page 2-6</i>	Within PHMAs, maintain or increase sagebrush and perennial grasslands to meet the habitat objectives for greater sage-grouse unless there is a conflict with Utah prairie dogs.
BLM Utah State Office	<i>Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015), page 2-9</i>	For actions that result in greater sage-grouse habitat loss and degradation, the BLM will require mitigation that provides a net conservation gain to greater sage-grouse. Exceptions to the net conservation gain for greater sage-grouse will be made for vegetation treatments to benefit Utah prairie dogs.
BLM Utah State Office	<i>Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015), pages 2-12–2-20</i>	Vegetation treatments, including prescribed fire, and maintaining, improving, and restoring habitat will be conducted to meet greater sage-grouse habitat objectives unless there is a conflict with Utah prairie dog, in which case the landscape will be managed for both species.
Dixie NF RMP	<i>Land and Resource Management Plan for the Dixie National Forest (USDA 1986a), page 11-20</i>	The Forest is presently cooperating with UDWR and other federal agencies in an effort to re-establish sufficient populations of prairie dogs on federal land so that the species can be delisted in sites for prairie dogs. Some of these sites are currently occupied; the others are historic prairie dog towns.
Dixie NF RMP	<i>Land and Resource Management Plan for the Dixie National Forest (USDA 1986a), page IV-6</i>	Goal No. 17: Manage classified species bald eagle (E), peregrine falcon (E), Utah prairie dog (T), <i>Astragalus perianus</i> (E), Bonneville cutthroat trout (S), Colorado River cutthroat trout (S) (E = Endangered, T = Threatened, S = Sensitive) habitat to maintain or enhance their status through direct habitat improvement and agency cooperation.
Fishlake NF	<i>Fishlake National Forest Land and Resource Management Plan (USDA 1986b), page 11-33</i>	The Utah prairie dog has been reestablished on two sites on the Forest. These relocations are part of an effort to establish viable populations in accordance with the recovery plan for this species. Recent efforts have resulted in a downlisting of the species from endangered to threatened. The Forest will continue to cooperate in providing and enhancing habitat for this species.
Bryce Canyon National Park	<i>Foundation Document Bryce Canyon National Park Utah (NPS 2014), page 14</i>	High-quality meadow habitat supports an abundance of native fauna, including the federally threatened Utah prairie dog. As a keystone species, the Utah prairie dog creates habitat for and supports other animal and plant species at a variety of levels through soil aeration, vegetation modification, and burrow engineering.
Bryce Canyon National Park	<i>Foundation Document Bryce Canyon National Park Utah (NPS 2014), page 49</i>	Utah prairie dog population stability is variable given the limited number of colonies, susceptibility to nonindigenous disease, and overall small number of animals. These factors, coupled with habitat fragmentation, yield a declining trend.

<b>Federal Agency</b>	<b>Land Planning Document Reference*</b>	<b>Excerpt of Resource-Specific Language</b>
Bryce Canyon National Park	<i>Foundation Document Bryce Canyon National Park Utah</i> (NPS 2014), page 50	Loss of habitat for keystone species, such as the Utah prairie dog, due to climatic shifts and drought events, nonnative diseases, and habitat fragmentation.
Bryce Canyon National Park	<i>Foundation Document Bryce Canyon National Park Utah</i> (NPS 2014), page 50	Cooperative management of Utah prairie dogs and their habitat across jurisdictions through planning with U.S. Forest Service, Garfield County, Bryce Canyon City, Utah Division of Wildlife Resources, and U.S. Fish and Wildlife Service.  Identify and designate Utah prairie dog habitat in the park.  Utah prairie dog population and disease monitoring  Utah prairie dog stewardship plan
Bryce Canyon National Park	<i>Foundation Document Bryce Canyon National Park Utah</i> (NPS 2014), page 56	Identification of Key Parkwide or Major Issues: Utah prairie dog management

\* The Cedar City FO RMP is in draft form and will be incorporated into Utah prairie dog planning once released.

### **7.3.2 Funding Conservation Actions**

Funding to implement this Conservation Strategy will be provided from a variety of sources and will include in-kind contributions from the Conservation Strategy partners, such as personnel, field equipment, and supplies. The Conservation Strategy partners will also seek other sources of assistance for implementing this Conservation Strategy through engagement of other partners. UDWR and the Conservation Strategy partners have a solid track record of funding Utah prairie dog recovery efforts and each have existing funding sources for use in management of Utah prairie dogs and new funding sources will be accessed as applicable. For example, funding for Utah prairie dog recovery through Utah’s Endangered Species Mitigation Fund, administered by UDWR, exceeded \$1.8M over the past 5 years (state FY18-22). Utah prairie dog conservation will continue to be a high priority for funding through the Endangered Species Mitigation Fund post-delisting.

## **7.4 CONSERVATION SCHEDULE AND PROGRESS ASSESSMENT**

The coordination and implementation of conservation activities and progress assessments will be conducted according to the process outlined below.

### **7.4.1 Coordinating Conservation Activities**

Administration of this Conservation Strategy will be conducted by UDWR, with help from its Conservation Strategy partners. UDWR and its Conservation Strategy partners will meet annually at a minimum to review progress reports (consisting of annual monitoring data, spring counts, translocations, plague prevention, and regulated control), the effectiveness of implementation of this Conservation Strategy, and yearly conservation schedules and budgets, and help develop funding as necessary.

### **7.4.2 Implementing the Schedule**

Conservation actions and monitoring activities will be scheduled and reviewed on an annual basis by the Conservation Strategy partners based on recommendations from UDWR. UDWR will be responsible for coordinating the review of conservation actions and monitoring activities conducted by the Conservation Strategy partners to determine if all actions are in accordance with this Conservation Strategy and the annual schedule. This Conservation Strategy will be a flexible document and can be revised through adaptive management to incorporate new information as it becomes available.

### **7.4.3 Progress Reports and Assessment**

Annual progress reports and 5-year assessments will be prepared by UDWR and provided to the Conservation Strategy partners. The 5-year assessments will evaluate the effectiveness of the conservation actions in reducing threats to ensure the long-term persistence of the Utah prairie dog and whether revisions to this Conservation Strategy are warranted. Conservation partners will contribute their respective data needed to complete reports and assessments.

## **7.5 CONSERVATION STRATEGY DURATION**

This Conservation Strategy shall be effective as of the date of the last signature in the attached Agreement and will remain in force into the foreseeable future as a living document that can be revised through adaptive management to incorporate new information as it becomes available. The Conservation Strategy partners shall undertake a review of this Conservation Strategy on a 10-year cycle from the date of the last signature. Revisions to this Conservation Strategy would be agreed upon by all Conservation Strategy partners and a commitment to renew the term for another 10 years upon expiration of the original term. Prior to renewal of the Agreement, the signatories will review monitoring data collected as part of this Conservation Strategy and other best available scientific and commercial information to assess the status of the Utah prairie dog against the biological goal and objectives of this Conservation Strategy. The Agreement will remain in place until the species is evaluated for and included in the 2035 revision of the Wildlife Action Plan.

## **7.6 MEMORANDUM OF AGREEMENT**

UDWR and its Conservation Strategy partners agree to implement this Conservation Strategy, consistent with available resources and funding sources. The MOA attached to this Conservation Strategy (see Appendix A) provides written assurances of the involved Conservation Strategy partners that have agreed to use their authorities and work cooperatively and collaboratively to conserve the Utah prairie dog across its range. This will be implemented through the regulatory mechanisms, conservation actions, adaptive management, monitoring, and other provisions of this Conservation Strategy per the details and responsibilities outlined in the MOA. The Conservation Strategy partners are composed of both Signatory and non-signatory partners. The signatories to this Conservation Strategy are the Conservation Strategy partners with the authority to administer the conservation actions described herein within the lands in which they manage.

The MOA signatories are as follows:

- Utah Division of Wildlife Resources
- Bureau of Land Management
- U.S. Forest Service
- Garfield County, Utah
- Iron County, Utah
- Kane County, Utah
- National Park Service
- Utah School and Institutional Trust Lands Administration
- The Nature Conservancy

## CHAPTER 8. LITERATURE CITED

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## **APPENDIX A**

### **Memorandum of Agreement**

## Appendix B. Utah Prairie Dog Conservation and Management Timeline

	<i>Poisoning, sylvatic plague, drought, and habitat alteration induced by agricultural and grazing activities</i>
<b>1971</b>	<b>Drastic decline</b> <i>UPD numbers drop to &lt; 3,000; Population distribution reduced by an estimated 87%; Only 48 remaining colonies</i>
<b>1972</b>	<b>Colony mapping &amp; translocations begin</b> <i>by UDWR</i>
<b>1974</b>	<b>Listed as an Endangered species</b> <i>under the Endangered Species Act</i>
<b>1976</b>	<b>Annual spring counts</b> <i>started by UDWR</i>
<b>1984</b>	<b>Downlisted to Threatened species</b> <i>Special 4(d) agriculture rule enacted</i>
<b>1991</b>	<b>First UPD Recovery Plan established</b> <i>Special rule amended expand to include all non-federal lands</i>
<b>1997</b>	<b>Interim Conservation Strategy</b>
<b>1998</b>	<b>Iron County Habitat Conservation Plan</b>
<b>2006</b>	<b>Habitat Conservation Plan amended</b> <i>Utah Prairie Dog Recovery Implementation Team (UPDRIT) joins UPD Recovery Team</i>
<b>2010</b>	<b>Utah Prairie Dog Recovery Implementation Program (UPDRIP) established</b> <i>Public and private partnership</i>
<b>2012</b>	<b>4(d) Rule and Recovery Plan revised</b> <i>to cover human safety hazards, protect burial sites, and exempt normal agricultural practices</i>
<b>2013</b>	<b>Iron County Low effect HCP</b>
<b>2014</b>	<b>Court ruling</b> <i>PETPO vs. USFWS; State Management begins</i>
<b>2015</b>	<b>State Management Plan</b> <i>UPDRIP restructured into the Utah Prairie Dog Oversight Group (UPDOG)</i>
<b>2017</b>	<b>Federal regulation reinstated</b> <i>Iron County HCP restored</i>
<b>2018</b>	<b>Range-wide GCP</b> <i>Iron County HCP expired; Colony active area mapping begins; Conservation Agreement &amp; Strategy on Federal Lands in the Paunsaugunt RU drafted</i>
<b>2020</b>	<b>Conservation Strategy</b> <i>drafted by UDWR and partners</i>
<b>2022</b>	<b>Paunsaugunt Recovery Unit</b> <i>reaches recovery goal for 9th consecutive year</i>

	<b>SPRING COUNT</b>		
<b><u>Tier</u></b>	<b><u>West Desert</u></b>	<b><u>Paunsaugunt</u></b>	<b><u>Awapa</u></b>
1	< 2,500	< 1,250	< 625
2	2,500 - 3,000	1,250 - 1,500	625 - 750
3	3,000 - 4,000	1,500 - 2,000	750 - 1,000
4	4,000 - 5,000	2,000 - 2,500	1,000 - 1,250
5	> 5,000	> 2,500	> 1,250

MANAGEMENT ACTIONS						
<u>Tier</u>	<u>Plague Control</u>	<u>Translocation</u>	<u>Regulated Control</u>	<u>Development</u>	<u>Predator Control</u>	<u>Habitat Management</u>
1	All protected colonies	Only conflict and development within major development areas	Up to 25% productivity	Surveys required for projects within major and minor development areas	Translocation sites and protected colonies with $\geq 15$ animals	Translocation sites and protected colonies with $\geq 15$ animals
2	All protected colonies	Only conflict and development within major development areas	Up to 50% productivity	Surveys required for projects within major and minor development areas	Translocation sites	Translocation sites and protected colonies with $\geq 23$ animals
3	All protected colonies $\geq 15$ animals	Translocate as needed and prepare new sites	Up to 75% productivity	Surveys required for projects within minor development areas	Not required	New translocation sites
4	All protected colonies $\geq 23$ animals	Translocate as needed and prepare new sites	Up to 100% productivity	Surveys required for projects within minor development areas	Not required	New translocation sites
5	Two-year interval at protected colonies $\geq 23$ animals	Trap as many sources as available	Up to 100% productivity plus 50% adults	No surveys required	Not required	Not required

Management under GCP and 4(d) rule	Protected colonies as funding allows	Development, independent of development, 4(d) agriculture, and 4(d) safety	4(d) control permits of up to 50% productivity and 4(d) safety where fencing is installed	Surveys required in major and minor, required mitigation fees for impacts to occupied habitats	Only at translocation sites as needed	As funding and project proposals are made
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**R657. Natural Resources, Wildlife Resources.**

**R657-70. Taking Utah Prairie Dogs**

**R657-70-1. Purpose and Authority.**

(1) Under authority of Sections 23-14-1, 23-14-3, 23-14-18, and 23-14-19, this rule provides the standards and requirements for taking Utah prairie dogs.

(2) This rule will immediately go into effect if:

(a) the U.S. Fish and Wildlife Service delegates management of Utah prairie dogs to the State; or

(b) Utah prairie dogs are no longer listed as a threatened or endangered species under the Endangered Species Act of 1973, 16 U.S.C. Sec. 1530, et seq.

(3) The division may transplant Utah prairie dogs under Section 23-14-21.

(4) A person capturing any live Utah prairie dog for personal, scientific, educational, or commercial use must comply with Rule R657-3.

**R657-70-2. Definitions.**

(1) Terms used in this rule are defined in Section 23-13-2.

(2) Additional terms used in this rule are defined as follows:

(a) "Agricultural land" means any property that is used or has been used in the previous two years for production of a cultivated crop or irrigated pasture that is harvested or grazed.

(b) "Certificate of registration" means a document issued by the division authorizing a person or entity to take a Utah prairie dog.

(c) "Developed land" means any property that is:

(i) developed or improved for public use and where Utah prairie dogs threaten human health, safety or welfare, including parks, playgrounds, public facilities, sports fields, golf courses, school yards, churches, areas of cultural or religious significance, improved roads, transportation systems; or

(ii) within 50 feet of an occupied, residential or commercial structure where Utah prairie dogs threaten human health, safety or welfare on developed curtilage, including lawns, landscaping, gardens, and driveways.

(e) "Division" means the Utah Division of Wildlife Resources.

(f) "Federal land" means all lands in the State of Utah owned by the United States government including Forest Service, Bureau of Land Management, Bureau of Reclamation, Department of Defense, National Park Service, Bureau of Indian Affairs, National Monument, and National Recreation Area lands.

(g) "Immediate family" means a landowner's or lessee's spouse, child, son-in-law, daughter-in-law, father, mother, father-in-law, mother-in-law, brother, sister, brother-in-law, sister-in-law, stepchild, and grandchild.

(h) "Landowner" means the person(s) or entity holding fee title to real property impacted by Utah prairie dogs.

(i) "Lessee" means the person(s) or entity leasing or renting under written contract real property impacted by Utah prairie dogs.

(j) "Major development areas" means non-federal lands identified by the division that are developed, adjacent to developed areas, in areas of dense human activity, or areas projected for development in the near future.

(k) "Management area" means one of the three geographic areas established for the protection and management of Utah prairie dogs.

(l) "Minor development areas" means non-federal lands identified by the division that are less likely than major development areas to experience large-scale development and are more likely to function as suitable habitat or to support habitat and population connectivity for Utah prairie dogs.

(m) "Productivity" means the segment of a population represented by pups born that year.

(n) "Protected land" means federal and non-federal property that is set aside specifically or primarily for the preservation of Utah prairie dogs.

(o) "Rangeland" means any property that is used or has been used in the previous two years for grazing livestock, and is neither cultivated nor irrigated.

(p) "Utah prairie dog" or "prairie dog" means the genus and species *Cynomys parvidens*.

### **R657-70-3. Certificate of Registration of Take of Utah Prairie Dog**

(1)(a) A person may not take a Utah prairie dog without first obtaining a certificate of registration from the division, except as provided in Sections R657-70-6; -7; and -8.

(b)(i) A certificate of registration for taking Utah prairie dogs consistent with the division management plan may be issued consistent with this rule when removal is required to mitigate conflict between Utah prairie dog populations and human development.

(ii) A certificate of registration for taking Utah prairie dogs are only valid within the management area specified on the certificate of registration.

(c) A person may apply for a certificate of registration at the division's southern regional office, 1470 North Airport Road, Cedar City, Utah 84721.

(d) A landowner or lessee may apply for a certificate of registration.

(e)(i) A person applying for a certificate of registration, may designate the following individuals to exercise the benefit of the certificate of registration:

(A) immediate family of landowner or lessee; or

(B) employee on a regular payroll who is not hired specifically to take Utah prairie dogs.

(ii) A maximum of four designee certificates of registration may be issued per landowner or lessee.

(iii) Each designee application shall be considered individually based upon the explanation and justification provided.

(f) An application for a certificate of registration must include:

(i) full name;

(ii) complete mailing address;

(iii) phone number;

(iv) date of birth;

(v) weight and height;

(vi) gender;

(vii) hair and eye color;

(viii) social security number;



- (ix) driver's license number, if issued;
- (x) explanation of the need for the certificate of registration to be issued;
- (xi) justification for any designees;
- (xii) landowner or lessee's signature;
- (xiv) proof of hunter education certification if the applicant was born after December 31, 1965; and
- (xv) the township, range, section and 1/4 section of the agricultural lands where the prairie dogs will be taken.

(g) An applicant must be at least 14 years of age at the time the application is filed and must abide by the provisions for children being accompanied by adults while hunting with a weapon pursuant to Section 23-20-20 up to the age of 16 years of age.

(h) After the division reviews an application, a certificate of registration may be issued specifying the number of Utah prairie dogs that may be taken under the certificate of registration.

(i) A maximum of four certificates of registration may be issued to any landowner or lessee, including those issued to the landowner or lessee's designees.

(j) A certificate of registration shall be issued on an individual basis and shall be valid only for the person to whom the certificate of registration is issued.

(k) A certificate of registration is not transferrable and must be signed by the holder prior to use.

(l) If the application and permitting process is accomplished by U.S. Mail, the certificate of registration shall only become valid after a copy of the signed certificate of registration is received by the division's southern regional office.

(3) Notwithstanding any other provision in this chapter authorizing take of prairie dogs, a person may not take a Utah prairie dog on protected land set aside by contractual agreement or law for the protection and conservation of Utah prairie dogs.

#### **R657-70-4. Methods of Take.**

(1)(a) A person authorized to take a Utah prairie dog under this chapter may lethally remove the animal using any means permitted by federal, state, and local, law.

(b) Environmental Protection Agency regulations currently prohibit the use of toxicants and fumigants on Utah prairie dogs.

(2) Notwithstanding Section 23-13-6 or as authorized by the division in a certificate of registration, a person may not:

- (a) capture or attempt to capture a live prairie dog;
- (b) possess a live prairie dog; or
- (c) release a prairie dog into the wild.

(3)(a) A person may take Utah prairie dogs with a firearm during daylight hours or by trapping as specified on a certificate of registration.

(b) In addition to the requirements of this rule, any person taking Utah prairie dogs must comply with all federal, state, and local laws.

(4) The following information must be reported every 30 days to the division's southern regional office at 1470 North Airport Road, Suite 1, Cedar City, Utah 84720, or online when available:

(a) the name and signature of the landowner, lessee, or certificate of registration holder;

(b) the person's certificate of registration number (where applicable);

(c) the number of prairie dogs taken; and

(d) the location and method of disposal of each prairie dog taken during the 30-day period.

(5) Failure to report the information required in Subsection (3), within 30 days, may result in the denial of future opportunity to take prairie dogs.

**R657-70-5. Adaptive Management Tiers.**

(1)(a) Utah prairie dog spring counts are conducted annually, and the most recent 3-year average of spring-counted Utah prairie dogs are used in trend analysis.

(b) The division will make management decisions regarding development and take allowances based on the 3-year average spring count.

(2)(a) Table 5-1 identifies spring count population tiers for triggering management actions within each management area on all lands.

(b) If annual spring counts for a management area are below the established population minimum identified in the Tier 1 Conditions, the division may attempt live capture before lethal control will be authorized, and Utah prairie dogs will be translocated to approved translocation sites on federal or other non-federal lands to help abate the conflicting land use activity.

Tier	West Desert Management Area	Paunsaugunt Management Area	Awapa Plateau Management Area
1	< 2,500	< 1,250	< 625
2	2,500 - 3,000	1,250 - 1,500	625-750
3	3,000 - 4,000	1,500 - 2,000	750 - 1,000
4	4,000 - 5,000	2,000 - 2,500	1,000 - 1,250
5	> 5,000	> 2,500	> 1,250

(c) Table 5-2 identifies the thresholds for development surveys for Management Areas.

Tier	Survey Requirements
1	Surveys required for all projects within Major and Minor Development Areas
2	Surveys required for all projects within Major and Minor Development Areas
3	Surveys required for all projects within Minor Development Areas
4	Surveys required for all projects within Minor Development Areas
5	No surveys required. Development impacts will be tracked with spring-count data

(d) Table 5-3 identifies take allowances per colony.

Tier	Number of Take Allowed
1	Up to 25% Productivity
2	Up to 50% Productivity
3	Up to 75% Productivity
4	Up to 100% Productivity
5	Up to 100% Productivity + 50 Adults

(3) The Division will calculate the yearly maximum take based on annual colony counts.

**R657-70-6. Take of Utah Prairie Dogs in Inhabited or Occupied Structures.**

(1)(a) For purposes of this section, an inhabited or occupied structure means a building where people live, work, or visit, including a home, apartment, hotel, commercial or public office, public building, church, store, warehouse, business, work shop, restaurant.

(b) Notwithstanding Section R657-70-3, any person with the consent of the owner or lessee may take a Utah prairie dog that is within the interior of a structure inhabited or occupied by people.

(2) A certificate of registration or prior notice to the division is not required to take a prairie dog under this section.

(3) A person that takes a prairie dog under this section is required to submit a report to the division under Section R657-70-4(4).

**R657-70-7. Take of Utah Prairie Dogs on Developed Land.**

(1) A landowner or lessee of developed land may take a prairie dog on that land without a certificate of registration, provided:

(a) The division is notified prior to take and the property where take will occur is confirmed by the division to be developed land;

(b) Take is performed exclusively by the individuals and under the conditions set forth in Section R657-70-3;

(c) Take is restricted to the developed land owned by the landowner, or leased by the lessee; and

(d) The methods utilized to take prairie dogs are consistent with the limitations in Section R657-70-4;

**R657-70-8. Take of Utah Prairie Dogs During and Prior to Land Development Activities.**

(1) A person may not take a Utah prairie dog on developable land without first obtaining a certificate of registration from the division.

(2)(a)(i) A person may obtain a certificate of registration to take prairie dogs on developable land when:

(A) a construction project is proposed for a parcel of developable land; and

(B) construction on the project is imminent.

(ii) The project proponent must notify the division prior to disturbing the surface of the ground or building a structure on developable land.

(b) Upon receiving notice of the proposed construction project, the division will survey the subject property for the presence of prairie dogs.

(i) If the property is not occupied by prairie dogs, the division will issue a written notification to the project proponent authorizing the project to proceed.

(ii) If prairie dogs are discovered on the property, the division will first attempt to trap and relocate the animals to the extent feasible and in coordination with the project proponent.

(iii) If the project proponent declines to delay the project for trapping, or when trapping is determined complete, the division will issue a certificate of registration to the project proponent authorizing take of all prairie dogs present or remaining on the property.

(4) Take is allowed only on the property proposed for the project and identified in the certificate of registration.

(6) The division will survey for Utah prairie dogs in major and minor development areas according to Table 5-2.

#### **R657-70-9. Take of Utah Prairie Dogs on Agricultural Land and Range Land.**

(1) A person may not take a Utah prairie dog on agricultural land without first obtaining a certificate of registration from the division, except as provided in Section R657-70-7.

(2) The division will calculate the yearly maximum take based on the productivity of colonies measured on an annual basis.

(4)(a) Prairie dogs trapped on the property and relocated by the division between June 15 and October 1 – before lethal take – will not count against the property's maximum take limit identified on the certificate of registration

(b) Take is restricted to the agricultural land owned by the landowner, or leased by the lessee.

(c) Prairie dogs may be taken on agricultural land only with firearms, archery equipment, and kill traps.

(d) Utah prairie dogs may be taken under this section from June 15 to December 31, and in number not to exceed that identified on the certificate of registration.

(5) A person that takes a prairie dog under this section shall submit a monthly report to the division, as provided in Section R657-70-4(3).

#### **R657-70-10. Violations .**

(1) Any violation of this rule is a Class C misdemeanor as provided in Subsection 23-13-11(2).

(2) Pursuant to Section 23-19-9, the division may suspend a certificate of registration issued under this rule.

**KEY: wildlife, game laws**

**Date of Enactment or Last Substantive Amendment: New Rule**

**Notice of Continuation: New Rule**

**Authorizing, and Implemented or Interpreted Law: 23-14-1, 23-14-3, 23-14-18 and 23-14-19**

**R657. Natural Resources, Wildlife Resources.**

**R657-19. Taking Nongame Mammals.**

**R657-19-1. Purpose and Authority.**

(1) Under authority of Sections 23-13-3, 23-14-18 and 23-14-19, this rule provides the standards and requirements for taking and possessing nongame mammals.

(2) A person capturing any live nongame mammal for a personal, scientific, educational, or commercial use must comply with R657-3 Collection, Importation, Transportation and Subsequent Possession of Zoological Animals.

**R657-19-5. Nongame Mammal Species - Certificate of Registration Not Required.**

(1) All nongame mammal species not listed in Section R657-19-4 as requiring a certificate of registration, may be taken:

- (a) without a certificate of registration;
- (b) year-round, 24-hours-a-day; and
- (c) without bag or possession limits.

(2) A certificate of registration is not required to take any of the following species of nongame mammals, however, the taking is subject to the provisions provided under Section R657-19-10:

- (a) White-tailed prairie dog, *Cynomys leucurus*; and
- (b) Gunnison prairie dog, *Cynomys gunnisoni*.

**R657-19-7. Areas Open to Taking Utah Prairie Dogs -- Dates Open --Limits on Number of Utah Prairie Dogs Taken.**

(1) A person who obtains a valid certificate of registration may take Utah prairie dogs only on private lands within the following counties:

- (a) Beaver;
- (b) Garfield;
- (c) Iron;
- (d) Kane;
- (e) Millard;
- (f) Piute;
- (g) Sanpete;
- (h) Sevier;
- (i) Washington; and
- (j) Wayne.

(2) Taking of a Utah prairie dog on any land or by any method, other than as provided in the valid certificate of registration, including any public land, is a violation of state and federal law.

(3) Any person, who is specifically named on a valid certificate of registration, may remove Utah prairie dogs, as provided in the certificate of registration.

(4) The taking of any Utah prairie dog outside the areas provided in this section is prohibited, except by division employees while acting in the performance of their assigned duties.

(5) The taking of Utah prairie dogs is limited to the dates designated on the certificate of registration. All dates are confined to June 15 through December 31, except as provided in Subsection R657-19-6(1)(b)(iii).

(6)(a) A person may take only the total number of Utah prairie dogs designated in the certificate of registration, except as provided in Subsection R657-19-6(1)(b)(iii).

(b) The total annual range-wide take of Utah prairie dogs and the total annual take of Utah Prairie dogs on agricultural lands is governed by federal law.

[(c) If the division determines that taking Utah prairie dogs has an adverse effect on conservation of the species, taking shall be further restricted or prohibited.

(7) If Utah prairie dogs are delisted by the U.S. Fish and Wildlife Service from the endangered or threatened species list or authority over Utah prairie dogs is delegated to the State in certain areas see rule R657-70 for the division's regulations.

**KEY:** wildlife, game laws

**Date of Enactment or Last Substantive Amendment:** February 7, 2018

**Notice of Continuation:** July 31, 2018

**Authorizing, and Implemented or Interpreted Law:** 23-13-3; 23-14-18; 23-14-19  
Emergency Rule Filing: August 15, 2017



## State of Utah

SPENCER J. COX  
*Governor*

DEIDRE M. HENDERSON  
*Lieutenant Governor*

## Department of Natural Resources

JOEL FERRY  
*Executive Director*

### Division of Wildlife Resources

J. SHIRLEY  
*Division Director*

## MEMORANDUM

TO: Utah Wildlife Board

FROM: Darren DeBloois, Predatory Mammals and Furbearer Program Coordinator

DATE: December 17, 2021

**SUBJECT: 2023 BLACK BEAR PLAN REVISIONS, RULE AMENDMENTS AND HUNT STRUCTURE RECOMMENDATIONS.**

### **2023-24 FURBEARER AND COUGAR SEASON RECOMMENDATIONS**

The second year of the three-year bear recommendation cycle begins in 2023. DWR will not be recommending any changes to permit numbers or harvest objectives next year.

The current Black Bear Management Plan expires next year, so the DWR convened a Black Bear Plan Review Committee to review the plan. The Committee was composed of the following individuals representing various stakeholder groups.

- Barb Smith – U.S. Forest Service
- Ben Lowder – Utah Archery Association
- Braydon Richmond – SFW
- Brett Guymon – Houndsmen
- Chad Heuser – Wildlife Services
- Cory Huntsman – Houndsmen
- Dustin Mitchell – Utah DWR
- Julie Young – USU/at large
- J.W. Hackett – At large
- Lisa Church – BLM
- Kirk Player – Backcountry Hunters & Anglers
- Ross Worthington – Big game hunters
- Sierra Nelson – Utah Wool Growers Association
- Sunshine Brosi – At large
- Travis O'Neil – Bait hunters
- Wade Heaton – Wildlife Board



In addition to the committee members, DWR had several employees to assist the group with their discussions and recommendations. The DWR personell were:

- Chris Wood – Facilitator
- Darren DeBloois – Committee Chair
- Elicia Cotcher – Record Keeper
- Lindy Varney – Licensing
- Gary Cook – Outreach
- Eric Bond – Law Enforcement
- Seth Decker – Law Enforcement

The committee met five times for three hours each time. It identified many topics to cover during the discussions at the first meeting and moved through each topic over the next four meetings. The discussions and final recommendations include changes to the management plan, administrative rule and hunting season structure. Topics of discussion included:

- Simplifying recommendation parameters
- Simplifying season structure
- Addressing law enforcement issues with hounds and bait in the field at the same time
- Addressing conflicts with houndsmen and archery big game hunters
- Bait regulations
- Pack size for houndsmen
- Permit costs
- Utilizing bear meat

The committee is recommending the following changes to the plan, rules and season structure:

Plan changes:

- Give district biologist flexibility to choose harvest strategies
- Take into account surrounding units
- Get statewide check during recommendation process
- Eliminate the requirement for percentages of the unit to fall under certain management strategies (light, moderate, liberal)
- Eliminate the requirements for limited-entry vs. harvest objective hunting strategies
- Keep current plan parameters for permit recommendations and adjustments
- Update literature cited to make include current research
- Help public understand regulations regarding pack size
- Offer permit holders info on how to determine sex of bears, but eliminate mandatory orientation for all applicants
- Update research goals
- Other housekeeping editing





#### Rule changes:

- Allow hunter with valid bait permits to hunt over another hunter's bait site, with written permission from the COR holder
- Allow the use of a single metal container (with maximum size of 55 gallons) to be used for bait, if securely attached at the bait site
- Prohibit the use of chocolate or cocoa products as bait
- Bait sites must comply with all DWR rules, but DWR will not review locations and approve them before COR is issued
- Eliminate mandatory orientation course, but provide information to successful bear permit holders

#### Hunt structure, season changes:

- Spring seasons:
  - Hound season April 1 – May 30, 2023
  - Bait season May 30 – June 30, 2023
  - Spring Pursuit (including restricted units) April 1 – May 30, 2023
- Summer Pursuit:
  - July 5 – August 4, 2023
  - Restricted Pursuit Book Cliffs, La Sal and San Juan Early Summer July 5 – 16, 2023 and Late Summer July 19 – 30, 2023
- Fall Seasons:
  - Hound season August 1 – 31 and October 30 – November 12, 2023
  - Spot-and-Stalk Season September 1 – October 29, 2023
  - Hound season Book Cliffs, Bitter Creek/South August 5 – 18 and October 6 – November 12, 2023
  - Spot-and-Stalk Book Cliffs, Bitter Creek/South August 19 – October 5, 2023
  - Spot-and-Stalk Book Cliffs, Little Creek Roadless September 2 – November 12, 2023

#### Recommendations for 2023-24 Furbearer include the following seasons:

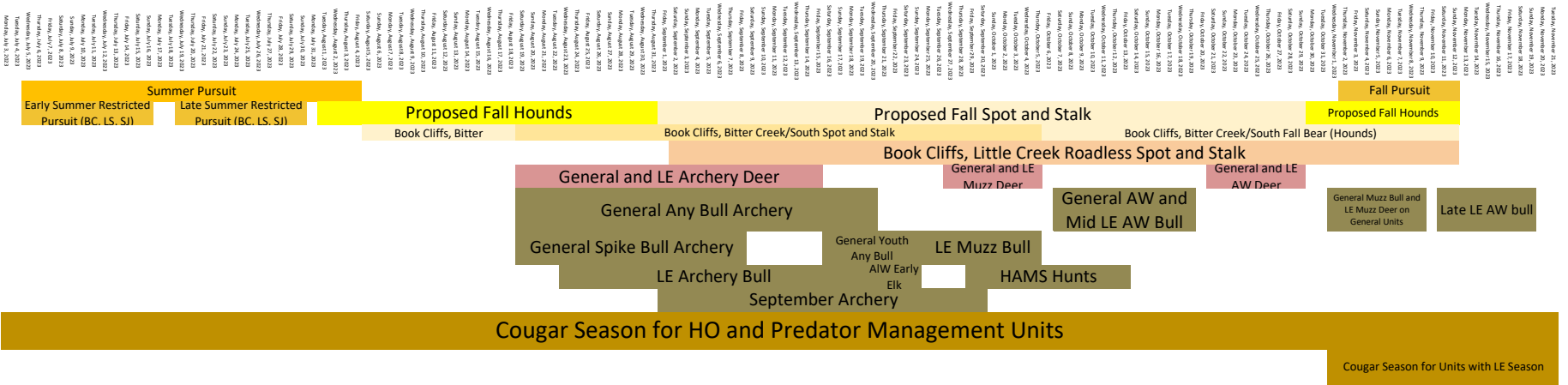
- Bobcat
  - Six permits for individual
  - November 16, 2023 – March 1, 2024
  - No permit cap
- Beaver and Mink
  - September 16, 2023 – April 1, 2024
- Marten, Badger, Gray Fox, Kit Fox, Ringtail, Spotted Skunk and Weasel
  - September 16, 2023 – March 1, 2024
- Close the following areas to protect habitat restoration projects using beaver transplants
  - Threemile Creek (Garfield County)
  - Reservoir Canyon (Washington County)



The cougar recommendation cycle is in its second year, so DWR will not be recommending permit or harvest objective changes this year. Seasons dates are being changed with the calendar to the following:

- Harvest objective season including predator management units July 1, 2023 – June 30, 2024
- Harvest objective season on La Sal; San Juan, Mtns; and Book Cliffs, East
  - No dogs from July 1 – November 2, 2023 and from March 30 – June 30, 2024 except for people with valid bear permits
- Harvest objective season on South Slope, Bonanza/Diamond Mtn/Vernal; South Slope, Yellowstone; Wasatch Mtns, Avintaquin/Currant Creek
  - No dogs May 30 – June 30, 2024
- Pursuit season (most units) November 1, 2023 – May 31, 2024
- Pursuit season on La Sal; San Juan, Mtns; and Book Cliffs, East units:
  - November 1, 2023 – March 29, 2024
  - Hunters with valid bear permits for these units may pursue from March 30 – May 27, 2024
- Limited Entry season (most units) November 1, 2023 – February 18, 2024
- Limited Entry season for Oquirrh-Stansbury, East and Wasatch Mtns, West-Strawberry units
  - November 1, 2023 – March 20, 2024
  - Harvest objective hunting begins at the end of these limited entry seasons and runs through May 31, 2024





Summer Pursuit  
Early Summer Restricted Pursuit (BC, LS, SJ)

Late Summer Restricted Pursuit (BC, LS, SJ)

Proposed Fall Hounds  
Book Cliffs, Bitter

Proposed Fall Spot and Stalk  
Book Cliffs, Bitter Creek/South Spot and Stalk

Proposed Fall Hounds  
Book Cliffs, Bitter Creek/South Fall Bear (Hounds)

General and LE Archery Deer

General and LE Muzz Deer

General and LE AW Deer

General Muzz Bull and LE Muzz Deer on General Units

Late LE AW bull

General Any Bull Archery

General AW and Mid LE AW Bull

General Spike Bull Archery

General Youth Any Bull AIW Early Elk

LE Muzz Bull

HAMS Hunts

September Archery

Cougar Season for HO and Predator Management Units

Cougar Season for Units with LE Season

Friday, June 30, 2023  
 Thursday, June 29, 2023  
 Wednesday, June 28, 2023  
 Tuesday, June 27, 2023  
 Monday, June 26, 2023  
 Sunday, June 25, 2023  
 Saturday, June 24, 2023  
 Friday, June 23, 2023  
 Thursday, June 22, 2023  
 Wednesday, June 21, 2023  
 Tuesday, June 20, 2023  
 Monday, June 19, 2023  
 Sunday, June 18, 2023  
 Saturday, June 17, 2023  
 Friday, June 16, 2023  
 Thursday, June 15, 2023  
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 Thursday, April 6, 2023  
 Wednesday, April 5, 2023  
 Tuesday, April 4, 2023  
 Monday, April 3, 2023  
 Sunday, April 2, 2023  
 Saturday, April 1, 2023

**Spring Pursuit** (Includes Restricted Season for non-residents on BC, LS, SJ)

**Proposed Spring Hound**

**Proposed Summer Bait**

**Cougar Season on HO and Predator Management Units**  
**Cougar Season for Units with LE Seasons**

## **R657. Natural Resources, Wildlife Resources.**

### **R657-33. Taking Bear.**

#### **R657-33-1. Purpose and Authority.**

(1) Under authority of Sections 23-14-18 and 23-14-19, the Wildlife Board has established this rule for taking and pursuing bear.

(2) Specific dates, areas, number of permits, limits and other administrative details which may change annually are published in the guidebook of the Wildlife Board for taking and pursuing bear.

#### **R657-33-3. Permits for Taking Bear.**

(1)(a) To harvest a bear, a person must first obtain a valid limited entry bear permit, a harvest objective bear permit, a spot-and-stalk permit, or a bear control permit for a specified hunt unit as provided in the guidebook of the Wildlife Board for taking bear.

(b) Any person who obtains a limited entry bear permit or a harvest objective bear permit which allows the use of dogs may pursue bear without a pursuit permit while hunting during the season and on the unit for which the take permit is valid, provided the person is the dog handler.

(2)(a) A person may not apply for or obtain more than one bear permit per year, except:

(b) if the person is unsuccessful in the drawing administered by the division under Rule R657-62, the person may purchase a permit available outside of the drawing; and

(c) a person may acquire more than one bear control permit as described in Subsection R657-33-23(4).

(3) Any bear permit purchased after the season opens is not valid until three days after the date of purchase.

(4) Residents and nonresidents may apply for and receive limited entry bear permits, and may purchase harvest objective bear permits and bear pursuit permits.

~~[(5)(a) A person must complete a mandatory orientation course before applying for or obtaining a limited entry, harvest objective, or bear pursuit permit.]~~

~~[(b) The orientation course is not required to receive a bear control permit under Subsection R657-33-23(4).]~~

~~[(c) The orientation course shall include training on hunter ethics.]~~

~~[(6)]~~

(5) To obtain a limited entry, harvest objective, spot-and-stalk permit, or bear pursuit permit, a person must possess a valid Utah hunting or combination license.

#### **R657-33-13. Certificate of Registration Required for Bear Baiting.**

(1) A certificate of registration for baiting must be obtained before establishing a bait station.

(2) Certificates of registration for bear baiting are issued only to holders of limited entry permits authorizing the use of bait, as provided in the guidebook of the Wildlife Board for taking bear.

(3) A certificate of registration may be obtained from the division office within the region where the bait station will be established by applying on the division website.

(4) A new certificate of registration must be obtained before moving a bait station. All materials used as bait must be removed from the old site before the issuing of a new certificate of registration.

(5) The following information must be provided to obtain a certificate of registration for baiting: a 1:24000 USGS quad map with the bait location marked, or the Universal Transverse Mercator (UTM) or latitude and longitude coordinates of the bait station, including the datum, type of bait used and written permission from the appropriate landowner for private lands.

(6)(a) Any person interested in baiting on lands administered by the Bureau of Land Management must verify that the lands are open to baiting before applying for and receiving a certificate of registration for bear baiting.

(b) Information on areas that are open to baiting on National Forests must be obtained from district offices.

(c) Issuance of a certificate of registration for baiting does not authorize an individual to bait if it is otherwise unlawful to bait under the regulations of the applicable land management agency.

(7) A handling fee must accompany the application.

(8) ~~[Only hunters]~~ A person may hunt over a bait station only if:

(a) ~~the person is~~ listed on the certificate of registration ~~[may hunt over the bait station]~~ and possesses the certificate of registration ~~[must be]~~ in ~~[possession while hunting]~~ the field; or

(b) possesses written permission from the certificate of registration holder to hunt over the bait station.

(9) Any person tending a bait station must be listed on the certificate of registration for that bait station.

#### **R657-33-14. Use of Bait.**

(1)(a) A person who has obtained a limited entry bear permit for a season and hunt unit that allows baiting may use firearms and archery equipment as provided in Section R657-33-6.

(b) Bear lured to a bait station may only be taken using firearms and archery equipment approved by the Wildlife Board and described in the guidebook for taking bear.

(c) A person may establish or use no more than two bait stations. The bait stations may only be used during periods designated in the guidebook for taking bear.

(d) Bear lured to a bait station may not be taken with dogs.

- (e)(i) Bait may be contained in a single metal container with a maximum size of 55 gallons that is securely attached to a bait site.
- (ii) Bait may not be contained in or include any metal, glass, porcelain, plastic, cardboard, or paper.
- (f) The bait station must be marked with a sign provided by the division and posted within 10 feet of the bait.
- (g) A dog handler may not intentionally run dogs off a bait station while pursuing bear.
- (2)(a) Bait may be placed only in areas open to hunting and only during the open seasons.
- (b) All materials used as bait must be removed within 72 hours after the close of the season or within 72 hours after the persons, who are registered for that bait station harvest a bear.
- (3) A person may use bait that is:
- (i) nongame fish~~[-as-bait]~~, except those listed as prohibited in Rule R657-13 and the guidebook of the Wildlife Board for Taking Fish and Crayfish[-];
- (ii) ~~No~~any other species of protected wildlife~~[-may be used as bait]~~; or
- (iii) chocolate or cocoa products.
- (4)(a) Domestic livestock or its parts, including processed meat scraps, may be used as bait.
- (b) A person using domestic livestock or their parts for bait must have in possession:
- (i) a certificate of brand inspection, bill of sale, or other proof of ownership or legal possession.
- (5) Bait may not be placed within:
- (a) 100 yards of water or a public road or designated trail; or
- (b) 1/2 mile of any permanent dwelling or campground.

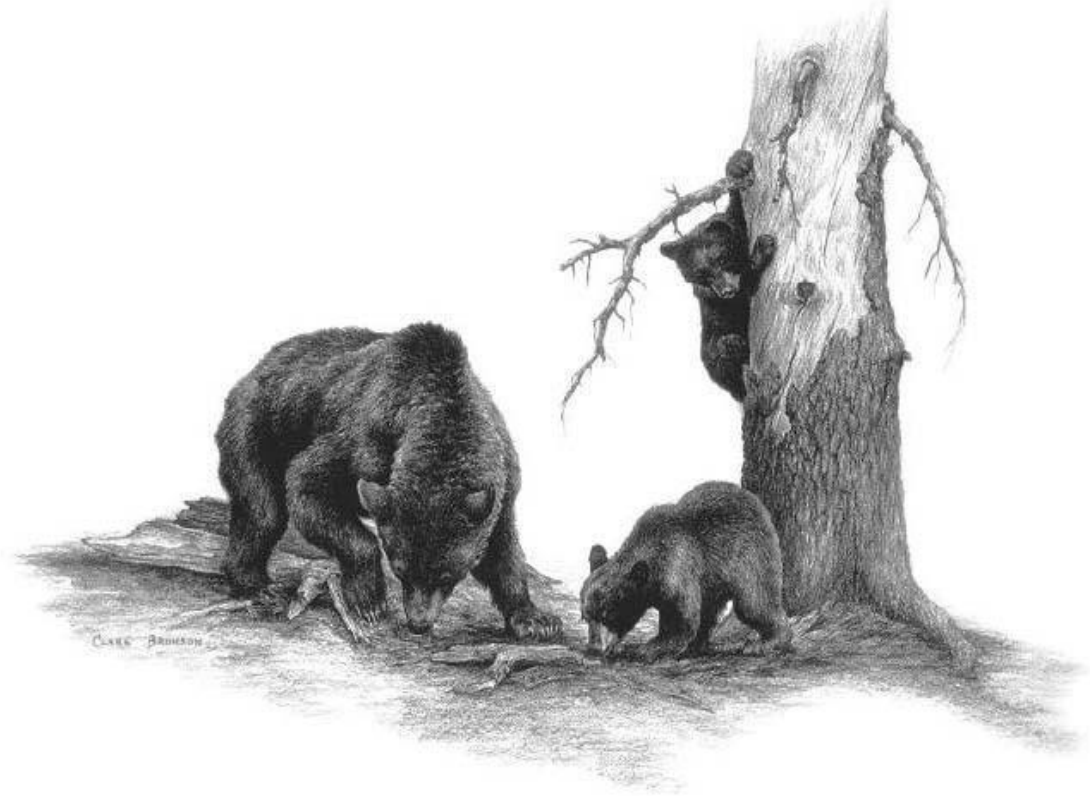
**KEY: wildlife, bear, game laws**

**Date of Last Change: May 2, 2022**

**Notice of Continuation: October 31, 2022**

**Authorizing, and Implemented or Interpreted Law: 23-14-18; 23-14-19; 23-13-2**

# UTAH BLACK BEAR MANAGEMENT PLAN



## Utah Black Bear Advisory Committee

DWR Publication

Utah Division of Wildlife Resources  
1594 West North Temple  
Salt Lake City, Utah 84114

Approved by the Wildlife Board

## Black Bear Advisory Committee Members

Ben Lowder	Utah Archery Association
Travis O’Niel	Bait Hunters
Cory Huntsman	Utah Houndsmen Association
Bret Guyman	Utah Houndsmen Association
Kirk Player	Backcountry Hunters and Anglers
Sunshine Brosi	At Large
Kaya Wasilewska	BLM
Julie K. Young	Utah State University
Sierra Nelson	Utah Woolgrowers
Brayden Richmond	Sportsmen for Fish and Wildlife
Chad M Heuser	USDA Wildlife Services
Wade Heaton	Wildlife Board
JW Hackett	At Large
Ross Worthington	Big Game Hunters
Barb Smith	US Forest Service
<a href="#">Dustin Mitchell</a>	DWR

### DWR Representatives:

Darren DeBloois	Game Mammals Program Coordinator
<a href="#">Chris Wood</a>	Facilitator
<a href="#">Elicia Cotcher</a>	Recorder
Lindy Varney	Licensing
Gary Cook	Outreach
Eric Bond	Law Enforcement
Seth Decker	Law Enforcement

## UTAH BLACK BEAR MANAGEMENT PLAN V. 2.0 2011-2023

### Plan Goal

Maintain a healthy bear population in existing occupied habitat and expand distribution while considering human safety, economic concerns, and other wildlife species.

Definition: A “healthy” bear population is one that has a proportion of breeding age animals that will maintain population levels consistent with habitat, and that maintains genetic variability.



## **Introduction**

The purpose of the Utah Black Bear Management Plan is to provide direction for management of black bear (*Ursus americanus*) in Utah. This purpose is in accordance with the mission statement of the Utah Division of Wildlife Resources (UDWR). The mission of UDWR is:

*To serve the people of Utah as trustee and guardian of the state's wildlife*

The Utah Black Bear Management Plan will direct black bear management statewide for a period of twelve years (2023-2035). Over the life of the plan, four three-year harvest recommendation cycles will be presented to the Utah Wildlife Board for approval. In 2029, six years after the plan has been adopted, an evaluation of key objectives will occur, primarily those associated with the population management system. However, earlier reviews and updates may be needed in response to new scientific information. Similarly, an additional evaluation may be necessary after the first six years. In all cases, this document will be reviewed, management progress will be evaluated, and an updated management plan will be written and presented to the Utah Wildlife Board for approval in 2035.

## **Background**

In 1999, the UDWR Director appointed an *ad hoc* committee, which became known as the Black Bear Discussion Group, to address concerns with black bear management and develop Utah's first black bear management plan. This group contained citizen representatives of sportsmen and animal protection groups, researchers, livestock operators, and representatives from Federal and State agencies. In 2010 the Division revised the Utah Black Bear Management Plan using a similar process.

In 2022, UDWR established a committee to recommend changes to the black bear plan because the current plan was expiring in 2023. This plan is the product of those meetings and recommendations.

For details about subjects covered during these committee meetings, see Appendix A.

## **Natural History**

The range of the American black bear historically included all the forested areas of the continent from Alaska to the northern states of Mexico and from California, east to Florida and the Canadian provinces of Newfoundland and Nova Scotia. Today, the range of black bear is reduced but still includes all or parts of 38 states, 11 Canadian provinces, and 7 Mexican states. In Utah, the black bear is present in much of the forested habitat and desert systems where oak (*Quercus sp.*) trees exist. The Deep Creek Mountains,

Pilot Range, Henry Mountains, and Raft River Mountains are notable exceptions (Figure 1).

The black bear is secretive, long lived, and has a low annual reproduction rate compared to other large North American wildlife species. Based on harvest levels, Utah may have the smallest bear population of all the western states, except Nevada. Data from Utah during the past twenty years suggests the population may be growing.

## **Description**

In the mountain west, most black bears have brown to dark chocolate pelage while a few are black. In the eastern USA, they are generally black except for the frequent presence of a white triangle on the upper chest, and brown muzzles. Bears from the west tend to have lighter muzzles, and some individuals are blonde. In Utah, the white chest patch is infrequent. The dark brown pelage may appear black, especially in low light conditions.

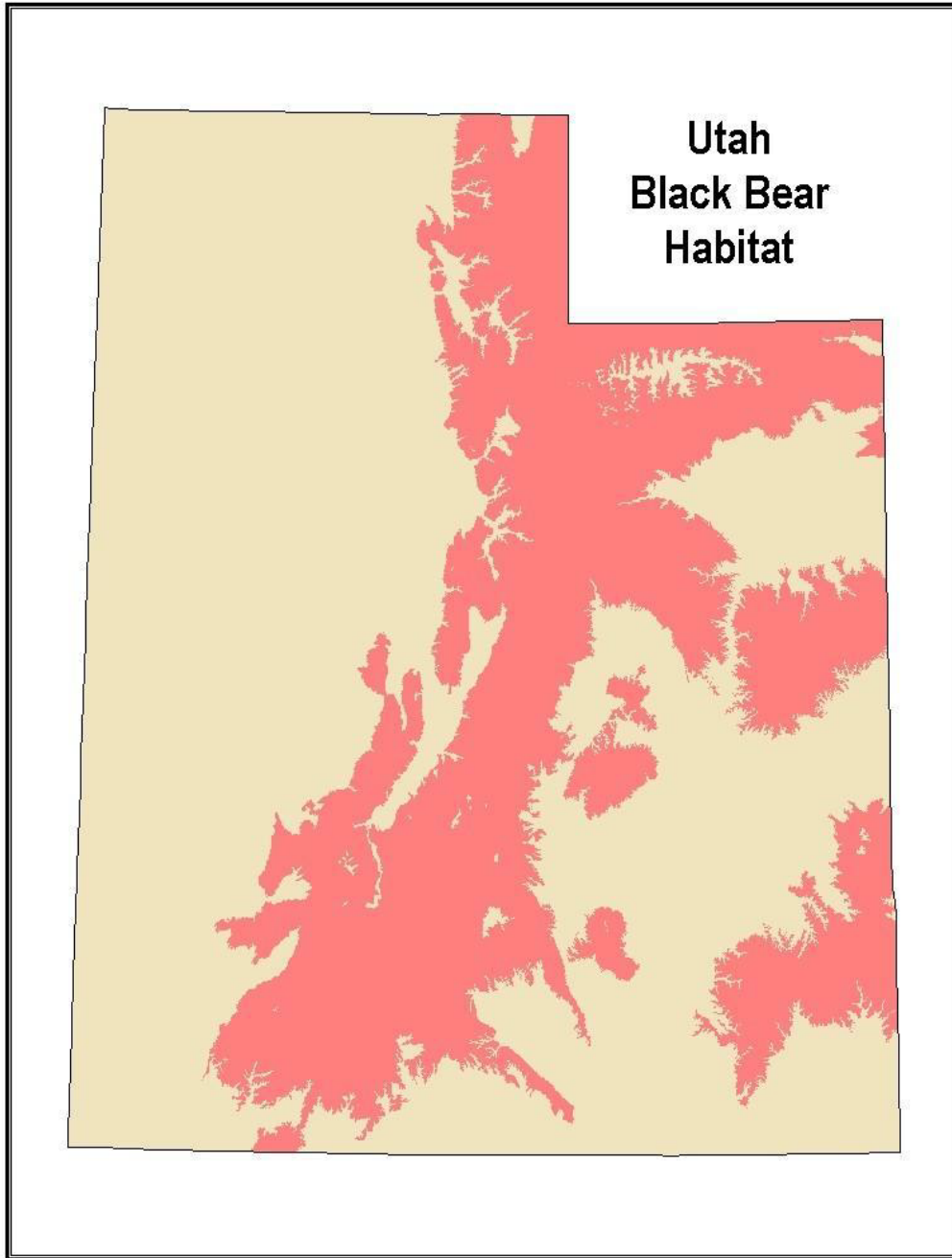
The weight of black bears varies. A male black bear that weighed 816 lbs was recorded in Minnesota in 1991. A female in Pennsylvania weighed 454 lbs. However, the mature western black bear male will typically be 250 - 300 lbs and the female 150-180 lbs in mid summer. These weights vary depending on season, age, and food supply. An Idaho study (Beecham and Rohlman 1994) showed a weight difference between male and female bears of all ages of 77 lbs (n=132). A Colorado study (Beck 1991) of a limited number of bears showed mean summer weights of 280 lbs for males and 167 lbs for females. In Utah, large males in summer may weigh over 300 lbs and adult females 130 - 150 lbs.

Black bears have a compact body with stout legs, especially the forearms, and feet. They have recurved claws, a straight facial profile and no shoulder hump. Mature males are about 60 in long while mature females are about 50 in. After about seven years, growth slows. The length measurements from the Colorado study showed greater lengths than Idaho in both males and females. Some differences in measurement techniques could account for part of the difference but the heavier weights from Colorado suggest that the Colorado bears may genetically be slightly larger or have access to better food supplies. Weights and lengths from ongoing studies in Utah are comparable to Colorado. Black bears have a keen sense of smell and stand on their hind legs to aid in seeing and smelling. They are strong swimmers.

In the west, black bears of both sexes occasionally live in excess of 20 years of age. Study animals, as well as harvested animals, have exceeded 20 years in Utah. In hunted populations, average life span is shorter than in unhunted populations and differences between sexes may emerge. For example, males averaged several years younger than the females in hunted populations of Idaho (Beecham and Rohlman 1994), and males have only a 0.1% probability of living to be 20, while females have a 0.5% chance in hunted populations of Michigan (Waples et al. 2018) In Utah, apparent survival of bears is 2.2x

higher in females than males (Pederson et al. 2012). Hunter selectivity for larger bears coupled with the male bears larger range make them more likely to be taken.

Figure 1. Distribution of black bear habitat in Utah, represented by dark (red) area on map.



## **Reproductive Biology**

Black bears tend to be solitary, except for females with cubs, and during the breeding season of June and July. After fertilization, the egg remains free and unattached in the uterus until implantation in late fall. Birth occurs in late January or early February. The cubs are born with eyes closed and weigh 8 to 12 oz. In the Intermountain West, age at first reproduction is typically 4.5 years. Males are sexually mature at 3.5 to 4.5 but do not reach physical maturity until age 7.5. Occasionally, first litters occur at 3.5 or as late as 7.5 years. Litter sizes may increase with the age of the female but two cubs are most common. Poor food crops may result in females skipping a year or more between cub production. While the average is 2 cubs per litter, litter sizes range from 1 to 4. Typically, litters are produced every other year (Beck 1991, Waples et al. 2018). The sex ratio of cubs is either 1:1 or slightly male biased. Cub mortality is higher in the west with Utah fitting the pattern at 45 to 50% (Beecham and Rohlman 1994; Tolman and Black 1998). The average annual litter frequency (number of litters for all females in a population) for a typical western population is 16 to 18% (Beecham and Rohlman 1994) and may vary significantly year to year. Cubs stay with the females for 16 to 18 months after birth. Family groups break up in late spring prior to the breeding season. Causes of cub mortality are starvation, predation, and a variety of other causes of unknown significance. Yearlings and subadults have a survival rate as high as 90% depending largely on the level of human caused mortality, primarily hunting, and removal for depredation and nuisance activity.

## **Predation**

As omnivores, black bears use a wide variety of foods, changing diets seasonally based on availability (Beck 1991, Kolenosky and Strathearn 1987) and typically do not obtain much of their food through predation. In Utah, carnivory is correlated to sex and elevation, with more carnivory observed in males and in bears living at higher altitudes (Hatch et al. 2019). Within this study, elevation was also correlated to density of ungulates. Rogers (1987) found that fruits, nuts, and insects were the foods most important to fall fattening and reproductive success. A study in Idaho (Beecham and Rohlman 1994) revealed that typically less than 2% of the diet is mammals. Black bear research in Utah (Richardson 1991, Bates 1991, Bunnell 1999, Black 2004) has found that vegetative matter is the most important item in their diet, followed by mast, insects and animal matter. Ogborn (1990) documented the importance of ants in the diet.

In the La Sal Mountains, Richardson (1991) found that animal matter was present in 2.3% of 859 bear scats. It was most important as a food item in summer and fall. Mule deer (*Odocoileus hemionus*) remains were the most common mammal, occurring in 9 scats, or 1.1% of all scats. Other mammal remains included black bear (mostly from grooming), domestic cattle, rock squirrel, *Microtus sp.*, cottontail rabbits, deer mouse, least chipmunk, jumping mouse, domestic sheep, and pocket gopher. Bone size and teeth of deer remains indicated that both adults and fawns were eaten. The presence of

maggots in the scats indicated that cattle could have been fed upon as carrion. Bird remains were found in 2.1% of the scats analyzed.

LeCount (1986) reported that there are three different ways that black bears obtain animal matter as food: 1) predation, where the bear kills a healthy animal; 2) pseudo-predation, where a bear kills an animal that is sick or otherwise stressed and would have died anyway; and 3) scavenging, where death comes from other causes.

Black bear predation on young deer, moose (*Alecs alecs*), caribou (*Rangifer tarandus*), and elk (*Cervus elaphus*) has been reported in several studies (Kolenosky and Strathearn 1987, Franzmann et al. 1980). Smith (1983) radio-collared 54 newborn mule deer fawns on the La Sal Mountains. He found that fawn survival was 54% during the first month of life. Of the 22 fawns that died, predation was the cause of death for 16 (73%). Coyote (*Canis latrans*) and black bear predation accounted for most of these deaths, although he did not indicate how many were taken by which species. One was taken by a cougar. With a peak fawning date of 24 June, all bear predation had ceased by 24 July. Coyote predation continued past 18 August. While most black bear predation consists of newborn animals their first month of life, Bates (1991), Richardson (1991), and Bunnell (1999) reported limited black bear predation on adult deer in Utah.

Projar (2004) in a three-year mule deer fawn survival study in west-central Colorado attributed 4% of the fawn mortality to bears. Likewise, Lomas (2007) in a similar study in north-central New Mexico reported 3% of the mule deer fawn mortality was due to black bear predation.

At times, black bears are effective predators on domestic livestock. In Utah, from 1992 to 1999 and 2000 to 2009, an average of 373 and 516 livestock kills, respectively, by bears were confirmed annually. Almost 97% of all livestock kills were domestic sheep. Bears typically attack sheep herds after dark when sheep are bedded for the night. The majority of sheep predation occurs in June, July and August. Lambs accounted for 58%, and ewes 39% of black bear kills, respectively. The average number of livestock taken in a single predation incident was 6. In an apparent rare event in eastern Utah, a nine year old adult female bear killed three 150-200 lbs calves over a nine day period. This radio collared female had not exhibited this pattern of behavior in the five previous years when her behavior was monitored (Bunnell 1999). Records from 2003-2013 showed the most livestock and agricultural damage by bears in Utah was near Green River (Miller et al. 2016).

While black bears on occasion act as predators, they are also preyed upon. Rogers (1987) reported that nine wolves killed a female bear and her cub in a den. Cub mortality due to predation was less than 12% in years of good nutrition. Richardson (1991) found two cases of black bear cannibalism in southeastern Utah. A radio-collared two-year old female was eaten by another bear, while another yearling female was apparently eaten by the adult female while in the den.

Most researchers indicate that black bears are poor predators. As omnivores, they have not evolved behaviors found in cooperative hunters (Rogers 1987). Their bulky, heavy bodies lack the agility needed for effective predation. Legs are adapted for climbing, turning rocks and tearing apart logs and stumps, rather than speed. Most mammals, both large and small, are generally too fast for bears to catch (Kolenosky and Strathearn 1987). A bear's distance vision is poorly developed. These limitations prevent black bears from taking most prey, other than newborns or other animals whose escape is hampered by behavior, injuries, disease or deep snow.

## **Denning**

Denning and hibernation in black bears is an evolved means of dealing safely with a winter food shortage. It also offers a protected situation for females to give birth to and raise young cubs. The choice of den location, size, and type are affected by topography and ease of construction. Concealment appears to be a higher priority than avoiding thermal loss. Where large trees are available they are generally selected, and the dens are dug into the tree or in the root system. The other options are ground dens which are excavated into a brushy hillside, or dens in rocky areas where rock provides a part of the den structure. In Utah, dens are predominately rock related (Tohlman and Black 1998). Females select sites that are at a slightly higher elevation than males in a given area. Few dens are reused from year to year but a yearling female may use a den previously used by the adult female. Availability of acceptable den sites is not likely to limit bear densities.

Beck (1991) noted that at least some bears made periodic movements to den-sites in the summer to prepare them with a lining of green vegetation. He also suggested that the primary function of the den is to provide protection from predators rather than weather. Both wolves (Pacquet and Carbyn 1986) and grizzly bears (Ross et al. 1988) have been observed killing black bears in winter dens.

Denning varies by reproductive groups: males den later and for shorter duration than sub-adults, non-parturient females, and parturient females (Fowler et al. 2019). This trend is true in the west; females tend to enter dens earlier, and exit dens later than males (Beecham 1980, Beck 1991). The onset of denning may be delayed by two to three weeks if plentiful food is still available from late mast crops. In the Intermountain West, denning occurs in October and November. Female denning typically peaks in late October while male denning peaks in mid-November. The dens are left in April and May. The timing is affected slightly by elevation of the den and aspect with the higher dens being left later. Beck (1991) noted females exited dens about 14 days later than males. The peak of den abandonment for males is late April and the peak for females is mid May. Den emergence is related to ecoregion and negatively correlated to spring temperatures and temperatures the spring and summer before denning in Utah (Miller et al. 2016). Broadly, black bears are capable of changing denning patterns in response to climate and this will likely be more variable in future years. Black bears enter dens later when food availability is good and snow accumulation is low (Fowler et al. 2019).

## **Home Range**

Black bears are generally active early and late in the day. In areas of human activity they tend toward being more nocturnal. Several may be found in areas where food is concentrated, but otherwise are solitary. Black bear home range size varies widely depending on sex of the bear and quality of habitat. Adult males may have a home range 5 times that of an adult female. Female ranges overlap other females, particularly their offspring. With their much greater range, the males have up to 100% overlap with other males and their territories will include several females. This range overlap helps assure breeding of all the females. Subadult males that are searching for a home range may temporarily share territory with adult males and females. The resulting density of bears varies widely depending on habitat quality. Home range varies from .15 bears per square mile in an Arizona study area to 1.7 bears per square per square mile in three disjunct areas in Virginia (Beck 1991). For the western states the average is around 0.8 bears per square mile. In a low density population in northern Utah, Pederson et al, (2010) found .03 bears per square mile.

## **Habitat**

Pelton (1982) characterized black bear habitat throughout its range as having “relatively inaccessible terrain, thick understory vegetation, and abundant sources of food in the form of shrub or tree-borne soft or hard mast (fruit and nuts)”. He summarized black bear food habits as “primarily grasses, forbs and insects in spring, soft mast in the form of shrub and tree-borne fruit in summer, and a mixture of soft and hard mast in fall”. The spatial arrangement, abundance, and dependability of seasonally important food sources may explain much of the variation in black bear density, fecundity, home range size, and seasonal habitat use throughout the range of the species.

## **Western North America Perspective**

The following is a review of information relating to black bear habitat, obtained largely from studies in Utah and other western states and provinces.

## **Food Habits**

Understanding black bear food habits may be the key to understanding bear-habitat use. Foods eaten by black bears throughout their distributional range reflect the omnivorous feeding habits of the species. Bears primarily eat grasses, berries, and ants (Baldwin and Bender 2009), but also consume other vegetation, animal matter, and anthropogenic foods. In Rocky Mountain National Park, scats with anthropogenic foods were 15.2 times more likely to occur in the mid-2000s compared to scats collected in the late 1980s (Baldwin and Bender). This increase is likely occurring in many areas where humans and

bears co-occur. The spring diet consists primarily of grasses and forbs. The summer diet also includes grasses and forbs but includes increasingly more ants in summer and fruits as the season progresses to fall. The fall diet consists primarily of a mixture of soft mast (fruits) and hard mast (nuts of deciduous and evergreen trees). Animal matter, primarily insects and carrion, generally comprises a smaller portion of the diet.

Spring (April-June) black bear diets in southwestern Colorado consist largely of grasses and forbs in oakbrush and aspen stands (Beck 1991). Bears in central and southeastern Utah forage on grasses and forbs in aspen, aspen-conifer and mountain brush, as well as riparian areas and low elevation timbered canyon bottoms (Bates 1991, Richardson 1991).

Aspen buds are frequently observed in spring bear scats in southeastern Utah. Ants, carrion, rodents and ungulates provide spring dietary protein sources in the Utah studies (Ogborn 1990, Black 2004). Rodents, winter-killed and new-born mule deer comprise a portion of the spring diet in central Utah (Bates 1991). In two western state studies, neonatal mule deer fawn mortality attributed to black bear predation was less than 5% (Projar 2004, Lomas 2007).

Summer black bear diets consist of insects (primarily ants), grasses, forbs, and the flowers of some shrubs, until berries ripen. Fruits and flowers constitute the bear-food group highest in fats and carbohydrates (Richardson 1991). Larval ants are also high in fats and protein, and are sought by black bears in summer. In the La Sal's, ants made up >1% volume of nearly 40% of the bear scats collected (Auger et al. 2004). The authors suggest ants are an important source of food for black bears. Bears actively hunt ants when larvae occur close to the soil surface in response to warming temperatures (Bates 1991, Richardson 1991).

When available, berries are heavily used by bears during summer months. Although berries are eaten by bears prior to ripening (Tisch 1961), most use occurs after fruits ripen.

In Utah, areas likely to produce abundant berries include canyon bottoms with perennial water, where species such as elderberry (*Sambucus spp.*), currants (*Ribes spp.*), raspberries and thimbleberries (*Rubus spp.*) and others frequently occur. In the low to mid-elevation mountain brush types, species such as squawapple (*Peraphyllum ramosissimum*), serviceberry (*Amalanchier spp.*) and others (Table 1), ripen in midsummer and can provide an abundant source of food. Berry producing shrubs found at higher elevations are most productive in aspen stands, riparian areas, timber cuts, and along the edges of conifer stands in central and southeastern Utah, and southwestern Colorado. Aspen, mountain brush and oakbrush are the primary habitats that supply summer forage for bears in the intermountain west (Beck 1991, Bates 1991, Richardson 1991).

Fall diets consist largely of berries and hard mast. Berries ripen first at lower elevations and somewhat later as elevation increases. Seasonal bear movements may reflect their



tracking of ripening fruits (Amstrup and Beecham 1976). Chokecherry (*Prunus virginiana*), which tends to bloom and fruit later than other brush species at similar elevations, is used heavily when available in Utah, Idaho and Colorado (Amstrup and Beecham 1976, Beck 1991, Bates 1991, Richardson 1991).

Hard mast species consumed by bears in Utah include gambel oak acorns (*Quercus gambelli*) and pinyon pine nuts (*Pinus edulis*). Fruits of these two species ripen somewhat later than the berry producing species (Table 1). Bears foraging at higher elevations, or in areas which do not contain oak, may make long movements to lower elevation oakbrush communities in years when acorns are produced (Pelton 1982, Kellyhouse 1977, Beck 1991). Bears often remain in these areas until denning if mast is abundant. Bears feed heavily on hard and soft mast in the fall, prior to denning, and are physiologically capable of immense weight gains in a few weeks. Pinyon pine seed was reported as a bear food in the mountains of southeastern Utah, and the plateaus of the southern Dixie National Forest (Danvir et al. 1983). Bears may respond to abundant pinyon nut crops as they do to abundant oak mast. Seeds of other pines, most notably whitebark pine (*Pinus albicaulis*) are used heavily when available in Montana (Tisch 1961). Limber pine seeds (*Pinus flexilis*) are also eaten in Montana, and may provide food for bears in Utah as well.

Factors influencing production of both hard and soft mast include temperature, light, moisture, soil nutrients, insect predators and disease (Shopmeyer 1974). Freezing temperatures during the flowering period and extreme dryness during spring and summer appear to significantly affect mast production. Either of these conditions may result in nearly complete crop failure. Although data concerning the frequency of catastrophic mast failures is lacking, interviews with commercial seed collectors and survey respondents estimated ten-year intervals between abundant acorn crops in portions of Utah (Danvir et al. 1983). Bates et al. (1991) observed oak mast failure in central Utah during all three years of their study. Beck (1991) and Richardson (1991) observed concentrations of bears in patches of abundant acorn production.

Table 1. Plant species used as food items by black bears in Utah.

Species	Flowering Dates	Fruit Ripening Dates	Interval (yrs.) Between Abundant Berry Crops	Habitat and Distribution Dates
Serviceberry ( <i>Amelanchier</i> spp.)	May-June	July-Aug	1-5 yrs.	Common in arid areas, in canyons and foothills, 4000-8000 ft
Bearberry or Manzanita ( <i>Arctostaphylos</i> spp.)	March-May	June-Aug	Annually	Dry-moist soils, usually grows in association with lodgepole or Ponderosa pine in Utah
Squawapple ( <i>Peraphyllum ramosissimum</i> )	May-June	June-July	Annually	Dry foothills and mountain slopes, well-drained soils, 4000-9000 ft
Chokecherry ( <i>Prunus virginiana</i> )	May-June	July-October	2-5 yrs.	Widely distributed, esp. abundant along streams and moist canyon bottoms 4500-8000 ft
Currant ( <i>Ribes</i> spp.)	April-June	June-August	2-3 yrs.	Exposed slopes and ridges 4000-11,000 ft
Raspberry Thimbleberry ( <i>Rubus</i> spp.)	May-July	July-Sept	Annually	Widely distributed, wooded and open slopes alike, 5000-11,000 ft

Elderberry ( <i>Sambucus spp.</i> )	April-July	July-Sept	Annually	Commonly found along streams and canyon bottoms, moist soils, 5000-9500 ft
Buffaloberry ( <i>Shepherdia spp.</i> )	April-June	June-August	1-4 yrs.	<i>S. argentea</i> found along streams and river bottoms 3000-7500 ft
Snowberry ( <i>Symphoricarpos spp.</i> )	June-August	August-Oct	Annually	<i>S. rotundifolia</i> found on steep, rocky slopes, 5000-8000 ft <i>S. longiflorus</i> and <i>S. rotundifolius</i> found in rocky slopes, canyons and valleys 4000-10,000 ft <i>S. oreophilus</i> and <i>S. alba</i> found on wooded mountain slopes, valleys and riverbanks 5500-10,000 ft
Whortleberry or huckleberry ( <i>Vaccinium spp.</i> )	June-July	June-September	Annually *poor berry production	Largely restricted to Uinta Mountains, grows on forested slopes 7000-12,000 ft
Pinyon pine ( <i>Pinus edulis</i> )	June	September	2-10 yrs.	Dry, rocky foothills and mesas, 5000 - 7000 ft
Gambel oak ( <i>Quercus gambellii</i> )	February-May	August-Oct	5-10* yrs.	Widespread, 4000-8000 ft, central and southern Utah. Dominant tree on dry foothills and canyon walls, but best stands grow on moist, rich well-drained soils

### Physical Characteristics of Bear Habitat in Utah

Elevation: In a survey of bear observations recorded by resource managers in Utah, eighty percent of bear survey observations occur between 7,000 ft and 10,000 ft (Danvir et al. 1983). About 12% occur between 4,600 ft and 6,988 ft and 8% occurred between 10,000 ft and 12,000 ft. The only geographic unit in which the elevational distribution of observations differed markedly from this trend was in the Book Cliffs east of Desolation Canyon where elevation rarely exceeds 8,000 ft. Bears were commonly observed below 7,000 ft in the eastern Book Cliffs.

Bears in central Utah use low elevation (7,102 ft) mountain brush in summer and higher elevation (7,152 ft) aspen and conifer in spring and fall (Bates 1991). Bears in southeastern Utah are similarly found in higher elevations spring and fall (8,727 to 8,858 ft) and lower elevations (8,202 to 8,530 ft) in summer (Richardson 1991).

In contrast, bears in southwest Colorado use low elevation oakbrush (8,202 to 8,530 ft) spring and fall, summering in higher elevation aspen communities (8,858 ft) (Beck 1991). Similar patterns of low elevation use in spring and fall, with higher elevation use in summer has been observed in Idaho (Amstrup and Beecham 1976, Reynolds and Beecham 1977).

Topography: Most observations of black bears occur in areas of marked topographic relief. Eighty-five percent of those who responded to a survey on Utah bear observations indicated that bears were generally found in areas with steep, rugged topography including mountain slopes, cliffs, escarpments, and canyons (Danvir et al. 1983). Forty Three percent stated bears were most frequently observed in and near canyons, regardless of elevation.

In studies performed in Idaho, Utah and Colorado, black bears predominantly used steeper, more rugged topography and made seasonal elevational movements in response to food resources (Amstrup and Beecham 1976, Bates 1991, Richardson 1991, Beck 1991). Bears in central Utah used progressively steeper slopes as the year progressed, whereas bears in southeastern Utah and southwestern Colorado made significant use of canyons.

**Moisture:** Although black bears obtain winter metabolic water from fat stored the prior fall, they require free water during the summer. Richardson (1991) found bears using areas closer to water in the fall and areas farthest from water in spring. Bates (1991) found bears, especially females, associated with creeks in spring and summer. Survey results (Danvir et al. 1983) indicated that bears in Utah most frequently occurred in areas containing moist soils and associated vegetation. Eighty percent of observations recorded in this survey fell within areas characterized by moist to wet soils. Forty-seven percent of observations were associated with perennial water, primarily streams in canyon bottoms. Soils within frequently used bear range are typically loamy soil associations on mountains and plateaus that receive sufficient precipitation to remain moist through all or part of the summer months. Precipitation level and soil characteristics largely dictate vegetative composition and availability of succulent forage. Vegetation types occurring on moist soils, such as riparian woodlands, wet meadows, mountain meadows and aspen provide year-round bear foraging areas for grasses, forbs and soft mast (Jonkel and Cowan 1971, Kellyhouse 1977, Pelchat and Ruff 1983, Smith and LeCount 1983, Beck 1991).

Food shortages resulting from summer droughts may affect the manner in which bears use their range. Annual home range sizes can double when food is scarce (Pelchat and Ruff 1983, UDWR unpublished CMR data) Summer drought was believed to have resulted in the dispersal of black bear cubs and yearlings out of the Book Cliffs into lower elevation areas in September and October of 1976 (Fair 1977).

**Vegetation:** Interspersed oakbrush, mountain brush, aspen and conifer communities tend to be used year-round in Utah and southwestern Colorado (Danvir et al. 1983, Bates 1991, Richardson 1991, Beck 1991). Black bears in southern California prefer canyon oak habitats for food and cover year-round (Novick et al. 1981). In Alberta, aspen communities are considered to be the most important plant community for black bears (Pelchat and Ruff 1983), containing important food items and used year-round. Large contiguous stands of mature conifers, such as the dense lodgepole pine (*Pinus contorta*) stands on the Uinta Mountains, and high elevation spruce-fir stands (*Picea engelmannii*-*Abies lasiocarpa*) were generally felt by bear survey respondents to support low bear densities (Danvir et al. 1983). Most observations in extensive coniferous forests occurred in canyons, where the diversity and interspersed of vegetative types is generally greater. Jonkel and Cowan (1971) found black bears in Montana preferred spruce-fir communities to lodgepole pine and were generally associated with forest edges. Bears used all seral stages of the spruce-fir/pachystima association, except recent burns and clearcuts. Barnes and Bray (1967) estimated bear density to be greater (1.4 bear/mi<sup>2</sup>) in a spruce, fir, whitebark pine, aspen and meadow interspersed than in monotypic lodgepole pine (1

bear/ 20 mi.<sup>2</sup>). Bears in central and southeastern Utah preferred mesic, north-slope conifer patches and 'stringers' as resting areas year-round (Bates 1991, Richardson 1991).

Most bear survey observations in pinyon-juniper woodlands were reported from the Bookcliffs, La Sal Mountains, and Abajo Mountains, where mast-producing mountain brush species intermix along mesa rims and in canyon bottoms (Danvir et al. 1983). Richardson (1991) noted use of pinyon-juniper primarily by adult male bears in late fall. There appears to be little black bear occurrence above timberline or in sage-steppe. Infrequent use of these types, particularly by females with cubs, may be due to lack of security cover. Both black and grizzly bears are believed to have evolved from a common forest-dwelling eurasian ancestor (*Ursus etruscus*) (Herrero 1972). Ancestral grizzly bears evolved to an open-ground dwelling species, where aggressive behavior became the principal means of protection from other predators. Black bears continued to evolve in woodland habitats, therefore tree-climbing behavior offered protection (Herrero 1972). Climbable trees or shrubs provide security to black bears, particularly females with young. While male bears will utilize sparser Arizona chaparral, females with young remain in denser stands of riparian woodland or shrub oak, presumably for security as well as forage advantages (Smith and LeCount 1983). LeCount et al. (1984), Bates (1991) and Richardson (1991) found black bears preferred shrub dominated feeding sites having dense horizontal cover. Bears in southeastern Utah selected areas of dense cover within all vegetation types, and by all sex and age classes, especially females with cubs (Richardson 1991).

High interspersion of preferred habitat types (such as aspen, conifer and brush patches) may improve bear-habitat quality. Richardson (1991) found bears and bear foods more common along patch edges in summer. Jonkel and Cowan (1971), Lindzey and Meslow (1977) and Bates (1991) similarly found bears associated with edges.

Females with cubs, as a group, tended to select areas having a rich diversity of plant species, a high interspersion of plant communities, proximity to water, hiding and climbing (escape) cover, and areas removed from roads (Bates 1991, Richardson 1991). Females used high elevations more than expected (Richardson 1991). Females utilized steeper, moister, higher elevation, more species-rich sites than did male bears.

Accessibility: Most survey respondents (85%) indicated that black bear observations generally occur in rugged canyons, on plateaus and mesa rims, and steep mountainous areas which are not accessible by vehicle and with little human use (Danvir et al. 1983). Black bears avoided roads in summer and fall in an Idaho study (Young and Beecham 1983). Bates (1991) noted that female bears avoided roads during spring. Bears of both sexes avoided roads and trails in fall. Young (1995), however, noted significant use of roads by bears in the Bookcliffs, and in fact used tracks on roads as an abundance index. Females tended to den in areas removed from human activity, and remain in these areas during spring. The apparent association of bears with canyons and similar steep, rugged topography may be related to several factors. Bears studied in mountainous terrain exhibited seasonal elevation shifts dictated by the abundance and phenological

development of forage species (Amstrup and Beecham 1976, Bates 1991). Within the elevation range that most bear observations occur, a wide range of topographic relief results in a greater interspersion of aspen, mixed conifer, and mountain brush. Bears may be able to obtain seasonally abundant foods within smaller home ranges in areas characterized by canyons than in terrain with less topographic relief. Areas with less relief may necessitate longer movements by bears to obtain seasonally abundant foods. Canyons and escarpments may serve as security cover as well as allowing bears to travel through areas which are otherwise heavily used by humans.

Denning habitat: Bears in Idaho, Arizona, California, Colorado and Utah primarily den in excavated or naturally occurring chambers in hillsides, under rocks, trees or shrubs (Beecham 1980, LeCount 1980, Novick et al. 1981, Beck 1991, Black 2004.) Bears in southwestern Colorado denned in all elevations and plant communities (Beck 1991). Bears in central and southeastern Utah generally denned at higher elevations in aspen or coniferous habitats (Bates 1991, Richardson 1991). Den sites are often located on steeper slopes, in areas of minimal human disturbance (Novick et al. 1981, Bates et al 1991, Beck 1991).

Relationship between food, seasonal movements and home range size: Resident black bears apparently make short-term exploratory excursions into 'new' territory periodically throughout the non-denning period (Amstrup and Beecham 1976, Pelchat and Ruff 1983, Beck 1991). These activities allow bears to discover changes in food availability and distribution through time. Studies in the mountainous portions of Idaho, Utah and Colorado (Amstrup and Beecham 1976, Reynolds and Beecham 1977, Bates 1991, Richardson 1991, Beck 1991) describe predictable, seasonal movements (in elevation and between vegetation types) in response to vegetation growth, flowering and fruiting of preferred bear foods. Rather long excursions to abundant, but patchy, chokecherry and oak mast crops have been observed in Idaho, Utah and Colorado. Tolerance of other bears apparently increases at abundant food sources. Richardson (1991) observed 9 telemetered bears feeding in a 7.4 acre patch of acorn-rich Gambel's oak. Beck (1991) observed annual migrations of bears from summer ranges lacking oakbrush into areas with abundant mast. These bears commonly moved distances of 9-25 mi to feed for several weeks prior to denning. Beck (1991) describes bears residing in a 193-386 mi<sup>2</sup> area concentrating in a single 10 mi<sup>2</sup> oakbrush stand each fall. Pelchat and Ruff (1983) saw similar 17 mi movements by bears to preferred seasonally abundant foods.

Lindzey et al. (1983) found that home range size of black bears in coastal Washington (coniferous forest) is influenced by food availability resulting from successive changes following logging. Bears selected more recently logged areas where berry producing shrubs (and berries) were most abundant. Home range sizes were smaller, and bear density greater, in more recently logged habitat dominated by early seral stages.

Relationship between food, fecundity and bear density: Studies in forested habitats suggest that food supply influences bear fecundity and density. Lindzey et al. (1983) noted a rapid population increase and high cub production following a period of logging on an island in coastal Washington. Bear density and cub production declined as

preferred bear food plants were replaced by coniferous trees. Rogers (1987) determined that the principal non-hunting factor limiting bear density was starvation of cubs and yearlings, and nutrition-related reproductive failure of adult female bears. Research from Montana (Jonkel and Cowan 1971) and Colorado (Beck 1991) suggest that fall food availability influences fall bear condition (weight) and subsequent cub production. Cub production in the Bookcliffs similarly appears to be dependent on prior-year food availability and body condition of breeding-age females (Black 2004).

### **Management of Black Bear Habitat**

Management of plants and plant communities involves using human creativity in the application and manipulation of the following “tools” and processes; succession, fire, rest, grazing (herbivory), animal impact and technology, to achieve desired conditions (Heady 1975, Savory 1988, Augustine and McNaughton 1998). Successful management of black bear habitat requires sound vegetation management, management of access and behavior of recreationists in “bear country”, and maintaining connectivity between seasonally important large blocks and patches of habitat.

Forest management: Forested habitats supply escape and resting cover, food, and denning habitat to black bears. Aspen stands are probably the most important forest community in Utah, providing both cover and food. Aspen communities can provide abundant herbaceous forage, berry production and animal matter (insects and ungulates) for bears. Coniferous forests appear to have high cover values, but lower food value. Successional replacement of aspen stands by conifers can significantly reduce bear-food production in aspen communities. Both fire and selective logging of conifers can be used to maintain aspen vigor.

In portions of the state where conifer stands are uncommon, large-scale logging may be detrimental to bears (Bates 1991). Since black bear foods are often abundant on forest edges, selective cuts appear to be preferable to clear cutting of timber (Young and Beecham 1983, Hugie 1983). Small-scale openings in timbered habitats, providing early seral shrub-borne mast and herbaceous forage in close proximity to cover, can be beneficial (Lindzey and Meslow 1977, Young and Beecham 1983, Hugie 1983). Hugie (1983) found bears preferred abandoned roads and small clearings having early seral stage growth, but avoided clearcuts greater than 15 ac in size. Young and Beecham (1983) found bears used shrub fields resulting from selective cuts more than expected in spring and summer, but avoided clear cut areas all seasons.

Mountain shrub communities containing oak, chokecherry and other mast-producing species should be managed to avoid successional shifts to pinyon-juniper monocultures. Fire, selective cutting and mechanical treatments can all be used to retard succession to pinyon-juniper. Dependable mast-producing areas should be identified and managed for taller, older-age shrubs to maintain fruit production despite browsing by wild and domestic ungulates. While many mast-producing shrub species will vigorously resprout and produce fruit following winter defoliation by ungulates, excessive growing season

utilization can significantly reduce both foliage and fruit production (Willard and McKell 1978, Kay 1995). Animal density of both wild and domestic herbivores should be managed to maintain diversity and vigor of both woody and herbaceous vegetation in all seasonally important vegetation types. Season-long livestock grazing can have negative impacts on both woody and herbaceous vegetation. Season long grazing may reduce seasonal bear food availability and increase the likelihood of predation. Jorgenson (1980) found bears and sheep competed spatially and temporally for food and space when grasses and forbs were limited, resulting in depredation, dead sheep, and dead bears. Conversely, livestock grazing can be used to reduce herbaceous competition, reduce suckering and promote apical dominance and seed production in shrubs (Urness 1990). Herded livestock, which are moved across the landscape, can maintain herbaceous plant diversity and vigor, and may reduce opportunities for predation.

Recreation management: Minimizing road density, human habitation and human access in high quality bear-habitat should reduce human contact with bears. Minimizing contact should increase longevity of breeding female bears, since they tend to utilize smaller ranges in less accessible areas when possible (Bates 1991, Beck 1991).

Graber and White (1983) noted that black bears in the coniferous forests of Yosemite spend a disproportionate amount of time near people and their high quality concentrated foods. Bear diets are generally high in carbohydrates and lacking in fats and protein. Consequently, bears seek out not only animal matter, but also human foods and garbage at campsites (Pelton 1982). Bears feeding on protein-rich sources (like contents of campground dumpsters) show significant weight gains (Rogers 1976). Augmenting bear habitat with human food-sources can result in increased size, fecundity and density of black bears (Herrero 1980). Since bears are extremely curious and learn quickly, it is important to avoid introducing these high quality food sources into bear habitat. Once bears become successful at exploiting human food-sources, they will continue to do so. With increased recreational demand in Utah's forested lands, education and enforcement of rules designed to minimize bear-access to human food-sources is essential in order to have both recreation and viable bear populations in bear country.

Landscape management: Successful bear management requires maintaining an adequate density of breeding females in high quality bear habitat. High quality bear habitat in Utah may be characterized as large interconnected blocks of land exhibiting high interspersion of aspen, mountain brush and coniferous plant communities with a healthy herbaceous and shrub component; well connected movement corridors between seasonal food sources and less accessible areas with variable topography. This requires management and planning at multiple scales, i.e. managing for healthy plants at the patch level, and managing at scales large enough to allow movement between blocks of important habitat. Connecting seasonal food sources maintains bear-condition, production and density; connecting habitat blocks maintains genetic diversity.

## **Utah Bear Harvest and Mortality**

The black bear has been a protected species in Utah since 1967, when a group of sportsmen petitioned the Utah State Legislature to protect both cougar (*Puma concolor*) and bear. Management methods have evolved since then, from unlimited permits with a spring and fall season from 1967 to 1989, to a limited entry spring and fall hunt from 1990 to 1992, a limited entry fall only hunt from 1993 to 2000, a limited entry fall and experimental spring hunt from 2001 to 2005 and then a limited entry statewide spring and fall hunt from 2006 to 2010. Current hunting seasons include spring and fall hound hunts, a late spring, early summer bait hunt, and long fall spot and stalk hunt.

Black bear harvest and mortality statistics in Utah have been collected since 1967

(Harvest

Reports are available on the DWR Website here: <https://wildlife.utah.gov/annual-reports/?dc=bear>.

Utah's black bear population appears to have increased since 1990, as indicated by a) a trend of increasing hunting harvests, coupled with sustained hunter success, b) a preponderance of young age classes in recent bear harvests, c) evidence of reproduction by research bears in the Book Cliffs during most of the period, d) increasing numbers of bear/livestock conflicts and rising numbers of bears killed in control efforts despite declining numbers of sheep on the State's open range and, e) increasing numbers of human-bear conflicts and rising numbers of bears trapped, moved and euthanized as a consequence. Population reconstruction estimates minimum adult bear numbers have likely increased since 2006, and continue to grow, with some slowing in overall growth rate since 2015.

## **Assessment**

The Black Bear Advisory Committee the following list of issues and concerns were reviewed from the previous plan and amended to reflect current opinions. In addition, regional wildlife managers and biologists listed their issues and concerns to be addressed by the advisory committee. Subsequent meetings focused on updating plan goals and objectives as well as changes to hunting regulations and season structure. Issues identified for discussion at the 2022 meetings are listed below.

For a more detailed view of topics discussed in the 2022 review process, see Appendix A.

## **Issues and Concerns**

### Outreach and Education

- Human safety
- Need for public education about hunting with hounds
- Need for improved sex and age determination by hunters
- Increase utilization of the meat from harvested bears



### Habitat Management

- Loss of habitat (need to manage)
- Need for monitoring habitat (mast/food production)

### Human/Bear Conflict Management (Largely Policy Driven)

- Conflict bear management
- Coordination with land management agencies on conflict bear translocations
- Techniques for dealing with conflict bears

### Livestock and Agricultural Depredation

- Impact on livestock operations (prevention, compensation)
- Need to learn more about bears in Utah (ecology, biology, behavior) in general and relative to livestock depredation
- Appropriateness of depredation control on public land
- Adequate funding for livestock damage compensation
- Explore education, collaboration and funding for livestock producers to use nonlethal tools to prevent depredation by bears
- Impacts from bears on agricultural crops (primarily watermelons and bee hives).

### Recreation

- Collaboration with public land management agencies on bait site locations
- Mitigate conflict between hound and bait hunters, and hound and archery hunters
- Maintain traditional hunting heritage and opportunity

### Population Management

- Need to learn more about bears in Utah (ecology, biology, behavior), including in relation to other carnivores
- Identify reliable population measurement method(s)
- Need to manage metapopulation (connecting corridors)
- Adequate funding for management
- Effects of climate change (drought, fire) on bear densities
- Assuring continued viability of species in Utah

### Research

- Identify reliable population measurement method(s)

- Identify reliable monitoring methods for diseases
- Techniques to improve use and awareness of nonlethal tools to reduce human-bear conflicts
- Effects of bears on other predators and prey species
- Impacts of bait stations on nontarget wildlife and disease risk (e.g., CDW)

## **Goal, Objectives, Strategies and Management System**

The Black Bear Advisory Committee reviewed the plan goal, objectives, strategies and management system to address identified issues and concerns in 2022. After review on recent data, and looking at available literature, very few changes were warranted to plan goals and objectives beginning in 2023. One notable change is an allowance for district biologists, in consultation with regional wildlife managers and salt lake city staff, to determine hunt strategies for their district bear management units.

### Outreach and Education

#### Objective 1:

Increase awareness of reasoning for the use of hounds to pursue bears, and the regulations on the limits on the numbers of hounds allowed during a pursuit.

#### Strategy:

1. Partner with the Utah Houndsman's Association to help the public understand methods and best practices for the use of hounds in bear hunting.

#### Objective 2:

Reach and educate general public about bear safety and how to avoid conflicts with bears

#### Strategies:

1. Continue to work with the WAU Program; an effort generated by the Conservation Outreach Section of the Division of Wildlife Resources.
2. Continue to coordinate / standardize bear safety information materials amongst state and federal agencies and others.

### Objective 3:

Continue to educate all bear hunters on how to determine the age/sex of bears to increase harvest selectivity through 2023 and continue to educate Division employees tagging bears.

#### Strategies:

1. Obtain high quality digital images of bears for sex and age identification purposes.
2. Produce an online orientation course for bear hunters.
3. Evaluate the relative effectiveness of mandatory and voluntary education efforts
4. Publish and refine information about sex and age identification techniques to be sent to bear permit holders.
5. Train Division employees responsible for tagging bears at least every other year.
6. Consider different color ear tags for male and female yearlings marked through the reproduction and survival study (denning) to provide an opportunity to improve sex identification in the field.
7. Investigate making collared females off-limits to harvest.

### Objective 4:

Increase the utilization of bear meat from harvested bears.

#### Strategies:

1. Collect baseline hunter harvest meat utilization data by modifying the black bear mortality form to include a question about meat consumption.
2. Publish techniques on how to utilize bear meat on the UDWR web site and in the Black Bear Guidebook.
3. Encourage organizations to publish techniques on how to utilize bear meat in their newsletters and promote consumption to clients and members.
4. Monitor hunter response concerning bear meat consumption from data collected on the black bear mortality form.
5. Identify charities that will accept bear meat.
6. Educate hunters about proper care of meat, examples at:  
<https://cpw.state.co.us/thingstodo/Pages/BearHtgTips.aspx>  
[https://dnr.maryland.gov/huntersguide/Pages/BearHunt\\_Care.aspx](https://dnr.maryland.gov/huntersguide/Pages/BearHunt_Care.aspx)

Objective 1:

Seek to prevent the loss of occupied and suitable unoccupied bear habitat and to improve existing bear habitat.

Strategies:

1. Define crucial bear habitat and review and update the Division's statewide suitable bear habitat coverage map.
2. Evaluate the potential for currently unoccupied habitat and habitat with low bear densities to support bear reintroductions / augmentations while considering human safety, economic concerns, and other wildlife species.
3. Use the results of Strategies 1-2 and Black Bear Research Objective 1, Strategy 2 to identify target areas for habitat improvement projects that would benefit bears and other wildlife associated with aspen and hard and soft mast producing communities, through the Utah Watershed Restoration Initiative.
4. Provide recommendations to land management agencies on ways to improve bear habitat and when projects, plans and practices may negatively influence the quality and quantity of bear habitat.
5. Coordinate law enforcement efforts in support of land management agency travel plans targeted at reducing wildlife habitat impacts in accordance with existing MOUs.

### Human-Bear Conflict Management

Objective 1:

Work to reduce the number of human-bear conflicts that resulted in the removal (lethal or nonlethal) of bears.

Strategies:

1. Train existing Division employees involved in black bear conflict management on the policy for handling black bear incidents
2. Encourage land management agencies and other organizations to train employees and volunteers regarding the prevention of human-bear conflicts.
3. Continue to monitor black bear incidents through reporting and database updates.
4. Evaluate and report progress by comparing the three year average removal rates to subsequent three-year periods (four over the life of the plan) at the black bear Regional Advisory Council and Wildlife Board meetings.

5. Continue to provide land management agencies and the general public with standardized bear literature, signs and placards to deliver a consistent message about how to safely recreate and live in bear country.
6. Encourage land management agencies and private campgrounds to provide bear proof storage containers and dumpsters (provide literature for designing bear proof containers).
7. Continue to develop and evaluate aversive conditioning techniques to discourage human-bear conflicts.
8. Coordinate with affected agencies when bear translocations are being considered as defined in Division policy (W5WLD-03).

### Livestock and Agricultural Depredation

#### Objective 1:

Reduce the level of depredation on livestock caused by bears.

#### Strategies:

1. Remove depredating bears by targeting offending individuals in accordance with the MOU with Wildlife Services. Track removal locations in support of Strategy 9.
2. Encourage land management agencies and livestock operators to utilize best management grazing practices to minimize bear depredation opportunities.
3. Encourage the implementation of nonlethal methods to reduce bear depredation on livestock such as:
  - a. Use of herders
  - b. Guard dogs (where potential for impacting other wildlife is low, e.g. deer fawns and elk calves)
  - c. Moving animals away from conflict
4. Work to develop and test new non-lethal techniques and evaluate the effectiveness of existing non-lethal techniques.
5. Continue to compensate operators for livestock losses from confirmed bear depredation.
6. Work to improve the detection of livestock killed by bears.
7. Develop a GIS coverage map that identifies areas of high livestock / bear conflict.
8. Evaluate the impacts of recreational pursuit (+ and -) on livestock depredation.
9. In areas with chronic livestock depredation, facilitate a dialogue between the Division, the land management agency, Wildlife Services and the livestock producer focused on identifying /

developing non-lethal ways to decrease depredation and the lethal removal of bears.

Objective 2:

Reduce the level of agricultural depredation caused by bears.

Strategies:

1. Provide recommendations (e.g. electric fencing, guard dogs, aversive conditioning.....) to agricultural operators on ways to reduce or eliminate damage from depredating bears.
2. When damage becomes extensive and abatement techniques have proven ineffective consider removing offending animals using sportsmen or agency personnel.
3. Allow commercial agricultural producers, in areas that the Division identifies as having chronic depredation problems, to lethally remove bears that are found in the act of depredating on commercial crops.
4. Develop a GIS coverage map that identifies areas of high agricultural / bear conflict to help focus preventative efforts.

## Recreation

Objective 1:

Maintain the quality and quantity of black bear recreational opportunities, both consumptive and non consumptive.

Strategies:

1. Continue to offer a variety of black bear hunting opportunities, including hounding, baiting, pursuit and spot and stalk as management tools.
2. Eliminate the need for the bear baiting COR requirement, but allow each bait hunter up to two bait sites that are located in areas outside restricted areas identified in rule.
  - a. Require bait hunters to register bait sites online to capture GPS coordinates to depict the location of bait stations.
  - b. Allow bait hunters to give written permission for other licensed hunters to hunt from their bait sites.

3. Implement bear harvest and pursuit strategies designed to reduce conflicts between other resource users (recreationists, bear and big game hunters) (e.g. hunting, pursuit, pack size, season dates).
4. Coordinate with land management agencies to implement land use restrictions designed to reduce conflicts between resource users.

Population Management

Objective 1:

Maintain a stable bear population while considering other wildlife population objectives, the level of human-bear conflict and source-sink population dynamics.

Performance Targets:

Performance Target	Light Harvest	Moderate Harvest	Liberal Harvest
Adult Male (5 yrs old) in the sport harvest category	>35%	25 – 35%	<25%
Female in the sport harvest category	<30%	30 – 40%	40 – 45%
Population Growth Rate (DNA study)	+10 to +20%*	-10 to +10%	-10 to -20%

\*Only applies if units have been moved from liberal to light within the last 2 recommendation cycles.

Management System (Figure 2):

1. Select one of the following harvest strategies for bear management units at the beginning of each three-year recommendation cycle:
  - a. Light Harvest Strategy
    - i. Manage based on performance targets referenced in the harvest strategy.
    - ii. Criteria used to select this strategy include providing opportunity to harvest adult male bears, a low level of human-bear conflict, low bear population in need of harvest protection or population acting as source for adjoining bear management units.
  - b. Moderate Harvest Strategy
    - i. Manage based on performance targets referenced in the harvest strategy.
    - ii. Criteria used to select this strategy includes moderate levels of human-bear conflict and a stable bear population.

c. Liberal Harvest Strategy

- i. Manage based on performance targets referenced in the harvest strategy.
- ii. Criteria used to select this strategy includes high levels of human-bear conflict, an increasing bear population, source population (refuge) adjacent or within the unit, chronic livestock issues on private land or when Wildlife Services bear mortalities have exceeded sport harvest on the unit during two of a three-year recommendation cycle or a high level of human-bear conflict has occurred.

d. Predator Management

- i. If a unit is placed under a predator management plan, according to DWR Policy W1AG-4 (Managing Predatory Wildlife), that unit will be managed under the Liberal Harvest Strategy for the duration of the predator management plan.

2. Harvest variables (adult male 5 years and female in the sport harvest category) identified in the performance targets at the bear management unit level over a three-year period will be evaluated as follows:

- a. When both variables are within the normal range, permits will be stabilized or adjusted upward or downward by " 20% depending on the location within the range for the desired population level.
- b. When one variable is inside the normal range and one variable is outside the normal range, permits will be stabilized or adjusted upward or downward by " 20% depending on the location within the range for the desired population level.
- c. When both variables are outside the normal range in opposite directions, permits will be stabilized or adjusted upward or downward by " 20% depending on the location within the range for the desired population level.
- d. When both variables exceed the normal range in the same direction, permits will be adjusted upward or downward by 20 – 40%.
- e. When moving to a new harvest strategy at the end of a three-year recommendation cycle, permits will be adjusted upward or downward depending on the new management direction but not to exceed  $\pm 50\%$ .
- f. When working with a small sample size ( $< 10$  individuals) over the three-year period, decisions to adjust permits will be based on best professional judgment.



3. The statewide rollup of harvest variables (adult male 5 years and female in the sport harvest category) will not be outside the performance target ranges identified in the moderate harvest strategy. Additional adjustments at the unit level may be necessary to move variables within normal range during the following three-year recommendation cycle. This will be accomplished by adjusting permits an additional  $\pm 10\%$  at the unit level.
  - a. Predator management plan units will not be considered as part of the statewide rollup.

Strategies:

1. Select the appropriate harvest strategy and manage to the performance targets identified in the management system.
2. Evaluate performance target ranges, harvest strategies and management system every 6 years.
3. Develop a GIS coverage map that identifies areas containing source-sink populations to help focus future harvest strategies

## Black Bear Research

Objective 1:

Continue to improve basic understanding of black bear management and ecology through applied research.

Strategies:

1. Continue to support research efforts that utilize harvested bears and publicize the study results.
2. In addition, focus on the following research topics, as funding allows, during the life of the plan.
  - a. Identify population connectivity and travel corridors
  - b. Explore source / sink population dynamics
  - c. Human-Bear conflict management
  - d. Techniques for reducing livestock and agricultural depredation
  - e. Document impacts to other resource users from summer bear pursuit activities, and implement actions to reduce impacts if warranted
  - f. Short term population density estimates
  - g. Potential impacts of selective versus non-selective hunt strategies
  - h. Dispersing yearling survival as compared to survival of established adults

- i. Effects of bear on prey species such as deer fawns and elk calves
  - j. Monitor productivity of hard and soft mast producing communities
  - k. Short and long-term black bear use of wildfires or vegetation treatments in aspen, mixed conifer and mixed mountain browse habitats
  - l. Effects of roads and energy development activities (habitat fragmentation) on black bear use
  - m. Continue to monitor the survival of rehabbed bear cubs
  - n. Determine if there is a relationship between baiting and human-bear conflicts (i.e. does baiting increase the potential for human safety issues in the area of the bait).  
[https://digitalcommons.unl.edu/icwdm\\_usdanwrc/2182/](https://digitalcommons.unl.edu/icwdm_usdanwrc/2182/)
3. Explore partnerships to leverage research funding.
  4. Continue to use universities to conduct research.
  5. When possible, use employees involved in the Division's continuing education program to conduct research.

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## Appendix A

This appendix is meant to capture thoughts and rationales from the 2022 plan review process that created this plan. Included here are notes from the 5 committee meetings and resources presented as part of the process.

The committee was tasked with simplifying the plan in 2022 including separating hound and bait hunting to avoid law enforcement concerns about chasing bears off of bait stations which is illegal. Having those two activities occur simultaneously made enforcement very difficult. The committee also was asked to try to simplify the bear plan and make it easier for biologists, hunters and the public at large to understand how recommendations are made.

The committee separated hound and bait hunting in time to address enforcement concerns. They also shifted hound hunting in the fall to give archery big game hunters time in the field without bear hunting hounds. They also expanded fall spot-and-stalk hunting seasons to provide expanded bear hunting opportunities.

Meeting resources



The six meeting roles are:

1. **Participant:** The participants have a real stake in the meeting objectives. This is the group that will participate in providing the meeting content. Another job of the participants is to call foul if the facilitator or recorder strays from their neutral role and begin to comment on or offer content.
2. **Recorder:** The recorder captures the group memory (record of major points of discussion and decisions). This is done on flip charts at the front of the room. The recorder must write large enough so that people at the back can read. The recorder should use the words of the speaker as much as possible. Also the recorder should change the colors between major points and the recorder should number the pages sequentially.
3. **Chair:** The role of the chair of the meeting has several duties. This is the person that calls the meeting and sets the purpose (objectives) and any constraints on the meeting. The chair assigns follow-up tasks and represents the group to outsiders. The chair is responsible for the meeting results however; the chair does not run the meeting. Because the chair calls the meeting and sets the purpose and constraints it is the chair who is responsible for the meeting results.
4. **Subject Expert:** This person(s) participates only by giving unbiased information on the topic and answering questions. They do not recommend solutions to the issue at hand. This person may wear a uniform or other symbols of their authority and expertise. They are neutral and provide accurate information to the group. The subject matter expert does not offer opinions or suggestions unless asked by the group. They definitely should not run the meeting. Their power is in their neutrality and the information they present.
5. **Observers:** The role of observer is to watch and evaluate effectiveness of the meeting. Observers participate only if asked. There is a tendency to jump into the conversation unless observers are clear on their role. Also, observers are seated separately from the group actually doing the work.
6. **Facilitator:** The facilitator role is that of a neutral servant of the group. The facilitator does not contribute content to the group's discussions. It is the job of the facilitator to keep the group focused on task and prevent straying away from the topic of discussion. The facilitator also encourages discussion and calls on people that have been very quiet asking for their opinions. Another critical role of the facilitator is that of protecting all participants from verbal attacks. The facilitator is to ensure a level and safe playing field for discussions. In addition, the facilitator works with the chair in planning the meeting and the facilitator supervises/assists the recorder during the meeting.

## Discussion Items

NEEDS DISCUSSION	CATEGORIES

Bear hunting strategies Conflicts	Recreation
Pursuit season and dates for lion and bear permits	Recreation
Hounds versus bait, overlap of season dates	Recreation
Hounds during the big game archery season	Recreation
Weapon types available for bear take. Has liberalized weapon type over bait increased applications and take?	Recreation
Addressing how bears are managed across the state, and connectivity issues	Research/Pop Management
Are we meeting the metrics outlined in the current plan?	Recreation
Season structures	Recreation
Using containers for bait	Recreation
Maximum number of dogs	Recreation
Cost of various permits	Recreation
What tools are available, what is used the most	Population Management
Spot and Stalk doesn't control populations like bait/hounds, different hunt strategy success	Population Management
Overpopulation and oversaturation of bears in certain units. Plan for population reduction	Population Management
Improve and update "Performance Targets" in current plan (percentages with harvest). Simplify?	Population Management
How do we know density of bears?	Population Management
Do we always give biologist discretion over unit performance targets categories? How are they decided?	Population Management
Manage for trophy hunts while increasing opportunity	Recreation
Obtaining accurate population estimates across the state/per unit. What type of data is collected?	Research
Update plan with recent literature	Research
Across agency coordination with bear management	Population Management
Trail cameras and bear hunting	
Weeding out the noise, not addressing every complaint (ppl complain about everything) Public land is equal opportunity	All
Depredation, livestock producers	Depredation
Tools for livestock owners	Depredation
How to increase chances of public hunters removing conflict bears	Nuisance
How to improve hunting opportunities without increasing negative public sentiment (example wanted waste)	Outreach
What is the current public sentiment, what is on social media? Wanted waste in Utah	Outreach
Translocations for nuisance bears	Population Management

What is used as bait, are there concerns with CWD spread	Population Management
Hunter education for identifying sows versus boars	Population Management
How improve hunt opportunities by using different strategies (increase opportunity w/out hurting the resource)	Recreation
Strengthen language in plan to encourage consumption of bear meat. Avoid Oregon situation where wanton destruction of bears occurred	Recreation
Special opportunities for youth in bear hunting, no group applications permitted	Recreation
Baiting CORs, necessary or not?	Recreation
Baiting COR, allowing alternate hunters on one bait and preapproving baits if they want to move it	Recreation
Distance between different hunter's baits, standardize the way regions handle it	Recreation
Prevalence of trichinosis	Research
Data on bear meat consumption	

Meeting Agendas:

*Statewide Bear Plan Committee*

**Draft Agenda**

*August 15, 2022 - 5:00 - 8:30 pm*

CRCC Building Central Region Office (1115 N Main Street, Springville)

Facilitator: Chris Wood      Chair: Darren Debloois      Recorder: Elicia Cotcher

Committee Members: Ben Lowder , Travis O'Niel , Cory Huntsman , Bret Guyman, Kirk Player, Sunshine Brosi , Kaya Wasilewska , Julie Young , Sierra Nelson , Brayden Richmond , Chad Heuser, Wade Heaton , JW Hackett, Ross Worthington, Barbara Smith, Dustin Mitchell

Purpose: Assist the DWR in writing the statewide black bear plan.

<i>Time</i>	<i>Topic</i>	<i>Person</i>	<i>Process</i>	<i>Product</i>
4:30	Dinner (provided by DWR)	All	-	-
5:00	Welcome by Director	J Shirley	Present	-
5:10	Introductions	All	Open Discussion	Know participants
5:20	Purpose, goals, roles, agenda of meeting	Chris	Present / Discuss	Functional agenda
5:30	Charter, ground rules, parking lot	Chris	Present / Discuss	Finalize charter and create ground rules
6:15	Expectations and direction from the Wildlife Board	Darren	Present	
6:20	Discussion- What is working? What is not working?	All	Discussion	
8:15	Assignments	All	Discussion	Assign tasks
8:20	Plan next meeting(s)	All	Discussion	Determine timing and purpose of next meeting
8:30	Adjourn	All	-	-

*Statewide Bear Plan Committee*

**Draft Agenda Meeting #2**

*September 1, 2022 - 6:00 - 9:00 pm*

CRCC Building Central Region Office (1115 N Main Street, Springville)

Facilitator: Chris Wood      Chair: Darren DeBloois      Recorder: Elicia Cotcher

Committee Members: Ben Lowder , Travis O'Niel , Cory Huntsman , Bret Guyman, Kirk Player, Sunshine Brosi , Lisa Church, Julie Young , Sierra Nelson , Brayden Richmond , Chad Heuser, Wade Heaton , JW Hackett, Ross Worthington, Barbara Smith, Dustin Mitchell

Purpose: Assist the DWR in writing the statewide black bear plan.

<i>Time</i>	<i>Topic</i>	<i>Person</i>	<i>Process</i>	<i>Product</i>
5:30	Dinner (provided by DWR)	All	-	-
6:00	Welcome/Introductions	All	Open Discussion	Know participants
6:10	Agenda overview	Chris	Present / Discuss	Agreement on meeting content
6:20	Bear Management overview.	Darren	Present	Better understanding of hunt strategies/structure/dates, big game/cougar season dates, current toolbox
6:40	Law Enforcement overview	Officers Bond & Decker	Present	Better understanding of LE experiences challenges and perspectives
7:00	Licensing overview	Lindy	Present	Better understanding of hunting success and hunting interest
7:20	Break			
7:30	Q&A about presentations	All	Discussion	Answer questions about all three presentations
8:00	Discussion & resolutions	All	Discussion	
8:40	Assignments	All	Discussion	Assign tasks
8:50	Plan next meeting(s)	All	Discussion	Determine timing and purpose of next meeting
9:00	Adjourn	All	-	-

*Statewide Bear Plan Committee*

**Draft Agenda Meeting #3**

*September 22, 2022 - 6:00 - 9:00 pm*

Southeastern Region Office (319 N Carbonville Rd Ste A)

Facilitator: Chris Wood    Chair: Darren DeBloois    Recorder: Elicia Cotcher

Committee Members: Ben Lowder , Travis O'Niel , Cory Huntsman , Bret Guyman, Kirk Player, Sunshine Brosi , Lisa Church, Julie Young , Sierra Nelson , Brayden Richmond , Chad Heuser, Wade Heaton , JW Hackett, Ross Worthington, Barbara Smith, Dustin Mitchell

Purpose: Assist the DWR in writing the statewide black bear plan.

<i>Time</i>	<i>Topic</i>	<i>Person</i>	<i>Process</i>	<i>Product</i>
5:30	Dinner (provided by DWR)	All	-	-
6:00	Welcome/Introductions	All	Open Discussion	Know participants
6:05	Agenda overview	Chris	Present / Discuss	Agreement on meeting content
6:10	Direction from DWR's Directors Office	Darren	Present	Understand the purpose of the committee and additional direction received from DWR leadership
6:15	Recap from law enforcement on season overlap challenges	Officers Bond & Decker	Present	Understand what challenges/complaints they are hearing from other hunters and user groups. Hear any recommendations on how to address those issues.
6:25	Discussion on season overlaps	All	Discussion	Generate recommendations on how to separate hunts and lessen conflicts among hunts/hunters.
6:50	Discussion on hounds, baiting, spot and stalk opportunities in units throughout the state	All	Discussion	Generate recommendations on hunting methods for units across the state
7:30	Break			
7:40	Presentation & discussion on pack including recent reg changes, avg # of dogs in units, social tolerances, etc	All	Discussion	Generate a recommendation on # of dogs for pursuit and hunting seasons
8:45	Assignments	All	Discussion	Assign tasks
8:50	Plan next meeting(s)	All	Discussion	Determine timing and purpose of next meeting
9:00	Adjourn	All	-	-

Statewide Bear Plan Committee

Draft Agenda Meeting #4

October 4, 2022 - 6:00 - 9:00 pm  
Central Region Office

Facilitator: Chris Wood    Chair: Darren DeBloois    Recorder: Elicia Cotcher

Committee Members: Ben Lowder , Travis O'Niel , Cory Huntsman , Bret Guyman, Kirk Player, Sunshine Brosi , Lisa Church, Julie Young , Sierra Nelson , Brayden Richmond , Chad Heuser, Wade Heaton , JW Hackett, Ross Worthington, Barbara Smith, Dustin Mitchell

Purpose: Assist the DWR in writing the statewide black bear plan.

Time	Topic	Person	Process	Product
5:30 pm	Dinner provided by Director J J Shirley.	All	-	-
6:00 pm	Welcome/Introductions	All	Open Discussion	Know participants
6:05 pm	Agenda overview	Chris	Present / Discuss	Agreement on meeting content
6:10 pm	Season structure- Wrap up discussion on season overlap ideas and hunt strategy discussion. Discuss feedback from biologists	All	Present/Discuss/ Agree-vote	Decide on- fall bait season, expanding spot and stalk, rest of the season dates
6:50 pm	Dogs- presentation & discussion on dogs- including recent reg changes, avg # of dogs in units, social tolerances, etc	All	Present	Generate a recommendation using hounds for bear hunting including- # of dogs for pursuit and hunting seasons
7:30 pm	Break			
7:40 pm	Bear Baiting- # of stations, location restrictions, permitting process, tracking bait stations, locations, land agency concerns	All	Discussion	Generate a recommendation on bear baiting
8:10	Plan parameters and harvest strategies	All	Discussion	Discuss three categories and how to determine which units have- light, moderate, heavy harvest categories.
8:45	Assignments	All	Discussion	Assign tasks
8:50	Plan next meeting(s)	All	Discussion	Determine timing and purpose of next meeting
9:00	Adjourn	All	-	-

*Statewide Bear Plan Committee*

**Draft Agenda Meeting #5**

*October 25, 2022 - 6:00 - 9:00 pm*  
Central Region Office

Facilitator: Chris Wood    Chair: Darren DeBloois    Recorder: Elicia Cotcher

Committee Members: Ben Lowder , Travis O'Niel , Cory Huntsman , Bret Guyman, Kirk Player, Sunshine Brosi , Lisa Church, Julie Young , Sierra Nelson , Brayden Richmond , Chad Heuser, Wade Heaton , JW Hackett, Ross Worthington, Barbara Smith, Dustin Mitchell

Purpose: Assist the DWR in writing the statewide black bear plan.

<i>Time</i>	<i>Topic</i>	<i>Person</i>	<i>Process</i>	<i>Product</i>
5:30 pm	Dinner provided by DWR	All	-	-
6:00 pm	Welcome/Introductions	All	Open Discussion	Know participants
6:05 pm	Agenda overview	Chris	Present / Discuss	Agreement on meeting content
6:10 pm	Recap- What the plan looks like, what decisions have been made	Darren	Present	An understanding of where we are and what we still need to discuss/recommend
6:20 pm	Bear Baiting- # of stations, sharing/changing stations, location restrictions, permitting process, tracking stations, locations, containers, land agency concerns	All	Present/Discuss/Recommend	Generate a recommendation on bear baiting
7:20 pm	Break			
7:30 pm	Plan parameters and harvest strategies	Daren/All	Discussion/Recommend	Discuss three categories and how to determine which units have- light, moderate, heavy harvest categories.
8:00 pm	Outreach strategies	DWR Outreach personnel/All	Present/Discuss/Recommend	Learn about DWR's outreach toolbox. Make recommendations on messaging and strategies.
8:25 pm	Statewide predator management plan	Darren/All	Present/Discuss	Understanding on how the plan applies to bear management
8:35 pm	Misc items to discuss	All	Discuss/Recommend	Wanton waste, recommendation on permit prices,
8:50 pm	Assignments	All	Discussion	Assign Life History, Habitat, etc sections
8:55 pm	Discuss next steps	All	Discussion	Determine whether additional meeting(s) and/or email communication is needed
9:00 pm	Adjourn			

**Additional reading offered during discussions**

- [Who Takes the Bait? Non-target Species Use of Bear Hunter Bait Sites](#)



(Thompson et al. 2008, Sorensen et al. 2014, Uehlinger et al. 2016

- Sorensen, A., F. M. van Beest, and R. K. Brook. 2014. Impacts of wildlife baiting and supplemental feeding on infectious disease transmission risk: A synthesis of knowledge. *Preventive Veterinary Medicine* 113:356–363.
- Thompson, A. K., M. D. Samuel, and T. R. Van Deelen. 2008. Alternative feeding strategies and potential disease transmission in Wisconsin white-tailed deer. *Journal of Wildlife Management* 72:416–421.
- Uehlinger F. D., A. C. Johnston, T. K. Bollinger, and C. L. Waldner. 2016. Systematic review of management strategies to control chronic wasting disease in wild deer populations in North America. *BMC Veterinary Research* 12:173.
- Chocolate and cocoa products and bear mortality  
<https://wildlife.onlinelibrary.wiley.com/doi/full/10.1002/wsb.647>