

Nevada Department of Wildlife
Predator Management Plan
Fiscal Year 2024

Summary on Plans and Reports

- Just reported on FY 2022
- Currently in FY 2023
- Presenting on FY 2024
- All available at website. Email pjackson@ndow.org for immediate request

NRS 502.253 (predator fee)

- ~\$900,000 generated annually
- \$14,000 admin support Dept. of Agriculture
- Predator plan projects
- Staff salary
- Reserve remains available for future years

NRS 502.253

1. Management of predatory wildlife
2. Research on lethal control techniques of predatory wildlife
3. Protection of sensitive species

NRS 502.253

- Mandates that 80% of revenues from most recent fiscal year from which we have complete accounting to be spent on lethal removal
- Includes monitoring of effects from lethal removal efforts

Input Opportunities

1. January Commission Meeting
2. PARC meeting
3. WDMC today
4. March Commission meeting
5. May Commission meeting
6. All supporting CAB meetings
7. Contact me directly pjackson@ndow.org

Budget Summary

- \$911,013 revenues from FY 2022 (last year with complete accounting, still receiving revenue in FY 2023)
- $\$911,013 \times 0.8 = \$728,810$ (80% mandate)
- \$934,000 allocated to lethal removal in FY 2024 plan

Project Types and Monitoring

Project Type

1. Implementation
2. Experimentation
3. Experimental Management

Monitoring

1. Standard Monitoring
2. Intermediate Monitoring
3. Rigorous Monitoring

Project Types and Monitoring

Project Type

Monitoring

- | | |
|----------------------------|----------------------------|
| 1. Implementation | 1. Standard Monitoring |
| 2. Experimentation | 2. Intermediate Monitoring |
| 3. Experimental Management | 3. Rigorous Monitoring |

Projects Recommended for Continuation



Project 21: Greater Sage-Grouse Protection (Common Raven Removal)

Project Type: Implementation and Experimental Management



Project 21: Greater Sage-Grouse Protection (Common Raven Removal)

- Protect greater sage-grouse populations
- Lethally remove common ravens
- Determine what level of raven control is needed

Project 21: Greater Sage-Grouse Protection (Common Raven Removal)

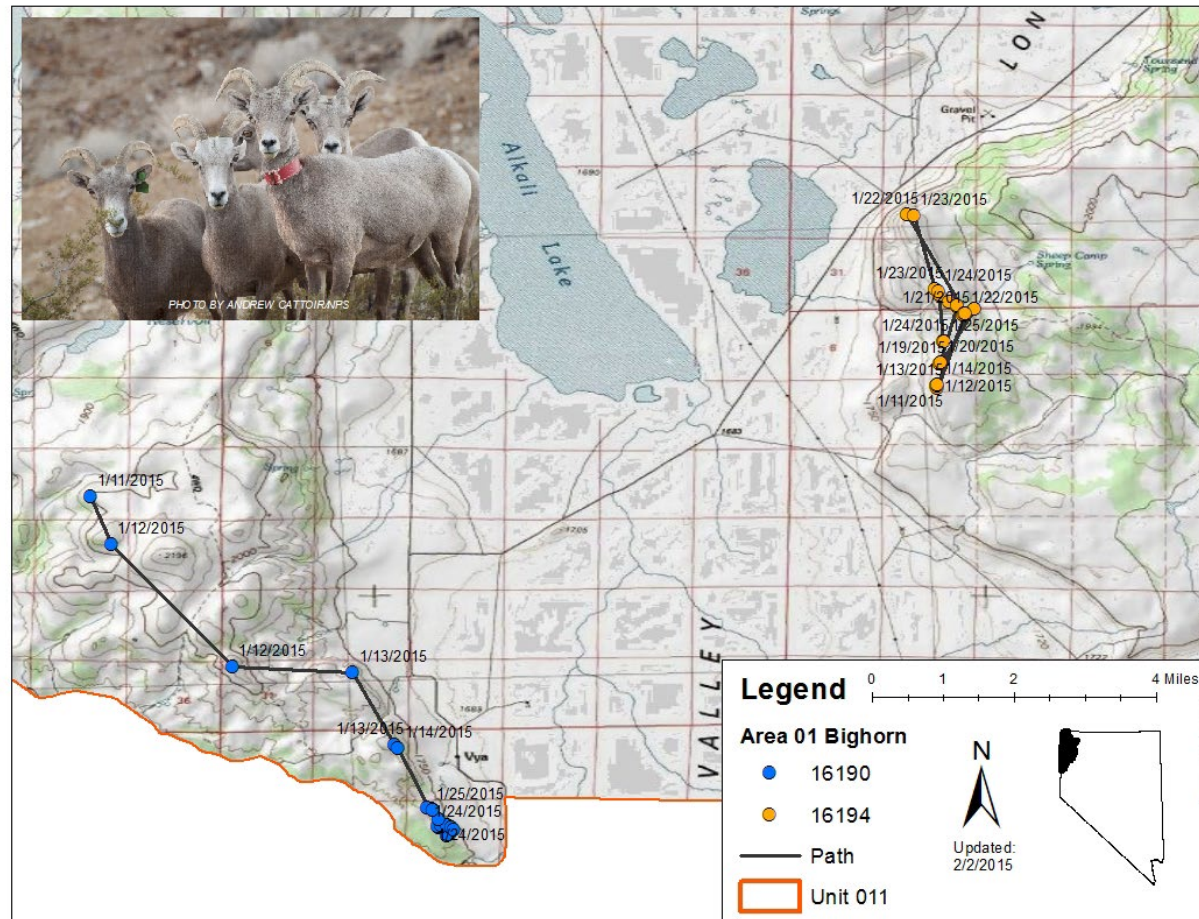
Budget:\$175,000

- Wildlife Services administers corvicide (DRC-1339)
- Surveys and models to determine common raven densities across Nevada



Project 22-01: Mountain Lion Removal to Protect California Bighorn Sheep

Project Type: Implementation



Project 22-01: Mountain Lion Removal to Protect California Bighorn Sheep

Budget: \$100,000

- Establish self-sustaining population of bighorn sheep, subset of population is currently collared
- Wildlife Services and private contractors are proactively removing lions entering area
- Wildlife Services or others may respond reactively with dogs after a sheep mortality

Population Dynamics

- Populations estimated at approximately 50 individuals in 011 and 013

Action	Bighorn Sheep Population
Monitor bighorn population, conduct removal on case by case basis	> 80
Remove lions that consume bighorn sheep*	60 - 80
Remove all lions in area	< 60

Project 22-074: Monitor Rocky Mountain Bighorn Sheep for Mountain Lion Predation

Project Type: Implementation and Experimental
Management

Project 22-074: Monitor Rocky Mountain Bighorn Sheep for Mountain Lion Predation

Budget: \$20,000

- Establish self-sustaining population of bighorn sheep
- Monitor bighorn sheep populations with GPS collars
- Remove mountain lions consuming bighorn sheep

Population Dynamics

- The population estimate is 35-40 individuals in area 074

Action	Bighorn Sheep Population
Monitor bighorn population, conduct removal on case by case basis	> 15
Remove lions that consume bighorn sheep*	10 - 15
Remove all lions in area	< 10

Project 37: Big Game Protection- Mountain Lions

Project Type: Implementation



Predator Removal Indices

Species	Annual Adult Survival Rates	Fall Young: Female Ratios	Spring Young: Female Ratios	Adult Female Annual Survival Rates
California Bighorn Sheep	< 90%	< 40:100	--	--
Rocky Mountain Bighorn Sheep	< 90%	< 40:100	--	--
Desert Bighorn Sheep	< 90%	< 30:100	--	--
Mule Deer	--	--	< 35:100	< 80%
Pronghorn	< 90%	< 40:100	--	--

Project 37: Big Game Protection- Mountain Lions

Budget: \$100,000

- Addressing population limiting predation by mountain lions
- Work will be conducted by Wildlife Services, private houndsmen, and/or private trappers
- Problematic mountain lions will be identified through GPS collar locations, trail cameras, and kill sites

Project 38: Big Game Protection- Coyotes

Project Type: Implementation



Project 38: Big Game Protection- Coyotes

Budget: \$100,000

- Addressing coyote predation that has a negative influence on game populations
- Removal of coyotes in pronghorn and deer winter range and fawning areas in certain situations
- Work will be conducted by Wildlife Services and private contractors

Project 40: Coyote and Mountain Lion Removal to Complement Multi-faceted Management in Eureka County

Project Type: Implementation



Project 40: Coyote and Mountain Lion Removal to Complement Multi-faceted Management in Eureka County

Budget: \$150,000

- Coyote removal will complement previously conducted feral horse removal, habitat improvement, and past predator removal efforts

Project 41: Common Raven Management and Experimentation

Project Type: Experimentation



Project 41: Common Raven Experimentation

Budget: \$300,000 (25% from \$3 predator fee)

- Develop a protocol to estimate common raven populations
- Increase the understanding of common raven density and distribution
- Increase the understanding of how human subsidies affect common raven movements and space use

Project 42: Assessing Mountain Lion Harvest in Nevada

Project Type: Experimentation

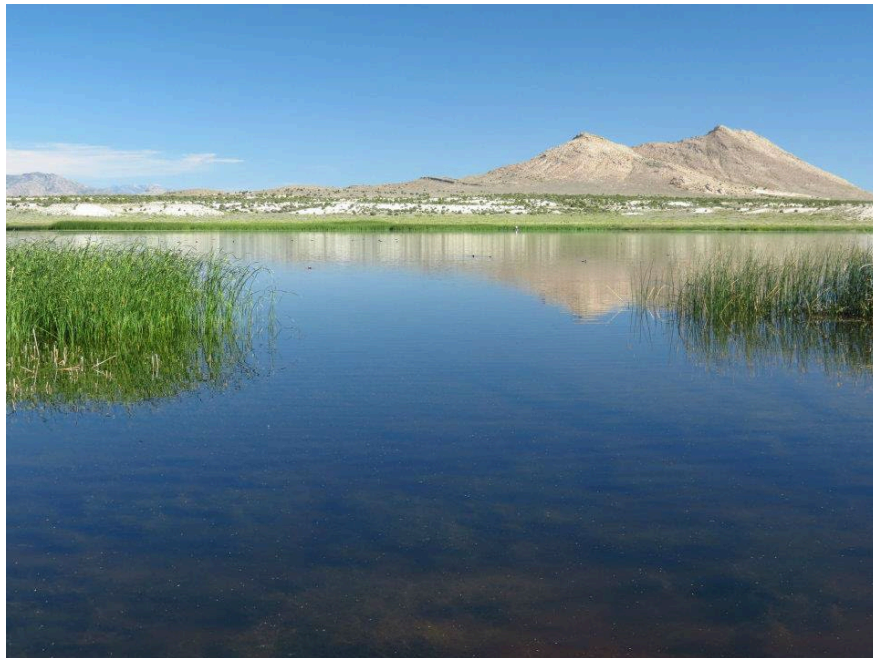
Project 42: Assessing Mountain Lion Harvest in Nevada

Budget: \$20,000 (25% from \$3 predator fee)

- Refine existing model
- Develop R-Shiny tool
- Publish existing model

Project 43: Mesopredator removal to protect waterfowl, turkeys, and pheasants on Wildlife Management Areas

Project Type: Implementation



Project 43: Mesopredator removal to protect waterfowl, turkeys, and pheasants on Wildlife Management Areas

Budget: \$50,000

- To occur on Overton and Mason Valley WMAs
- Coyotes, striped skunks, and raccoons will be lethally removed

Project 44: Lethal Removal and Monitoring of Mountain Lions in Area 24

Project Type: Experimental Management

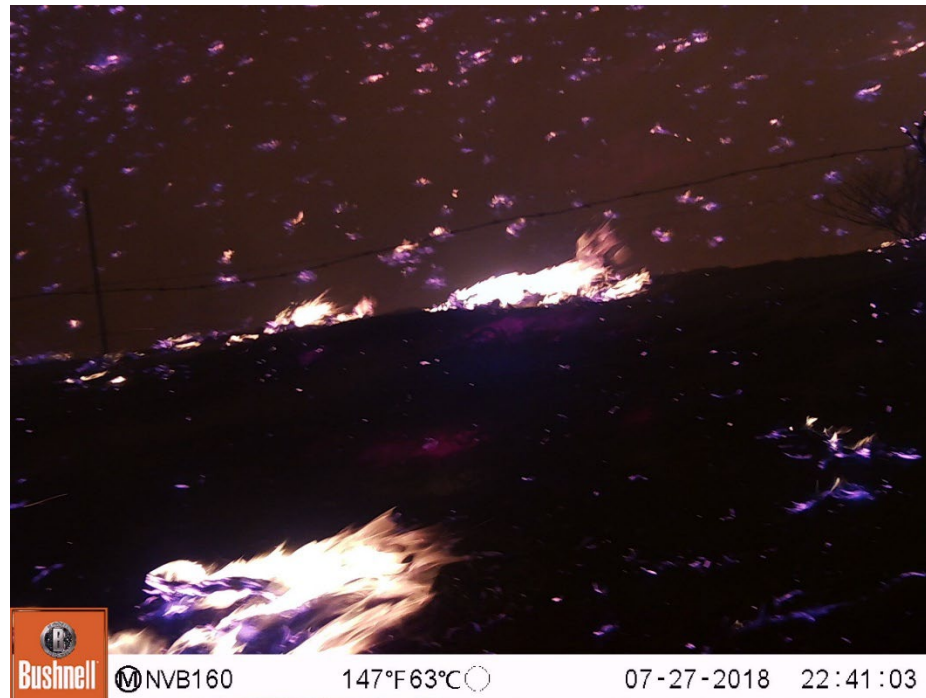
Project 44: Lethal Removal and Monitoring of Mountain Lions in Areas 23 and 24

Budget: \$125,000

- To occur primarily in areas 23 and 24
- Mountain lions in collar area will be captured and collared. Any collared lion killing bighorn sheep will be lethally removed
- Increase understanding of lion and horse interaction

Project 45: Passive Survey Estimate of Black Bears in Nevada

Project Type: Experimentation



Project 45: Passive Survey

Estimate of Black Bears in Nevada

Budget: \$20,000 (25% from \$3 predator fee)

- To occur primarily in areas inhabited by black bears

Project 45: Passive Survey

Estimate of Black Bears in Nevada

- Collaboration with Oxford and University of Montana
- Postdoctoral researcher from University of Montana
- Trail cameras main focus of field work

Project 46: Investigating Potential Limiting Factors Impacting Mule Deer in Northwest Nevada

Project Type: Experimentation

Project 46: Investigating Potential Limiting Factors Impacting Mule Deer in Northwest Nevada

Budget: \$160,000 (25% from \$3 predator fee)

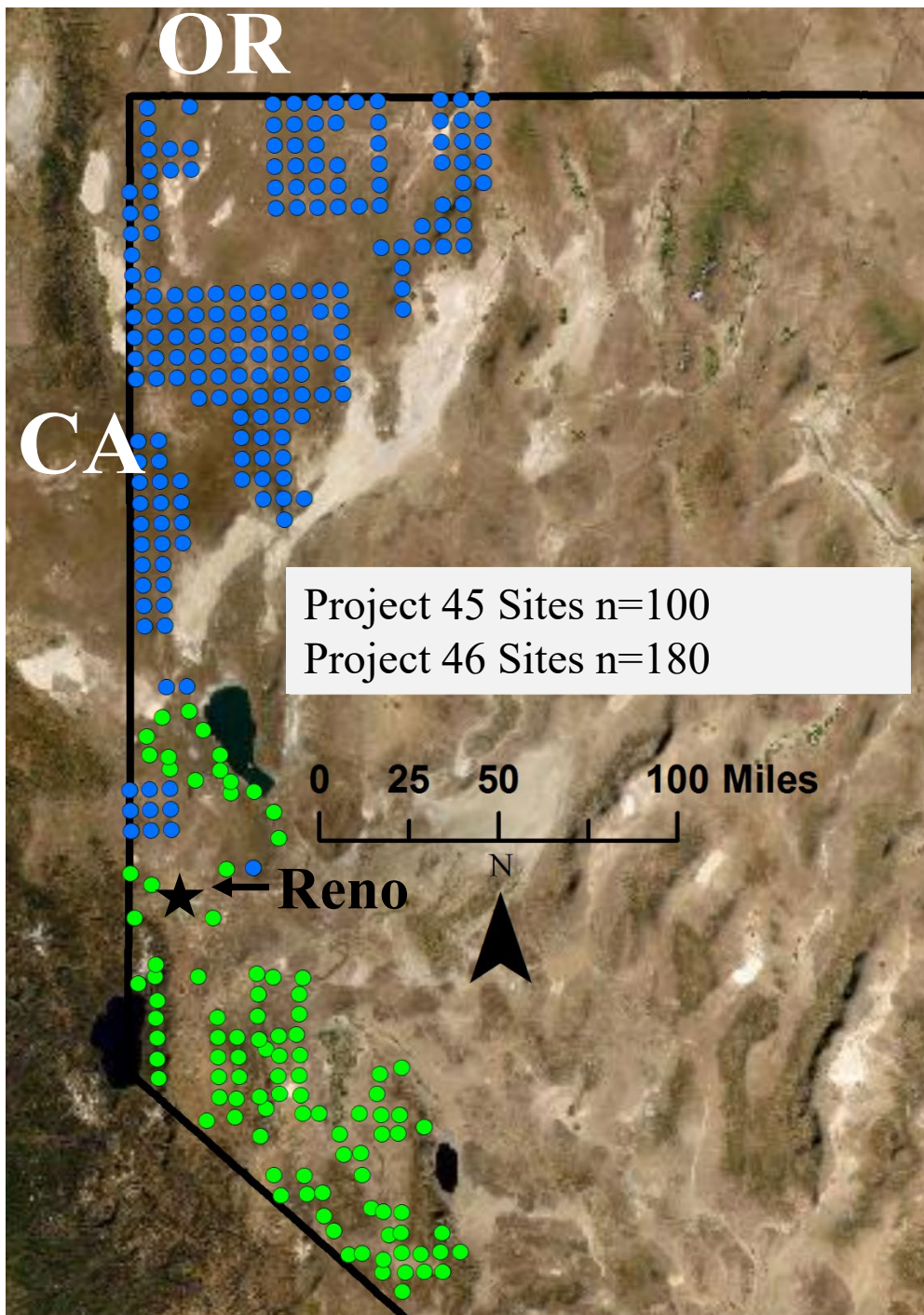
- To occur in northwest Nevada

Project 46: Investigating Potential Limiting Factors Impacting Mule Deer in Northwest Nevada

1. Accurately estimate mountain lion, feral horse, mule deer and/or pronghorn densities in specified areas
2. Increase understanding of how mountain lion, feral horse, mule deer and/or pronghorn densities changes throughout the course of a year

Project 46: Investigating Potential Limiting Factors Impacting Mule Deer in Northwest Nevada

- Collaboration with Oxford and University of Montana
- Series of trail camera grids throughout study area
- Year long monitoring
- Collar lions on Sheldon NWR



Newly Proposed Projects



Project 47: Mule Deer Enhancement Program Mule Deer Protection and Assessment

Project Type: Implementation or Experimental
Management

Project 47: Mule Deer Enhancement Program Mule Deer Protection and Assessment

Budget: \$100,000

- Statewide

Project 47: Mule Deer Enhancement Program Mule Deer Protection and Assessment

1. Identify predation as a limiting factor for mule deer
2. Build model to direct predator control temporarily and spatially

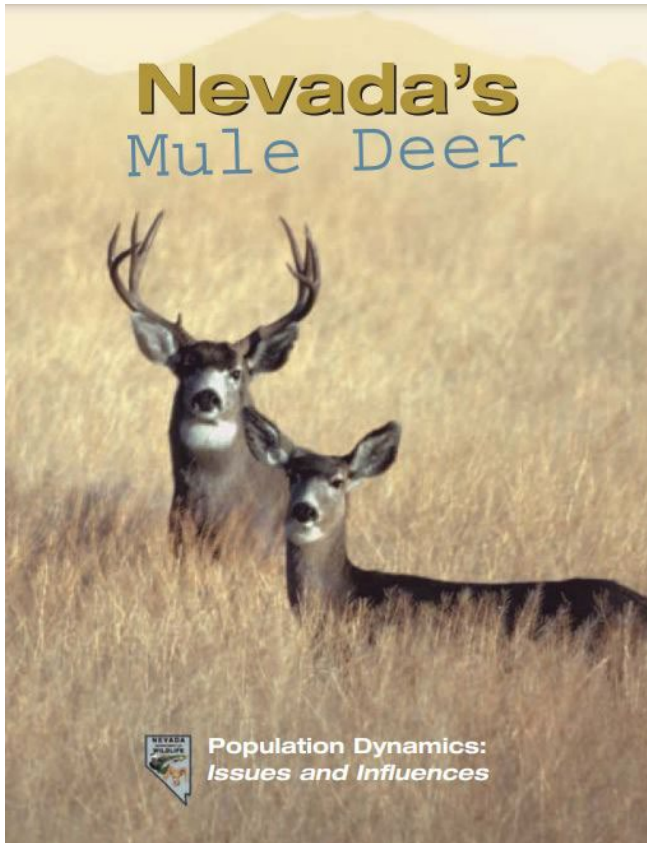




Stacking Assumptions



Population Dynamics



Statewide Mule Deer Population Estimate as it Relates to Average Monthly Precipitation Received July - September 1976 - 2000

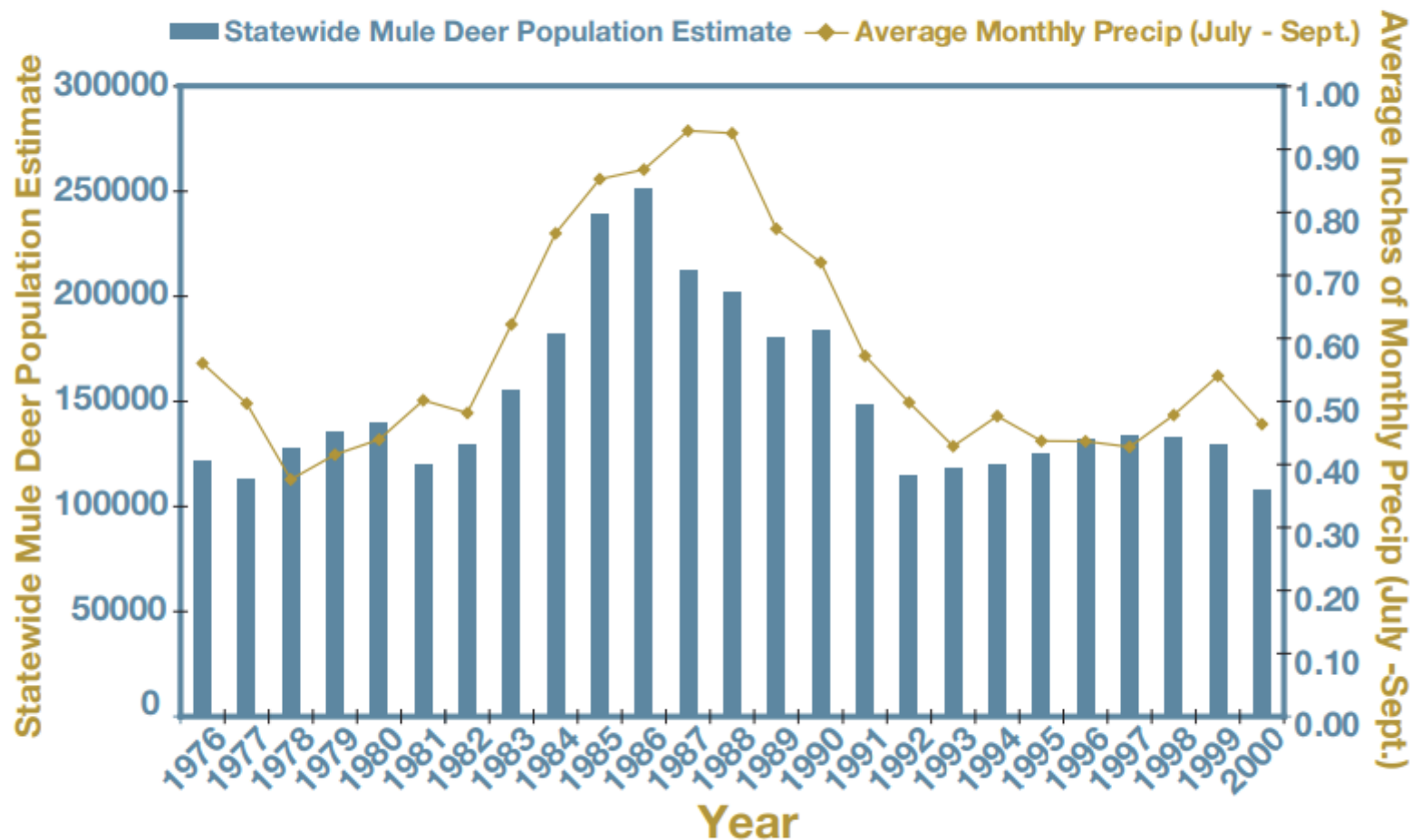


Figure 15. The relationship between statewide mule deer population estimate and summer precipitation. Summer precipitation is a six year average lagged 2 years.

\$3 Predator Fee

- \$800,000
- $\$800,000 / 16$
- $\$800,000 / 16 = \$50,000$

Circular Situation

Predation Perceived as Limiting
Factor



Conduct Predator
Removal



Wonder if it Worked

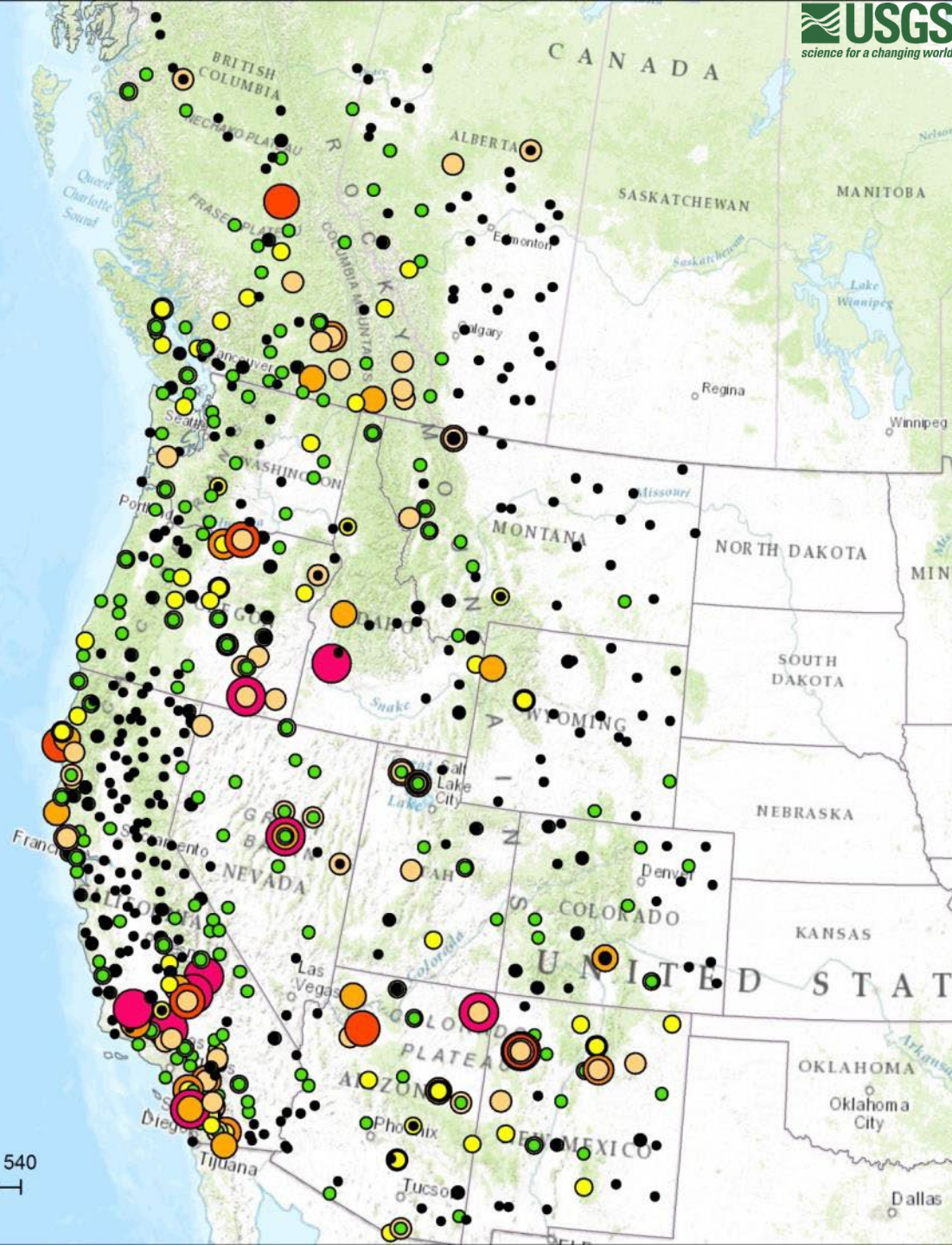
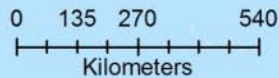
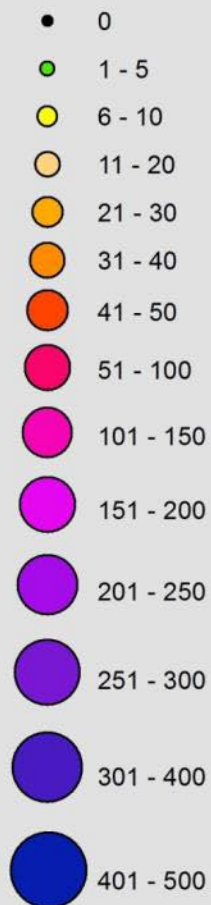
Various
Interpretations
Exist



Years 1971 – 1975

**Detected
at ~40% of
surveys**

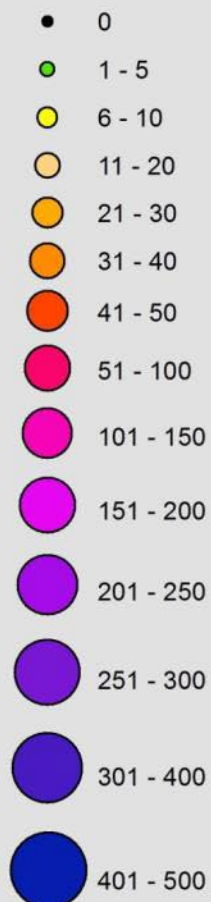
Raven Count



Breeding Bird Survey Data
Sauer, USGS

Years 2006 – 2010

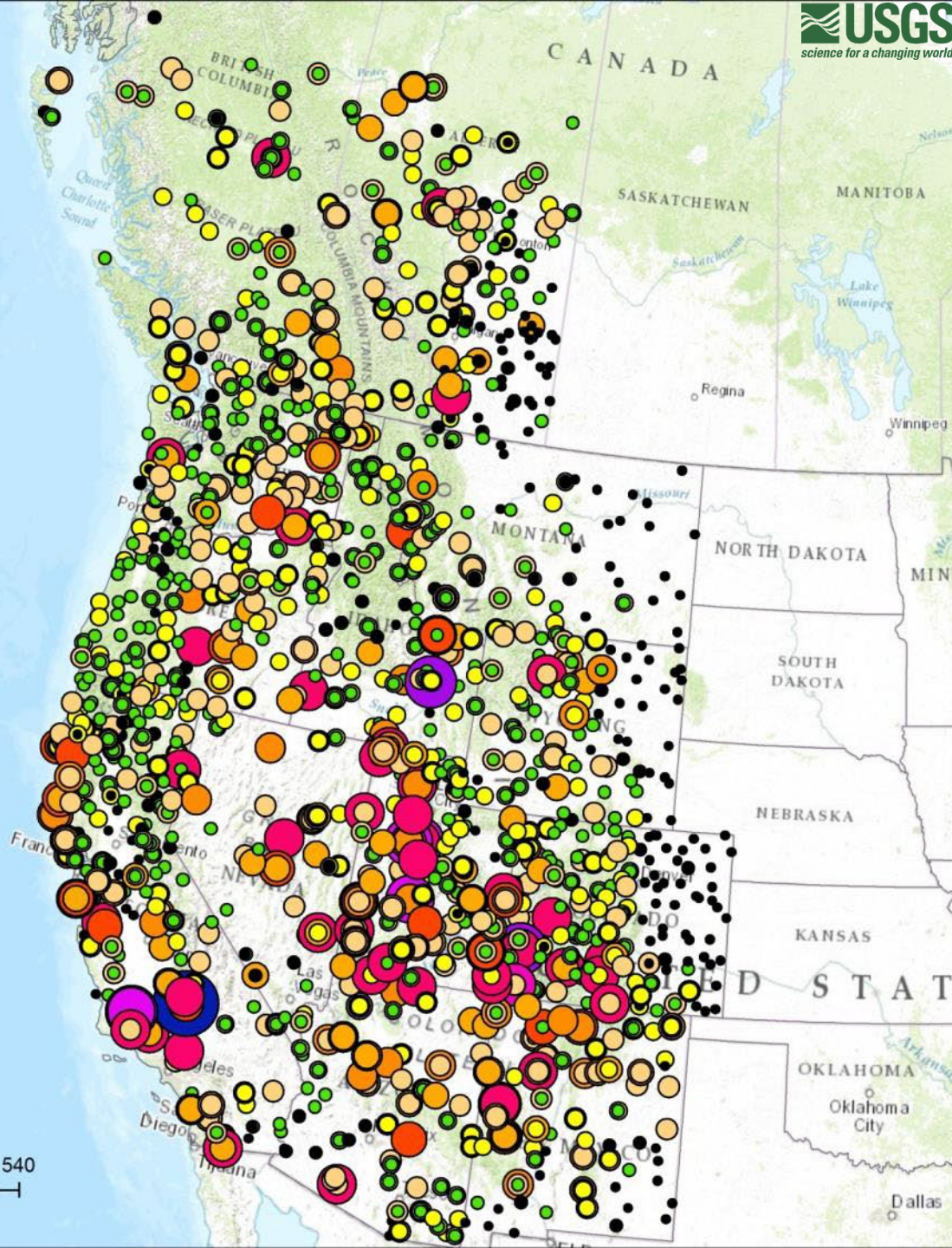
Raven Count



**Detected
at ~80% of
surveys**



0 135 270 540
Kilometers



Common Ravens and Sage-Grouse

1. There are more and more ravens
2. They do limit sage-grouse nest success
3. Lethal removal does reduce densities
4. Density reduction does increase sage-grouse nest success

Bighorn Sheep Introductions

Small Bighorn Populations

Pronghorn Fawn Survival

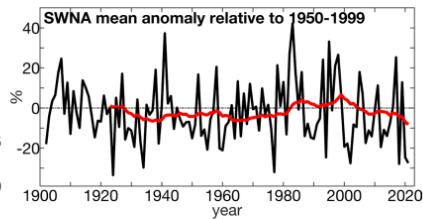
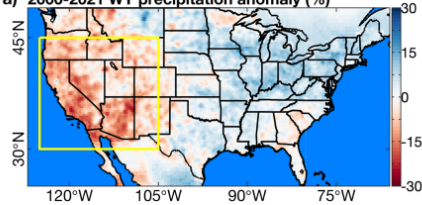
Mule Deer

Mega Drought

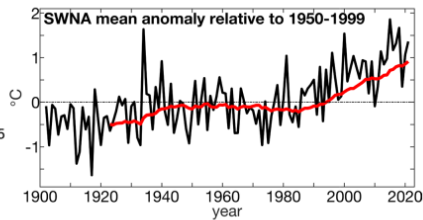
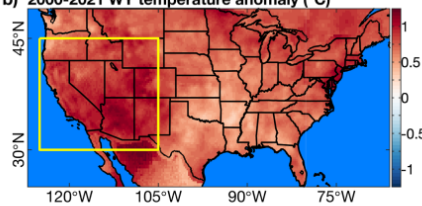
NATURE CLIMATE CHANGE

BRIEF COMMUNICATION

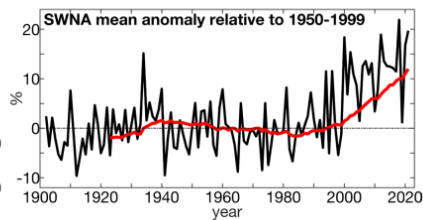
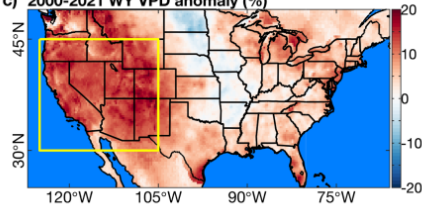
a) 2000-2021 WY precipitation anomaly (%)



b) 2000-2021 WY temperature anomaly (°C)

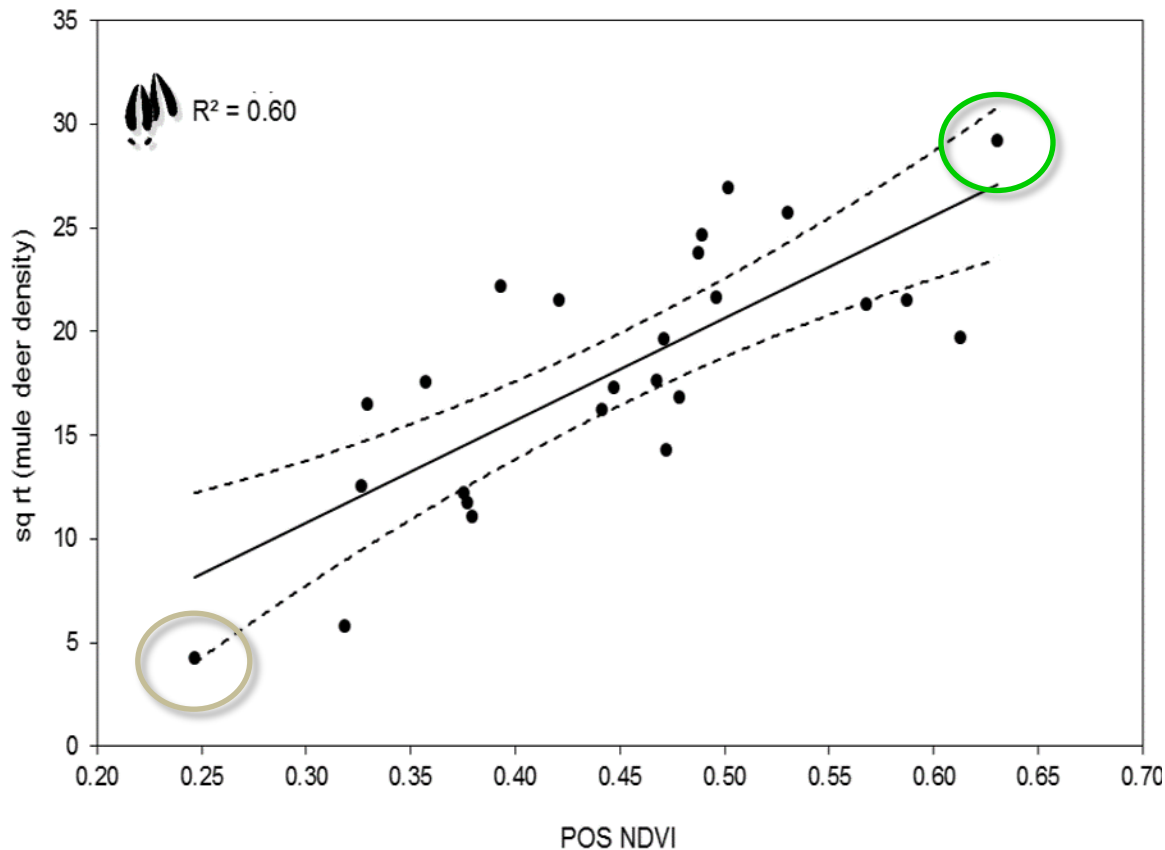


c) 2000-2021 WY VPD anomaly (%)



How much space is required to support 370 deer?

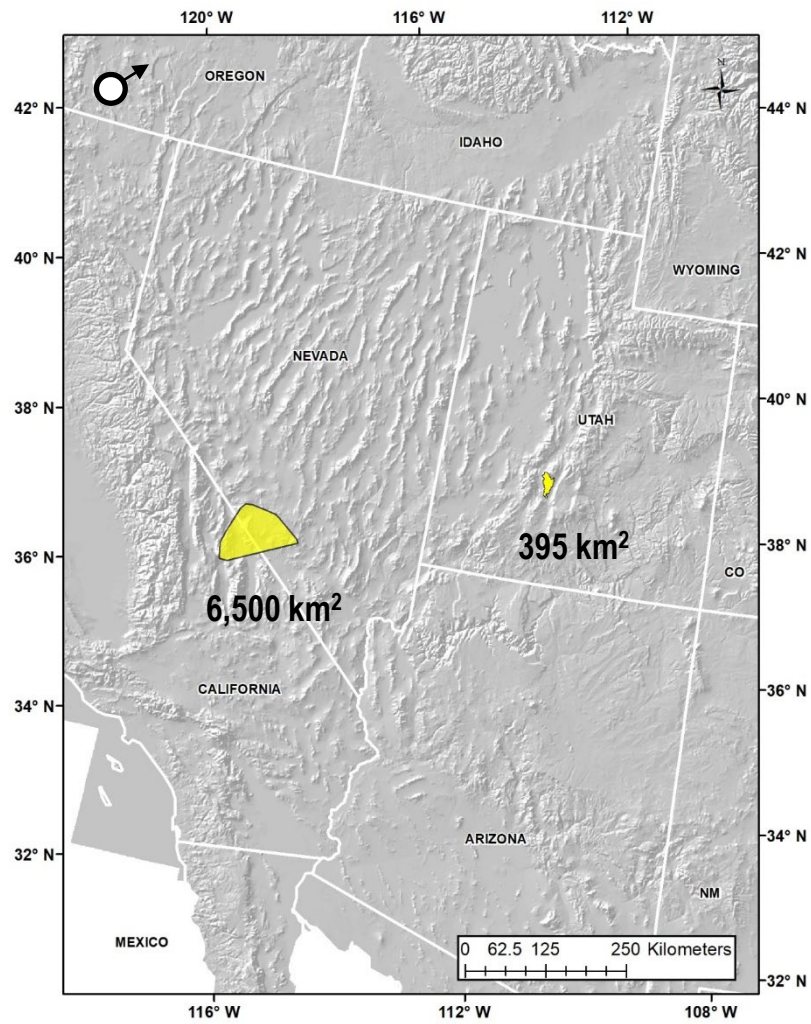
Mule deer density increases with primary productivity



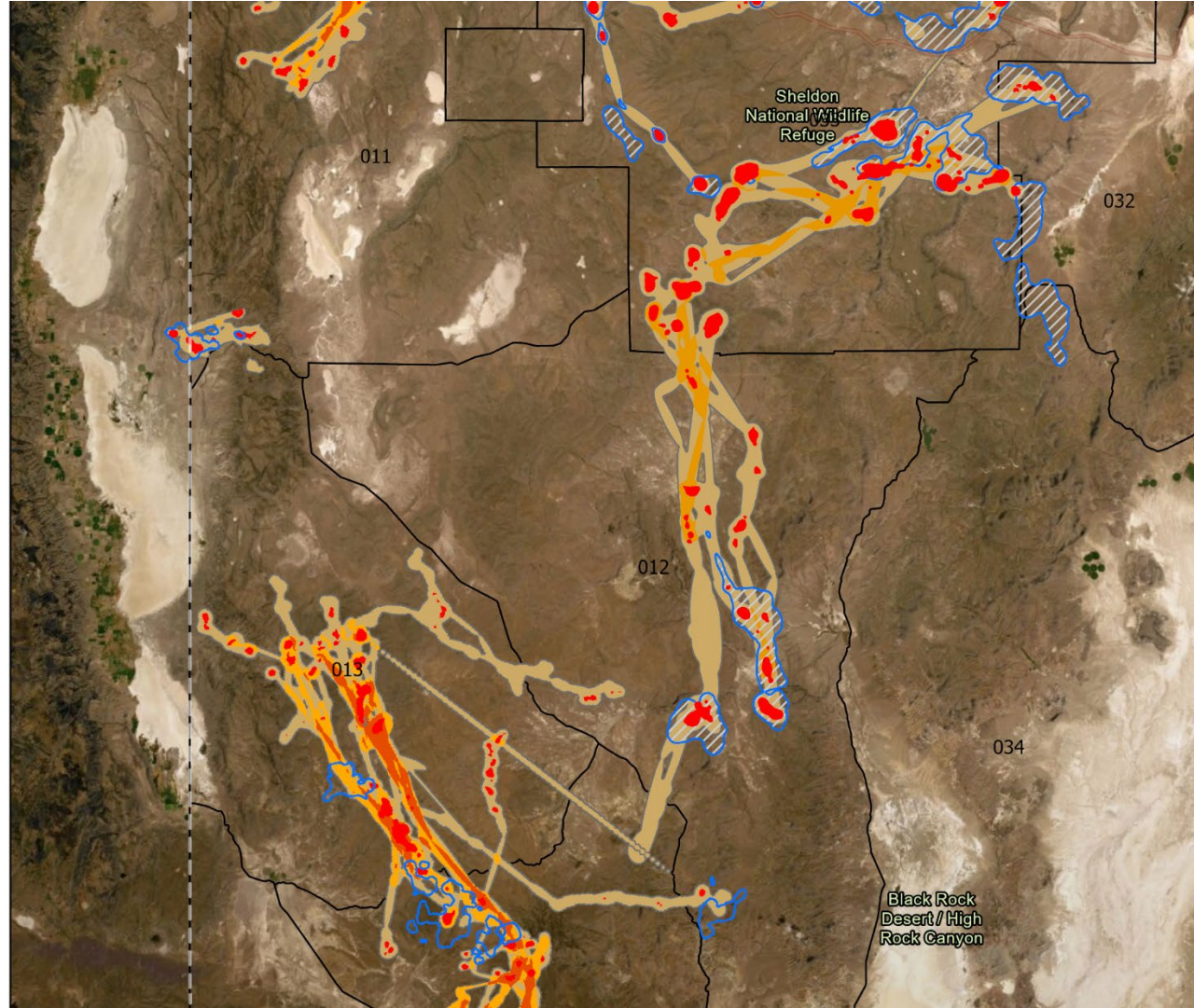
~ 60 km²



~ 1,500 km²

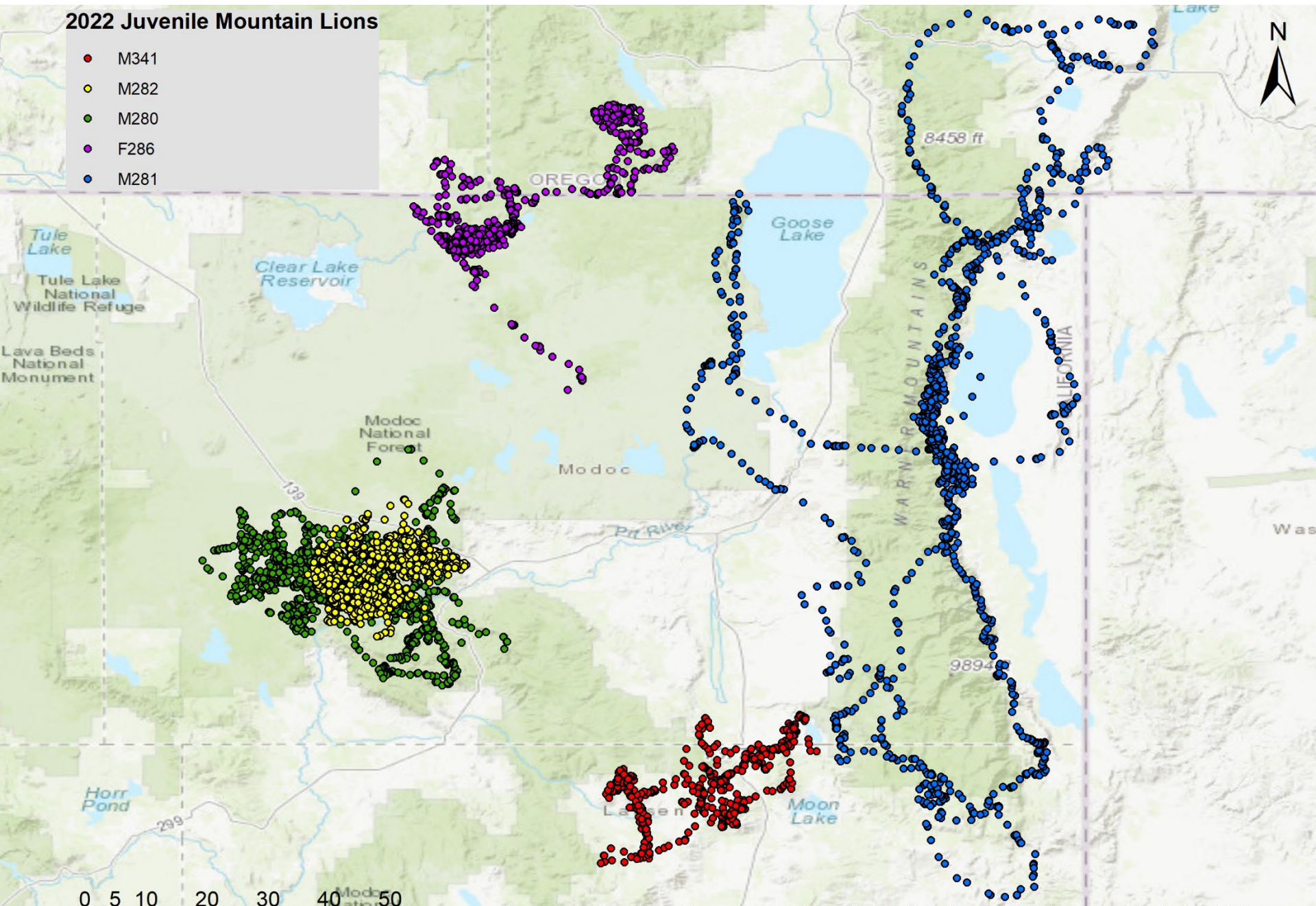


Wildlife constantly break
our assumptions



2022 Juvenile Mountain Lions

- M341
- M282
- M280
- F286
- M281



0 5 10 20 30 40 50 Kilometers

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Interesting Factoids

1. Fawns born in drought are ~1lb less than a fawn born
2. 250 does may do for recruitment than 1,000 other does
3. A prolonged rut may exacerbate predation impacts
4. Lion predation can be additive or compensatory based off fawn ratios
5. 45 coyotes have been found eaten in project 44

Where can we go from here?

PREDATION IMPACTS AND MANAGEMENT STRATEGIES FOR WILDLIFE PROTECTION

MICHAEL J. BODENCHUK, State Director, USDA-APHIS-Wildlife Services, P.O. Box 26976, Salt Lake City, UT 84126

DAVID J. HAYES, Environmental Coordinator, USDA-APHIS-Wildlife Services, P.O. Box 1938, Billings, MT 59103

INTRODUCTION

18 Factors To Consider for Predator Control

Habitat Factors

- Linear habitat
- Access to water
- Fire
- Excessive cover
- Drought
- Perches
- Escape cover

Predator Factors

- Numbers of predators
- Social structure
- Invasive predators
- Territoriality
- Ability to “bridge” to alternate prey
- Individual behavior
- Multiple predator species

Prey Factors

- Relationship to K
- Breeding synchrony
- Group size/composition
- Alternative prey

Coyote Research Center

- New Field Station Leader
- Growing collaboration with USDA WS NV

Where I want to end up



Where I want to end up



Where I want to end up



Minimum Effective Dose



Circular Situation

Predation Perceived as Limiting
Factor



Conduct Predator
Removal



Wonder if it Worked

Various
Interpretations
Exist



Mule Deer Summit

- August 17-19, 2023 at Winnemucca Convention Center

Questions?



Units 043-
046
Coyote
Removal

Hunt units 043-046

3 years

\$25,000-\$50,000 annually

Remove coyotes seasonally

Antelope
Range
Predator
Removal

Hunt units 111-115

3 years

\$75,000 annually

Remove coyotes

Cherry
Creek Lion
Removal

Hunt unit 121

May 2022-April 2025

\$75,000

Remove lions

Predator
Removal
in Priority
Fawning
Grounds

MA 22, 23, 24

May 2022-December 2026

\$50,000

Remove coyotes in fawning
habitat



Predator Projects



Predator Projects

Public Process



Predator Projects

A diagram of a stool. The seat is an oval with the text 'Predator Projects'. It has four legs. The two outer legs are angled outwards and have the text 'Public Process' at their base. The two inner legs are vertical and have the text 'Proven Technique' at their base.

Public Process

Proven Technique



Predator Projects

The diagram is a simple line drawing of a stool. It has a single oval-shaped seat at the top. From the center of the seat, four legs extend downwards. The legs are of varying lengths and angles: the two outer legs are shorter and angled outwards, while the two inner legs are longer and more vertical. Each leg terminates in a small horizontal bar at the bottom. The text 'Predator Projects' is centered on the seat. The text 'Public Process' is positioned to the left of the leftmost leg, 'Experiment' is to the right of the rightmost leg, and 'Proven Technique' is centered below the two central legs.

Public Process

Experiment

Proven Technique

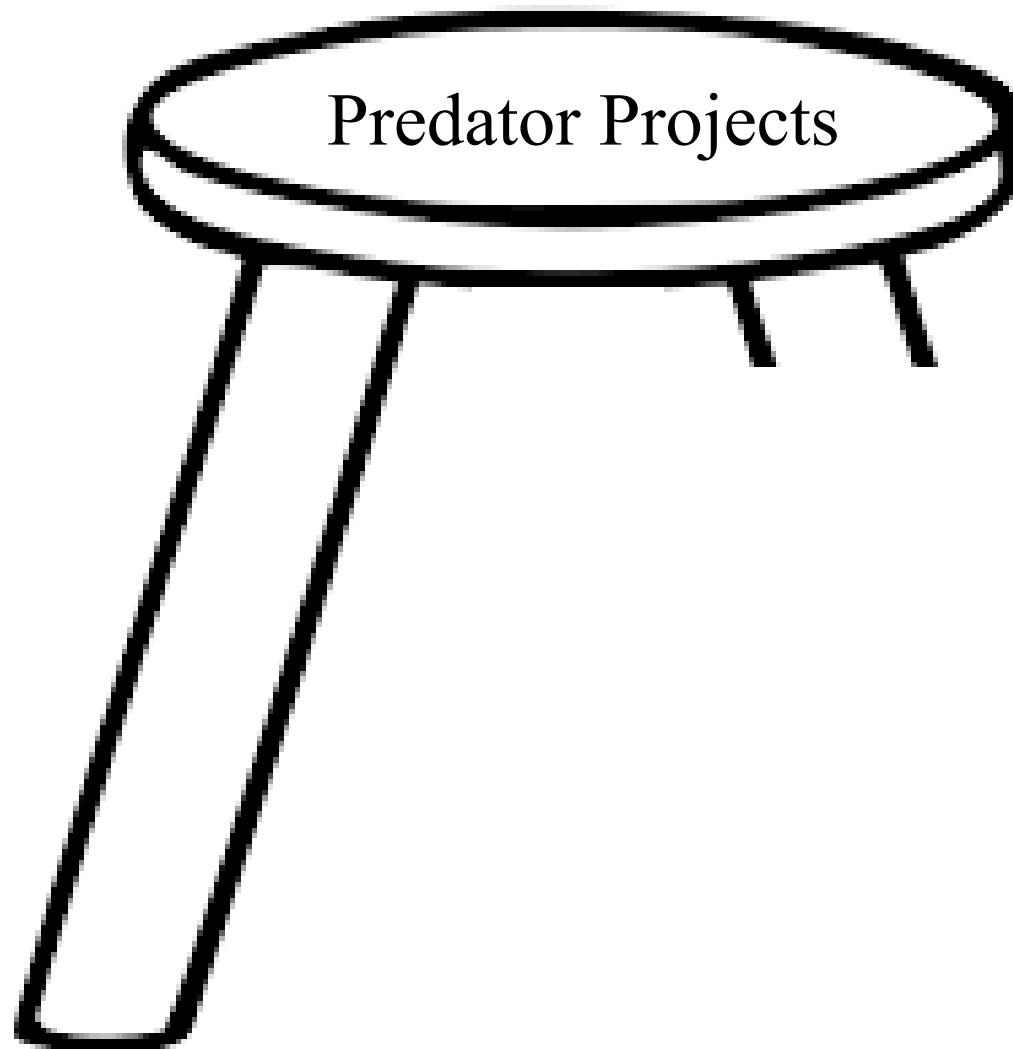


Predator Projects

A diagram of a stool. The seat is an oval with the text 'Predator Projects'. It has four legs. The two legs on the left are labeled 'Public Process' at the bottom, and the two legs on the right are labeled 'Experiment' at the bottom.

Public Process

Experiment



Public Process

Experiment

