Nevada Department of Wildlife
Predator Management Plan
Fiscal Year 2021

Summary on Plans and Reports

- Just reported on FY 2019
- Currently in FY 2020
- Presenting on FY 2021
- All available at http://www.ndow.org/Nevada_Wildlife/Conservation/Nevada_Predator_Management/

NRS 502.253 (predator fee)

- ~$717,000 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

Budget Summary

- $717,064 revenues from FY 2019 (last year with complete accounting, still receiving revenue in FY 2020)
- $717,064 x 0.8 = $573,651 (80% mandate)
- $724,000 allocated to lethal removal in FY 2021 plan

Types of Projects

Project Type: Implementation

- Where the rubber meets the road
- Includes lethal and non-lethal management

Project Type: Experimental Management

- Involves management and experimentation

Project Type: Experimentation

- Experiments to increase understanding of predators and their management

Standard Monitoring

Benefits

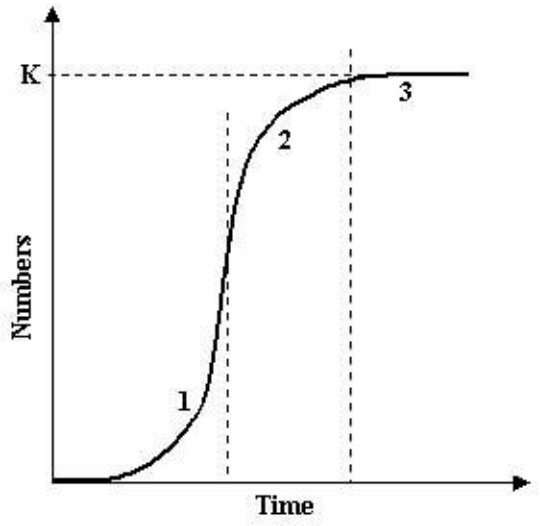
- A overall trend for local population
- Indices that can detect changes in location population over time
- Potential understanding of management efforts

Challenges

- Difficult for any definitive level of inference

Intermediate Monitoring

- Abundance, density, and/or population estimate
- A more accurate estimate of population trend
- An understanding of management efforts



Rigorous Monitoring

- Most accurate abundance, density, and/or population estimate
- A more accurate estimate of population trend
- Home range estimates
- An understanding of management efforts
- An understanding of space use

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 to determine common raven densities across Nevada

Monitoring

Response Variable

- Point counts before, during, and after to determine changes in raven densities

Level of Monitoring

- Standard to intermediate

Project 21-02: Common Raven Removal to Enhance Greater Sage-Grouse Nest Success

Project Type: Implementation and Experimental Management

Project 21-02: Common Raven Removal to Enhance Greater Sage-Grouse Nest Success

Budget: $25,000

- Document effect of raven removal
- Wildlife Services conducts avicide application
- USGS will conduct telemetry, camera, and lek surveys

Monitoring

Response Variable

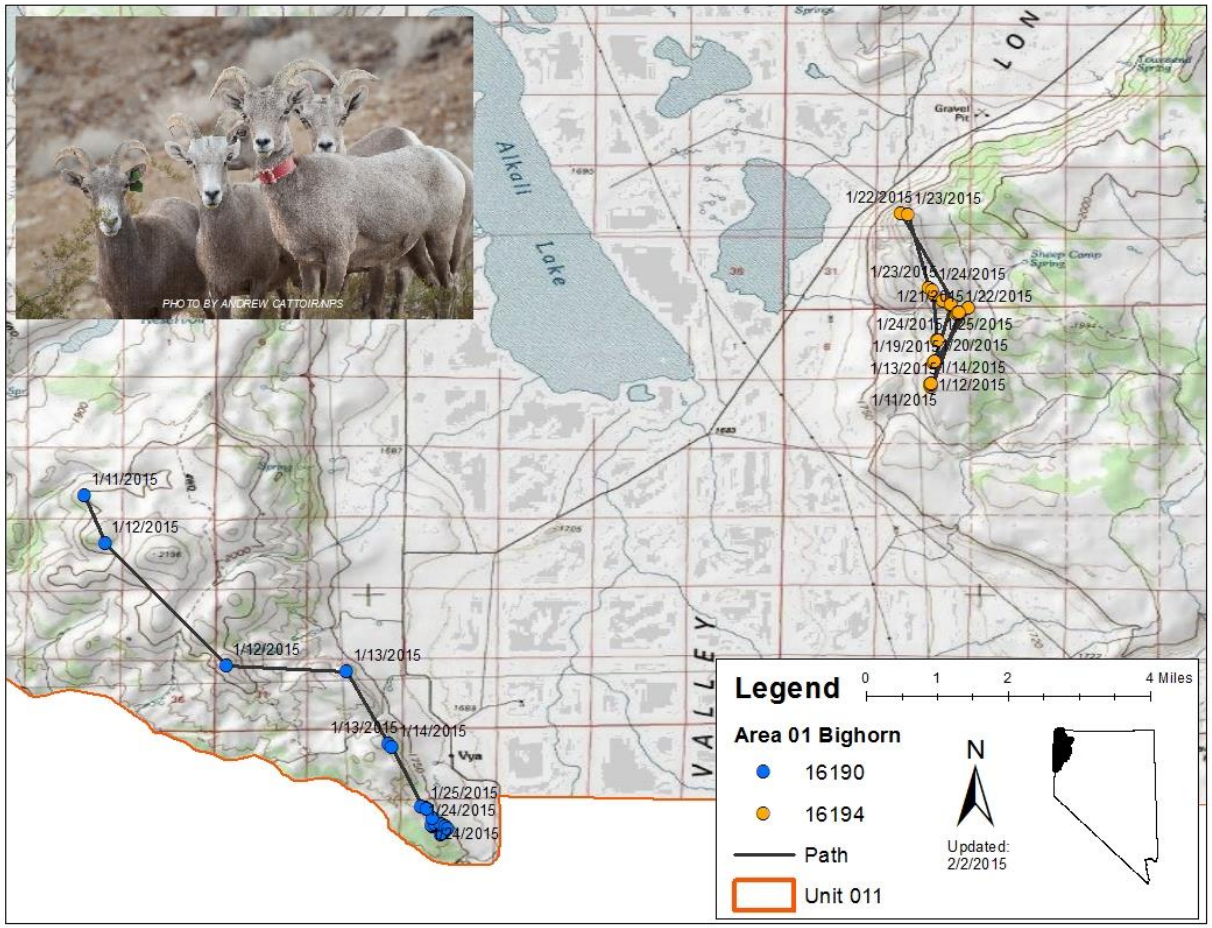
- Sage grouse nest success
- Brood survival

Level of Monitoring

- Intermediate (funding not from predator fee)

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: $90,000

- 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

Monitoring

Response Variable

- Number of collared bighorn sheep killed by mountain lions

Level of Monitoring

- Standard to intermediate

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

Monitoring

Response Variable

- Number of collared bighorn sheep killed by mountain lions

Level of Monitoring

- Standard to intermediate

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: $75,000

- 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

Monitoring

Response Variable

- Reduction of mountain lion induced mortalities
- Reduction of mountain lion densities or sign
- Removal of known offending individual
- Response variable may not be collected

Level of Monitoring

- Standard

Project 38: Big Game Protection- Coyotes

Project Type: Implementation

Project 38: Big Game Protection-Coyotes

Budget: $75,000

- 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

Monitoring

Response Variable

- Reduction of coyote induced mortalities
- Removal of offending individuals
- Reduction in coyote sign
- Response variable may not be collected

Level of Monitoring

- Standard

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: $100,000

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

Monitoring

Response Variable

- Fawn to doe ratios in Area 14

Level of Monitoring

- Standard to intermediate

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

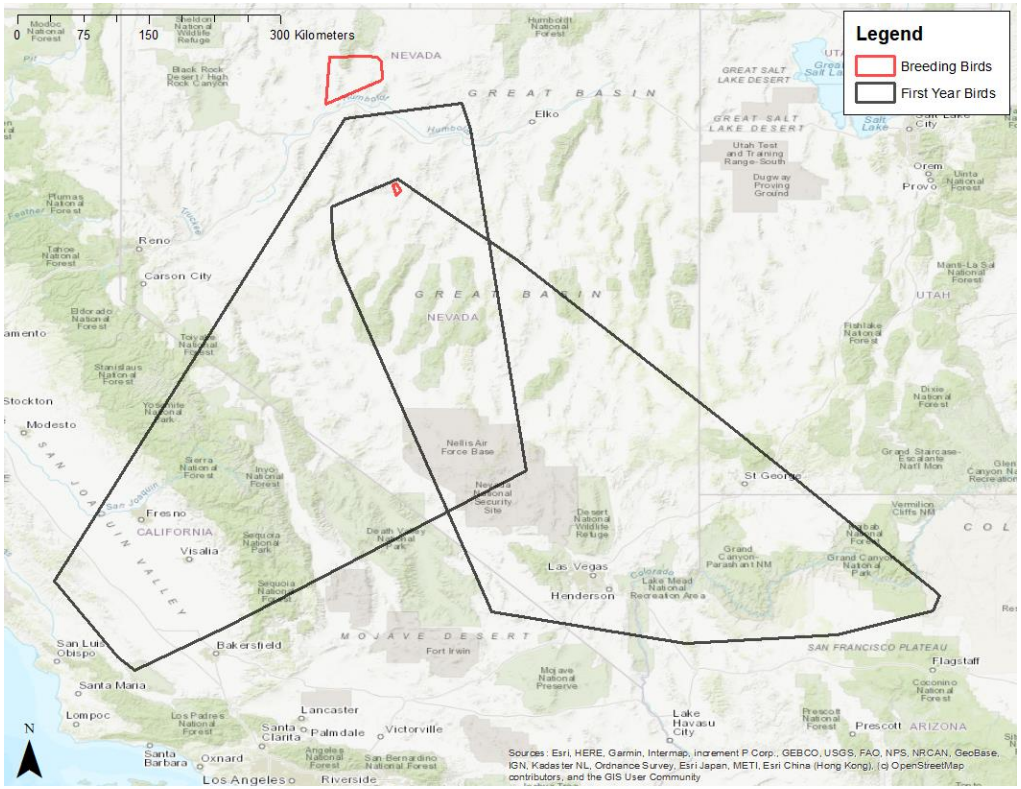
Monitoring

Response Variable

- None, this is an experimental project

Level of Monitoring

- Rigorous



Project 42: Assessing Mountain Lion Harvest in Nevada

Project Type: Experimentation

Project 42: Assessing Mountain Lion Harvest in Nevada

Budget: $10,000 (25% from $3 predator fee)

- Develop a model that predicts the number of lions that must be removed to reach management goals
- Identify gaps in data
- Determine what data is necessary to increase NDOWs understanding of mountain lions statewide

Monitoring

Response Variable

- None, this is an experimental project

Level of Monitoring

- Rigorous

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

Monitoring

Response Variable

- Number of females with clutches
- Number of young per clutch

Level of Monitoring

- Standard

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: $100,000

- 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

Monitoring

Response Variable

- Project will continue until adult annual survival for bighorn sheep reach 90% annually and fall female to young ratios exceed 30:100
- Goals may change based on collaring data

Level of Monitoring

- Intermediate

Project 45: Passive Survey Estimate of Black Bears in Nevada

Project Type: Experimentation

Project 45: Passive Survey Estimate of Black Bears in Nevada

Budget: $100,000 (25% from $3 predator fee)

- To occur primarily in areas inhabited by black bears

Project 45: Passive Survey Estimate of Black Bears in Nevada

1. Passively estimate the abundance of black bears in Nevada
2. Predict the density and occupancy
3. Provide guidance to the Department

Project 45: Passive Survey Estimate of Black Bears in Nevada

- Collaboration with Michigan State University and University of Montana
- Postdoctoral researcher from Michigan State University
- Hair snag and trail cameras main focus of field work

Monitoring

Goals

1. A statewide black bear population estimate
2. An estimate of black bear occupancy, density, and abundance based on hair snares and trail cameras
3. Guidance to the Department on which methods will be best suited for sustained population estimation

Level of Monitoring

- Rigorous

Bushnell
NVB108
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07-16-2018 07:04:29

Bushnell
NVB092
73°F 22°C
07-23-2019 13:49:31

Bushnell
NVB033
60°F 15°C
06-14-2019 06:57:40

Bushnell
NVB105
51°F 10°C
06-08-2019 19:33:15

TROPHY CAM HD

Bushnell
NVB158
95°F 35°C
07-29-2018 17:12:31

Bushnell
NVB158
142°F 61°C
07-29-2018 17:21:39

Newly Proposed Projects

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: $60,000 (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 outside institution
- Series of trail camera grids throughout study area
- Year long monitoring

Why This, Why Now?

Analysis of Check Engine Light

Known Variables

- Declining herd and tag numbers
- Plenty of lion refugia
- Accounts of increased lion numbers
- Drought
- Increase in horse numbers

Next Actionable Items

- Large area
- Long term management action likely necessary
- $$$
- May be a management recommendation
- May be more data collection

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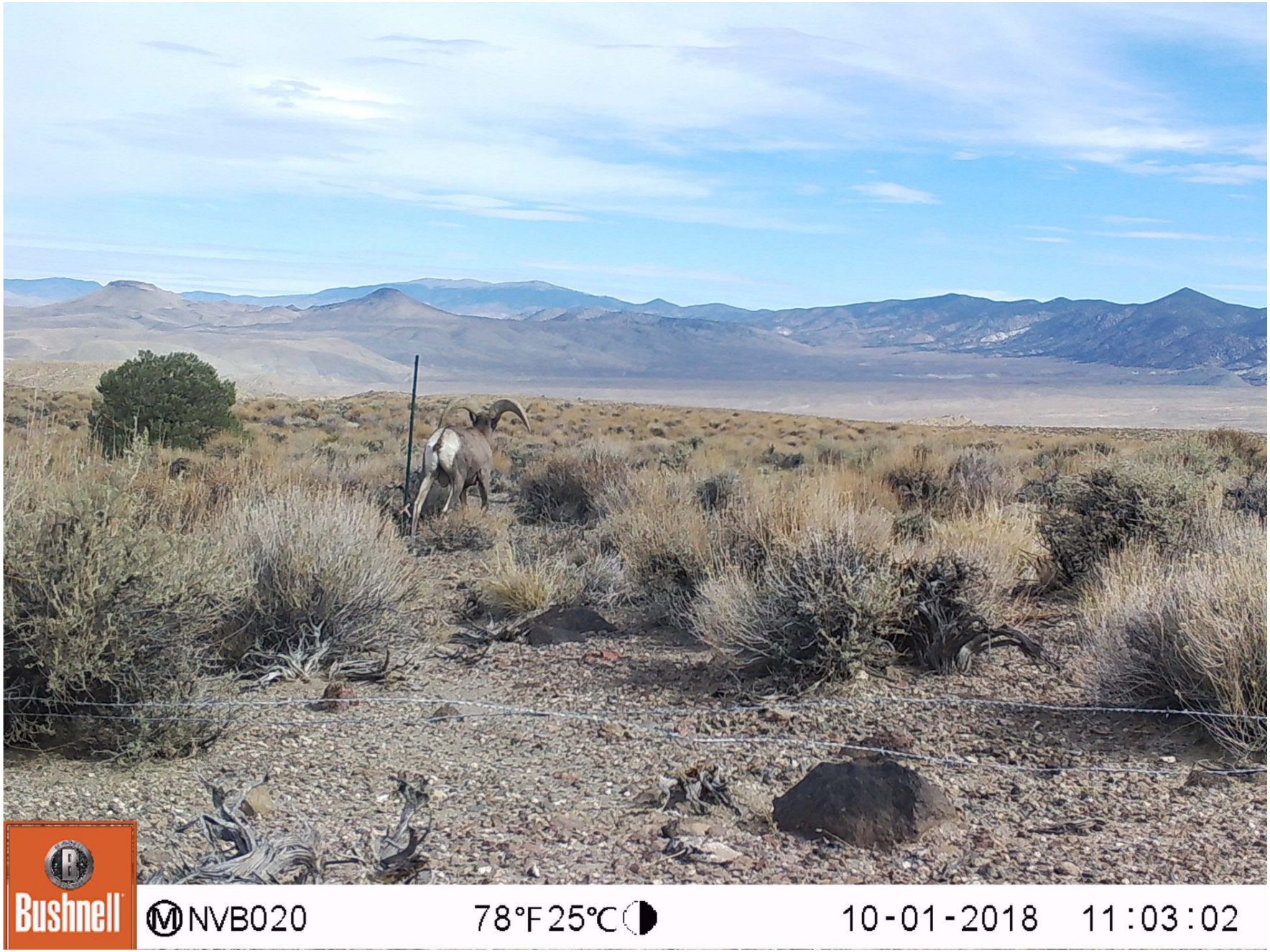
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13:58:40

Bushnell
NVB133
21°F -6°C
12-05-2018
17:44:16

Bushnell
NVB133
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01-16-2019
01:16:24

Bushnell
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06:27:30

Bushnell
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Bushnell
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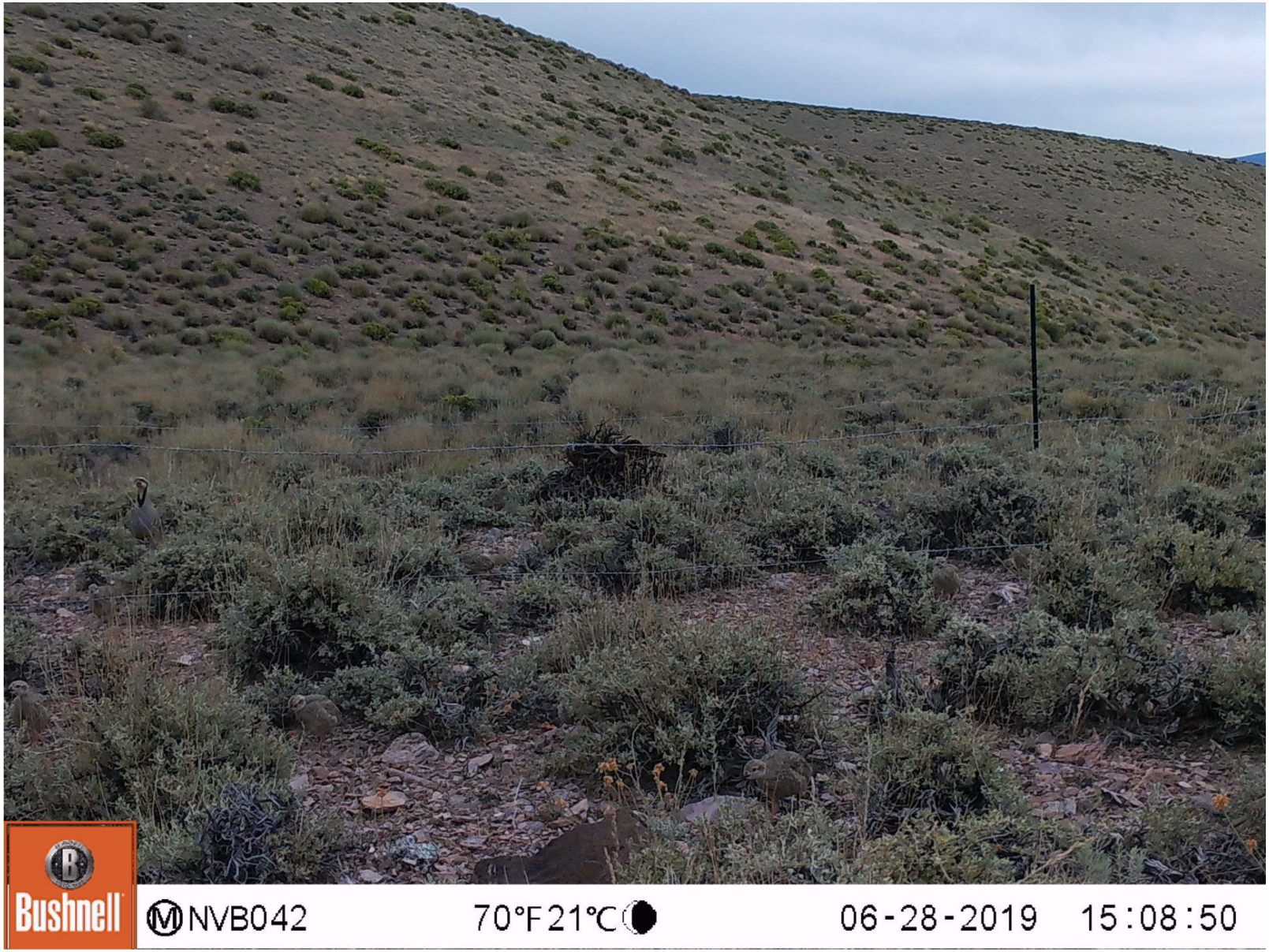
07-10-2019
10:35:35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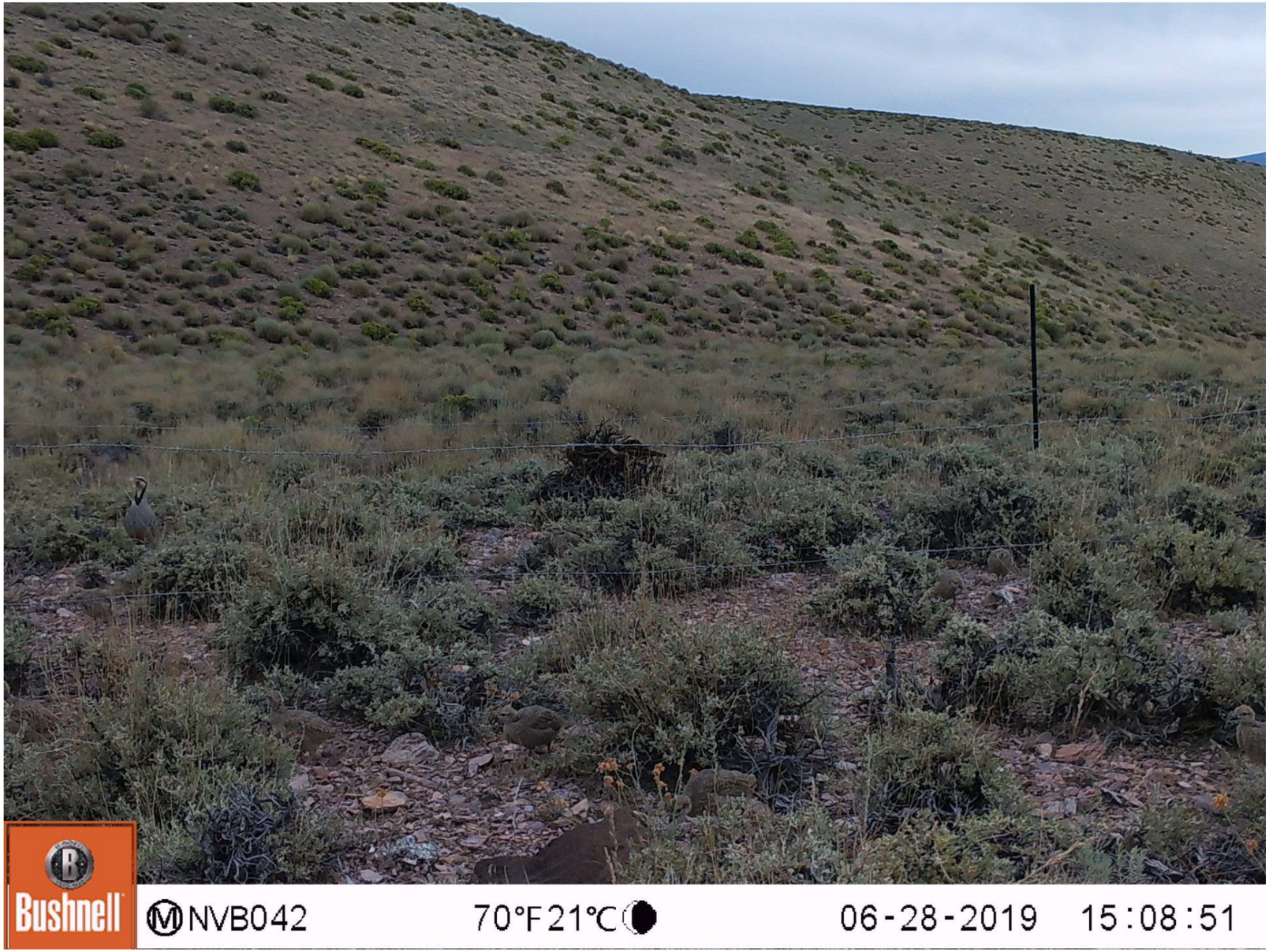
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Questions?