

Ron Stewart Preserve at Rabbit Mountain Elk and Vegetation Management Update

Jenny Dalton, BCPOS Hunt Coordinator



Outline

- Trapping and collaring
- Movement analyses
- Harvest/population counts
- Hazing
- Fencing
- Vegetation monitoring
- 2018-2019
 - Hunt overview, preparation, and improvements
 - Progress and recent updates
 - Public feedback
- Next steps





Trapping and collaring

Rabbit Mountain

6 Collars deployed at Rabbit/Indian this winter

- Purple B1-B6
- Older collars Blue 1 and 4
- 5 total active collars

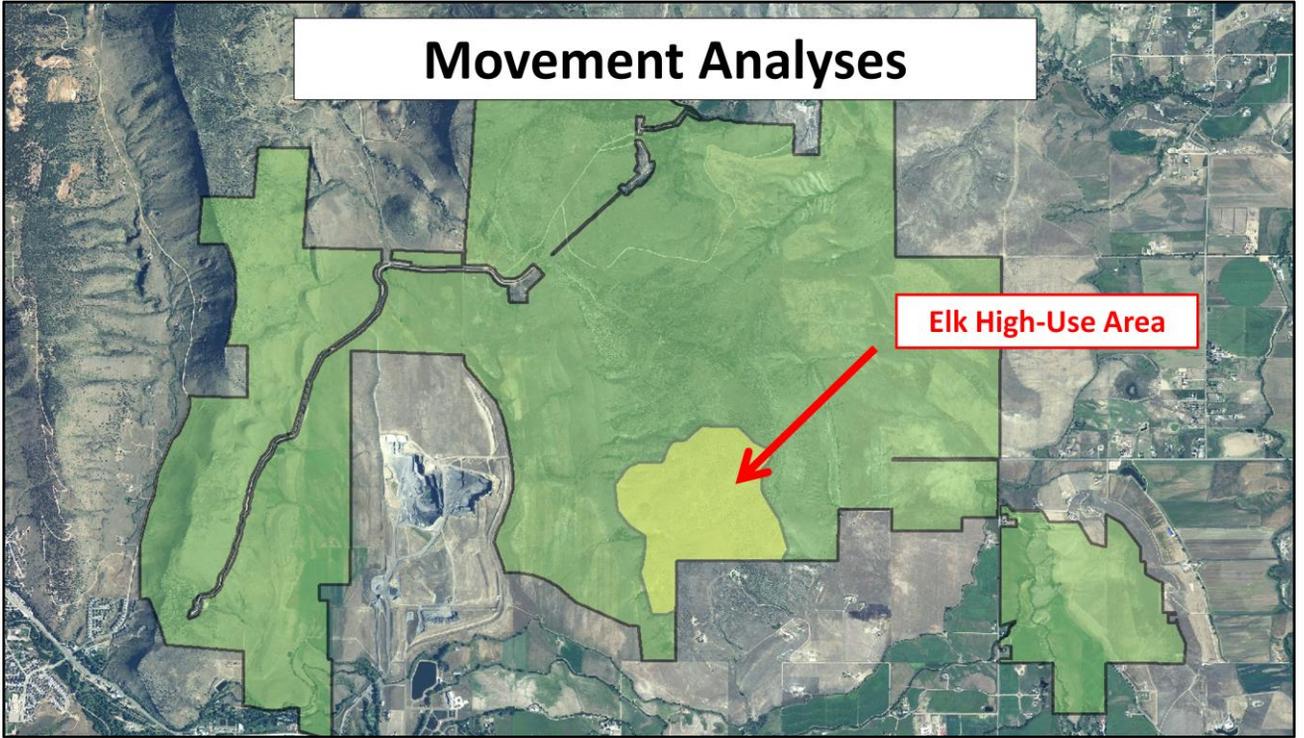


Heil Valley

4 Collars deployed at Heil this winter

- Purple B7-C0
- Older collar Blue T
- 5 total active collars

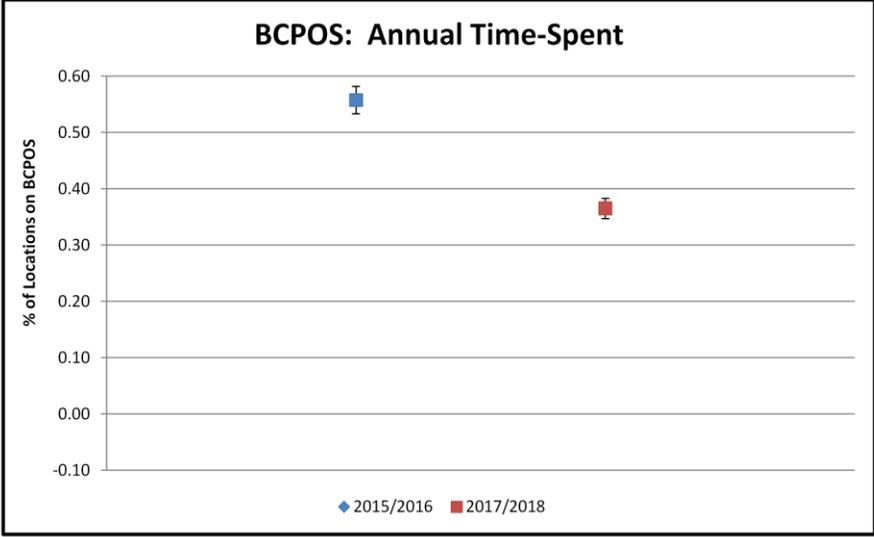
Movement Analyses



Annual Time-Spent Analysis

2015-2016 = 56%

2017-2018 = 36%



20% reduction

BCPOS, 2015-2016 = 56% vs 2017-2018 = 36%

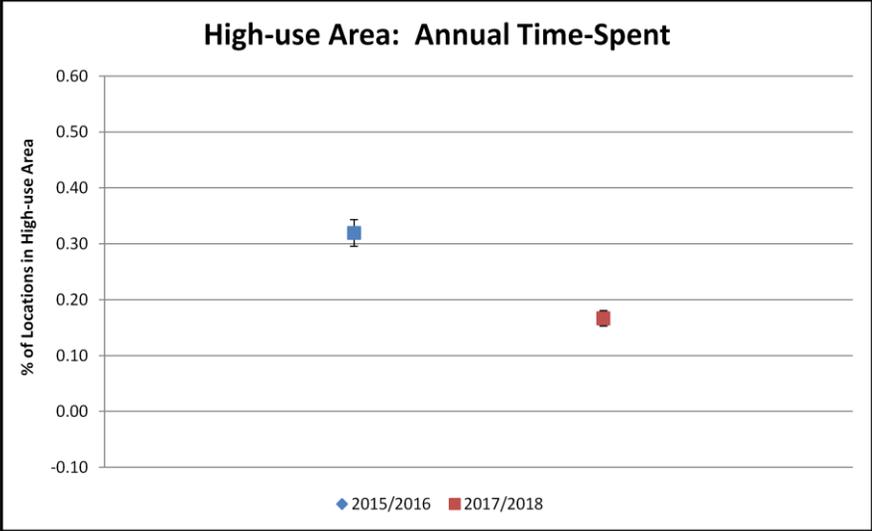
High-Use Area, 2015-2016 = 32% vs 2017-2018 = 17%

Are indeed error bars – shrunk down to fit on one page – don't overlap

Annual Time-Spent Analysis

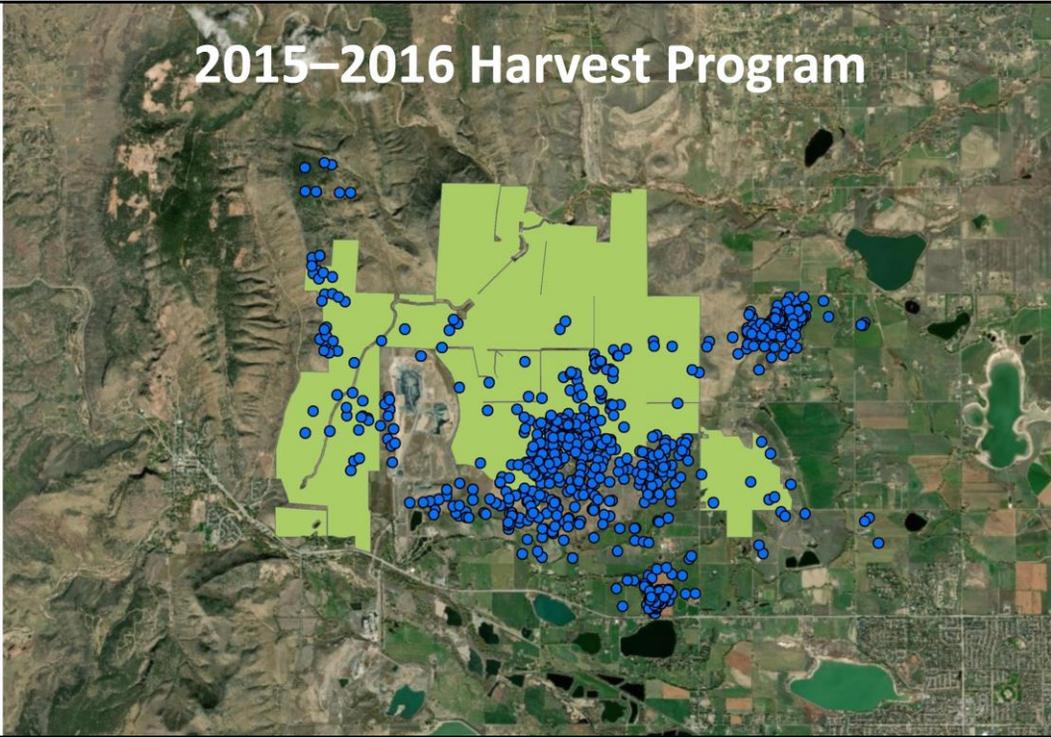
2015-2016 = 32%

2017-2018 = 17%



15% reduction

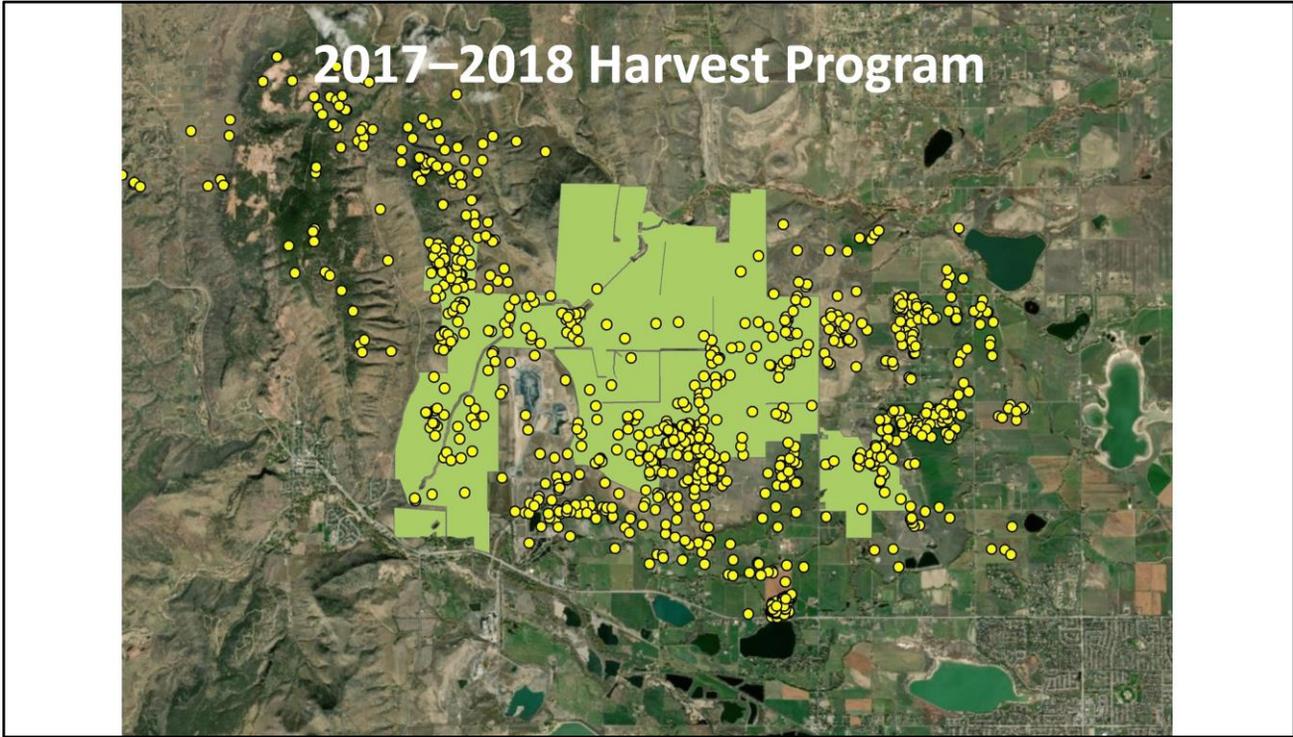
2015–2016 Harvest Program



2015-2016 implementation of the subunit hunt

All data points included from start to end of hunt - 9/11/15-1/29/16

Collars 1,2,3,4

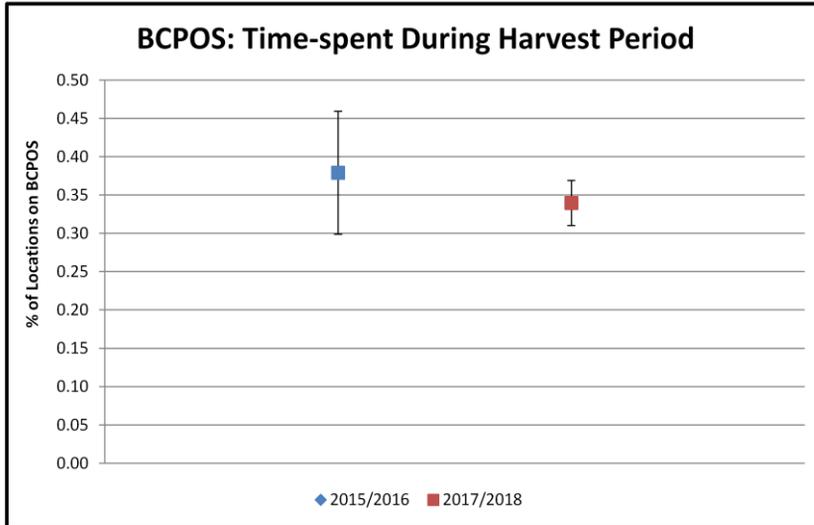


Hunting months only – 9/11/17-1/29/18

Collars 1,3,4,6,7

4 starting on 10/10/17

Harvest Time-Spent



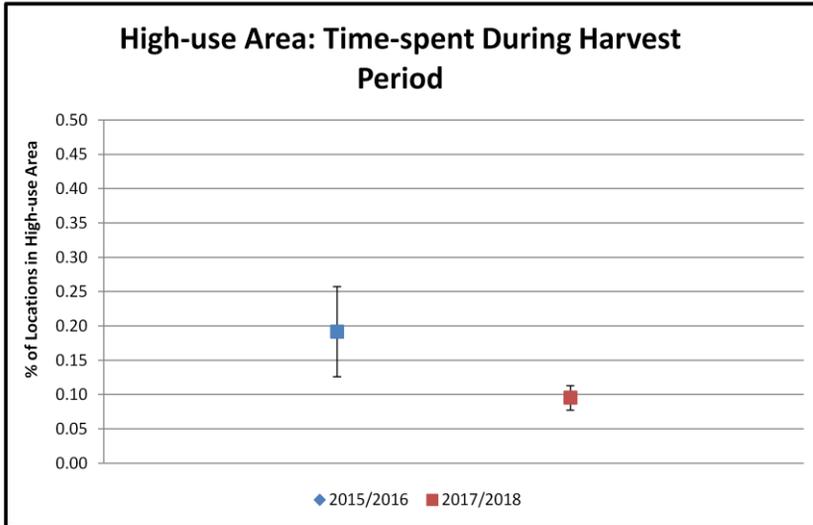
2015-2016 = 38%

2017-2018 = 34%

BCPOS, 2015-2016 = 38% vs 2017-2018 = 34%

High-Use Area, 2015-2016 = 19% vs 2017-2018 = 9%

Harvest Time-Spent



2015-2016 = 19%

2017-2018 = 9%

BCPOS, 2015-2016 = 38% vs 2017-2018 = 34%
High-Use Area, 2015-2016 = 19% vs 2017-2018 = 9%

2017-2018 Harvest Estimates

Subunit (100 licenses total)

EF-020-L3-R Subunit Hunters – 75

EF-020-L3-R Subunit Harvest – 47

Rabbit hunt

BCPOS Rabbit Hunters – 37

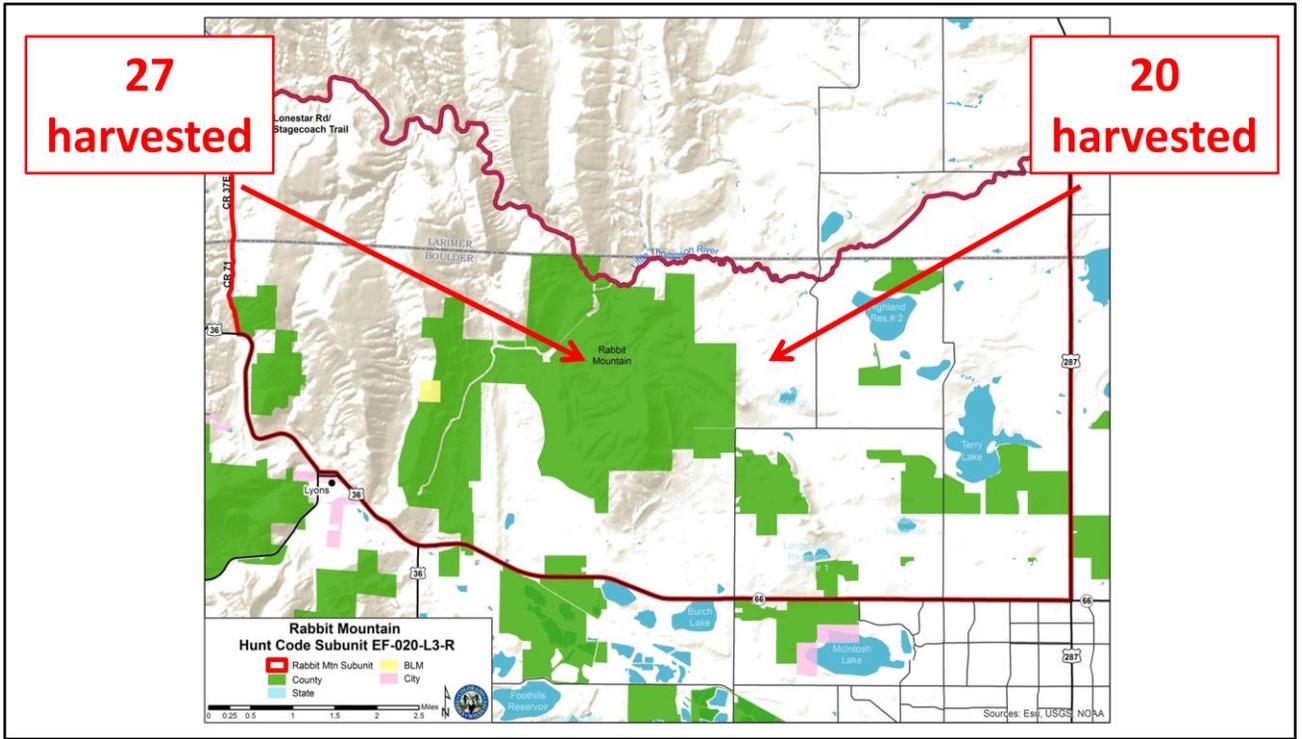
BCPOS Rabbit Harvest – 27

= 56 TOTAL HARVESTED

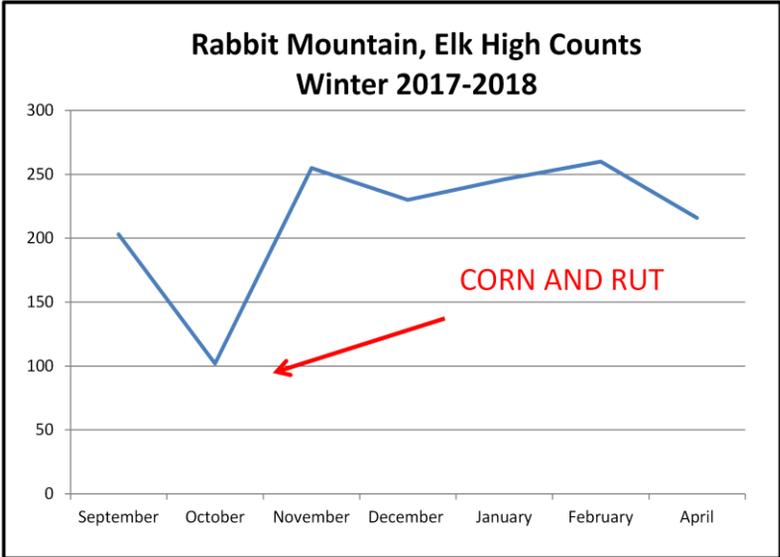
Damage tags

Damage Hunters – 22

Damage Harvest – 9

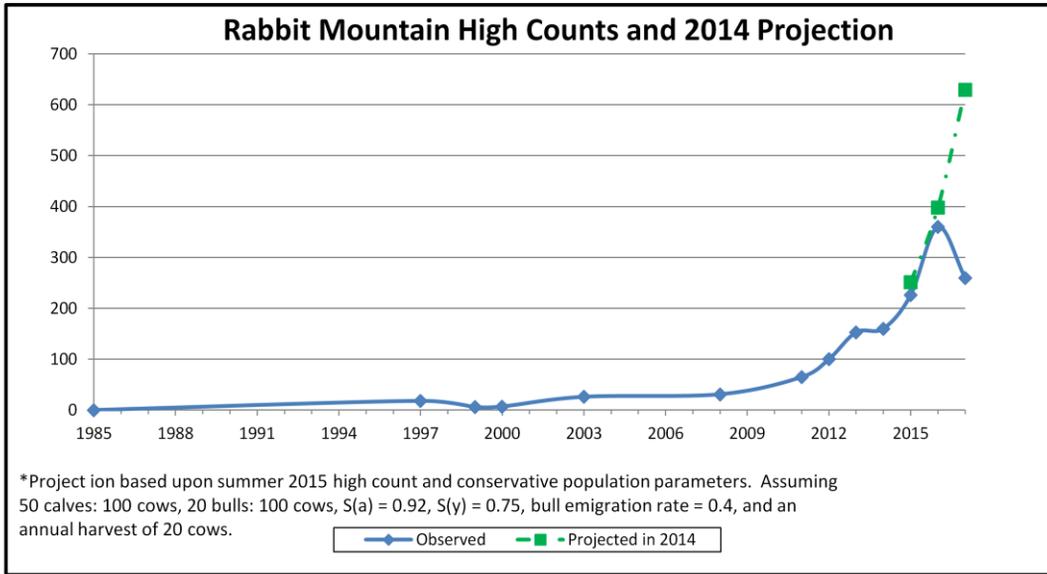


Ground Counts



- **High count – 260**
- **High last year – 360**
- Next coordinated ground count in November.

Population Estimates



Hazing 2018



- Hazing completed 2 times/week by BCPOS staff
- April-May
- Paused in spring to allow for calving
- Resumed in June until beginning of hunt



Fencing

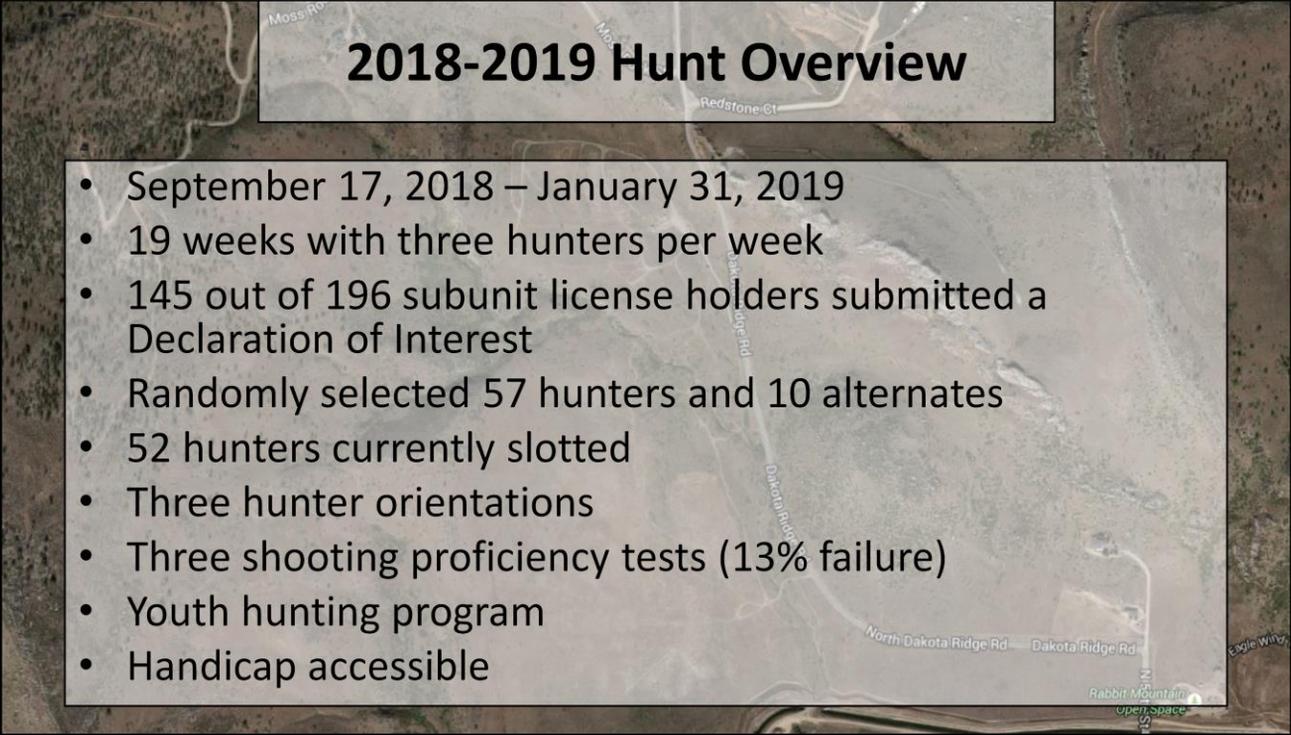
- Two enclosures on southern end of Rabbit Mountain in core use areas
- Protects about **4 acres** of shady ponderosa, disrupts herd movement, enables regeneration
- Completed with the help of Boulder County Youth Corps and Defenders of Wildlife (volunteer partner of the year)
- 500+ hours of labor



Vegetation Monitoring

- Shrub/vegetation volunteer training to be completed on Sunday, November 4
- Reading of control plots this year (alternating years with experimental plots)
- To be completed November, December and January by volunteers and BCPOS staff





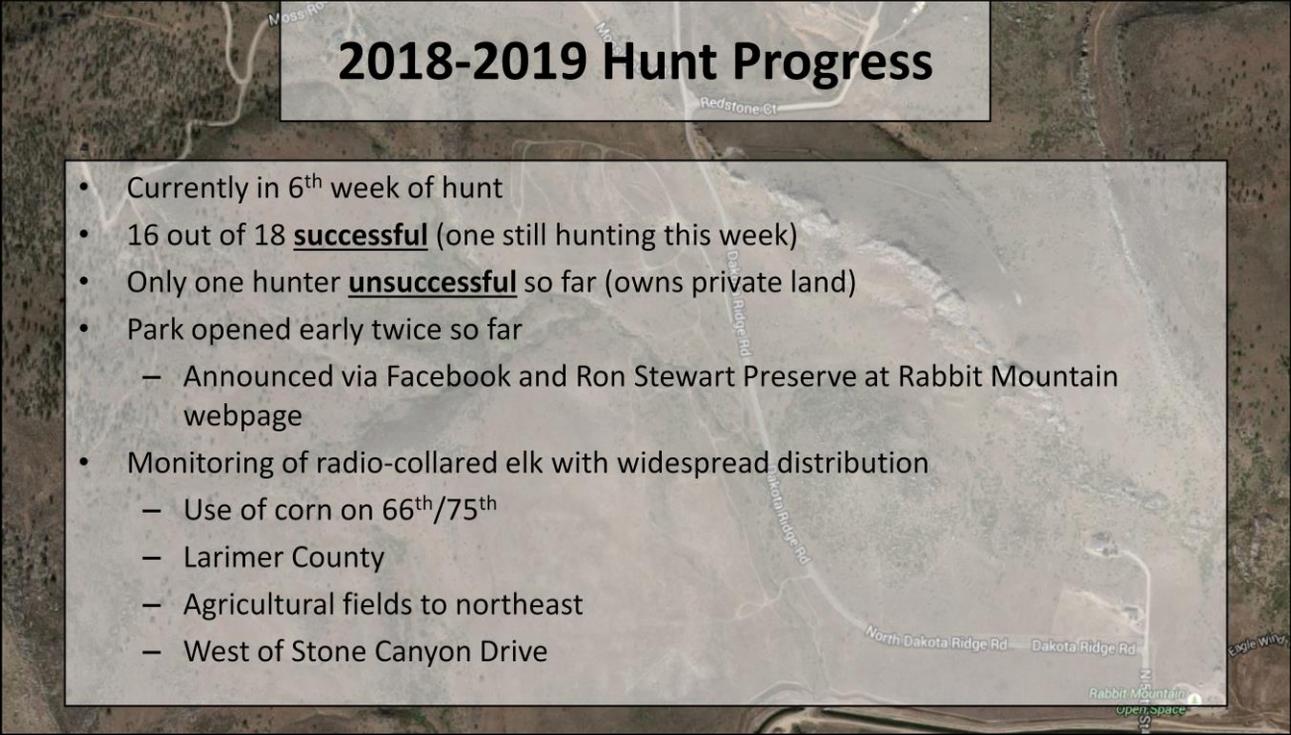
2018-2019 Hunt Overview

- September 17, 2018 – January 31, 2019
- 19 weeks with three hunters per week
- 145 out of 196 subunit license holders submitted a Declaration of Interest
- Randomly selected 57 hunters and 10 alternates
- 52 hunters currently slotted
- Three hunter orientations
- Three shooting proficiency tests (13% failure)
- Youth hunting program
- Handicap accessible

Hunt Preparation/Communication

- Press release
- Facebook announcement
- Landowner letter/tenant communication
- Elk Management email
- Avenza app maps
- Reinforcement and addition of safety carsonites
- Lighted sign on 53rd/55th
- Hiring of full-time hunt coordinator
- Mandatory feedback survey

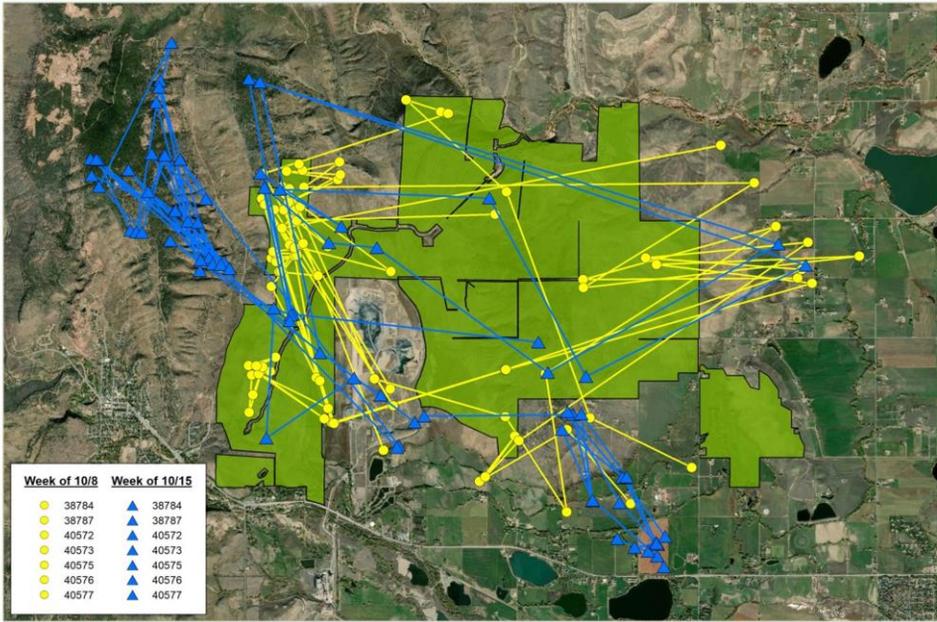


An aerial photograph of a rural landscape, likely in Colorado, showing a network of roads and fields. A semi-transparent white box with a black border is overlaid on the top center of the image, containing the title '2018-2019 Hunt Progress'. Below the title, another semi-transparent white box with a black border contains a bulleted list of hunt progress details. The background map shows roads labeled 'Moss Rd', 'Redstone Ct', 'Dakota Ridge Rd', 'North Dakota Ridge Rd', 'Winnapa Ridge Rd', 'Dakota Ridge Rd', 'Rabbit Mountain Open Space', and 'Eagle Wing'.

2018-2019 Hunt Progress

- Currently in 6th week of hunt
- 16 out of 18 **successful** (one still hunting this week)
- Only one hunter **unsuccessful** so far (owns private land)
- Park opened early twice so far
 - Announced via Facebook and Ron Stewart Preserve at Rabbit Mountain webpage
- Monitoring of radio-collared elk with widespread distribution
 - Use of corn on 66th/75th
 - Larimer County
 - Agricultural fields to northeast
 - West of Stone Canyon Drive

RABBIT MOUNTAIN ELK COLLARS



OCTOBER 8 - 21, 2018

0 0.5 1
Miles



This map applies to all collars of this and other Southern County
Elk Collar. For more information, please visit www.southerncounty.org/management
File: Y:\spacemobile\collar_management\2018_Rabbit_Mountain_Map_10.mxd

Public Feedback

- 1-2 emails, Facebook posts, or phone calls per week
- Via Elk Management email or POS Info
- All emails/phone calls are returned within that same day

Contact Us

Parks & Open Space

✉ **Jenny Dalton**

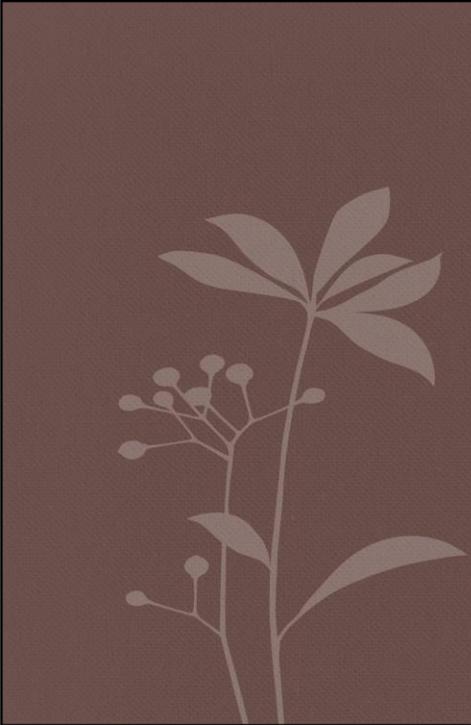
☎ **323-420-8551**

Next Steps/Time Line

- Data analysis – post-hunt
 - Kernel Density Estimates (KDE), time-spent analyses for two first years of hunt (GPS coordinates of all harvests this year)
 - Hazing analysis (temporal aspect TBD)
 - Meeting next month with CPW/spatial ecologist to establish methodologies and timeline
- Vegetation monitoring – November, December, January
- Coordinated ground count – November (once corn is harvested)
- Weekly wrap up reports to BOCC – Ongoing

Thank you!
Questions?





**RECREATION AND
FACILITIES 2018
OVERVIEW**

Division Work Groups

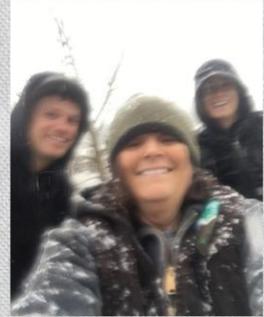
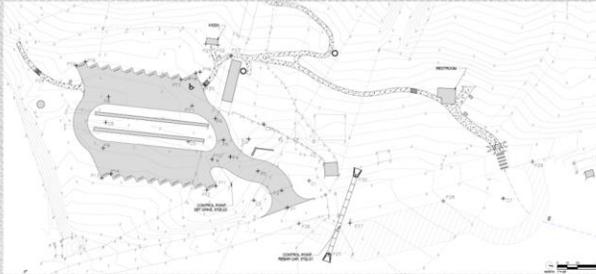
- Grounds
 - 7 Permanent Staff, 1 Term for County EAB, 3 seasonal workers
- Trails
 - 8 Permanent Staff, 7 seasonal workers
- Project Management and Design
 - 7 Permanent Staff, 2 Term Flood Related Positions, 1 seasonal worker
- Fairgrounds
 - 8 Permanent Staff, 1 seasonal worker
- Building and Historic Preservation
 - 7 Permanent staff, 3-4 seasonal workers
- Shop and Fleet Foreman – 1 Permanent Staff



40 full time staff, 16 seasonal staff

Grounds

Heil Trailhead Related Work



Left Hand Valley Grange



**Memorial
Bench
Installation**



Memorial benches at Heatherwood Notch, Twin Lakes, Pella, Mayhoffer Singletree, Bald Mountain, and Hall Ranch.



Urban Forestry and Emerald Ash Borer Coordination

- Planted 77 trees
- Planted 130 perennials and grasses at LHVG and Pella
- Planted 100 Rabbitbrush at Heil 2
- Set up irrigation system at Heil 2
- Trail clearance pruning
- Contracted tree removals and pruning at Haley, Suitts, Ramey, Twin Lakes Residential, Red Fox Hills trail, LHVG

Trailhead/property Related Work



Bluebird worm fencing replacement, new pedestrian gate at Heil Pyrite access, new bollard at Twin Lakes, trail cattle guard fabrication, welding gate repair at Hall Ranch, Goodhue fence repair at Carolyn Holmberg

Trails

Plains trail maintenance related to heavy rains this year



School House Loop at Heil Valley Ranch

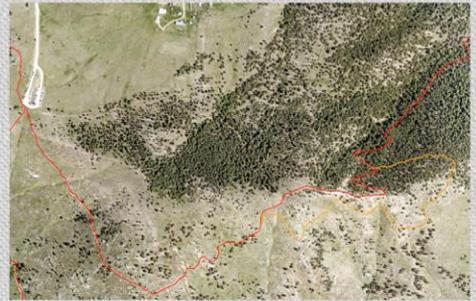
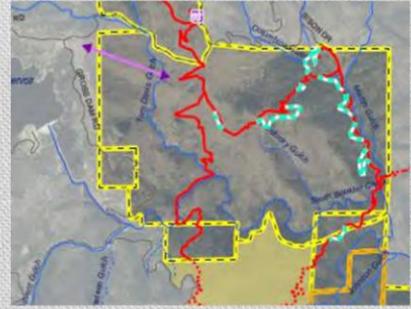




East Side Trail - Heil Valley Ranch



Walker Ranch Reroute

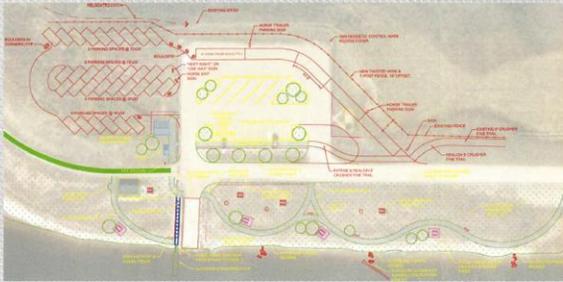


Trail construction with Youth Corps. Snip of planned trail reroutes in Walker Ranch 2013 Management Plan. Map of existing trail and new rerouted trail.

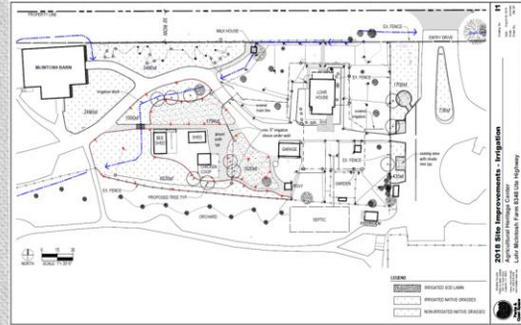
Left Hand Valley Grange LOBO Trail



Project Management and Design



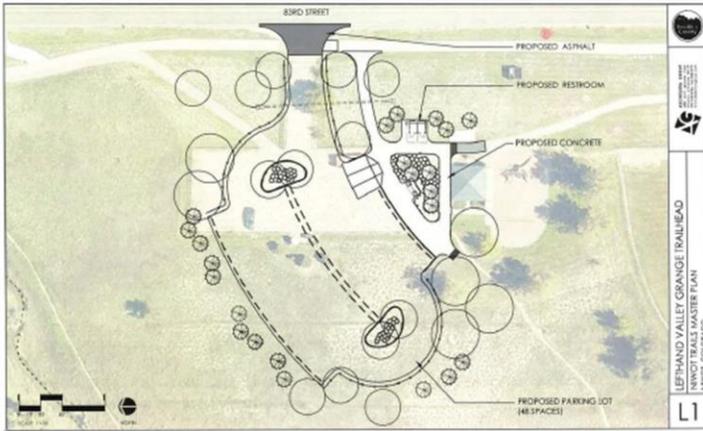
Lagerman Parking Upgrade Design



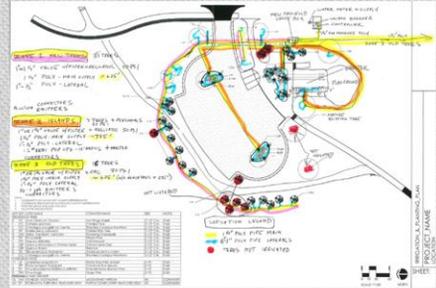
Agricultural Heritage Center
Irrigation Extension

Left Hand Valley Grange

Figure 4: Lefthand Valley Grange Improvements

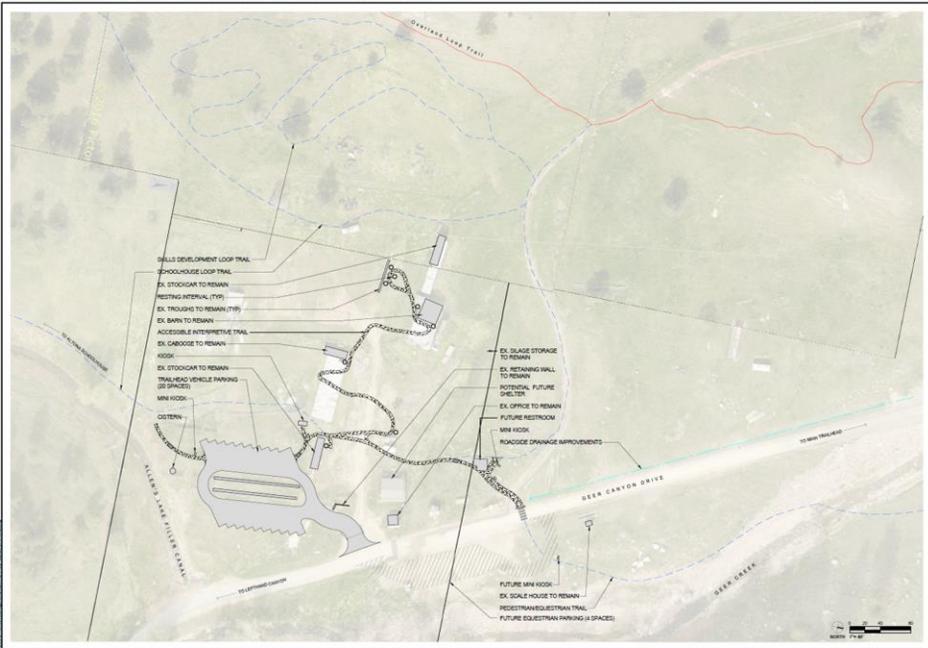


SUBMITTAL DRAWINGS



LHVG part of a grant project with multiple funding sources including State Trail Grant, Parks & Open Space Foundation, Boulder County Transportation, Boulder County Parks & Open Space.

Heil Valley Ranch Design Related Work



L1

DATE: 08/15/2018
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 SCALE: 1" = 40'

Area Plan
 Heil Valley Ranch II Trailhead
 257 Geer Canyon Drive, Boulder, CO

PROJECT NO: [Number]
 SHEET NO: [Number]

Anne U. White

- Engineering feasibility for trailhead facilities and stream restoration
- Coming to POSAC in November



Swede Dam and Reservoir



Agricultural water supply for the AHI property that was originally developed in 1930 that was severely deteriorated to the point that it was restricted to fully drained. Storage capacity approximately 151 acre-feet.

Castle Rock Bridges



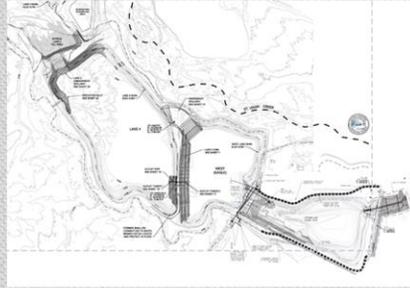
Flood



South St Vrain



Hall Ranch II Road



Lake 4, West Lake & A-Frame



St Vrain Reach 3

Signs

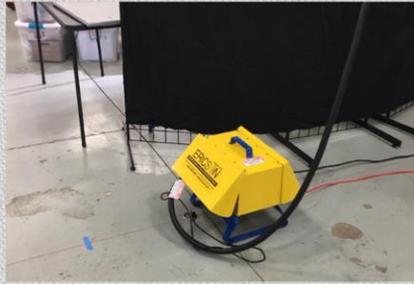
- 200+ signs installed or maintained. Examples include:
- 3 kiosk updates at Walker with new maps showing the new Walker loop re-route as well as, the Josie Heath trail.
- 18 + Carsonite boundary posts and stickers at Sherwood, Caribou Ranch and Mud Lake.
- Re-facing the mile markers on the Picture Rock trail
- Fabrication and installation of 2 very large entry sign posts at Heil Valley Ranch.
- Numerous sign faces replaced, post replaced or painted.



6 INTERPRETIVE PANELS UPDATED



Fairgrounds



Farmers Market paver installation. Exhibit Building electrical upgrades. 2019 Boulder County Fair will be the 150 Anniversary. Electrical turtle provide 240v and 30amp plugs with 6 receptacles and Dolly style transformers are 480v with 12 receptacles.

Indoor Arena Roof



Shop and Fleet Foreman



Two more Electric Vehicle Charging Stations



Cordless and Battery Powered Hand Held Equipment



Spray Foam Insulation at Suitts Building

Highlights related to fleet and shop:

- 2 more electric vehicle charging stations installed for POS fleet
- New backhoe
- New excavator
- New OHV
- New dump trailer
- New utility trailer
- New horse trailer
- New water trailer
- Spray foam insulation in Suitts barn
- Washer and dryer in shop
- Confined entry safety equipment
- Grant funding for cordless, battery powered hand held equipment
- Heil scrap metal removal

Volunteers

BHP – Heil fencing, Walker fencing,
6 projects.
111 volunteers.
410 volunteer hours.



GROUNDS – LOBO fencing,
LHVG Plantings, Heil Plantings
9 projects.
75 volunteers.
253 volunteer hours.



TRAILS – Heil East, Walker Ranch, a few at Schoolhouse
45 projects.
653 volunteers.
2,193 volunteer hours.

60 projects completed for Rec and Facilities to date, **839** total volunteers, **2856** combined volunteer hours.

Building and Historic Preservation

Projects

- Altona School House Phase 3
- Cleanup / Repairs on Heil 2 buildings & Corral
- De-Construction of Mammoth Mine Modern Building
- Asbestos abatement of the Tumbleson House at Hall Ranch
- Construct new Kiosk at the Lefthand Valley Grange trailhead.
- Youth Corps & Volunteer fencing projects at Walker Ranch and Heil 2
- Ongoing repairs at Rock Creek Farm, Harney Lastoka and the Barret Property.

Building and Historic Preservation

Altona School House Phase 3



Building and Historic Preservation

Cleanup and Repairs of Heil 2 Buildings/Corral



Before

After

Building and Historic Preservation

Cleanup and Repairs of Heil 2 Buildings/Corral



Building and Historic Preservation

Kiosk at LHVG



Building and Historic Preservation

Maintenance & Repairs at Assay Office – Mining Museum & Rock Creek



Assay Shed



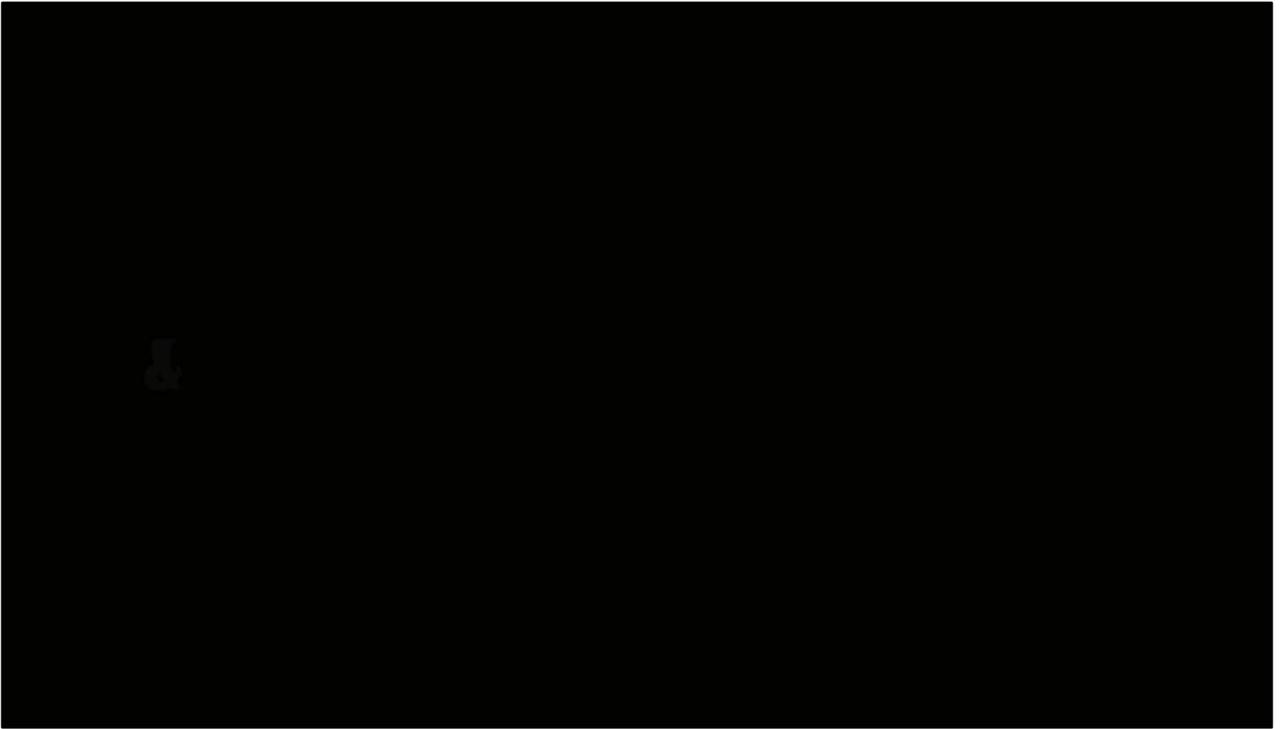
Rock Creek

Building and Historic Preservation

Maintenance & Repairs at Assay Office – Mining Museum & Rock Creek



Mining Museum





Assessing the Potential for Beaver Restoration and Likely Environmental Benefits

Juli Scamardo and Ellen Wohl
Colorado State University

Parks and Open Space Advisory Committee Meeting
October 25, 2018

Rivers throughout northern hemisphere simplified & homogenized by channel engineering, flow regulation, & removal of beavers & instream wood

Loss of spatial heterogeneity in river corridors – channels & floodplains – affects downstream fluxes of water, sediment, organic matter, & nutrients, as well as water quality, biomass, and biodiversity



channelized section of Poudre River, CO



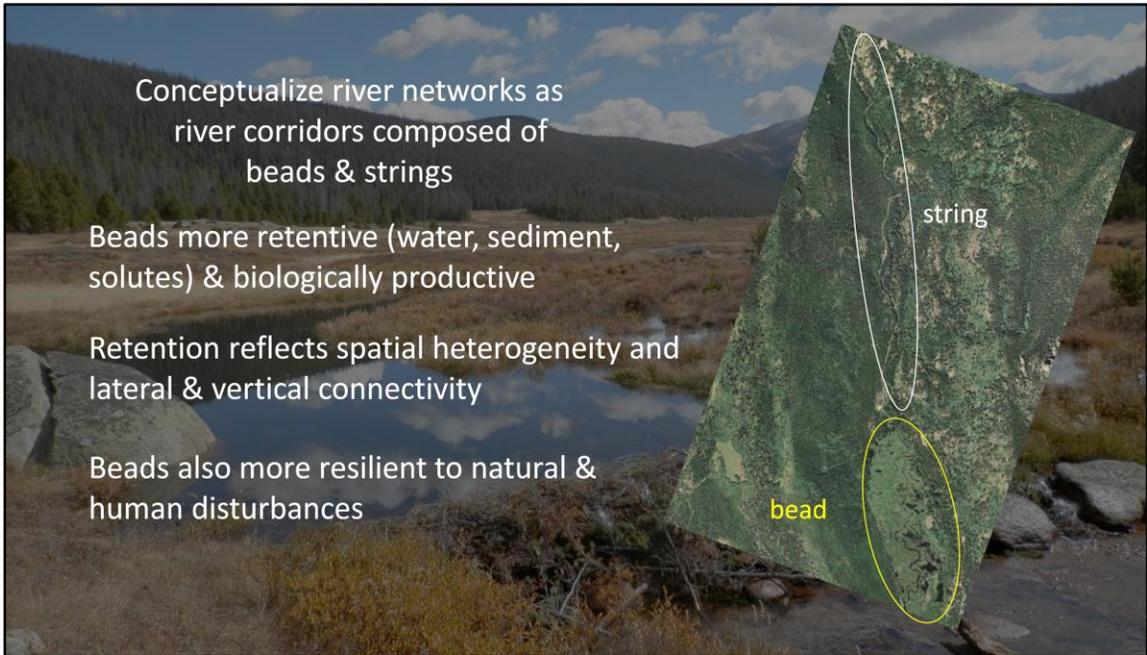
Yukon River, Alaska

Conceptualize river networks as
river corridors composed of
beads & strings

Beads more retentive (water, sediment,
solutes) & biologically productive

Retention reflects spatial heterogeneity and
lateral & vertical connectivity

Beads also more resilient to natural &
human disturbances

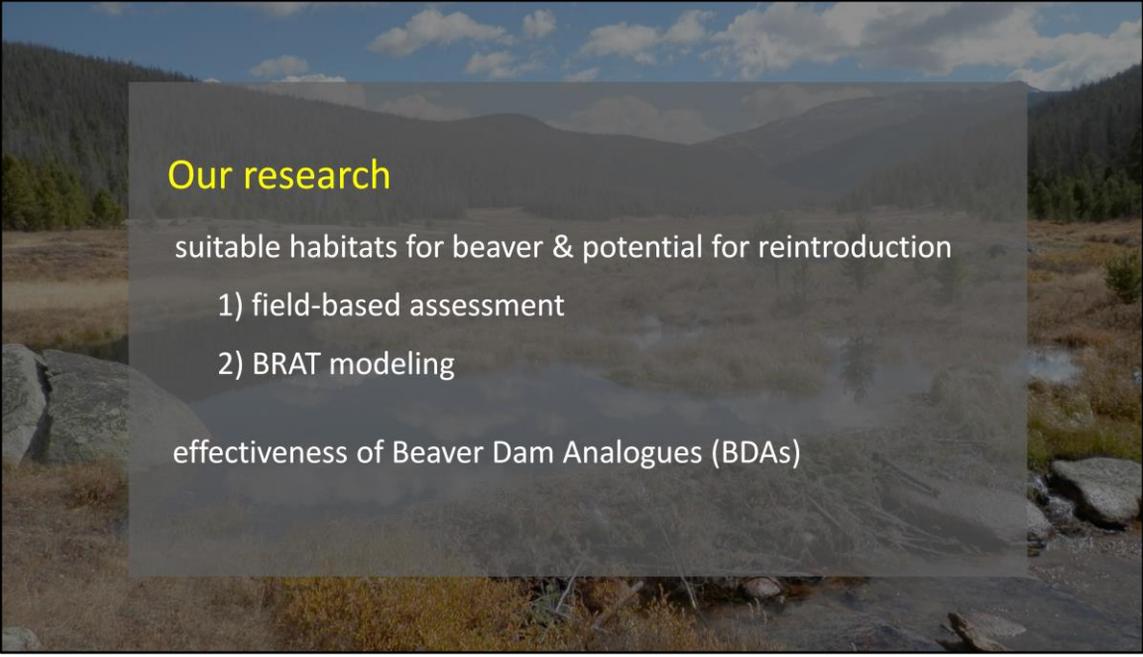




Within beads in streams of Colorado Rockies & foothills, spatial heterogeneity, connectivity, & resilience are enhanced by biotic drivers – logjams & beaver dams

Historic records & abundance of now-abandoned beaver dams indicate that beaver dams were formerly much more widespread & common in Colorado



A landscape photograph of a mountain valley with a river and a semi-transparent text box. The text box contains the following text:

Our research

suitable habitats for beaver & potential for reintroduction

- 1) field-based assessment
- 2) BRAT modeling

effectiveness of Beaver Dam Analogues (BDAs)

What does ideal beaver habitat look like?

- Aspen, cottonwoods, willows are within 100 meters of the banks
- Reliable water source, typically perennial streams
- Dam building is possible at typical flows and will not blow out during typical floods
- Low stream gradients (<3%)
- Wide valley bottoms



Where did we assess beaver habitat?

Delonde Creek in Caribou Ranch Open Space
St. Vrain Creek in Montgomery and Western Mobile Plots
St. Vrain Creek in Braly Plot
Middle Boulder Creek at Rogers Park
Middle Boulder Creek at Platt-Rogers Park
Sherwood Creek at Mud Lake Open Space

HABITAT ASSESSMENT

Geomorphology Scorecard

Site Name/Location: _____

GPS Coordinates: _____

___ Channel Gradient: $\leq 3\%$ (10 points) 4 – 6 % (0 points) 7-9% (-10 points) $\geq 9\%$ (-30 points)

___ Valley bottom width: Wide, > 100 meters (5 points) Narrow, <100 meters (0 points)

___ Site Length: > 1 km (5 points) < 1 km (1 point)

___ Flow Regime: Ephemeral (-10 points) Intermittent (5 points) Perennial (10 points)

Woody Food (Select the highest possible in each line – then multiply the lines)

a. Aspen/willow (3 points) Alder (2 points) Other hardwoods (1 point)

b. Within 10 m (3 points) Within 30 m (2 points) Within 100 m (1 point)

c. Abundant, >50 stems (2 points) Moderately abundant (1 point) Not Present (0 points)

___ Woody food score = multiply a x b x c

___ Herbaceous Food: Grasses and forbs abundant (10 points) No grasses/forbs (5 points)

___ Dominant Stream Substrate:

Silt/Clay/Mud (5 pts) Sand (2 pts) Gravel (1 pt) Cobbles (0 pts) Boulders (-1 pt) Bedrock (-3 pts)

___ Historical Beaver Use: Old berms present (15 points) No indication of berms (0 points)

___ Presence of dam building materials:

Abundance of 1-6" diameter woody vegetation (5 points) No building material present (-20 points)

___ Browsing/Grazing Impacts: No browsing (5 points) Heavy browsing (-10 points)

___ Ease of Access: Easy travel to deliver beavers and monitor (2 points) Long hike (-5 points)

___ Existing aquatic escape cover: Multiple deep pools present (10 points) No Pools (-10 points)

___ Total Score (100 points maximum)

How did we assess sites?

Remote Sensing and Google Earth:

Gradient

Valley bottom width

Site Length

Vegetation

Field Visits:

Browsing

Grain size

Vegetation

How did these sites score?

Creek	Site	Average Score
Delonde Creek	Caribou Ranch Open Space	85
St. Vrain Creek	Braly Plot	78
Sherwood Creek	Mud Lake Open Space	74
St. Vrain Creek	Montgomery and Western Mobile Plots	61
Middle Boulder Creek	Platt-Rogers Park	60.5
Middle Boulder Creek	Rogers Park	49

Why? Delonde Creek has good vegetation, remnant beaver ponds, but heavy grazing, high gradient upstream of ponds. St. Vrain in Braly Plot has a low gradient, long site length, some remnant berms, fine sediment, but lacking some vegetation and evidence of large flows. Sherwood Creek is perennial, possible berms, but lots of incision, less vegetation than Delonde and evidence of grazing. St. Vrain Creek in Montgomery and WM Plots is low gradient, perennial, and long, but has large grain sizes (exposed bedrock), sparse edible vegetation. Middle Boulder Creek has some abundant vegetation (especially in Platt-Rogers), but very steep, large grain sizes, and evidence of flows that would blow out dams (also the site has a narrow valley bottom and limited length).

How did these sites score?

Creek	Site	Average Score
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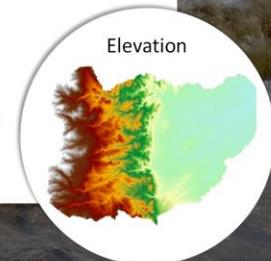
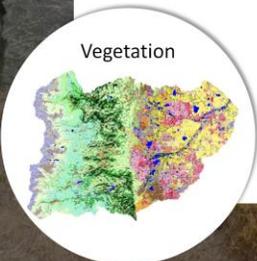
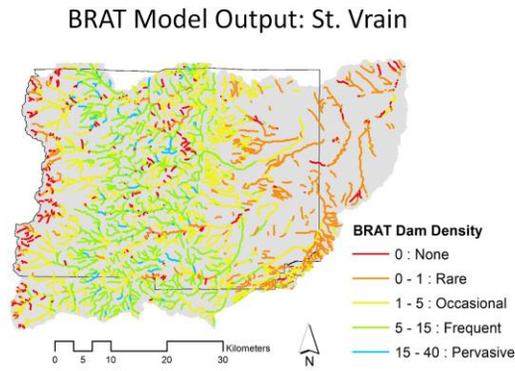
What is BRAT?

Beaver Restoration Assessment Tool

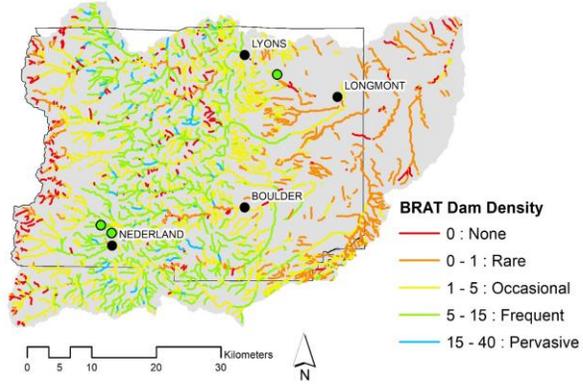
GIS-based model that assigns potential beaver dam density based on:

- Vegetation layer
- Regional hydrology
- Valley bottom width
- Slope
- Land use

BRAT MODEL

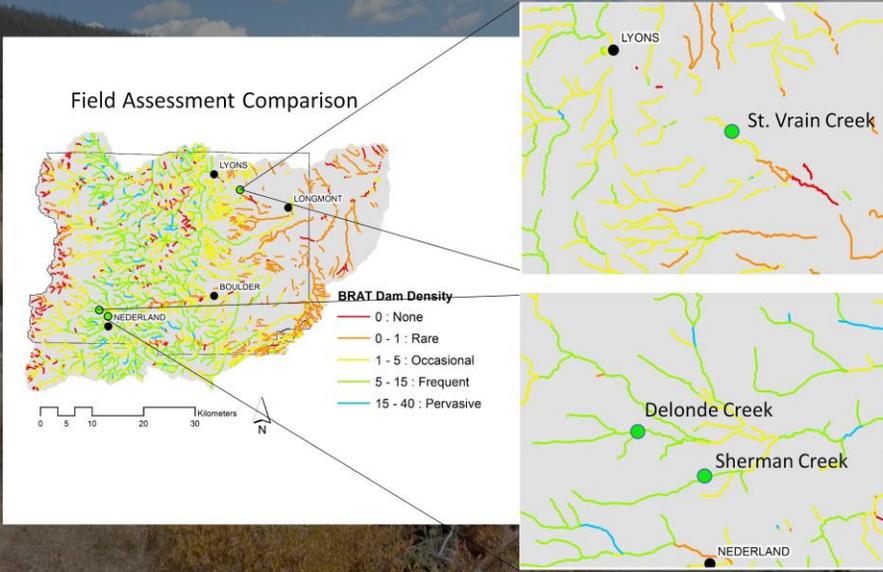


BRAT MODEL



BRAT MODEL

Field Assessment Comparison



BEAVER DAM ANALOGS (BDAs)

What are BDAs?

Beaver Dam Analogs

Human-built structures meant to mimic beaver dams
constructed of natural materials
made either by hand or with machinery

Livermore, CO



Estes Park, CO



BEAVER DAM ANALOGS (BDAs)

How do BDAs change geomorphology and hydrology?

Conducted field work on Campbell Creek and Fish Creek

Stream stage

Groundwater wells

Sediment surveys

Repeat channel bed surveys

Grain size analysis



Future Work and Timeline

Compare BRAT to site assessments across the Front Range
Watershed modeling in progress

Model potential flow disruption due to beaver dams on Delonde Creek,
Sherman Creek, and St. Vrain Creek
Channel surveys completed in August 2018
Modeling completed by March 2019

Conduct statistical analyses on BDA data
Field work completed in September 2018
Analyses completed by December 2018