

GRAND MESA MOOSE REINTRODUCTION



TOPICS

- Colorado Parks & Wildlife
 - who we are and what we do
- Moose biology
- Grand Mesa Moose
 - Project background
 - Current status
 - Results
 - Where we go from here
- Moose viewing safety & tips



COLORADO PARKS & WILDLIFE

- "...wildlife and their environment are to be **protected, preserved, enhanced, and managed for the use, benefit, and enjoyment** of the people of this state and its visitors"
- "The state shall utilize **hunting, trapping, and fishing** as the **primary methods** of effecting necessary wildlife harvests."



CPW MANAGES WILDLIFE



~~DOMESTIC ANIMALS~~



COLORADO STATE ANIMALS



Western painted turtle



Rocky Mtn. bighorn sheep



Lark bunting



Greenback cutthroat trout

What percentage of
your state tax dollars
go to Parks & Wildlife
to manage wildlife
Colorado?



ZERO!

- Wildlife management in Colorado is funded by sportsmen
 - Hunting/fishing licenses
 - Excise taxes on sporting goods
 - Great Outdoors Colorado (GOCO)
 - Habitat stamp
- CPW does not receive general tax fund monies for wildlife management

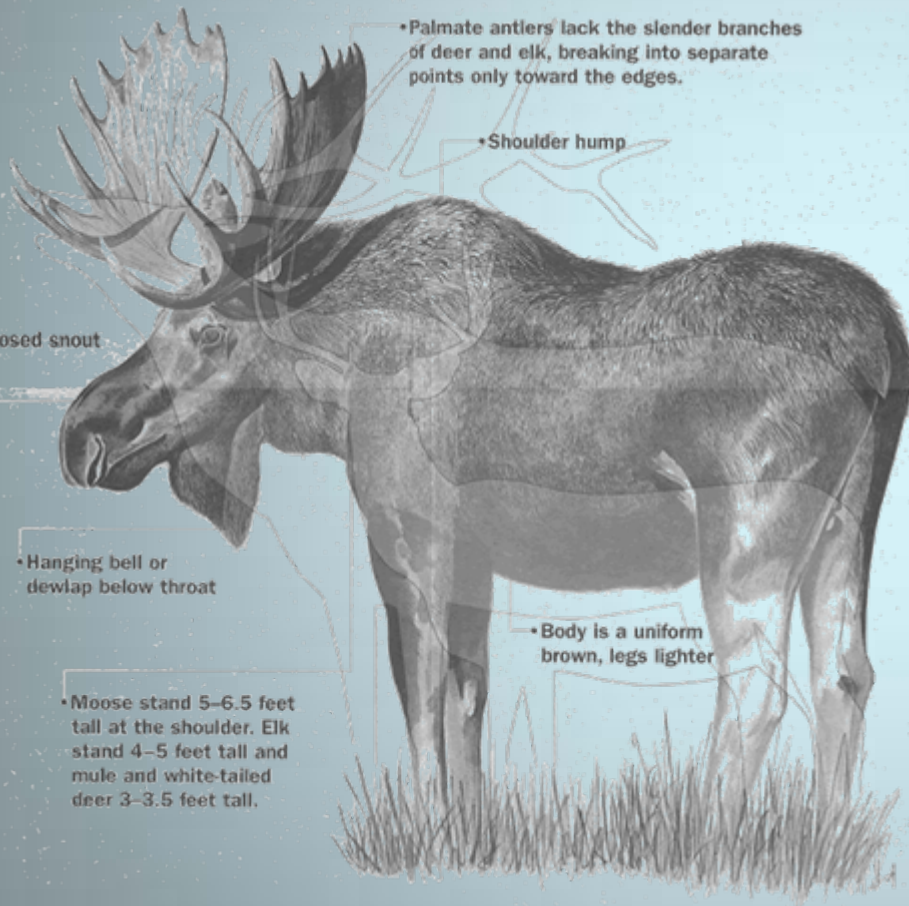


MOOSE



Photo courtesy Dennis Garrison, USFS

MOOSE BIOLOGY 101



- Deer Family (*Cervidae*)

- Deer

- Mule deer

- White-tail deer

- Black-tail deer

- Caribou

- Elk

- Moose

MOOSE BIOLOGY 101



WORLDWIDE MOOSE DISTRIBUTION

MOOSE BIOLOGY 101

- *Alces alces*
- Six different subspecies worldwide
- Breed Sept-Nov
- 10 – 15 year life span

Shiras	<i>A. a. shirasi</i>	Wyoming, Idaho, Utah, Colorado, Washington, Oregon, Montana
European	<i>A. a. alces</i>	Finland, Sweden, Norway, Estonia, Russia, Poland, Lithuania
Eastern	<i>A. a. americana</i>	e. Canada & northeastern US
Western	<i>A. a. andersoni</i>	w. Canada, upper Midwest US
Siberian	<i>A. a. cameloides</i>	Siberia, Mongolia, Manchuria
Alaska	<i>A. a. gigas</i>	Alaska, Yukon

MOOSE BIOLOGY 101



- Black body
- Silver legs
- Front legs longer than hind legs
- Broad muzzle with bulbous nose
- Bell or dewlap

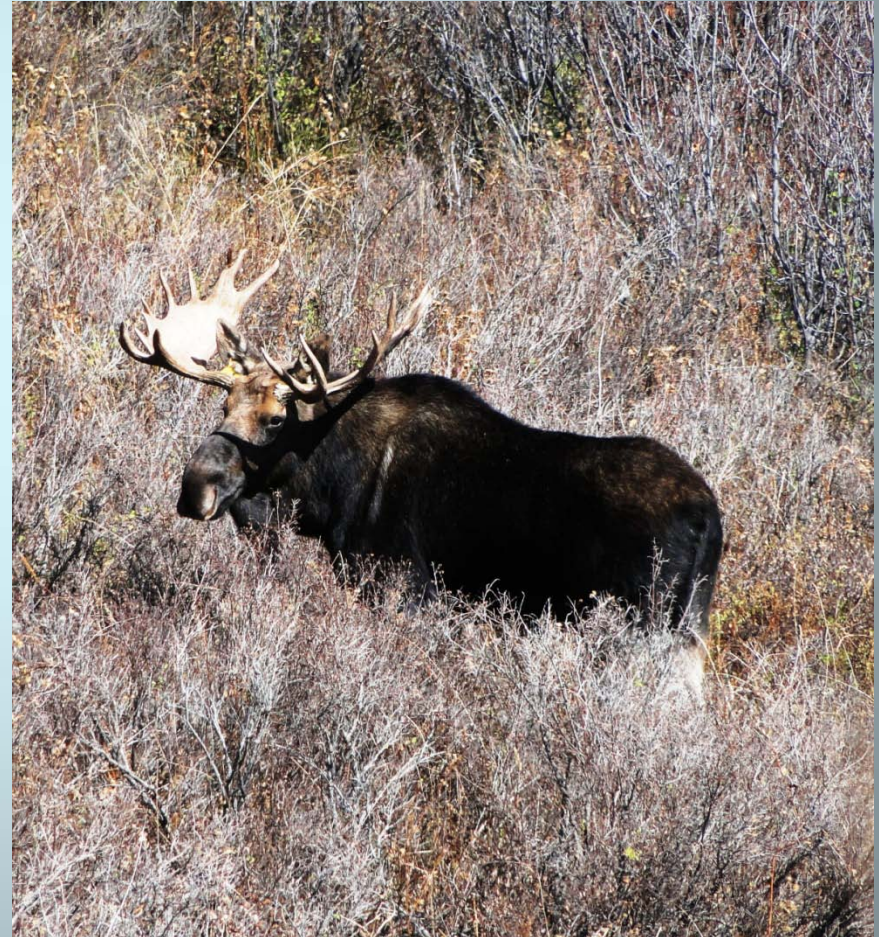
MOOSE BIOLOGY 101

- Generally solitary
- Riparian & woodland habitats
- Browsers * * *
 - Shrubs, willows, aspen
- Limited migration
 - Can withstand deep snow (15 feet)
- No natural predators of adults in Colorado



MOOSE BIOLOGY 101

- Male = bull
- 750 – 850 pounds
- Palmate antlers
 - Shed each year, immediately re-grow
 - Used during breeding season
- Fight for breeding rights, defend territory



MOOSE BIOLOGY 101



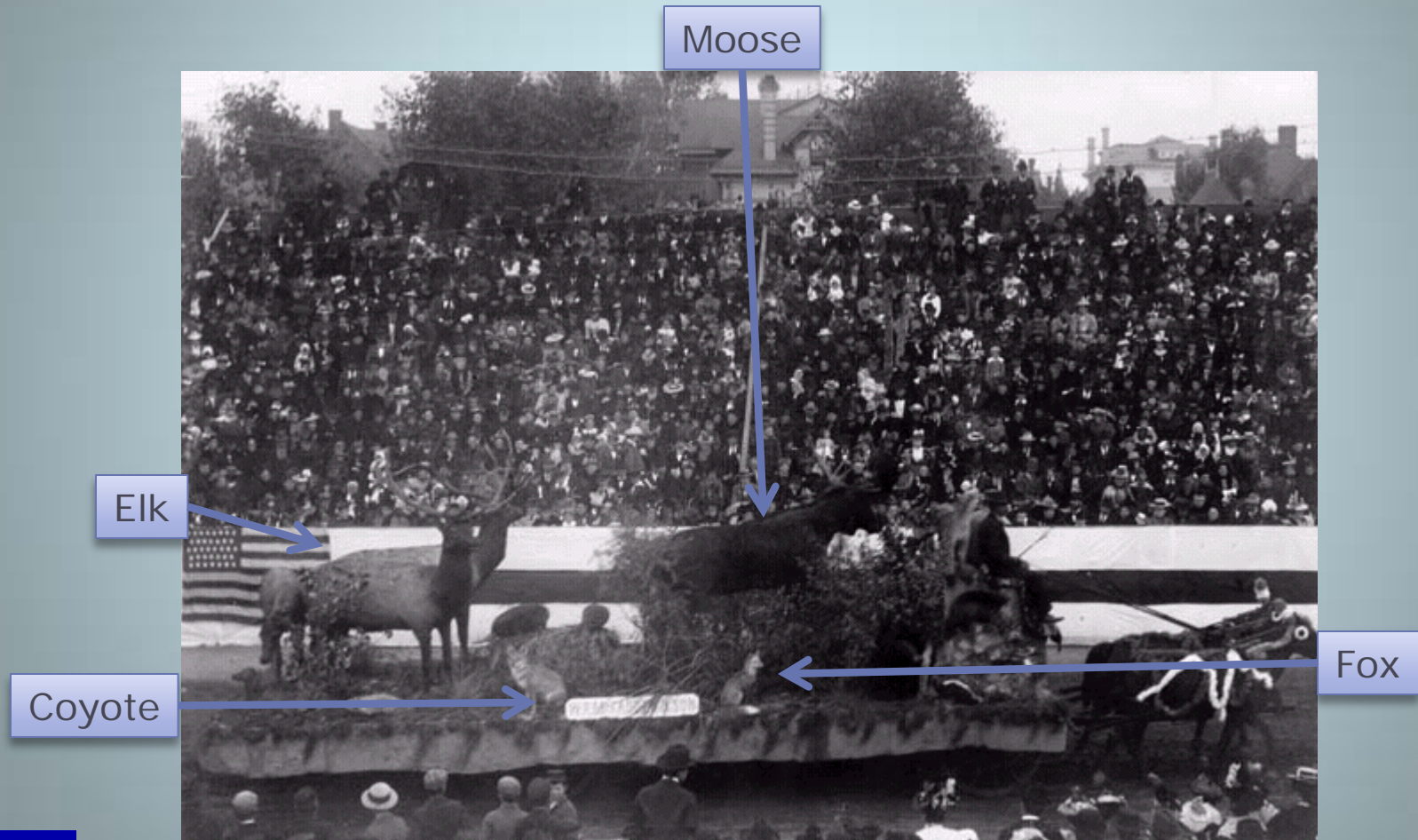
- Female = cow
- No antlers
- Smaller dewlap
- Smaller than bulls:
500 – 700 lbs
- White patch on
rump

MOOSE BIOLOGY 101

- Young = calf
- One calf/year
- Twinning uncommon
- Born mid-May – mid-June in CO
- Reddish-brown
- Will stay with cow until yearling

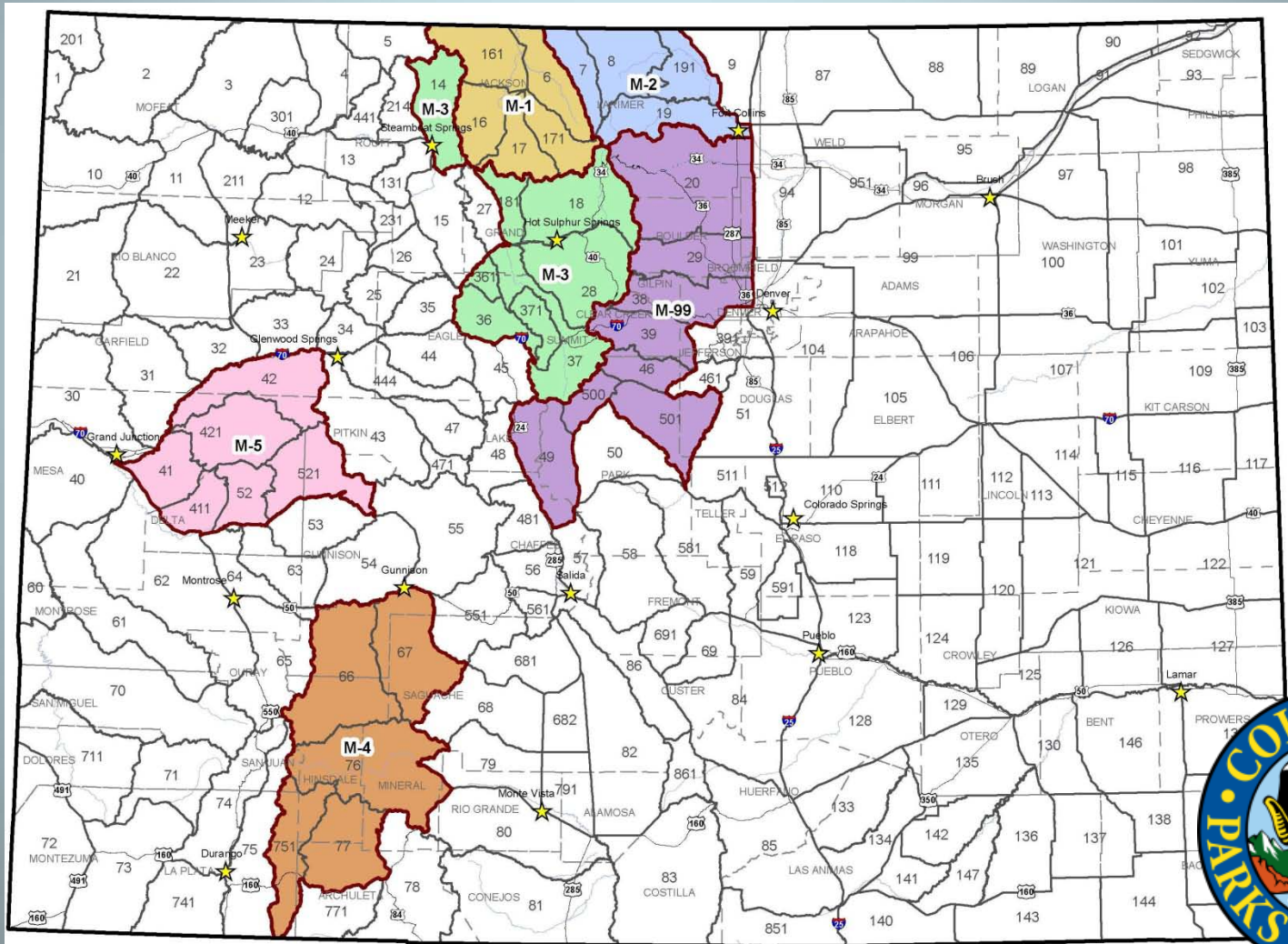


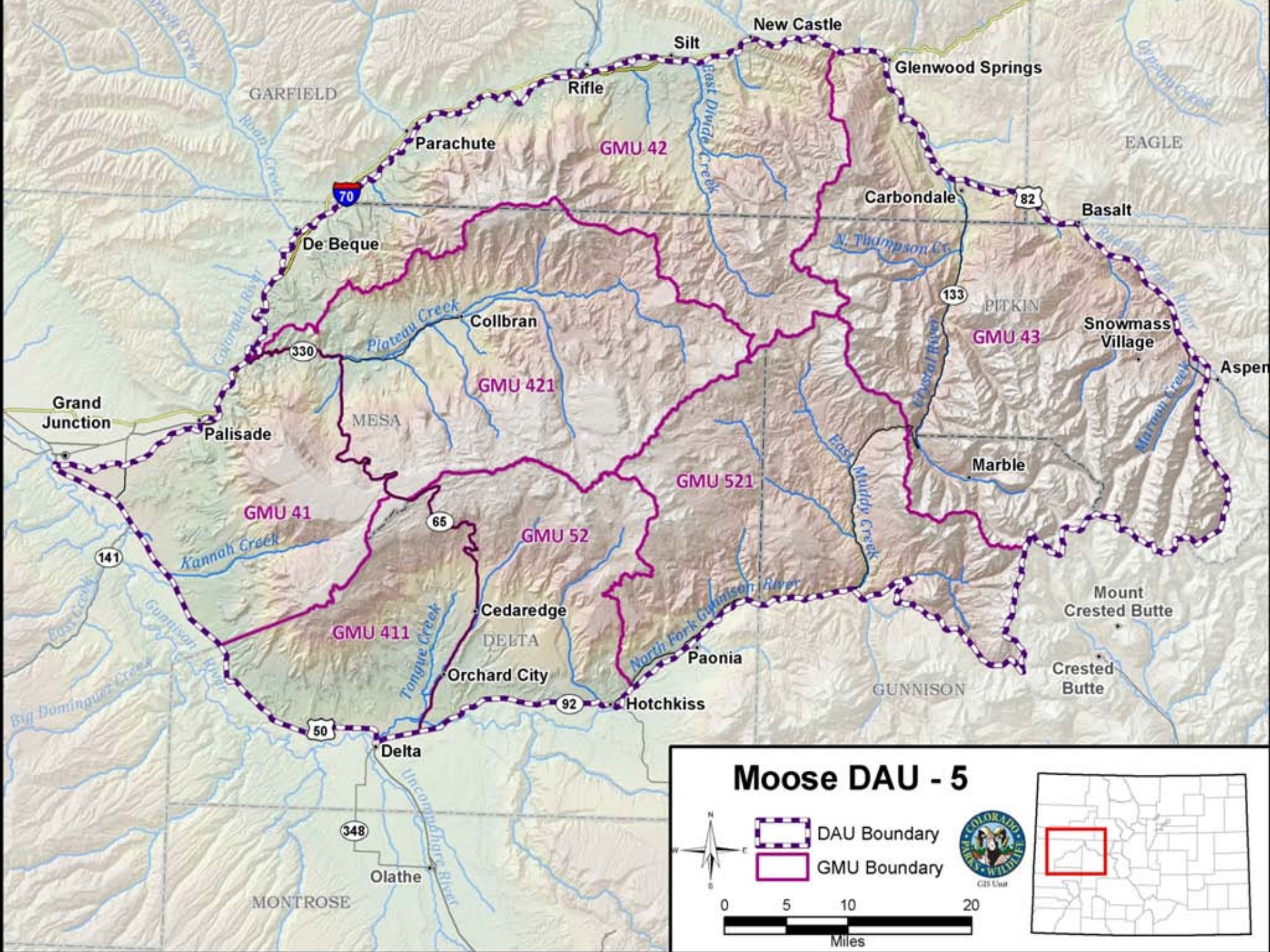
MOOSE IN COLORADO



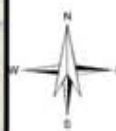
1896 Festival of Mountain & Plain - Denver



2012 COLORADO MOOSE POPULATIONS

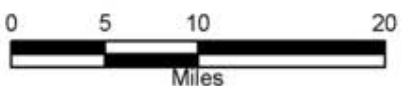




Moose DAU - 5



-  DAU Boundary
-  GMU Boundary



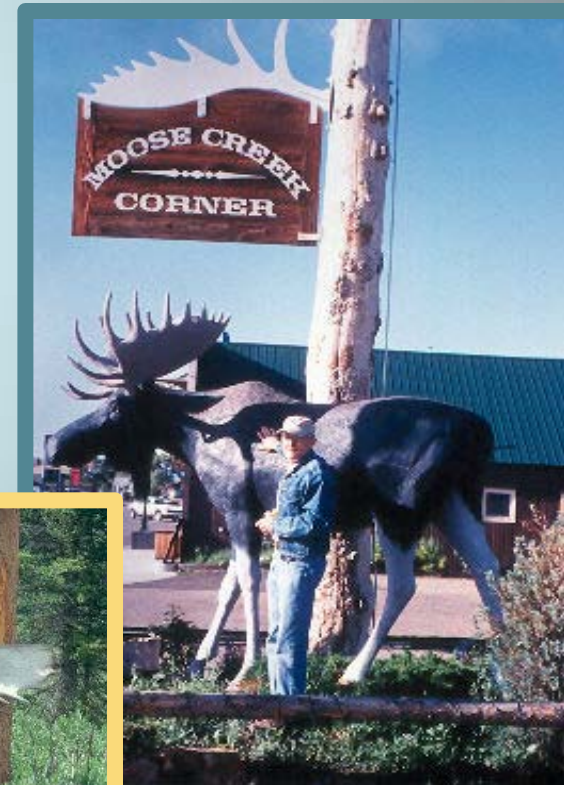
HISTORY OF MOOSE ON THE GRAND MESA

- "...deer in plenty, a few elk, and very few moose..."
 - Early 1900's-John W. Lowell, supervisor Battlement Mesa Forest Reserve
- Lax fish & game laws
- Native resident, low numbers
- Infrequent, but regular sightings

MOOSE ON THE MESA



- WHY?
 - Watchable wildlife
 - Public demand
 - Hunting
 - Economic benefits



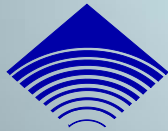
GRAND MESA MOOSE PROJECT COOPERATORS



AUCTION & RAFFLE
LICENSE FUNDS



STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources



GUNNISON ENERGY CORPORATION
An Oxbow Company

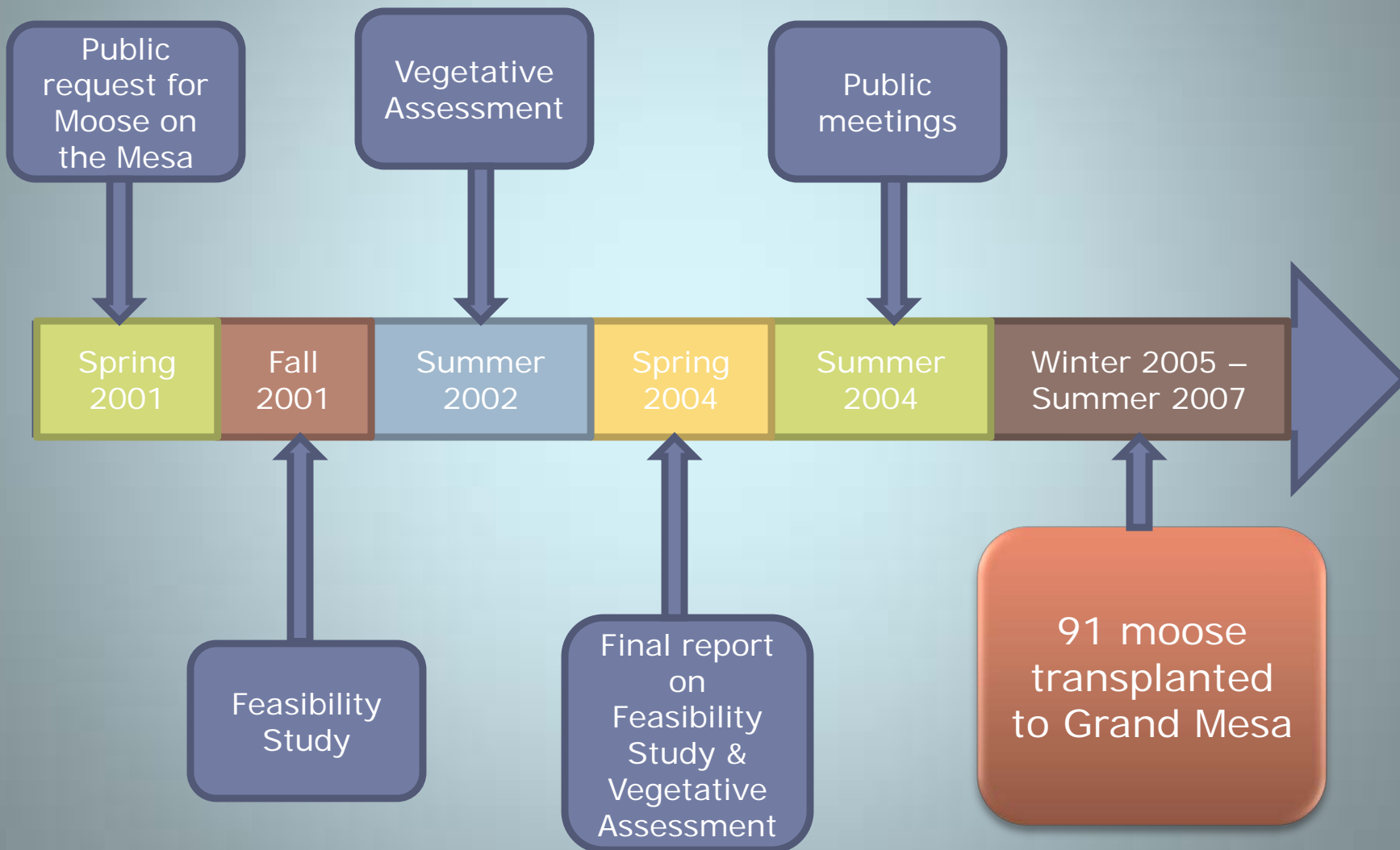


SG INTERESTS I, LTD.





PROJECT TIMELINE



PUBLIC REQUEST



- Spring 2001
- General interest
- Two primary leaders* *
- Historic sightings
- Suitable habitat
- Benefit to local area
 - Hunting opportunity
 - Economic benefit
 - Watchable wildlife

FEASIBILITY STUDY



- Fall 2001
- Meetings with:
 - North Park HPP & field tour
 - Grand Mesa permittees
- Commitment to study vegetation
- Concerns, but strong interest & support



FEASIBILITY STUDY



- PERMITTEE CONCERNS
 - Damage to riparian areas
 - Reduction in grazing allotments
 - Impacts to aspen regeneration (USFS & permittees)
 - Fence & hay damage
 - Disease
 - Moose coming down to ranches in the winter

VEGETATIVE ASSESSMENT

- Summer 2002
- Assumed 30% - 50% use of annual willow production
- **Willow only**
- Based on adult forage rates
 - Roughly $\frac{1}{4}$ of any population = calf
- Final Report 2004
- Winter willow habitat (above 7000 ft)
 - **278 – 464 moose**

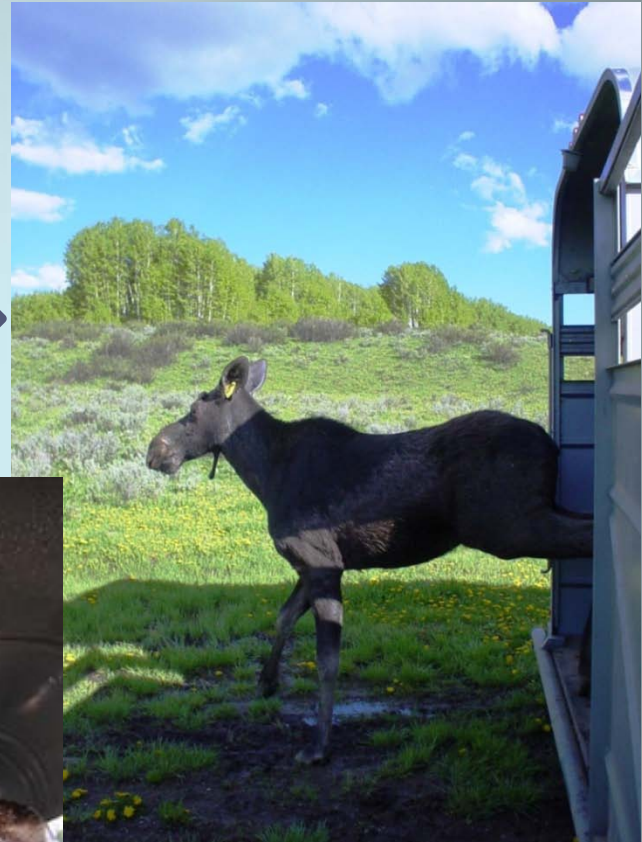
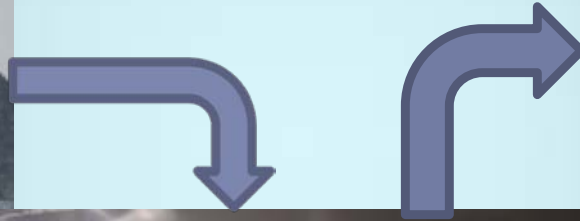


PUBLIC MEETINGS



- Summer 2004
- Cedaredge & Grand Junction
- Strong public support
 - Hunting opportunity
 - Watchable wildlife
 - Tourism/economic benefit
- Major concerns
 - Roadkill & potential human injury
 - Hiker/moose conflict

MOOSE CAPTURE & RELEASE



TRANSPLANTED MOOSE



Source	Total	Bulls	Cows
Colorado	5	3	2
UT singles	38	26	12
UT 2006	24	5	19
UT 2007	24	1	23
Total	91	35	56

MOOSE RELEASE



- Ninety-one moose released in M-5
- All moose marked with eartag & radio transmitter
- Antibiotics, anthelmintics
- CWD-tested
- Release sites:
 - Skyway
 - Harrison Creek
 - Muddy Creek



MONITORING 2005 – 2012

- Telemetry locations
 - Vegetation/habitat
 - Elevation
 - Slope & aspect
 - Range
- Mortality
 - Cause of death
 - Age
 - General health
- Visual observations
 - Group size
 - Reproduction
 - Health



HERD MANAGEMENT PLAN

- Management by objective: all big game species in Colorado
- Public process 2008
 - Input from residents, stakeholders, land management agencies, many others
- Approved 2009



HERD MANAGEMENT PLAN

- Commitment to not recommend for lowered AUMs due to moose
- Population size objective
 - 300 – 400 moose
- Composition objective
 - 50 bulls/100 cows
 - Minimum 5 year average spread > 35"

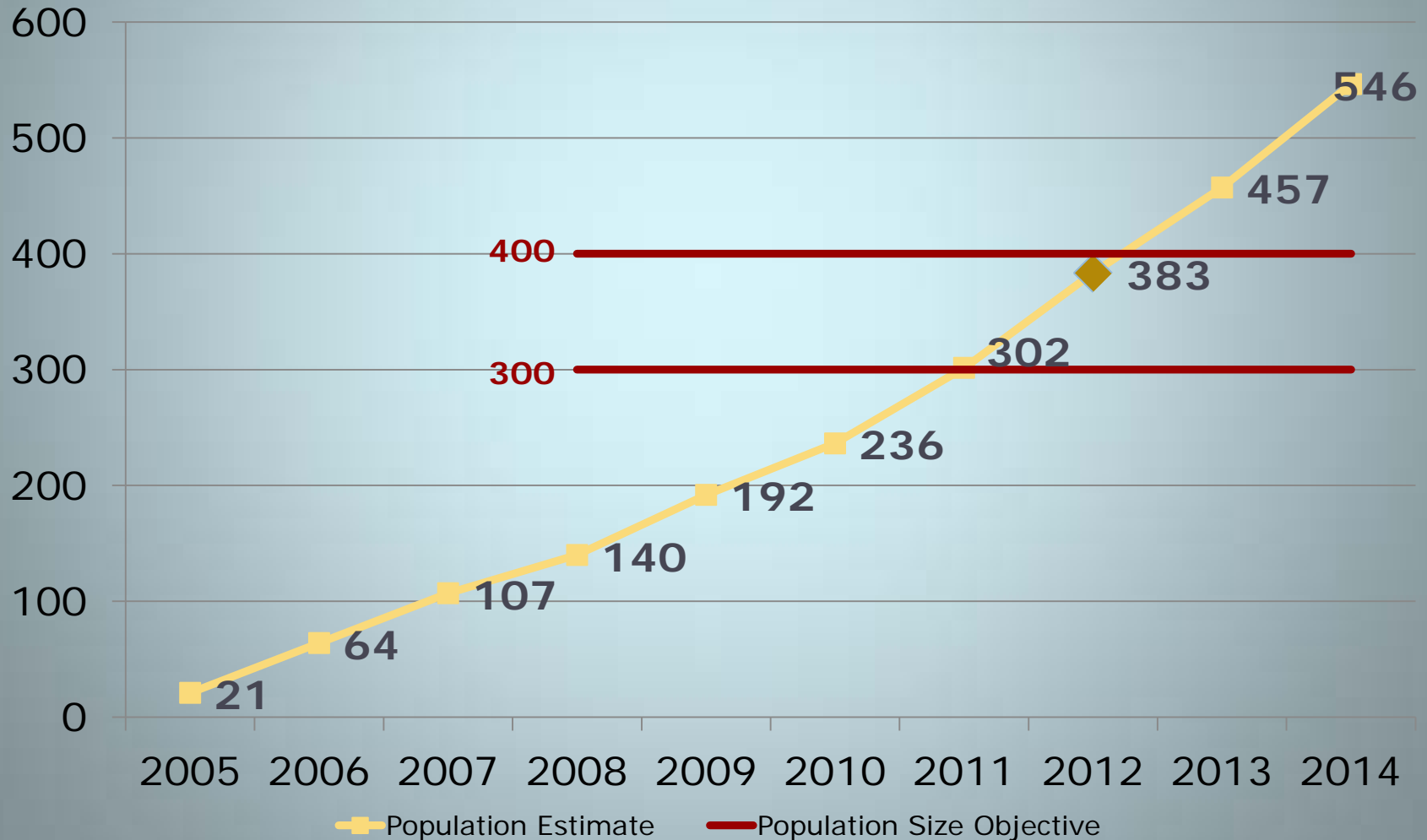


CURRENT STATUS



- 10 cows, 1 bull still telemetered
- 2012 population estimate 380 moose
- Minimal monitoring
- Some expansion into new areas
- High levels of twinning
- High survival rates

GRAND MESA MOOSE POPULATION ESTIMATE



INITIAL RESPONSE TO CONCERNS

- No damage claims or nuisance situations
 - Major encounters, fence, hay
- No CWD detected in moose in M-5
- No human injuries due to moose-vehicle collision
- Little riparian utilization
- Annual Grand Mesa Moose Day brings ~700 people to the Grand Mesa on the last Saturday in July

FORAGE COMPETITION

- Little dietary overlap with grazers
 - Elk & domestic livestock
- Browse competition with mule deer
 - Winter is time of limited forage
 - Minimal overlap in winter range
 - Moose browse > 3' above ground
 - Relatively low moose densities
 - 300-400 moose & 30,000 deer

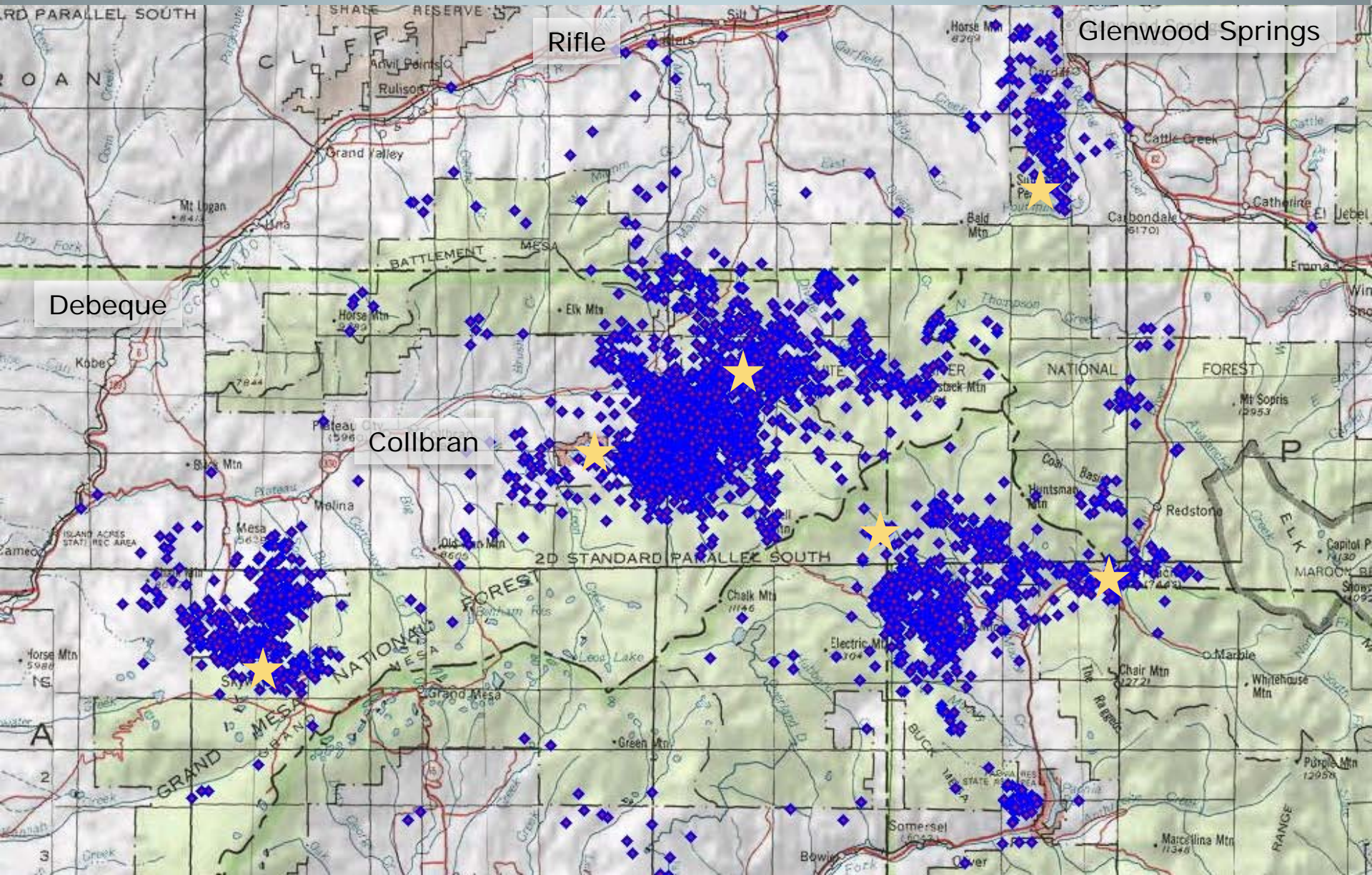




RESULTS

- Range size (MCP)
- Reproduction
- Elevation selection
- Mortality
- Survival
- Habitat selection

ALL LOCATIONS

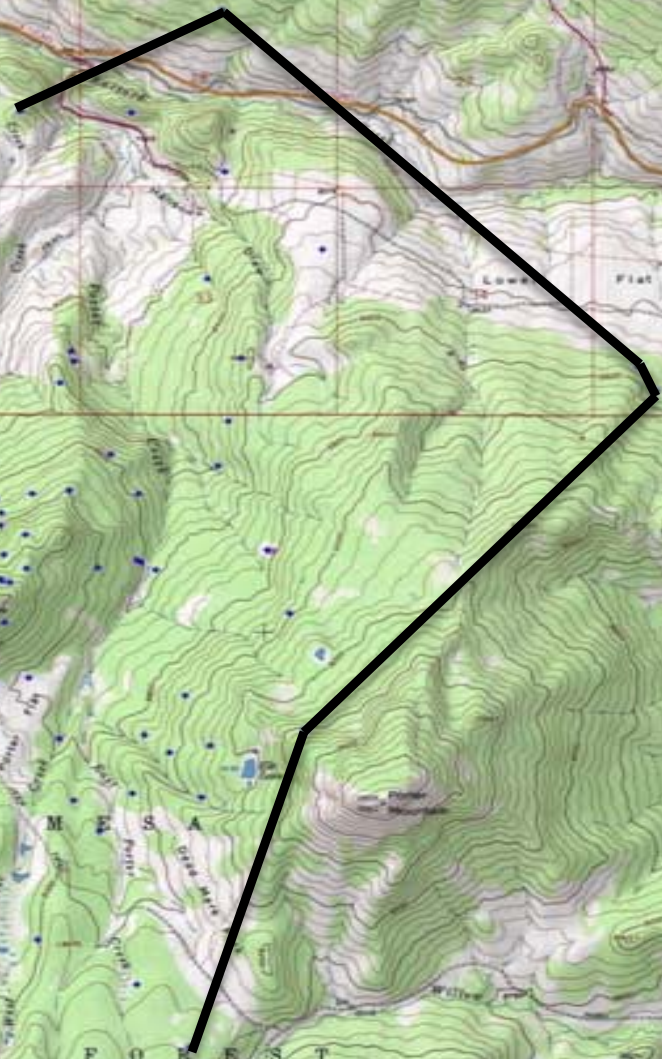




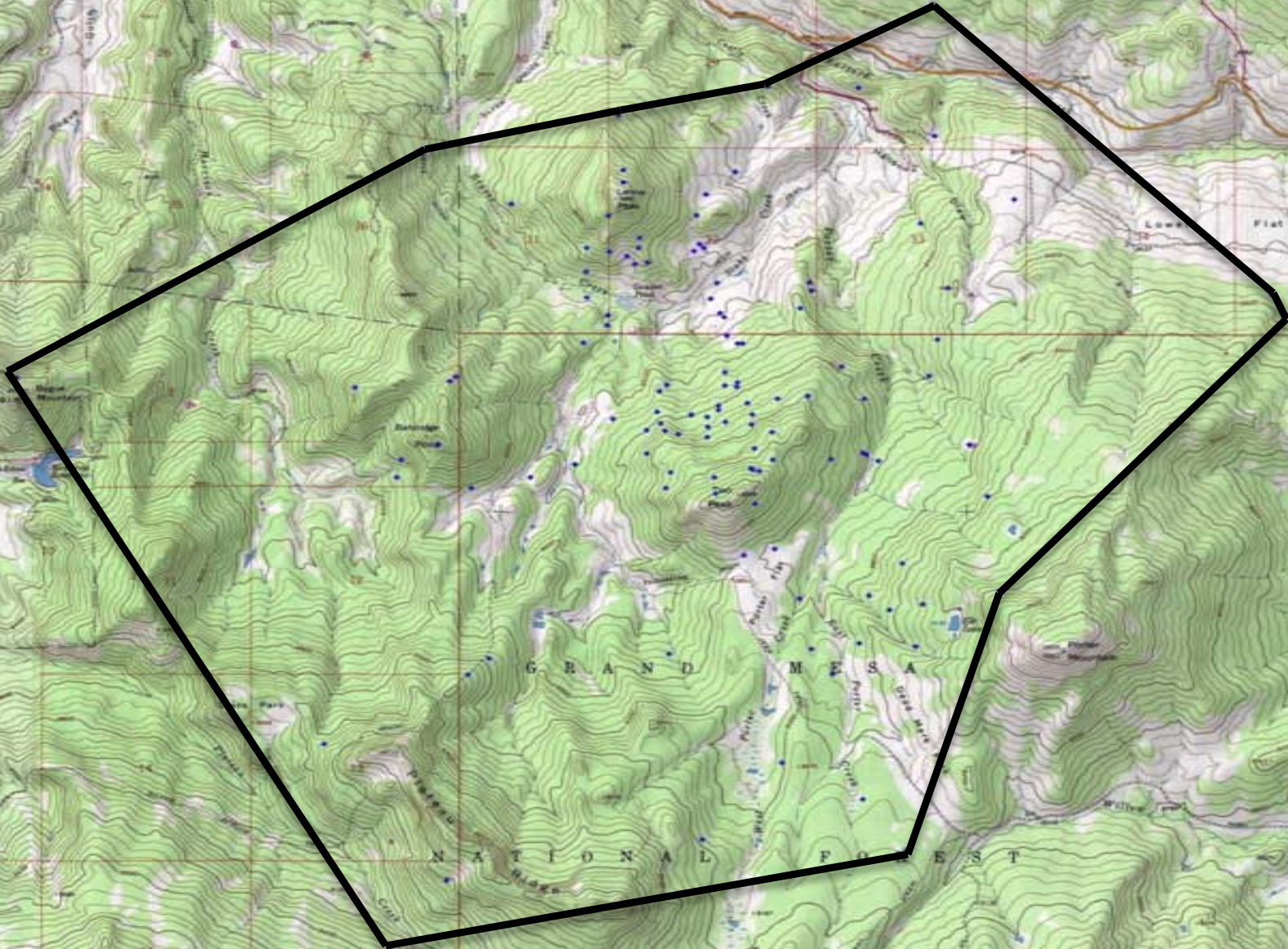
HOME RANGE SIZE

- Highly variable
 - Age
 - Sex
 - Time since transplant
- Lots of methods to measure
 - MCP*
 - Kernel/density
- Only individuals with >75 locations and no "fliers"

MINIMUM CONVEX POLYGON



MINIMUM CONVEX POLYGON

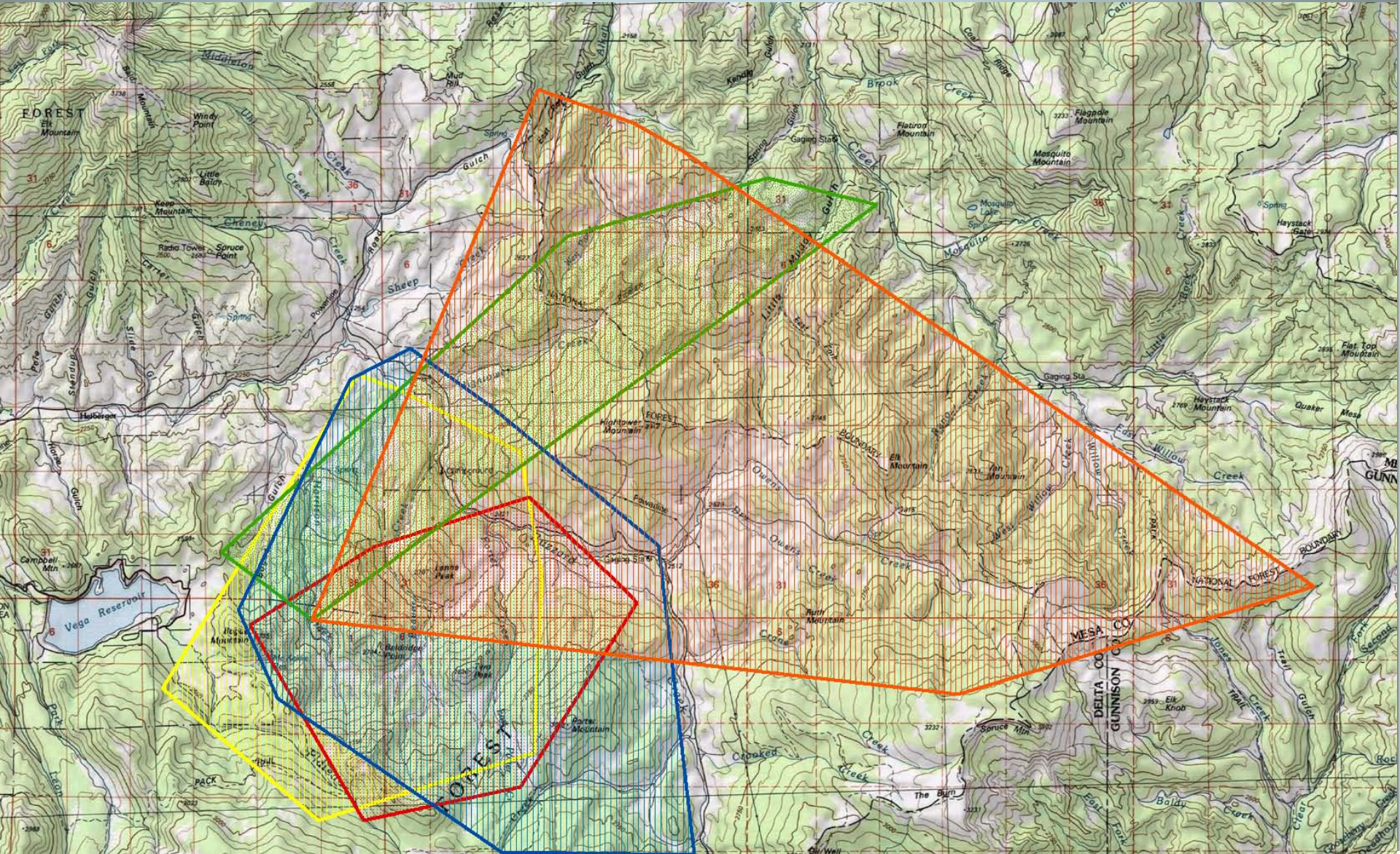


MINIMUM CONVEX POLYGON*



- Average MCP = 82 sq. miles
- Largest MCP = 213 sq. miles
- Smallest MCP = 19 sq. miles
- Primarily cows (very few bulls)
- Lots of overlap among cows, little overlap among bulls

MCP OVERLAP





REPRODUCTION

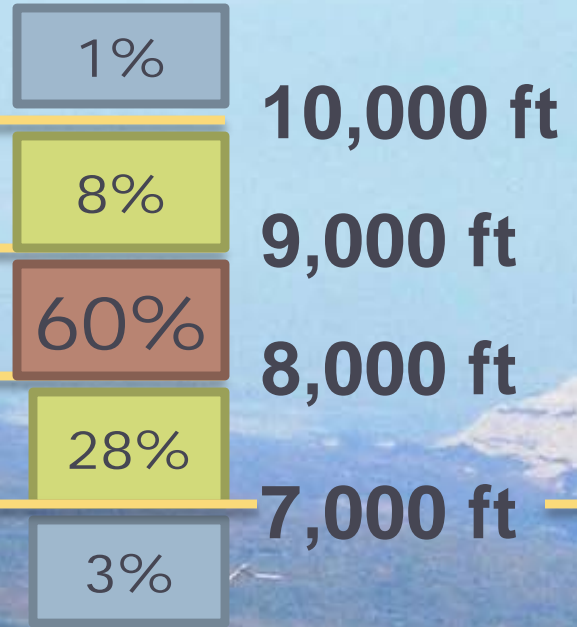
TOTAL CALVES FROM COLLARED COWS						
Year	2006*	2007*	2008	2009	2010	2011
Observed	8	18	21	21	14	14
Projected	3	3	12	11	9	9
TOTAL	11	21	33	32	23	23

CALVES: 100 COWS						
Year	2006*	2007*	2008	2009	2010	2011
TOTAL	37.1	43.9	75.0	87.5	66.7	73.7

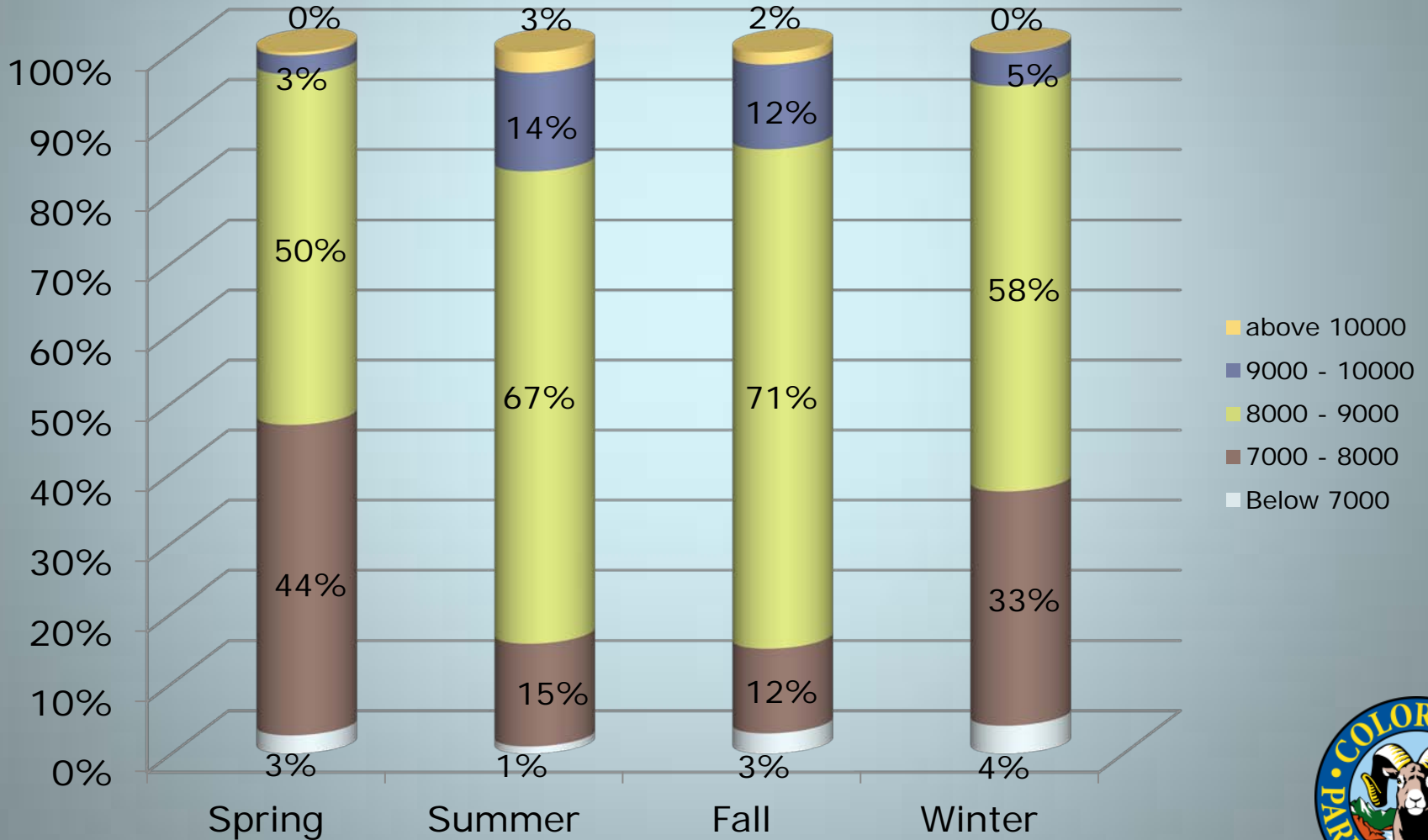


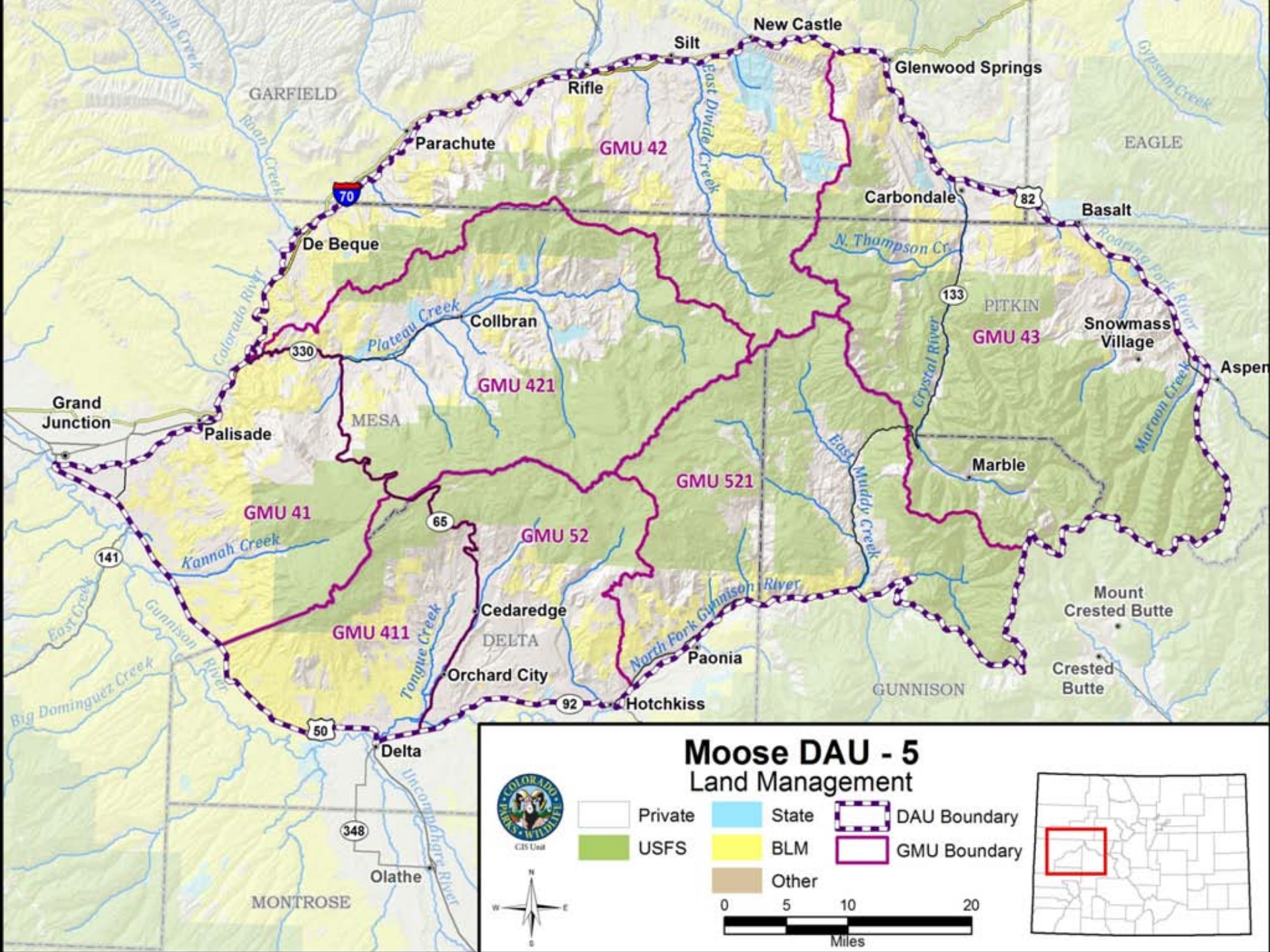
photos courtesy of J. Hockenberry

ELEVATION SELECTION



SEASONAL ELEVATIONS



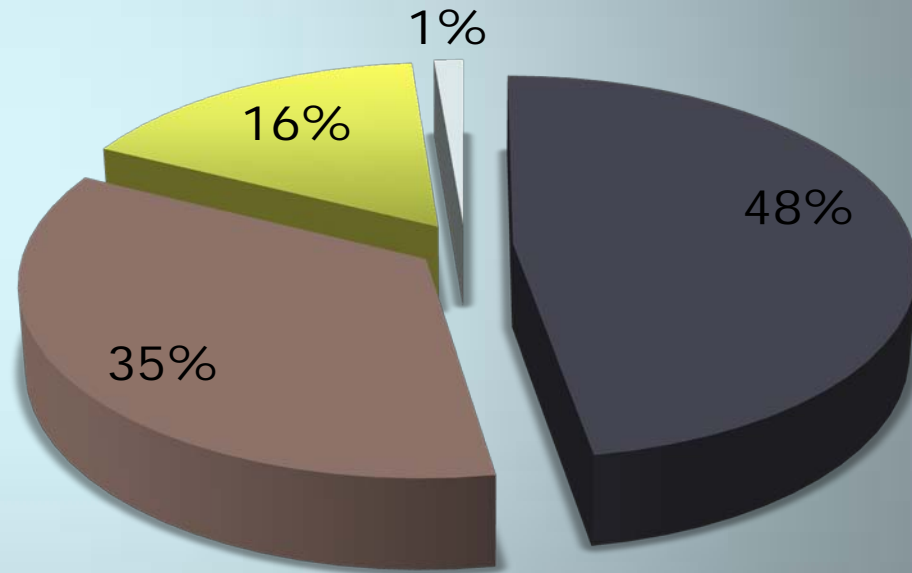
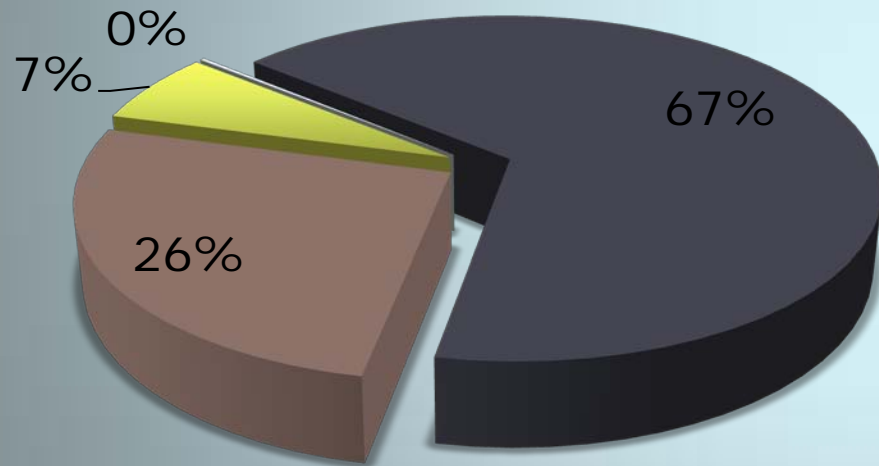


LAND OWNERSHIP



MOOSE LOCATIONS

M-5 OVERALL



■ USFS

■ PRIVATE

■ BLM

■ OTHER PUBLIC

SURVIVAL



YEAR	SURVIVAL	
	BULL * *	COW
2005	78%	95%
2006	100%	96%
2007	100%	95%
2008	100%	83%
2009	90%	89%
2010	89%	84%
2011	88%	92%
AVERAGE	92%	91%

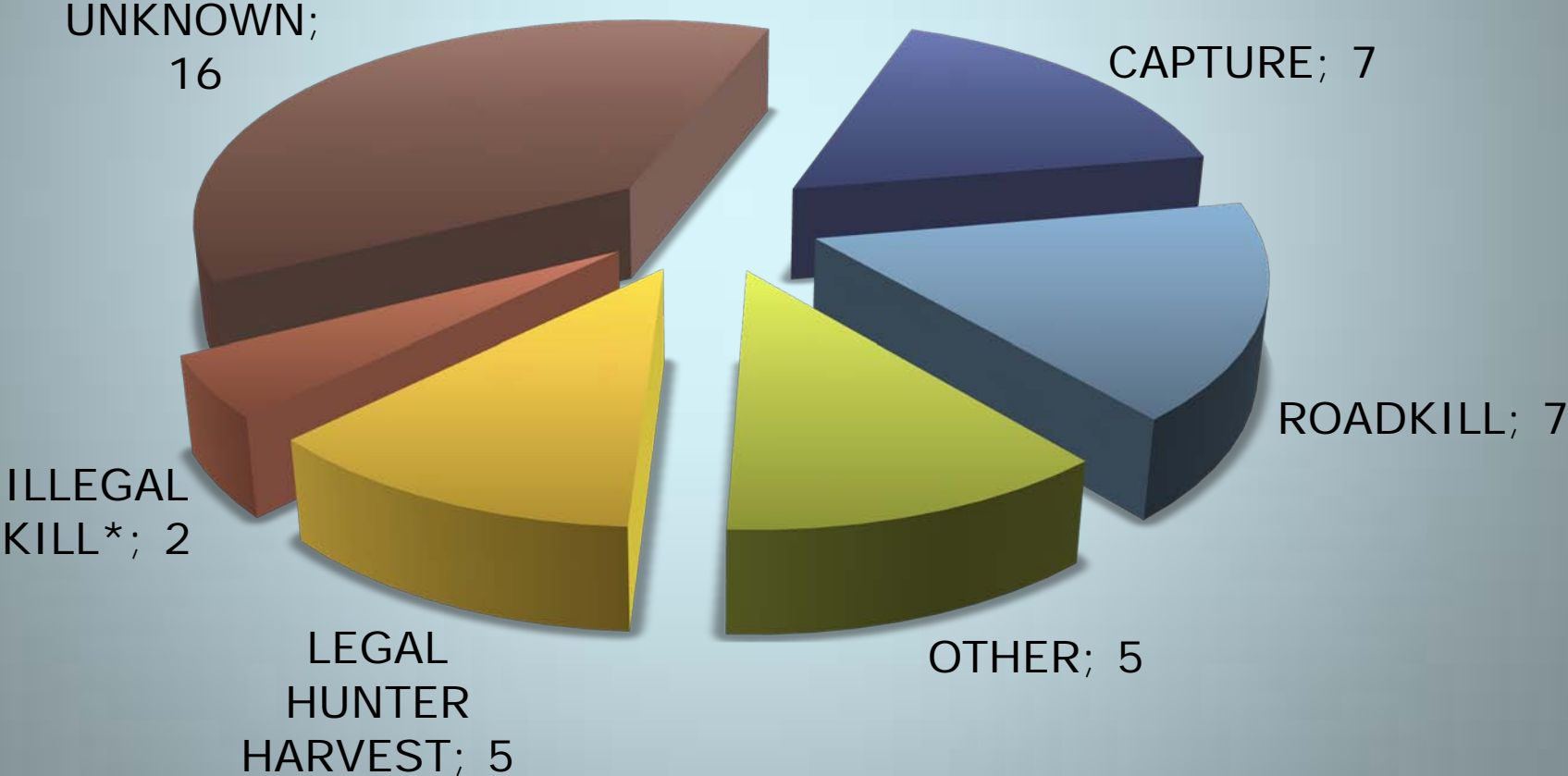
COLLARED MORTALITY

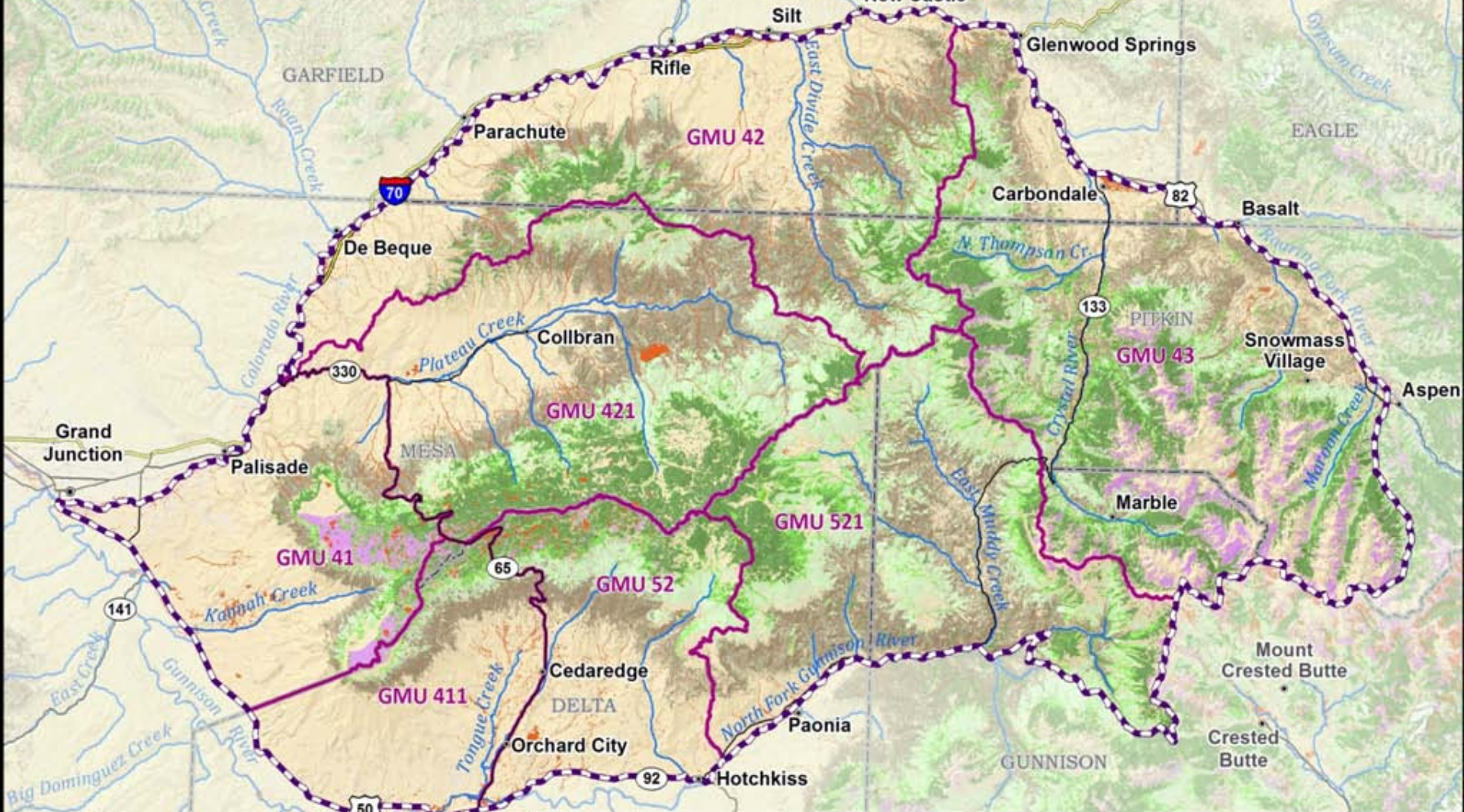


- 42 known mortalities since 2005
 - 7 directly capture related (~8%)
 - 7 roadkill
 - 5 other (fall, calving, starvation, old age)
 - 5 legal hunter harvests
 - 1 confirmed, 1 possible illegal kill
 - 16 unknown cause



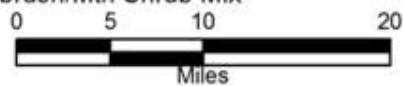
MORTALITY





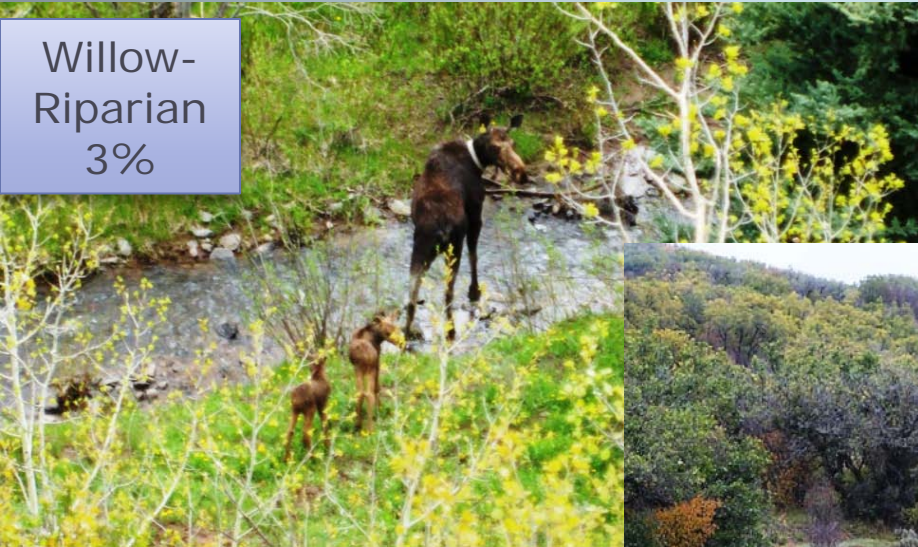
Moose DAU - 5 Vegetation

- | | | |
|--|--|--|
|  Other |  Conifer Forest |  DAU Boundary |
|  Alpine |  Conifer/Aspen Mix |  GMU Boundary |
|  Aspen |  Gambel | |
|  Riparian |  Sagebrush/Mtn Shrub Mix | |



VEGETATION SELECTION

Willow-
Riparian
3%



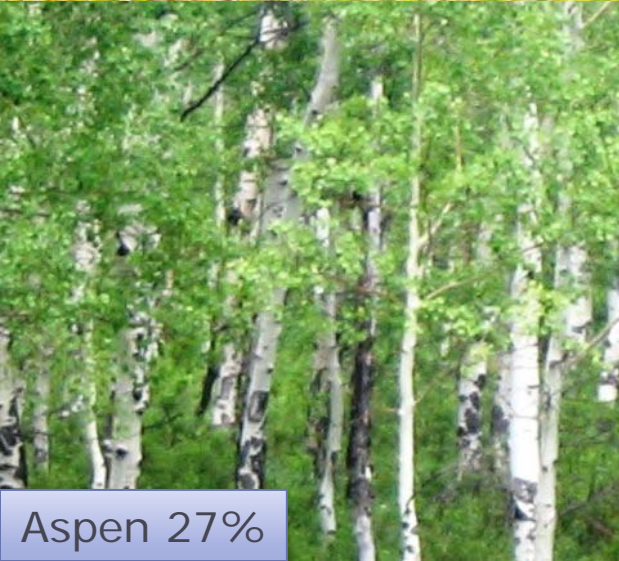
Conifer 4%



Sage/Mtn. shrub mix 7%



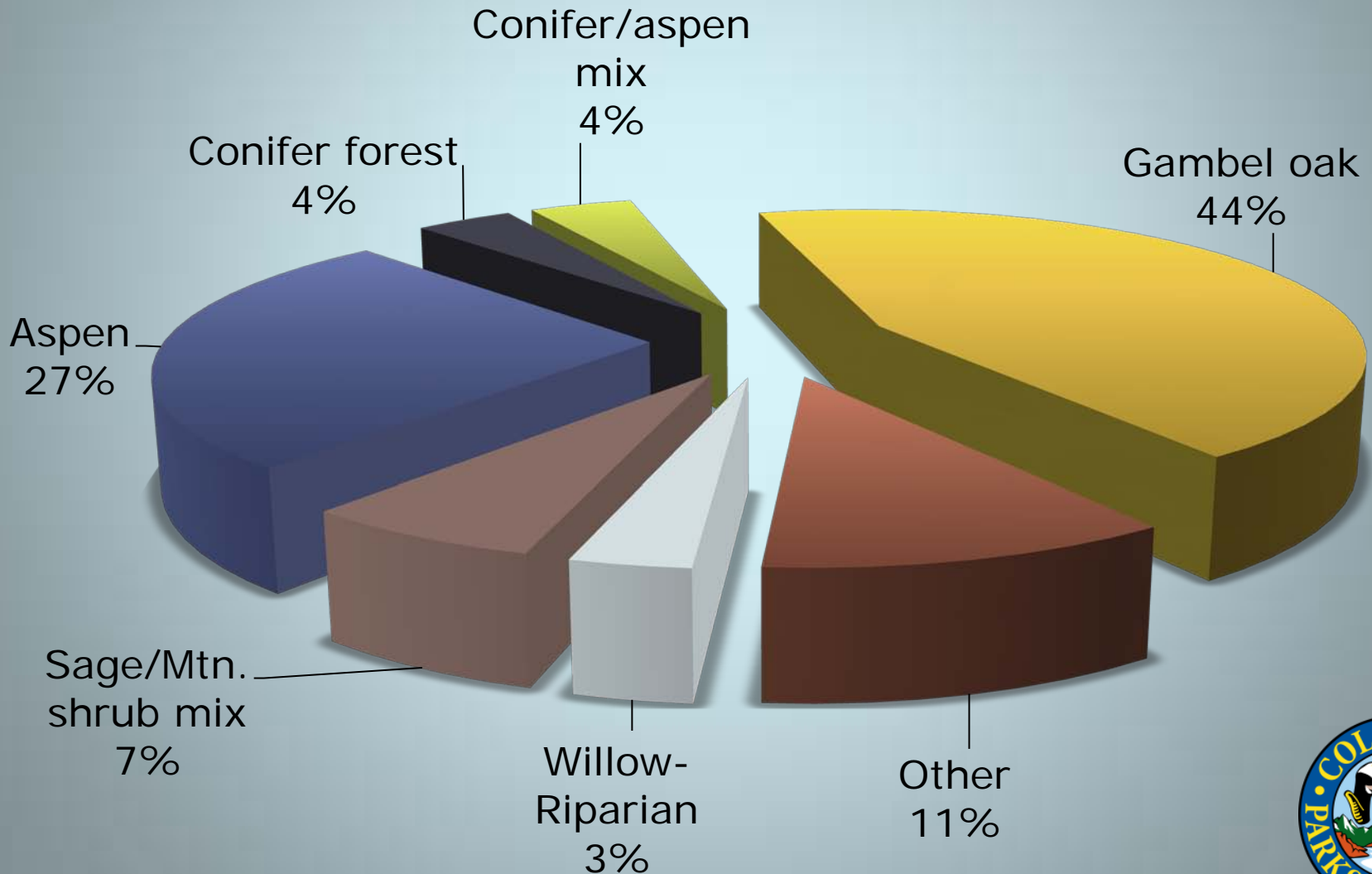
Oak & Oak/shrub 44%



Aspen 27%



VEGETATION SELECTION

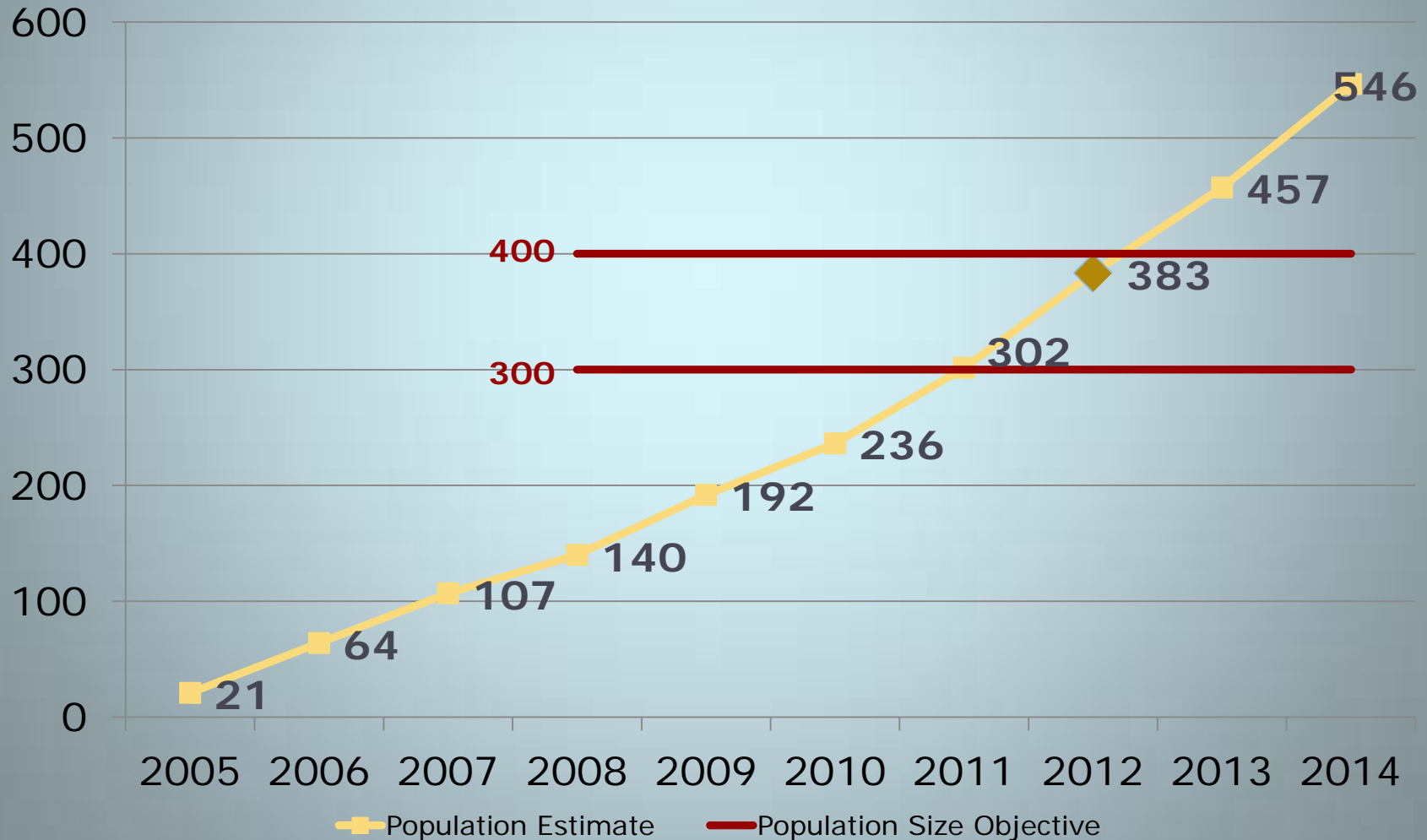


FUTURE PLANS



- Manage to meet DAU plan objectives
- Monitoring
 - Annual classification flights
 - Harvest information
- Occupancy monitoring
- Manage as huntable population
 - Continue antlered harvest
 - Antlerless harvest
 - Issue paper to PWC for 2013 season

GRAND MESA MOOSE POPULATION ESTIMATE



ANTLERED HARVEST

- 2009
 - 39" Griffith Lake
 - 47" Coon Crk.
- 2010
 - 27" Buzzard Crk.
 - 33" Buzzard Crk.
 - 42" Beaver Crk.
- 2011
 - 28" Buzzard Crk.
 - 33" Buzzard Crk.
 - 43" Buzzard Crk.
 - 47" W. Muddy Crk
- 2012*
 - 46" Beaver Crk.
 - 45" Waterdog Res
 - 44" Owens Crk.



39.5" average spread

ANTLERLESS HARVEST

- Issue paper submitted to Parks & Wildlife Commission for first review at November 2012 meeting
- Proposed antlerless harvest fall 2013
- Primary tool to meet population size objective



MOOSE VIEWING & SAFETY



MOOSE VIEWING & SAFETY

- Dawn & dusk are best times
- Be prepared – take binoculars and a good camera
- Keep a safe distance and use telephoto lens & spotting scopes
- Moose are curious – they may approach you. Back away and give them space!



MOOSE VIEWING & SAFETY

- If moose changes its behavior, you're too close
- Leave your dog at home
- Leave an escape route for the moose
- Bulls during the rut and cows with calves are the most dangerous
- Sept-Nov is the breeding season. This is not the time to view moose!



MOOSE VIEWING & SAFETY

- **DO NOT APPROACH MOOSE!**
- Moose have very few natural enemies, so they are not fearful of humans
- If threatened by a moose, stay calm; slowly back away or climb a tree



Photo courtesy Daniel Gray, USFS



MOOSE VIEWING & SAFETY

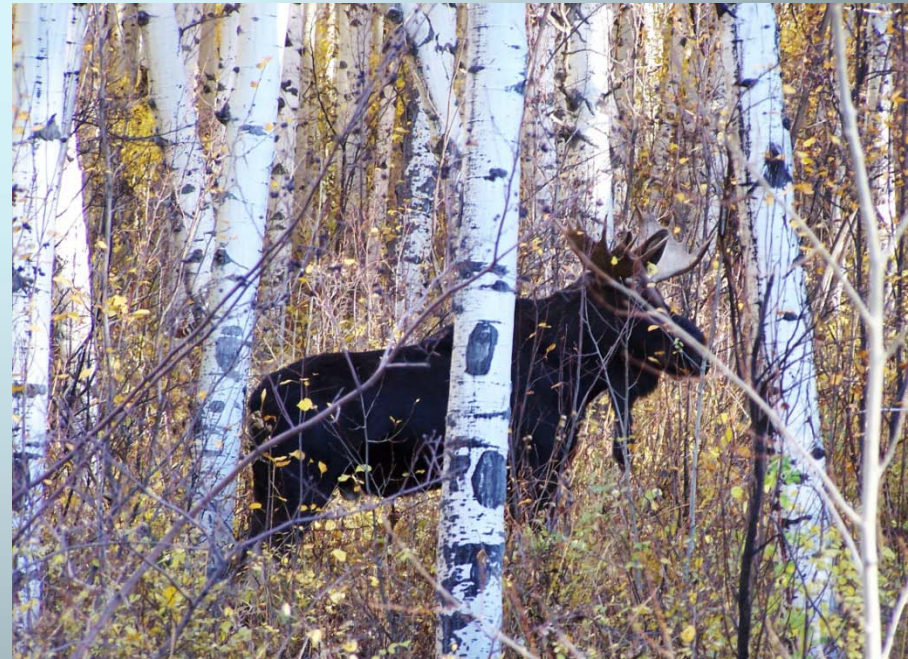
- WHERE TO GO

- USFS Rd. 265 (Collbran-McClure)
- Hwy 65 (Powderhorn – County Line)
- Flowing Park Reservoir
- Griffith Reservoir & Lake of the Woods
- Waterdog Reservoir
- Powderhorn
- Long Slough



- WHERE TO LOOK

- Oakbrush hillsides
- Aspen groves
- Streams
- Beaver ponds



WHERE TO GO?



Collbran

Vega SP

65

Paonia



THANK YOU



- Van Graham, retired
- Ron Velarde, Dean Riggs, NW Region
- Jeff Madison, John Ellenberger, retired
- Roger Shenkel & Bruce Bauerle
- Barry Johnston (USFS), Lonnie Renner
- Arlo Wing, UDWR
- Field technicians: Luke Mallon, Kellen Keisling, Ben Wilson, Tanner Gue

QUESTIONS?

