

Effects of Hunting on Elk Distribution



Predator-Prey Dynamics

- Animals must balance obtaining food with avoiding being killed by predators
- Moving to refuge areas is one of the main ways prey animals reduce risk of being killed by predators
- Examples across multiple taxa



Elk Responses to Hunting

- Elk may have a stronger and more prolonged response to hunters than other predators (i.e., wolves or bears)
- Elk will change their distribution to seek refuge from hunting
- Refuges may include:
 - Large private lands that do not allow hunter access
 - National Parks
 - Public lands with few open roads

Elk Responses to Hunting Example

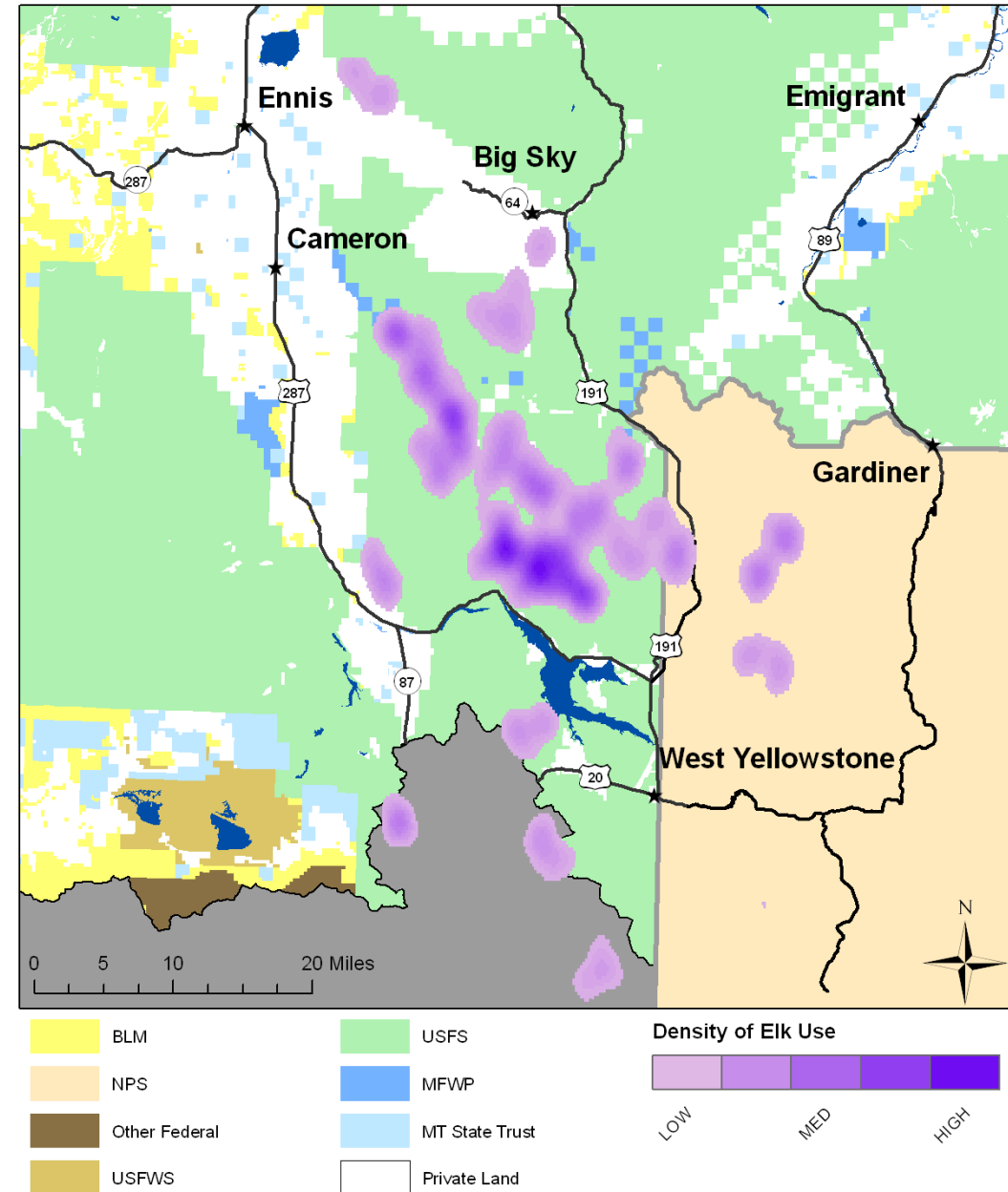
Madison Valley 2004-2005

Private land refuge area: no hunting on
~19,000 acres of private land

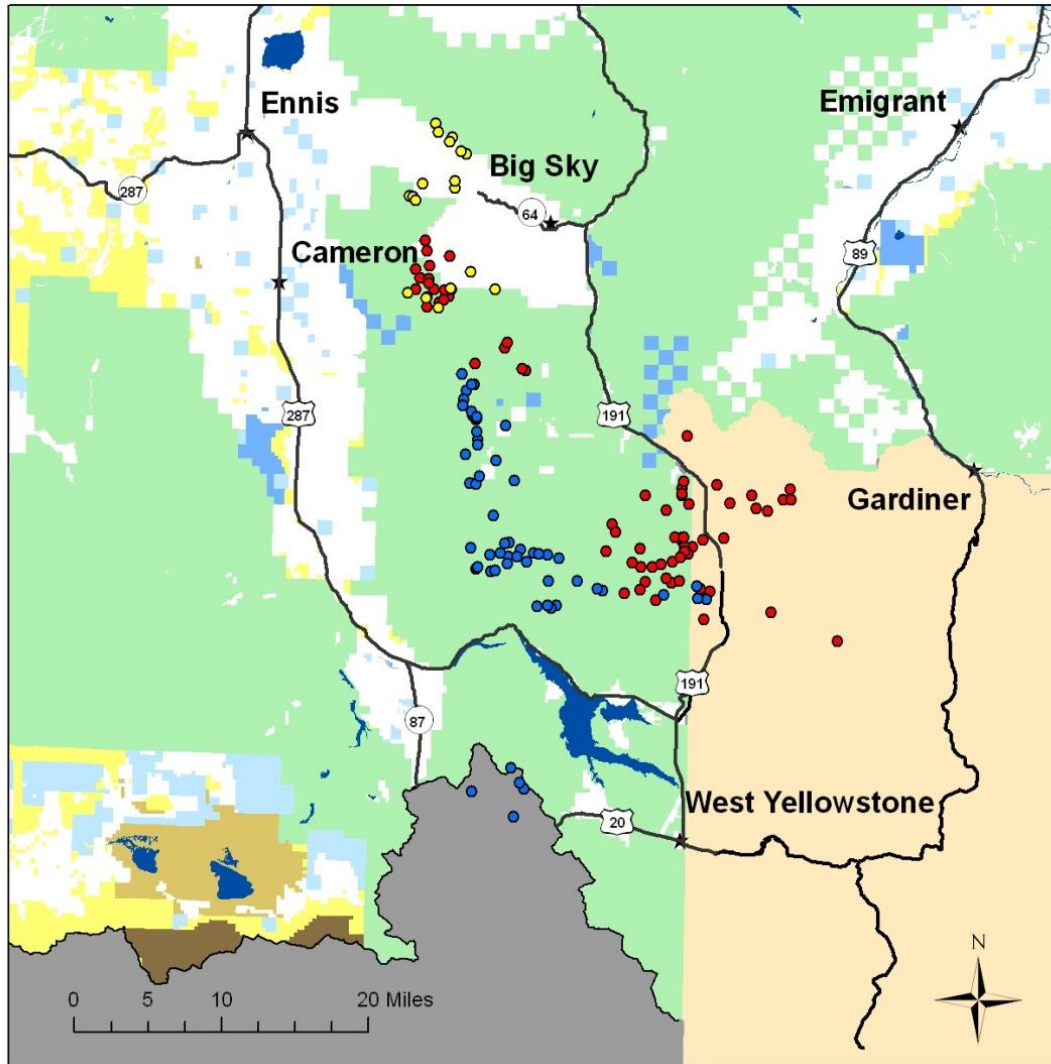
>4,000 elk in the Valley, 43 collared

Observe their distribution compared to
when access was allowed (1976-1986)

Madison Valley - 43 cow elk GPS collars (2005-06)
KDE (7am-12pm locations) - AUGUST



**Madison Valley - 27 cow elk GPS collars (1976-1986)
AUGUST LOCATIONS**

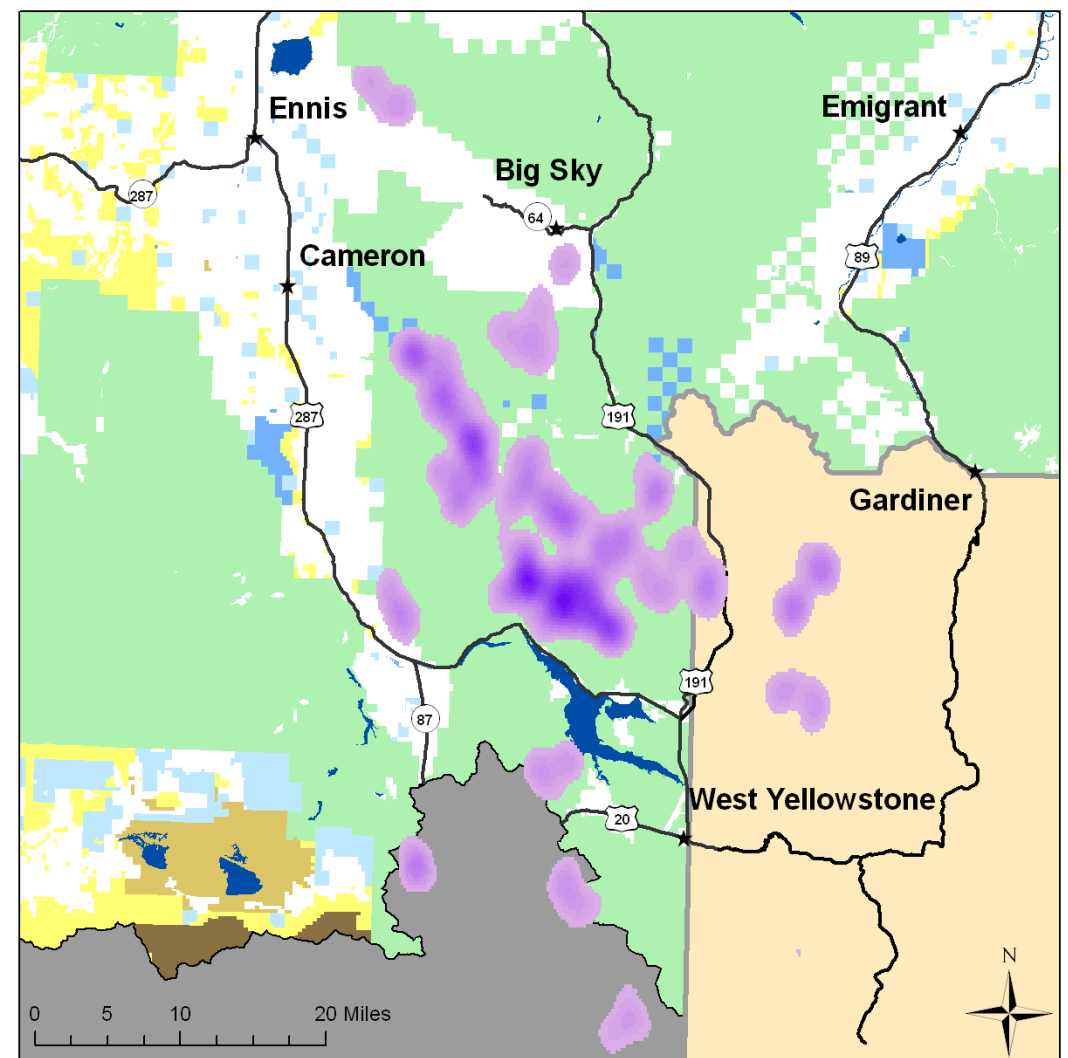


POPULATION

- Bear Creek
- Jumping Horse
- Sun Ranch

- BLM
- NPS
- Other Federal
- USFWS
- USFS
- MFWP
- MT State Trust
- Private Land

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KDE (7am-12pm locations) - AUGUST**

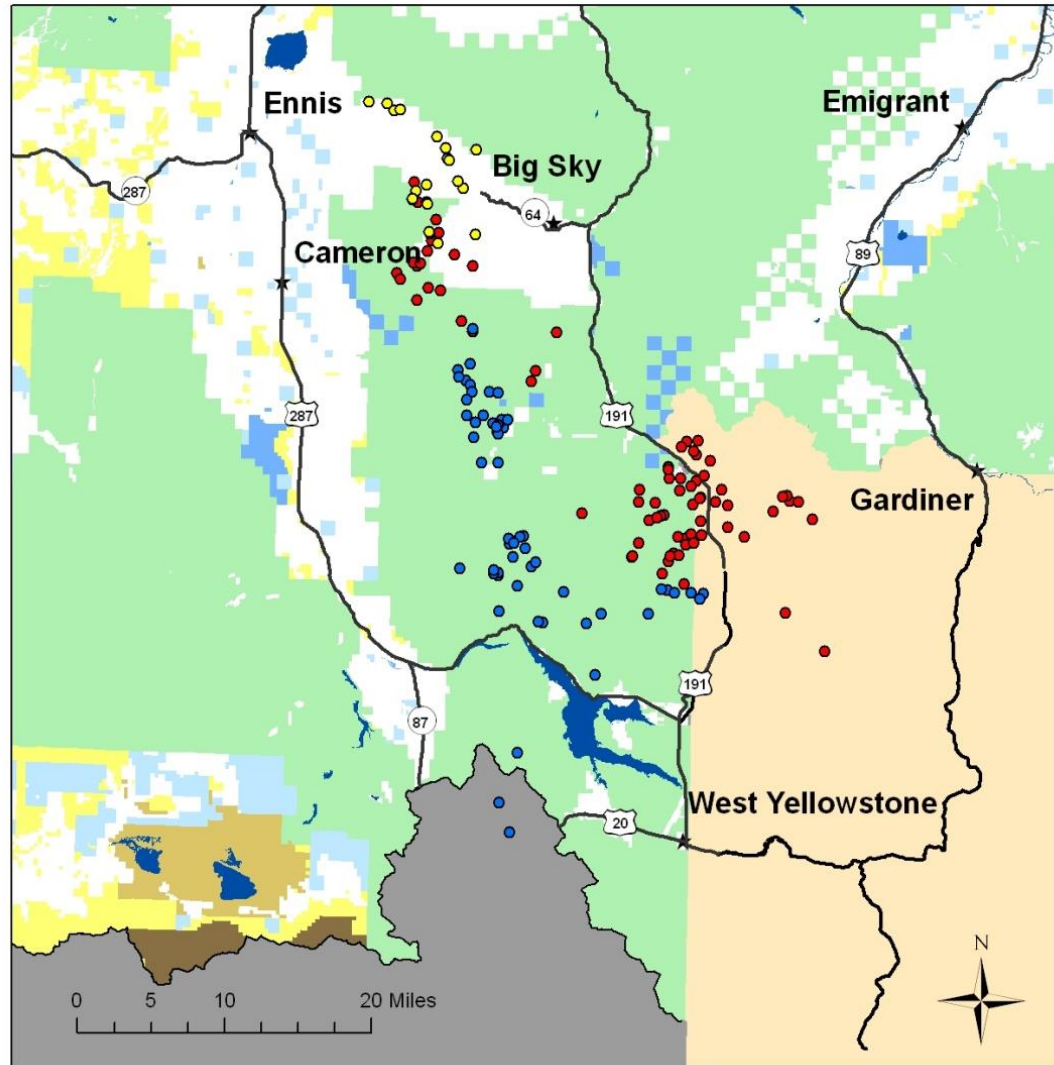


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Density of Elk Use



**Madison Valley - 27 cow elk GPS collars (1976-1986)
SEPTEMBER LOCATIONS**

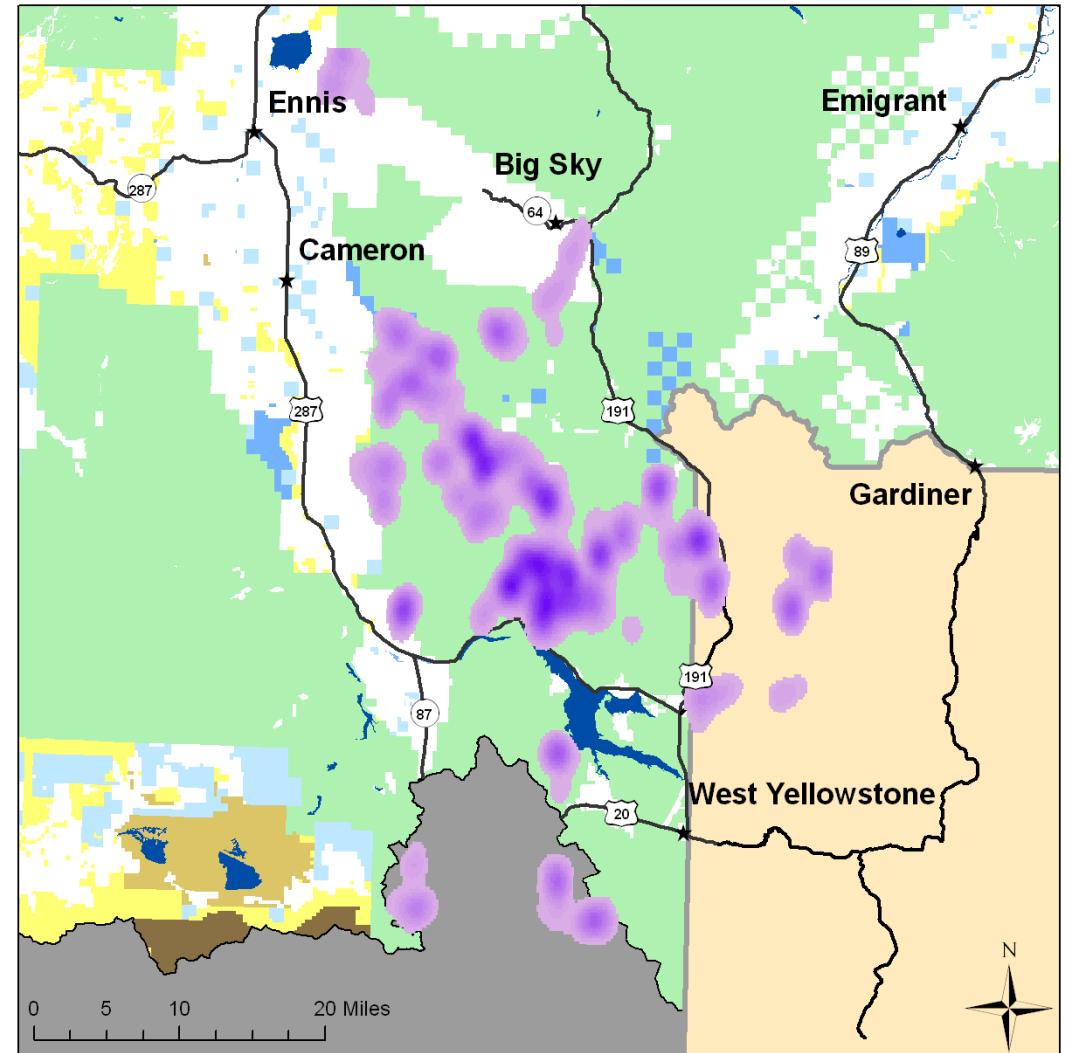


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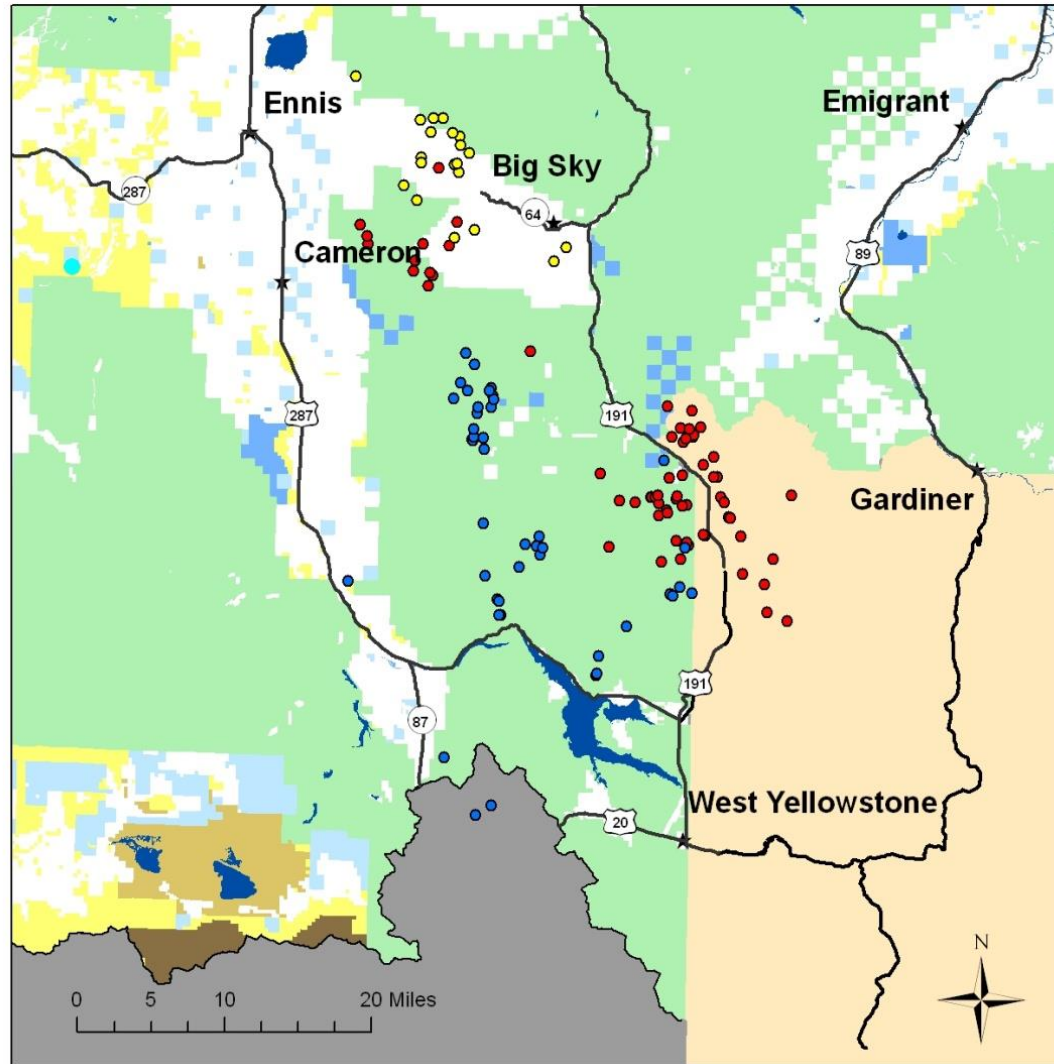


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Density of Elk Use



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OCTOBER 1-21 LOCATIONS**

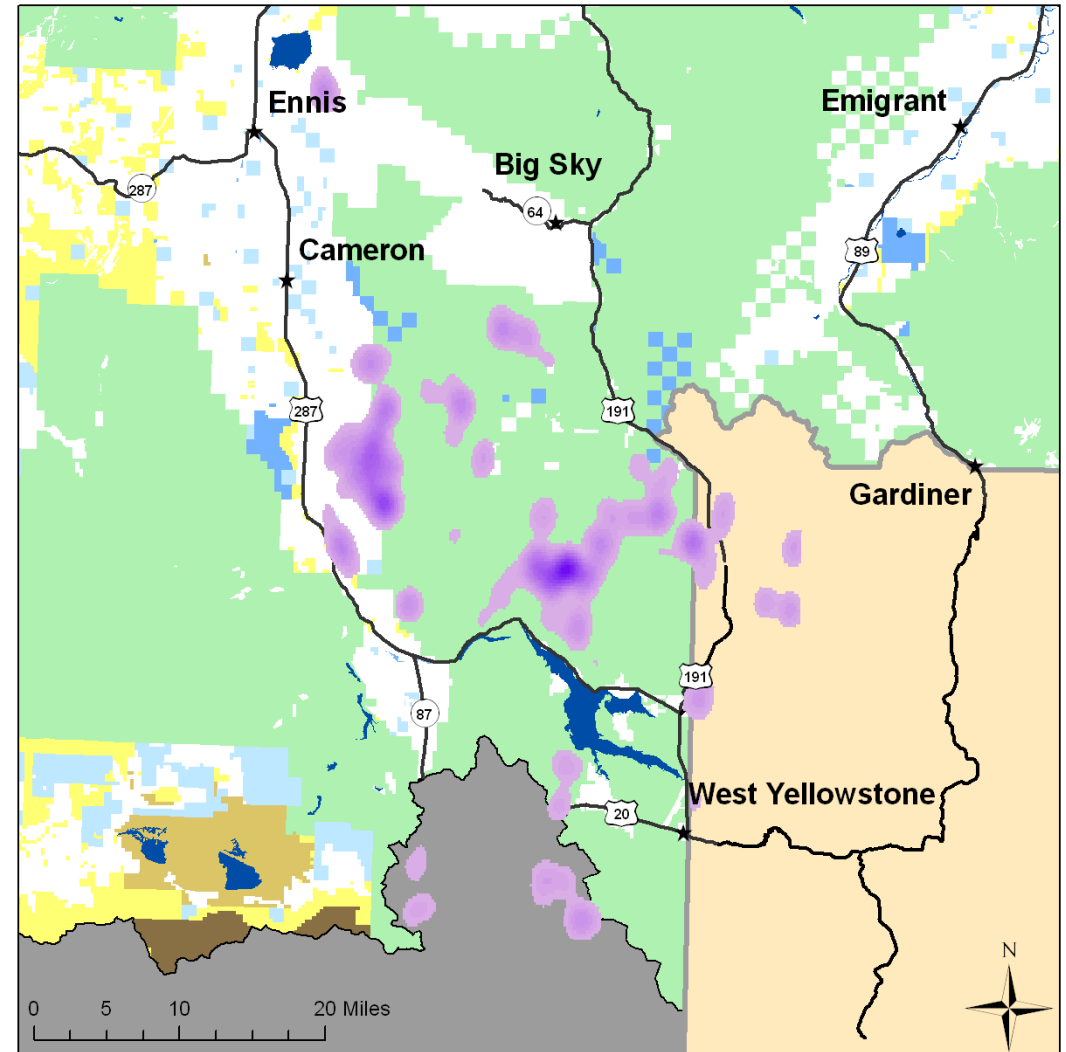


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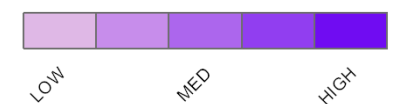
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|---------------|----------------|
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**Madison Valley - 43 cow elk GPS collars (2005-06)
KDE (7am-12pm locations) - OCTOBER 1-20**

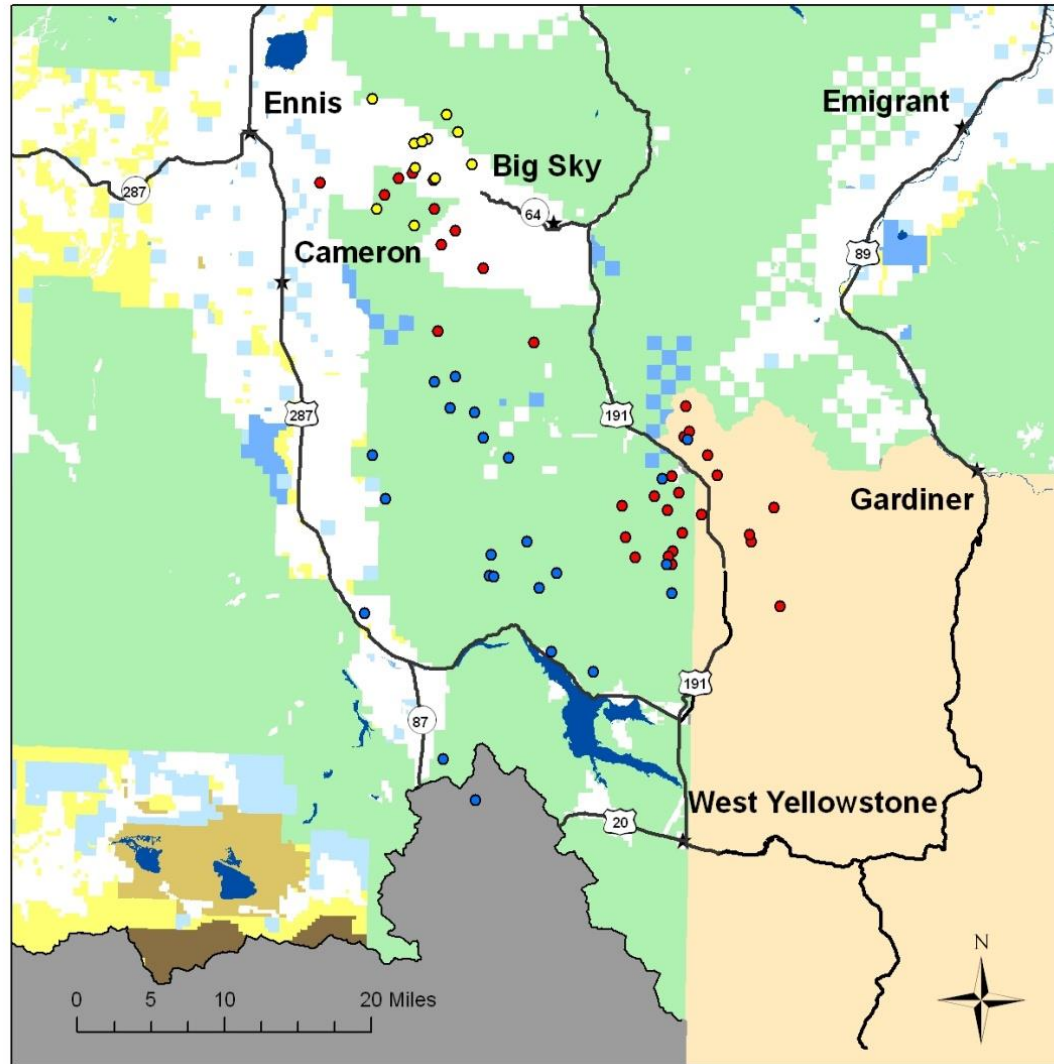


- | | |
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Density of Elk Use



**Madison Valley - 27 cow elk GPS collars (1976-1986)
OCTOBER 22-31 LOCATIONS**

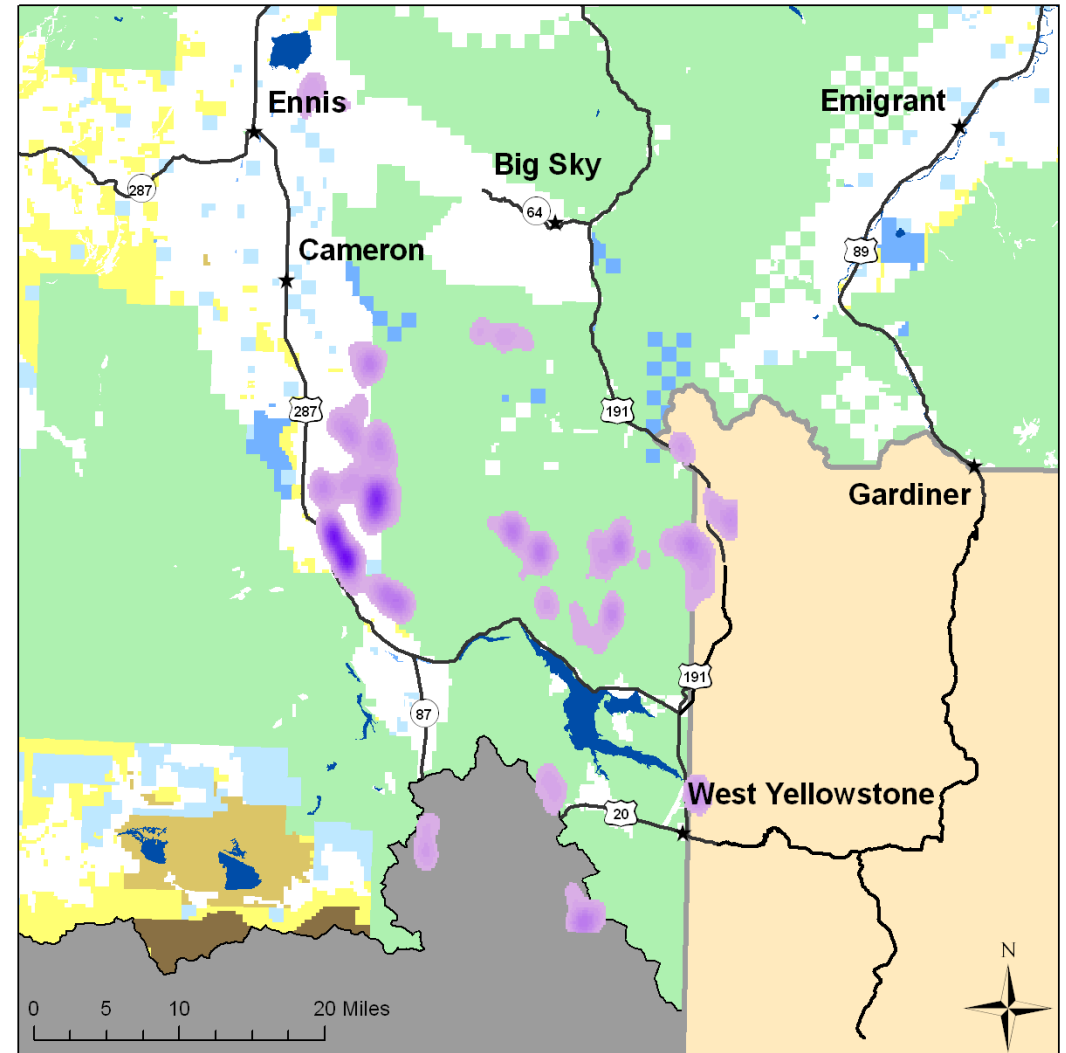


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**Madison Valley - 43 cow elk GPS collars (2005-06)
KDE (7am-12pm locations) - OCTOBER 21-31**

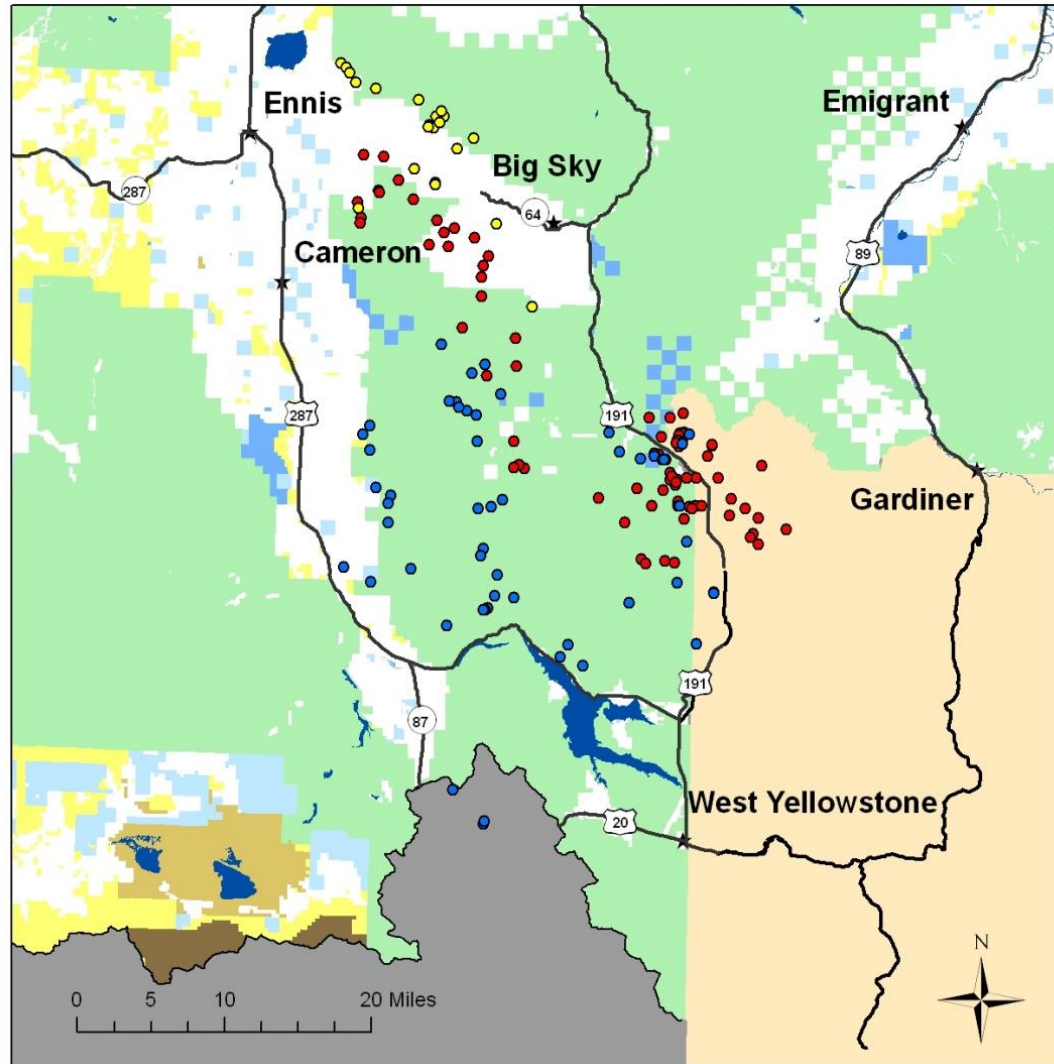


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Density of Elk Use



**Madison Valley - 27 cow elk GPS collars (1976-1986)
NOVEMBER LOCATIONS**

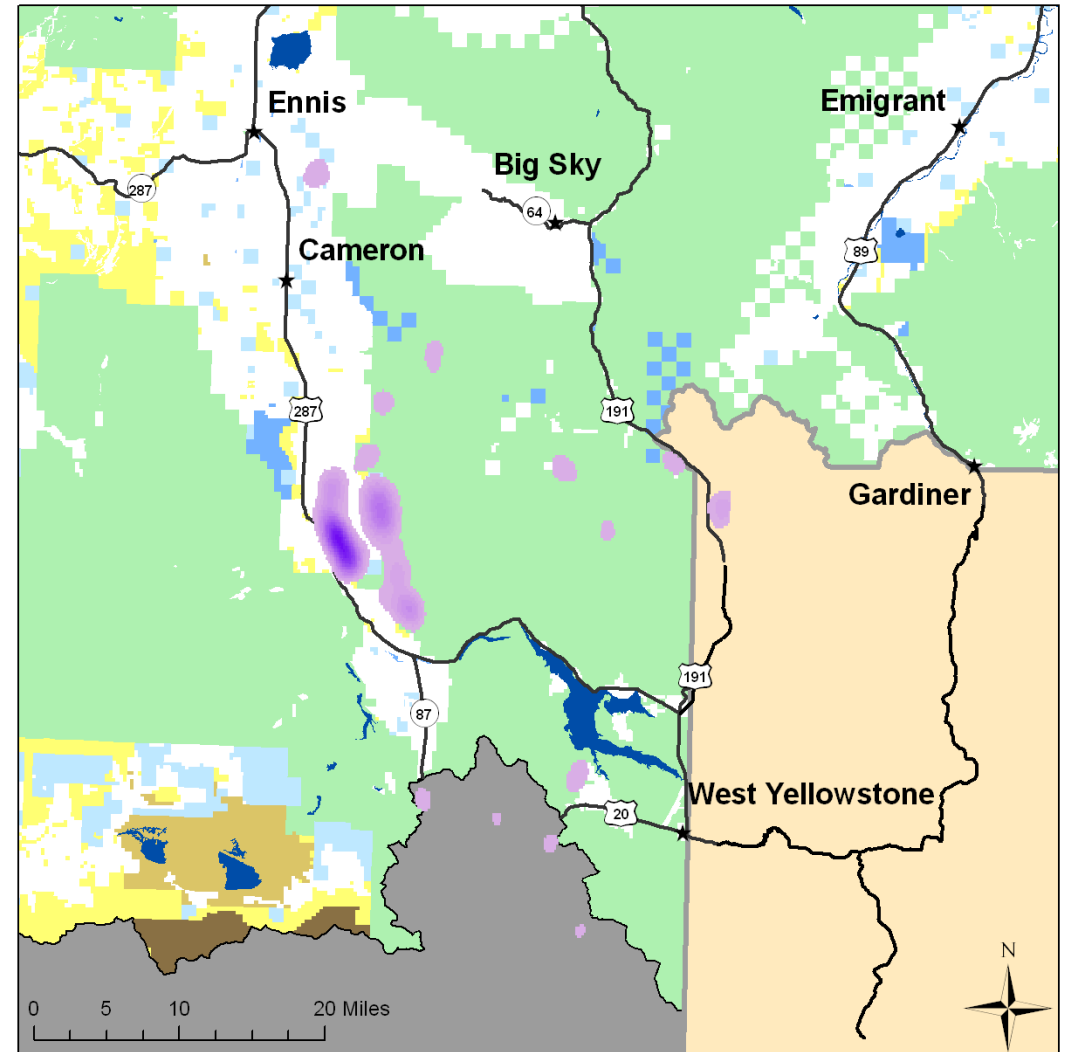


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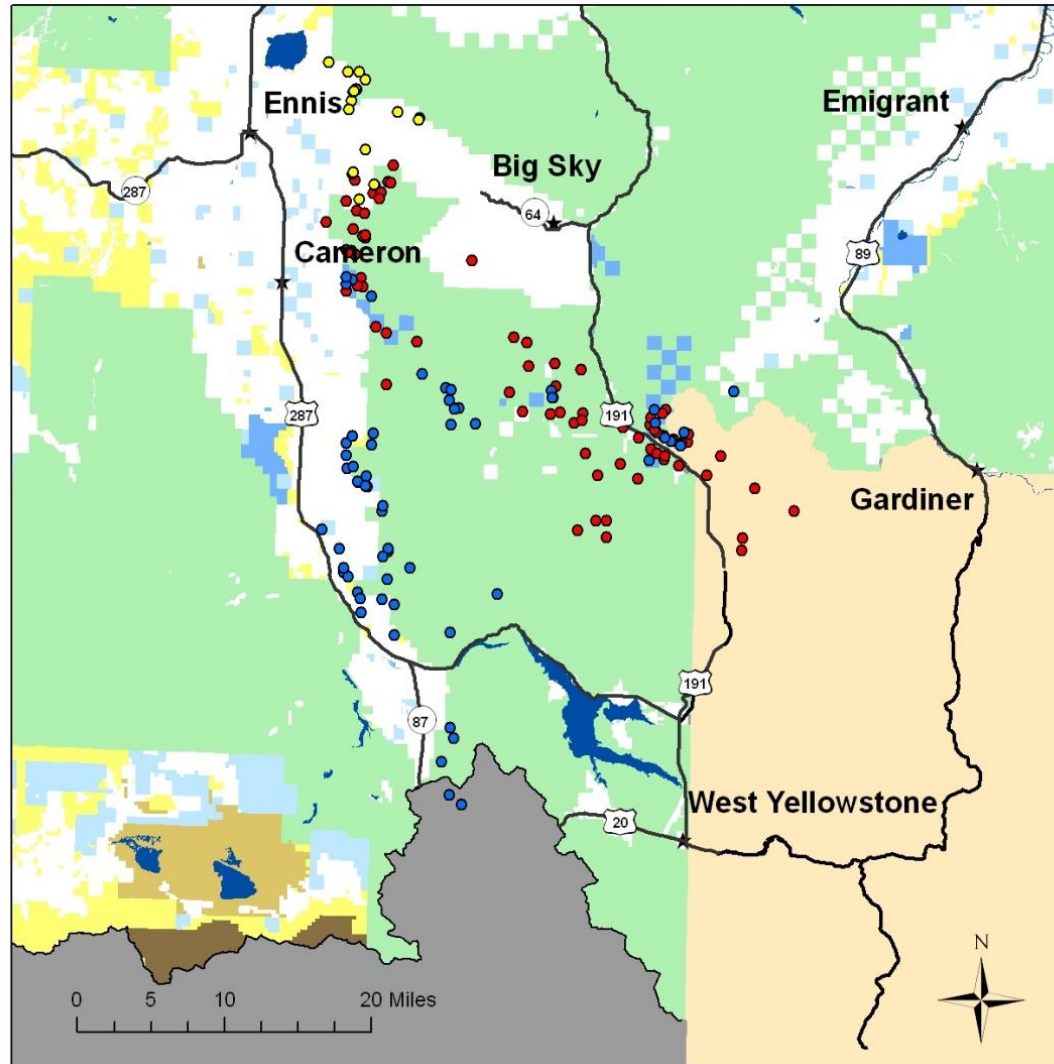


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Density of Elk Use



**Madison Valley - 27 cow elk GPS collars (1976-1986)
DECEMBER LOCATIONS**

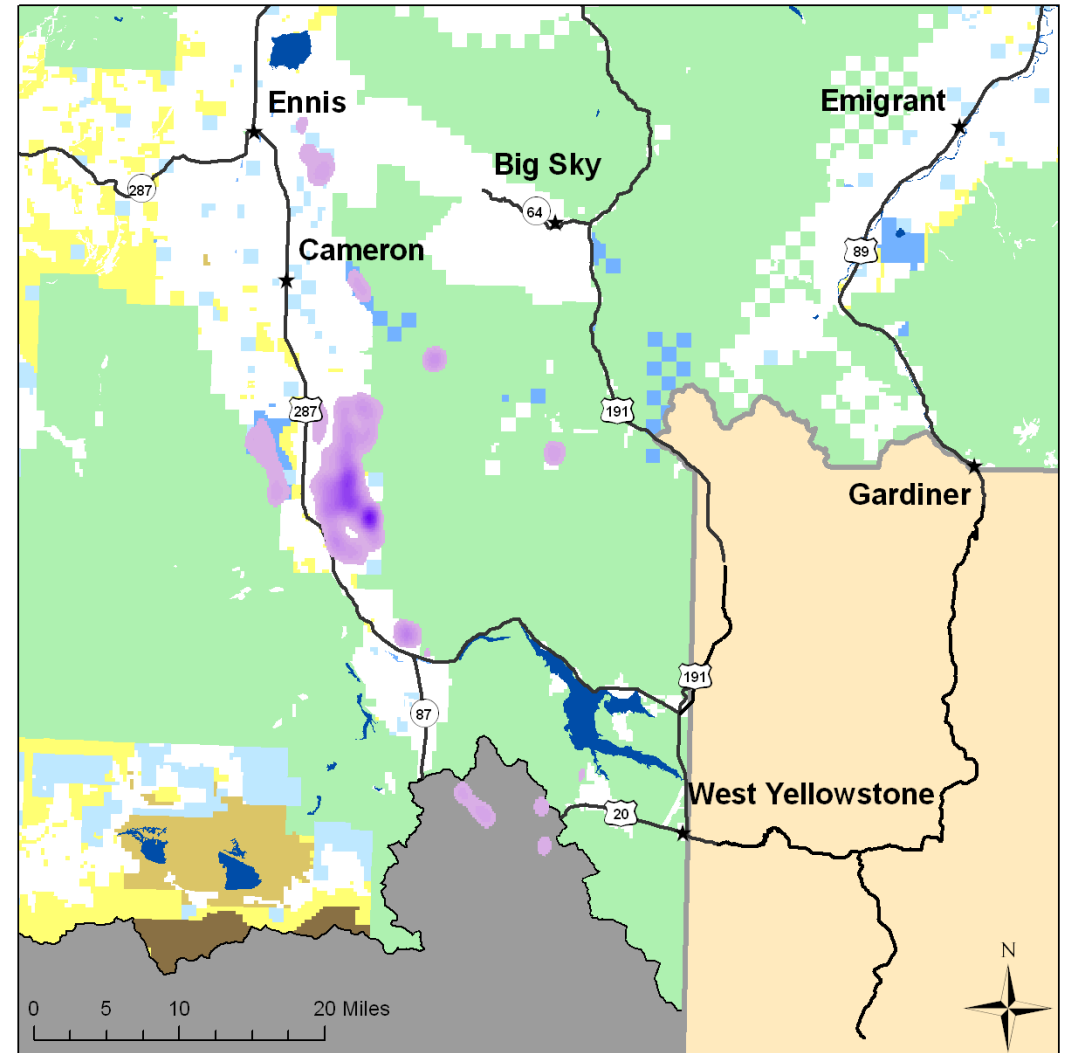


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KDE (7am-12pm locations) - DECEMBER**

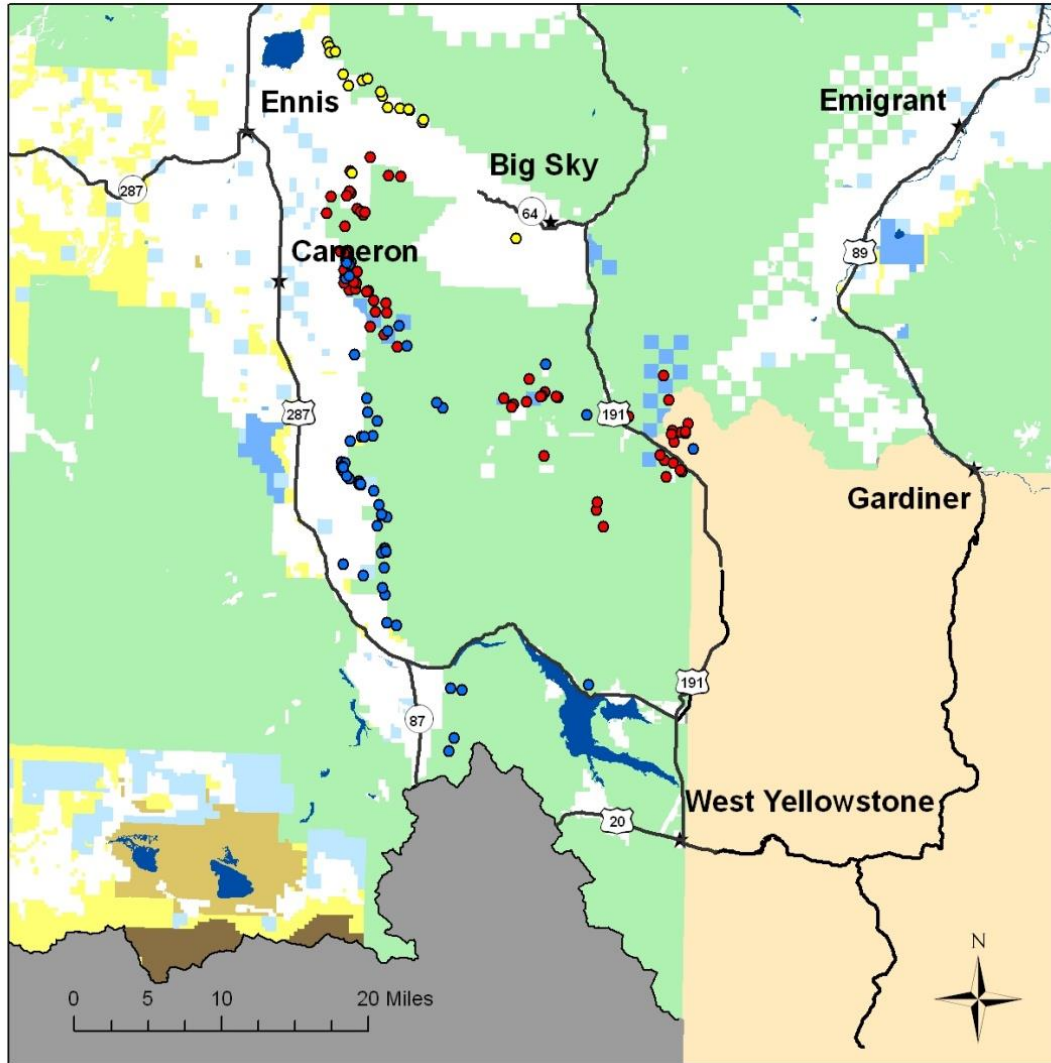


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Density of Elk Use



Madison Valley - 27 cow elk GPS collars (1976-1986) JANUARY LOCATIONS

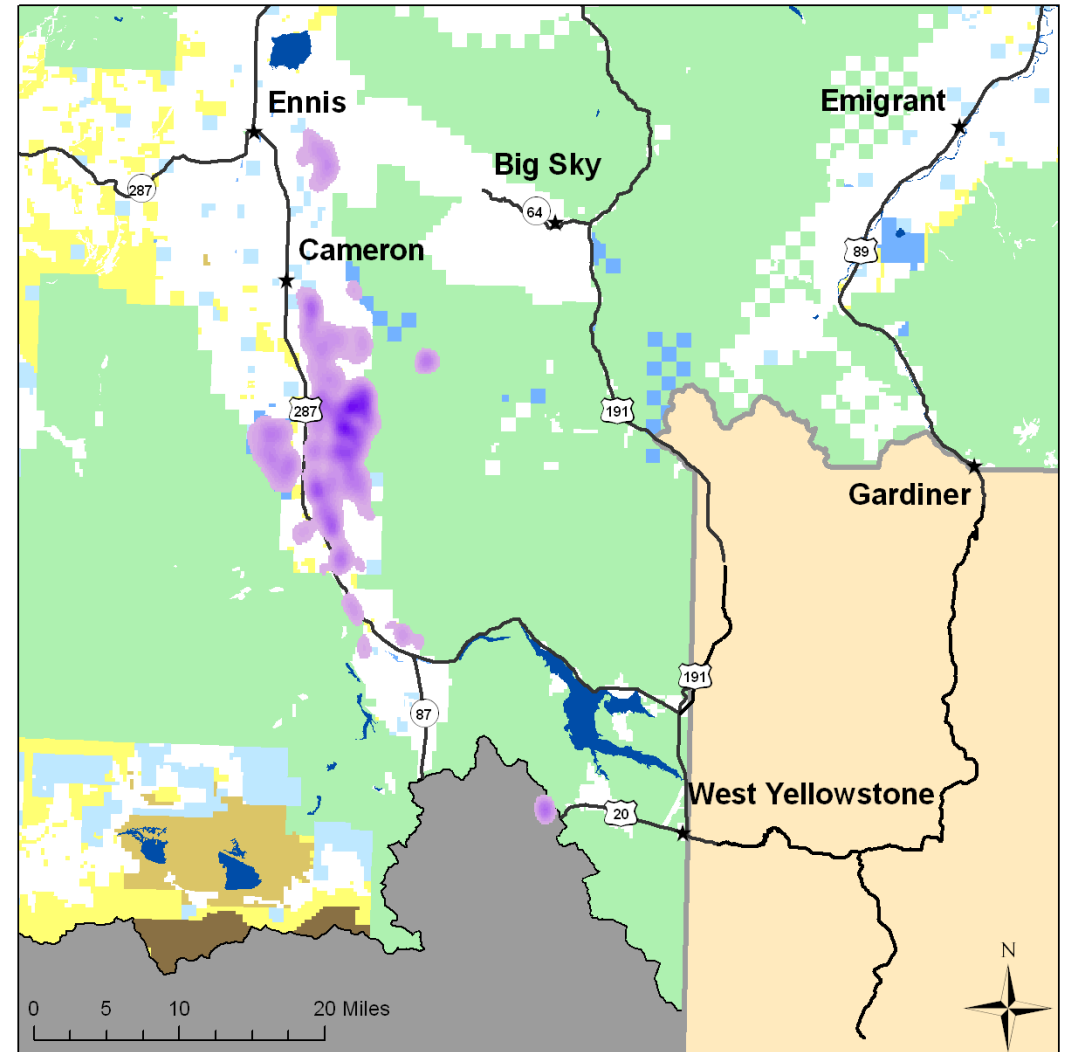


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Madison Valley - 43 cow elk GPS collars (2005-06) KDE (7am-12pm locations) - JANUARY



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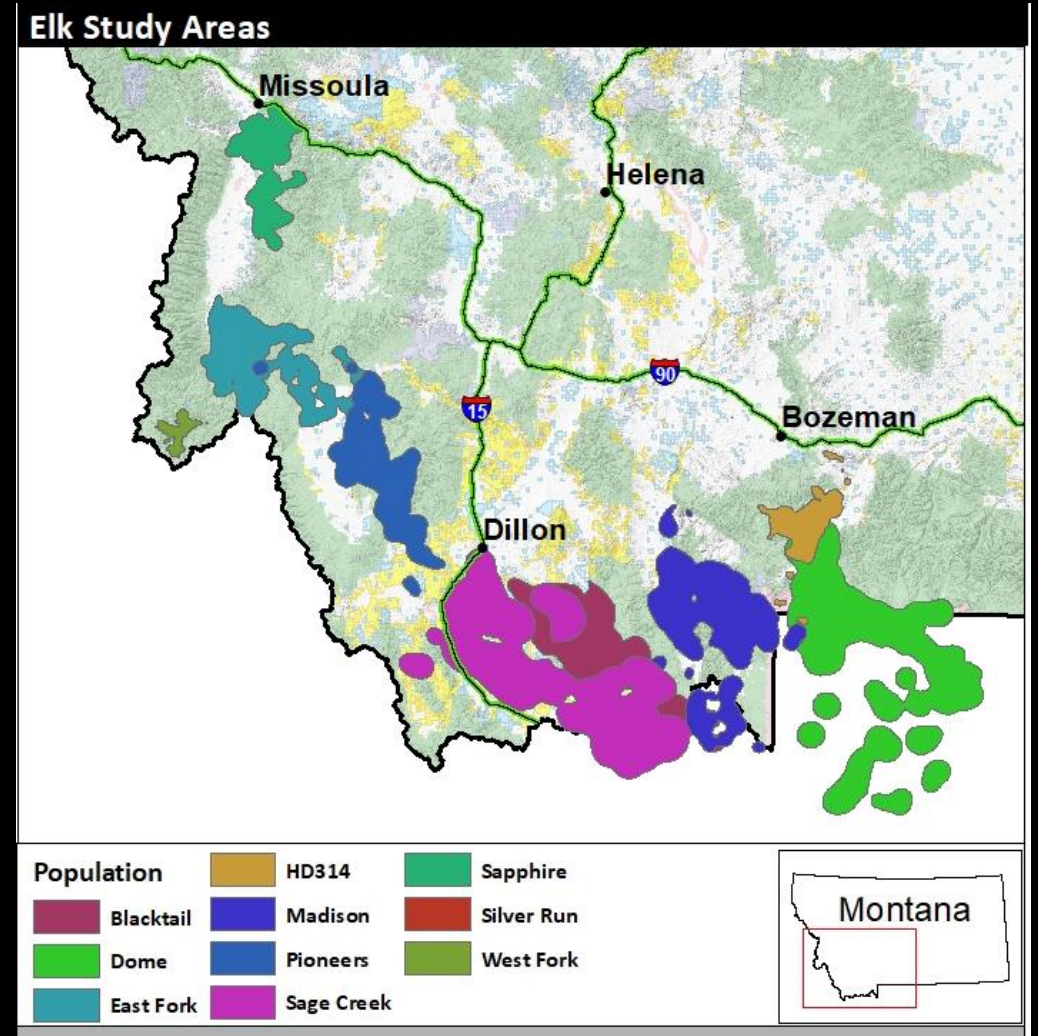
Density of Elk Use



Western Montana Elk Synthesis

Goals:

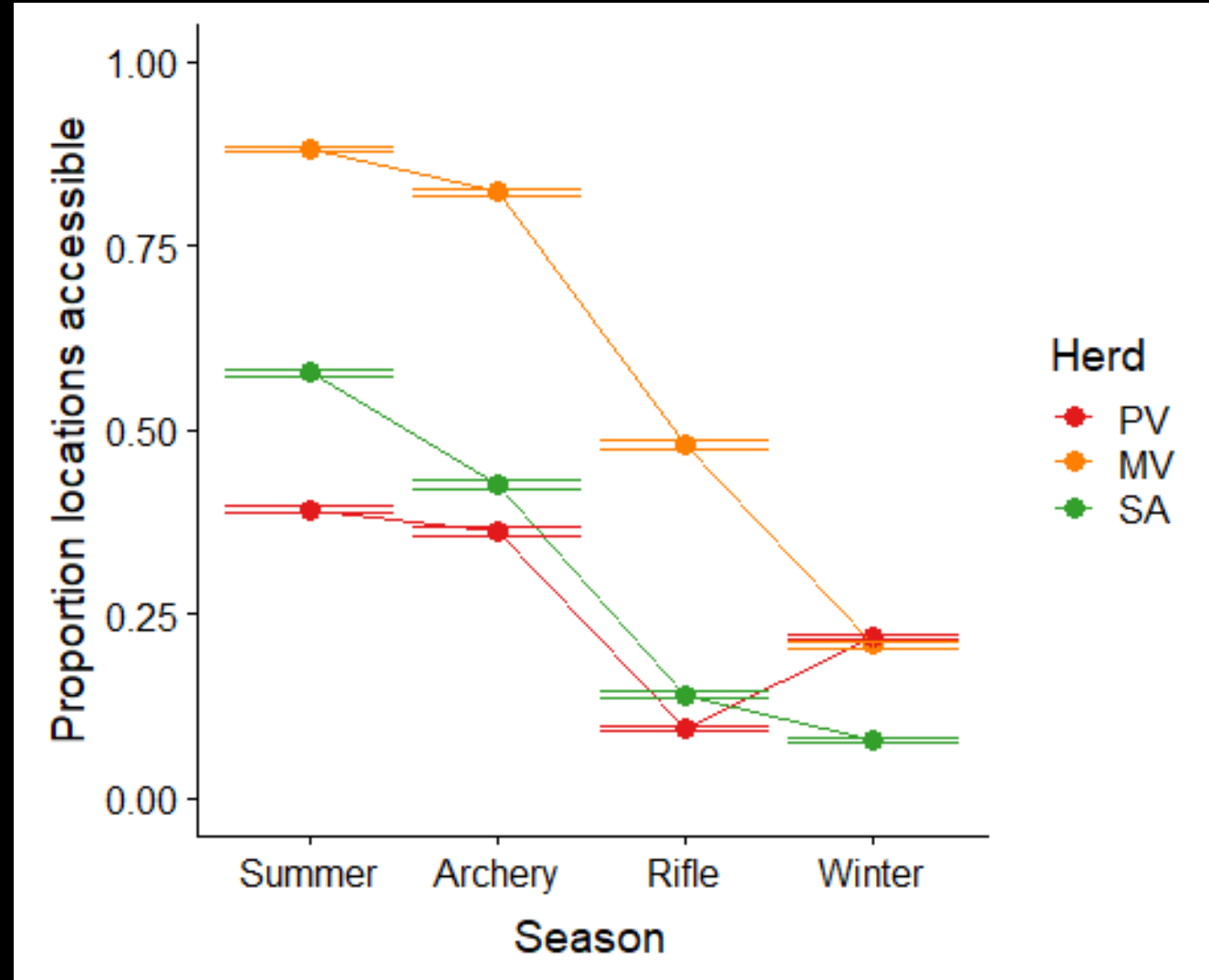
1. Identify important factors affecting fall distributions
2. Refine security definitions and provide recommendations for security standards



Western Montana Elk Synthesis

Some herds clearly show movement away from accessible lands to inaccessible lands during rifle season.

Accessible lands = public land + block management



Western Montana Elk Synthesis

Hunter access is primary driver of fall elk distribution

Access of hunters to elk is more important than any other covariate, including security habitat, motorized routes



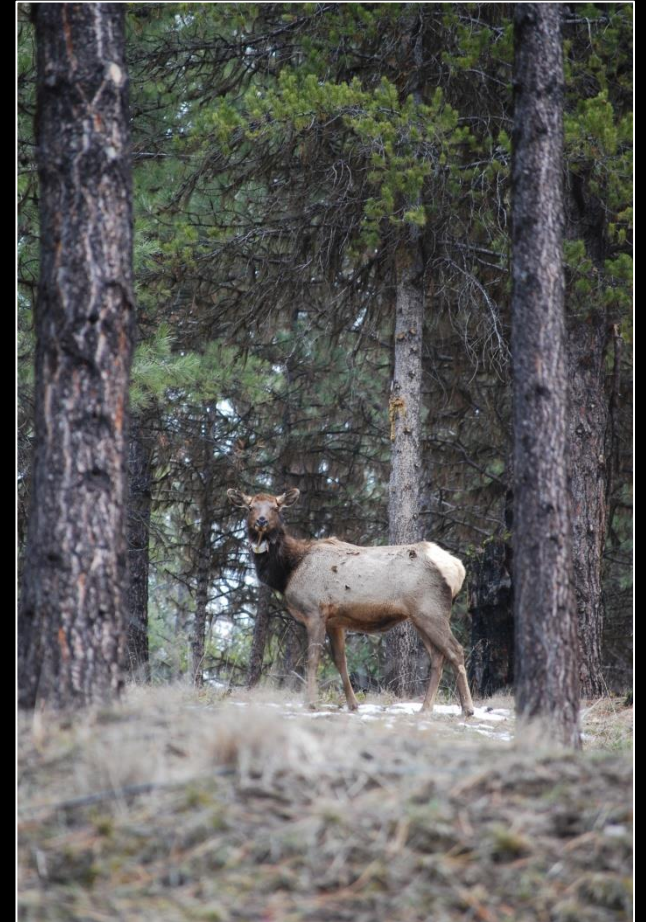
Western Montana Elk Synthesis

Revised definitions of security

- Need some canopy cover (>20%) but not dense canopy
- Need greater distance to roads (> 0.95-1.7 miles) for security

Hunter effort affects the magnitude of elk response to motorized routes

- Management of motorized route density and/or hunter effort



Western Montana Elk Synthesis - Conclusions

To maintain elk distribution on public land consider:

- 1) Minimize refuge areas
- 2) Road closures to create security areas in places with lots of hunters
- 3) Limiting hunters
 - Timing of seasons
 - Hunter effort (reduced number licenses)

Discussion Point 1:

1) Animals move away from hunting pressure and into refuge areas.

- Number of hunters and timing of hunting trigger this movement.
- Animals quickly learn these behaviors and where refuges exist.



Discussion Point 2:

2) If we want elk to use all available habitat we need to rebuild natural migratory behaviors

How?

Manage hunting pressure to provide security



Steve Ard

Discussion Point 3:

3) Movement behaviors may be learned and passed between generations

- Elk pioneer – individuals explore
- Bighorn do not – rely on generational knowledge
- Bison – unsure to what degree they pioneer or rely on knowledge?

Would bison respond quickly to change in hunting pressure?

Question:

If hunting has shaped bison behavior, can we reshape hunting to see free-ranging bison?



Morgan Jacobsen