

Chronic Wasting Disease Advisory Group
26 April 2018

Chronic Wasting Disease in Colorado

Past, Present, & Future



Chronic Wasting Disease in Colorado



Act I ... The Essentials

Act II ... Where we are & how we got here

Act III ... Lesson five

Chronic Wasting Disease

Agent: prion (origin unknown)

Hosts: mule deer
white-tailed deer
elk
moose

Signs: behavior
emaciation

Epi: prolonged incubation
uniform susceptibility*
indirect, lateral transmission
environmental persistence



Photo by M. W. Miller

Chronic Wasting Disease in Colorado

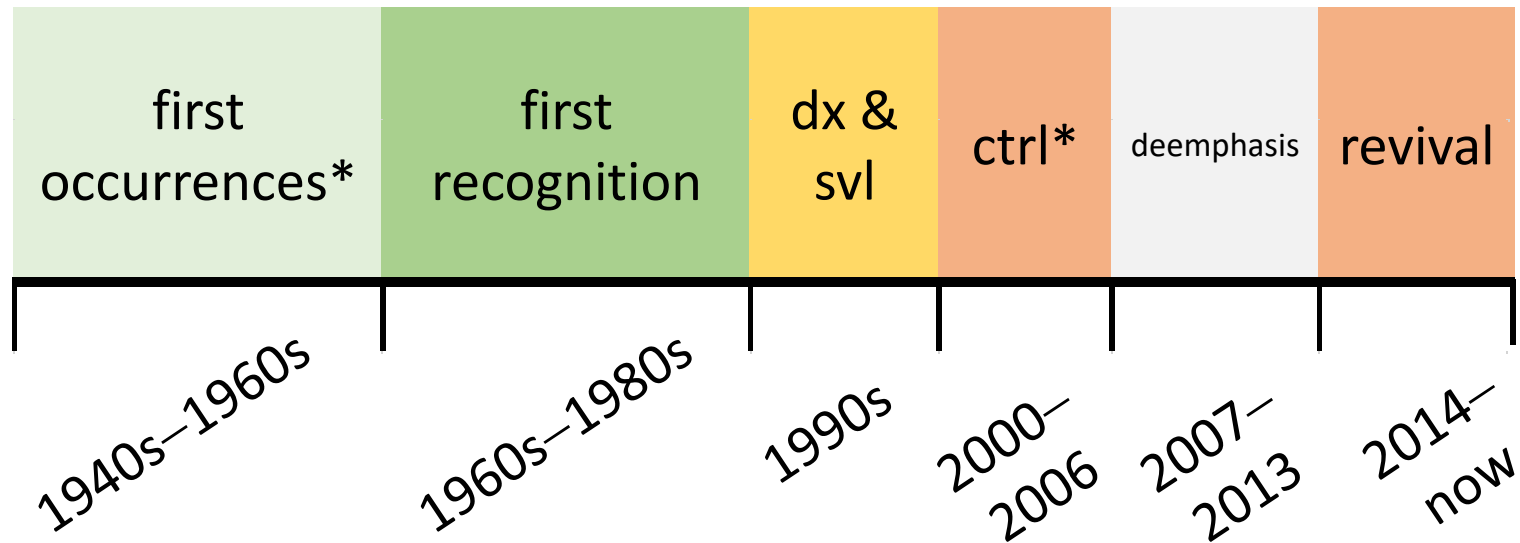


Act I ... The Essentials

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A brief history of chronic wasting disease in Colorado

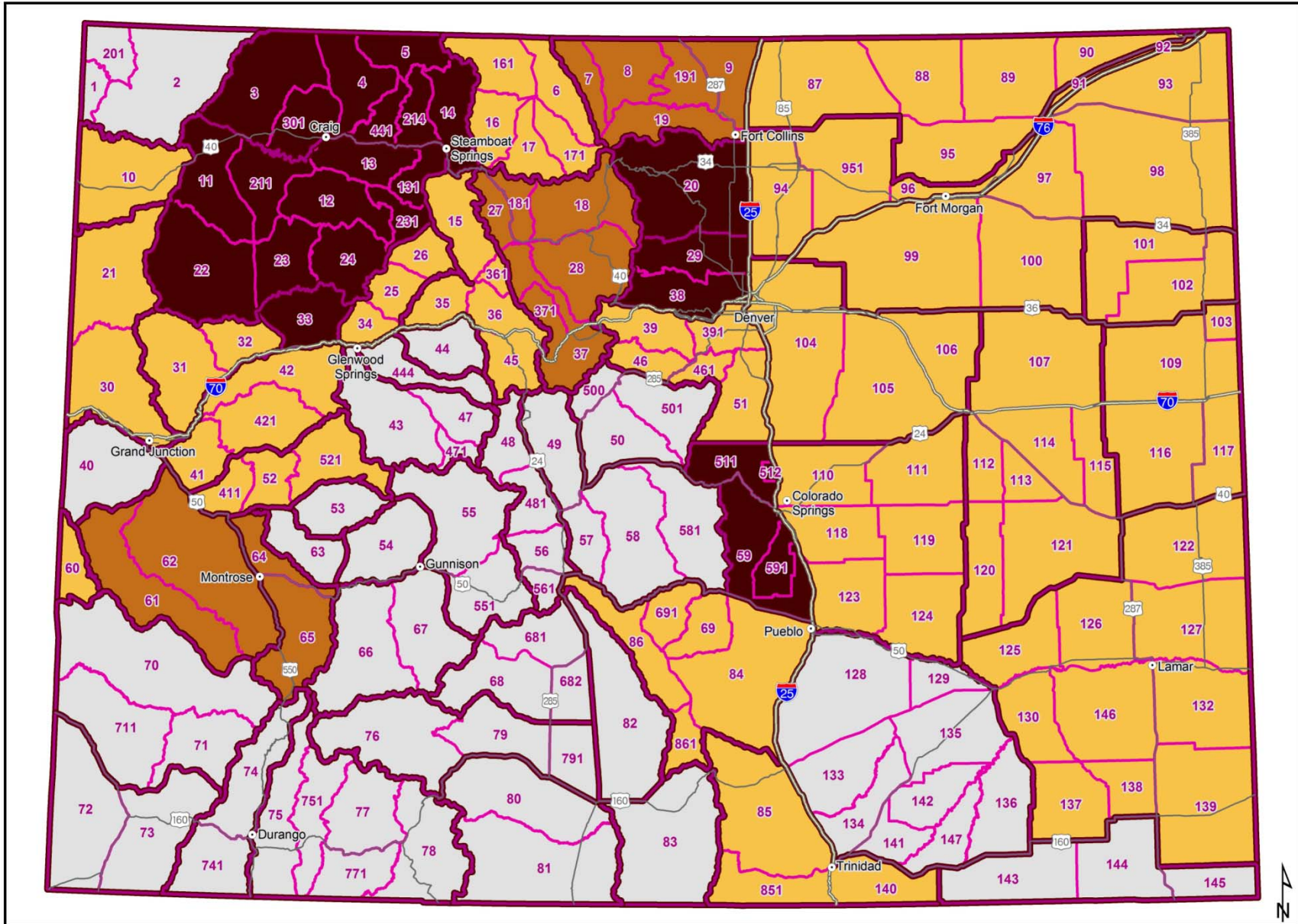


“Those who cannot remember the past are condemned to repeat it.”

George Santayana *The Life of Reason: The Phases of Human Progress* (1905–1906)

Chronic wasting disease in Colorado

- Infects >50% of deer herds* & 33% of elk herds.
 - 4 of 5 largest deer herds & 2 of 5 largest elk herds.
- Herd infection rates vary (<1 – >20%); deer>elk>> moose.
 - infection in bucks ~2× rate in does; elk sexes similar.
- ~2% of annual harvest submitted for testing.*
- Most infections unapparent; hundreds consumed each year.
- Management practices may be exacerbating CWD problem.

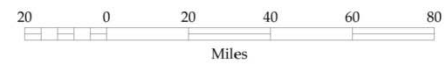


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Detected CWD in Harvested Mule Deer Bucks

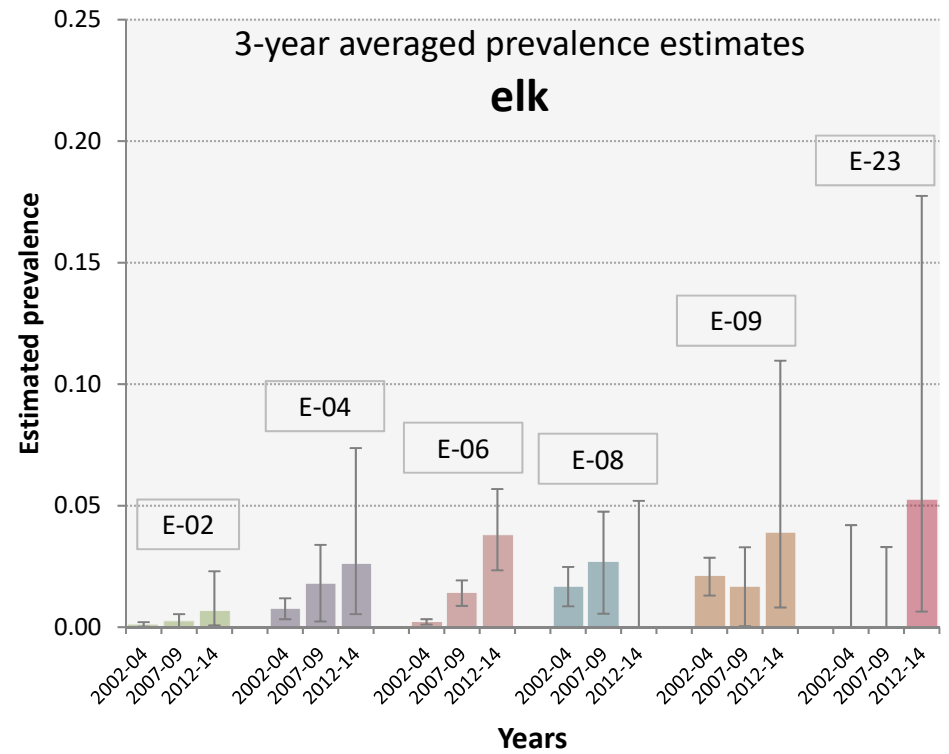
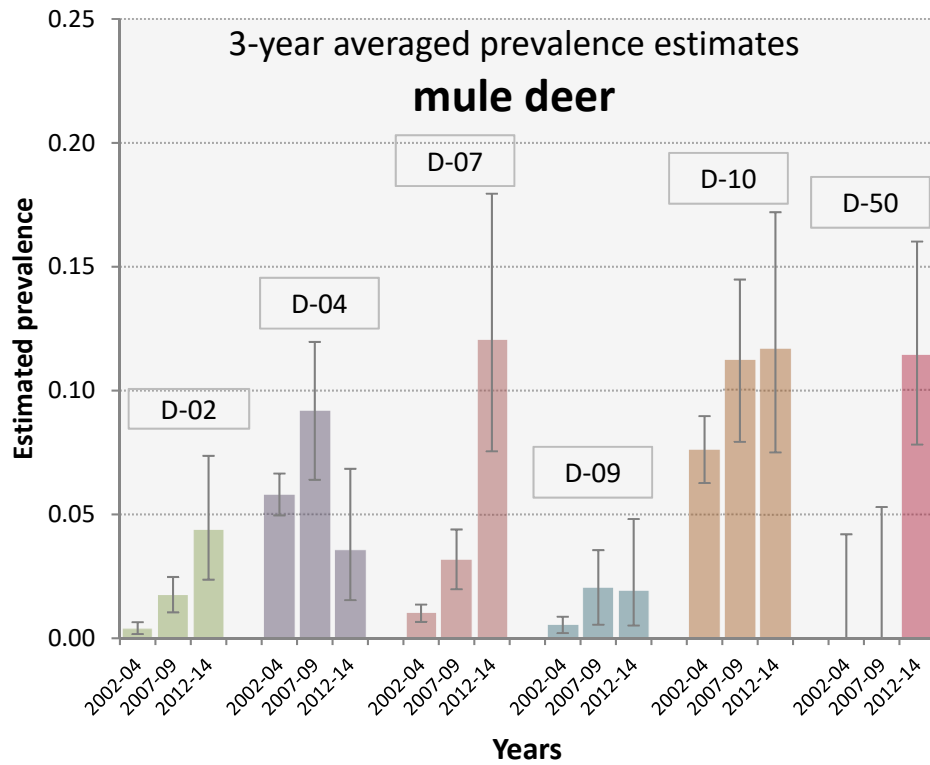
January 2018



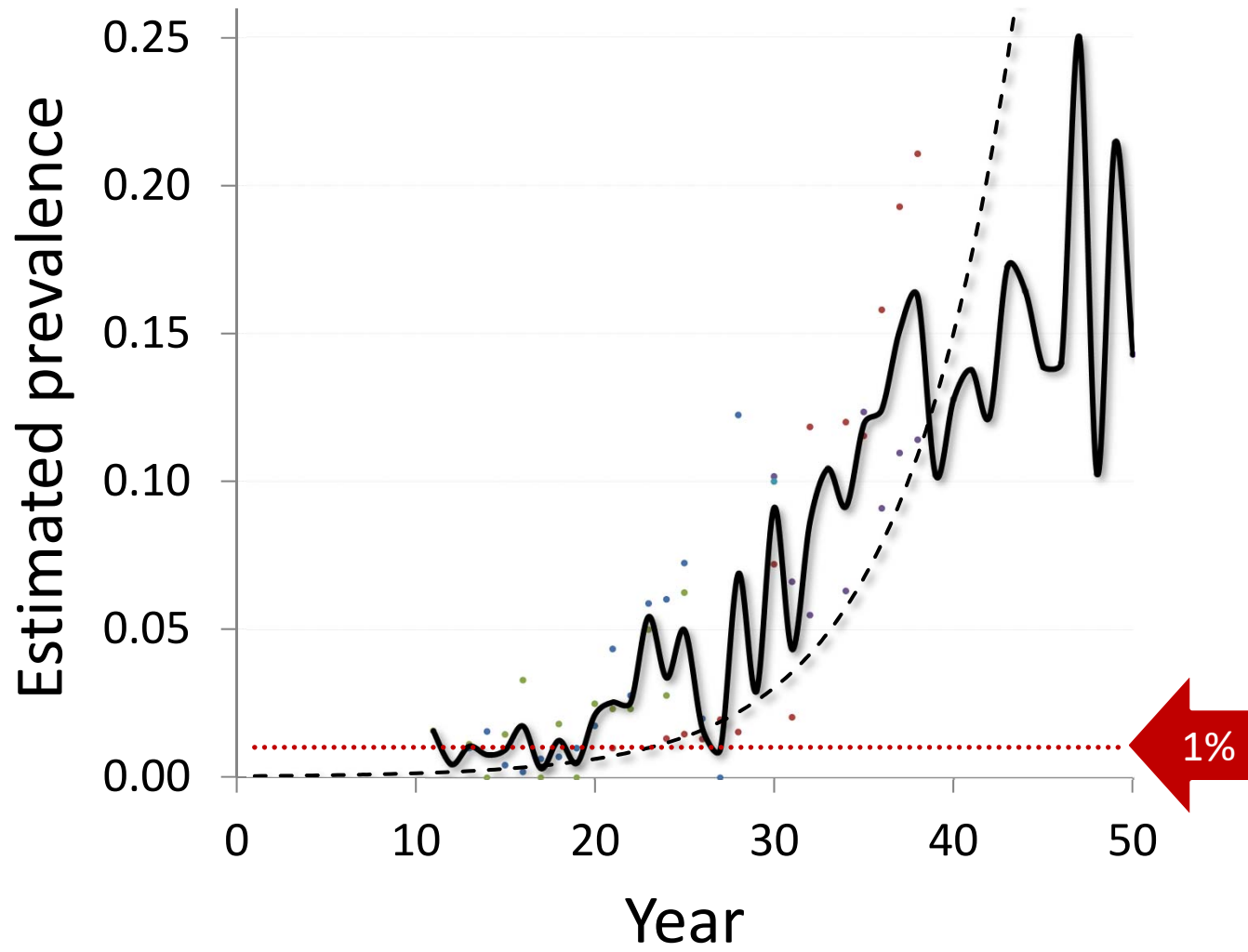
Estimated CWD Infection Rates Harvest Data for Colorado 2014 - 2017

- GMUs
- Insufficient Data
- Deer DAUs
- Detected <1%
- Detected 1-5%
- Detected 5-10%
- Detected >10%
- Detected (% Unknown)

Chronic wasting disease prevalence trends in Colorado (harvest-based estimates)



Composite epidemic curve (field data vs. model)



Sex, Age, & CWD

Infection rates higher (~2×) in bucks than in does from the same herd.
(Not so for elk.)

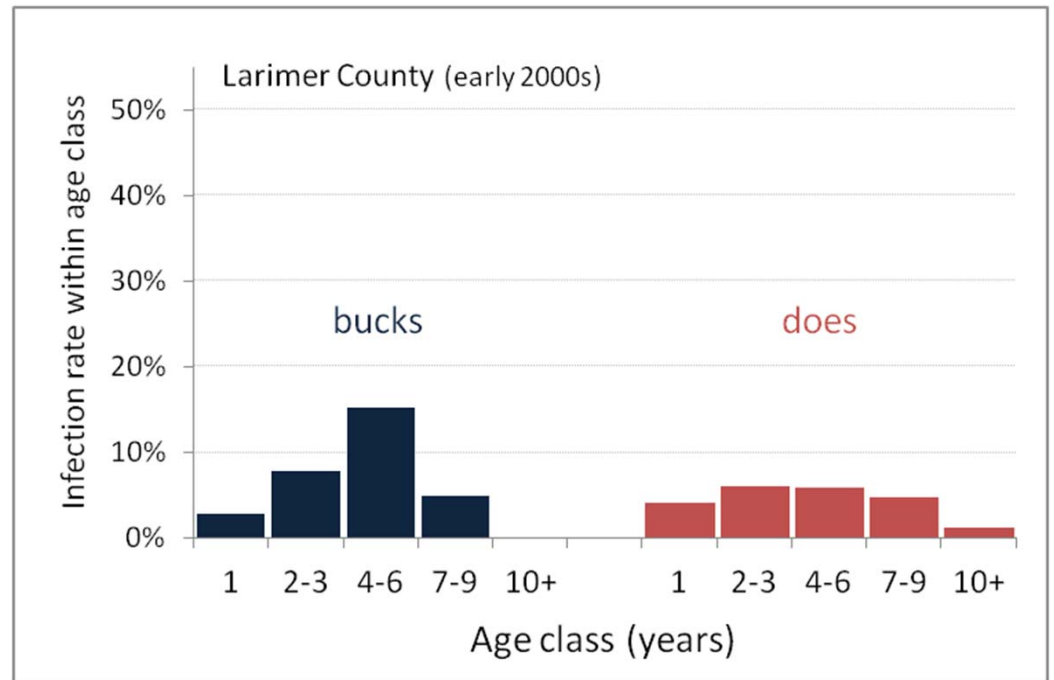
“Prime aged” adults show higher infection rates than very young or very old deer.

As the overall rate of infection in a herd increases, deer become infected & succumb at younger ages. Older aged deer become rare.

Examples shown at right:

In heavily hunted Larimer County herds, 25% of does & 4% of bucks were over 6 years old.

In the *unhunted* Table Mesa herd where infection rates were much higher, only 6% of does & 2% of bucks were over 6 years old.



Chronic Wasting Disease in Colorado



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Lessons in chronic wasting disease

Miller & Fischer 2016

Five lessons:

- ❖ Longer than you think
- ❖ At least two good stories
- ❖ Looking hard/hardly looking
- ❖ The five phases
- ❖ Sustained & sustainable effort

Lessons in chronic wasting disease

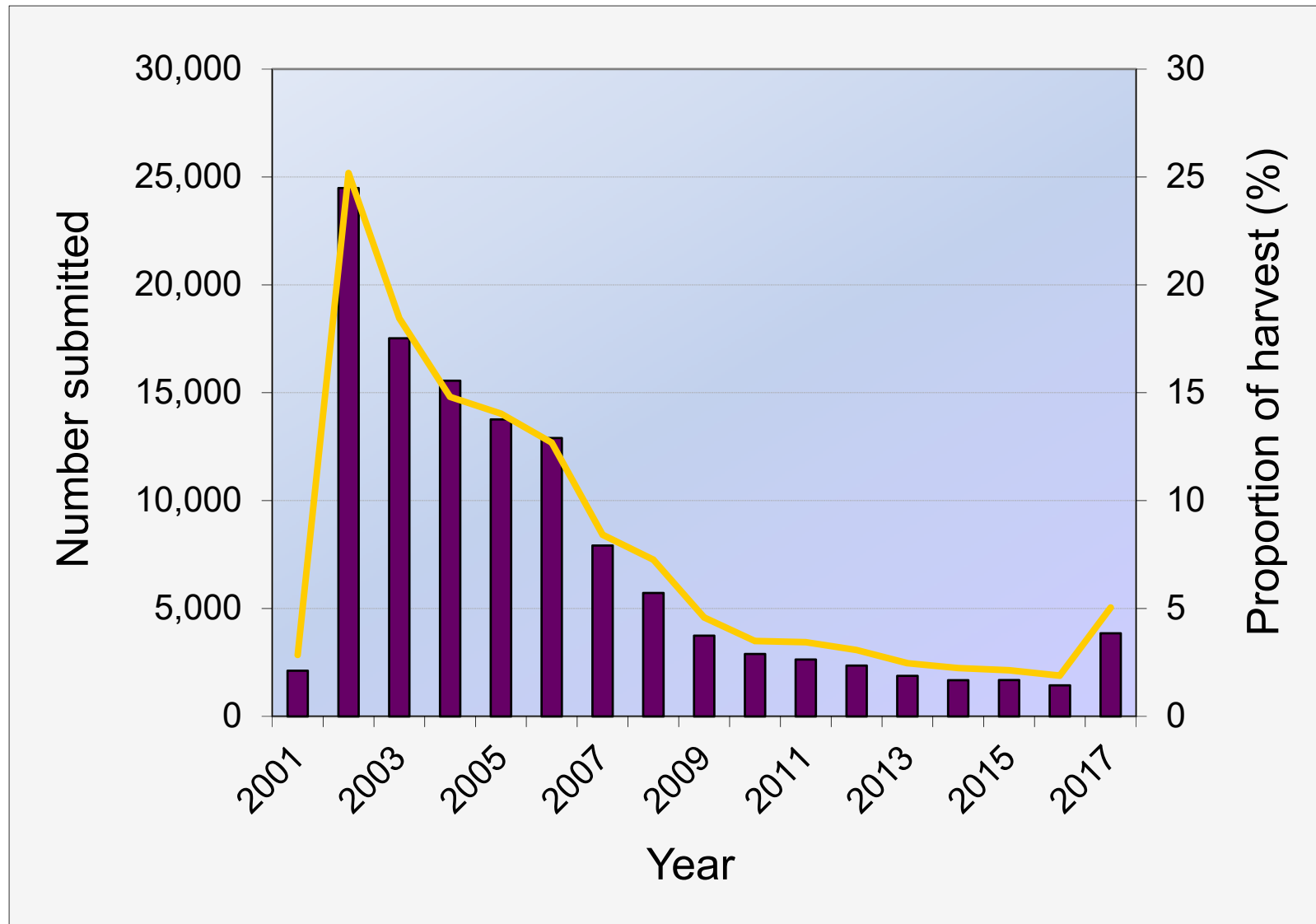
Sustained & sustainable effort..

❖ surveillance

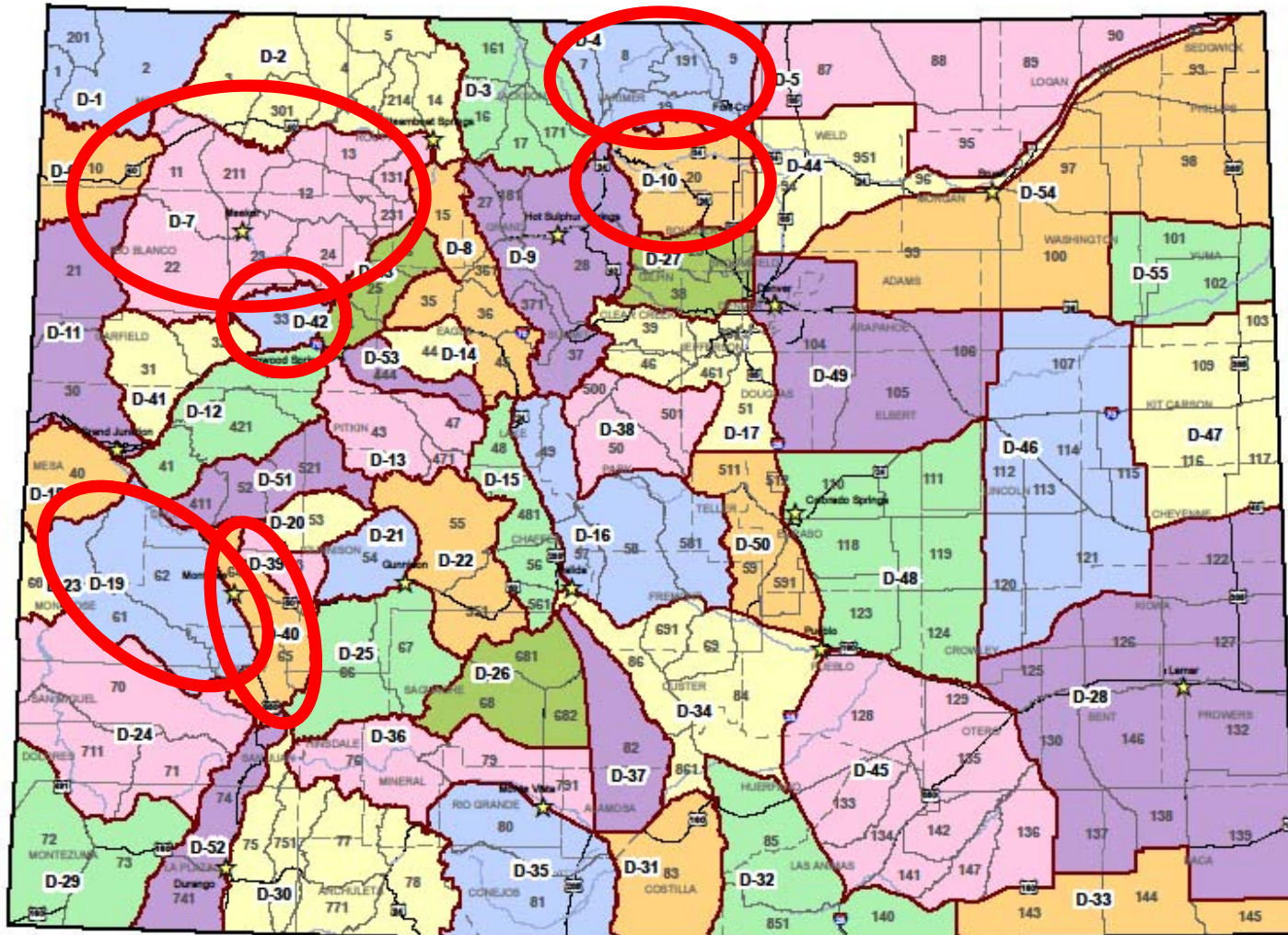
❖ monitoring

❖ control

Colorado chronic wasting disease testing: submission trends for harvested deer & elk



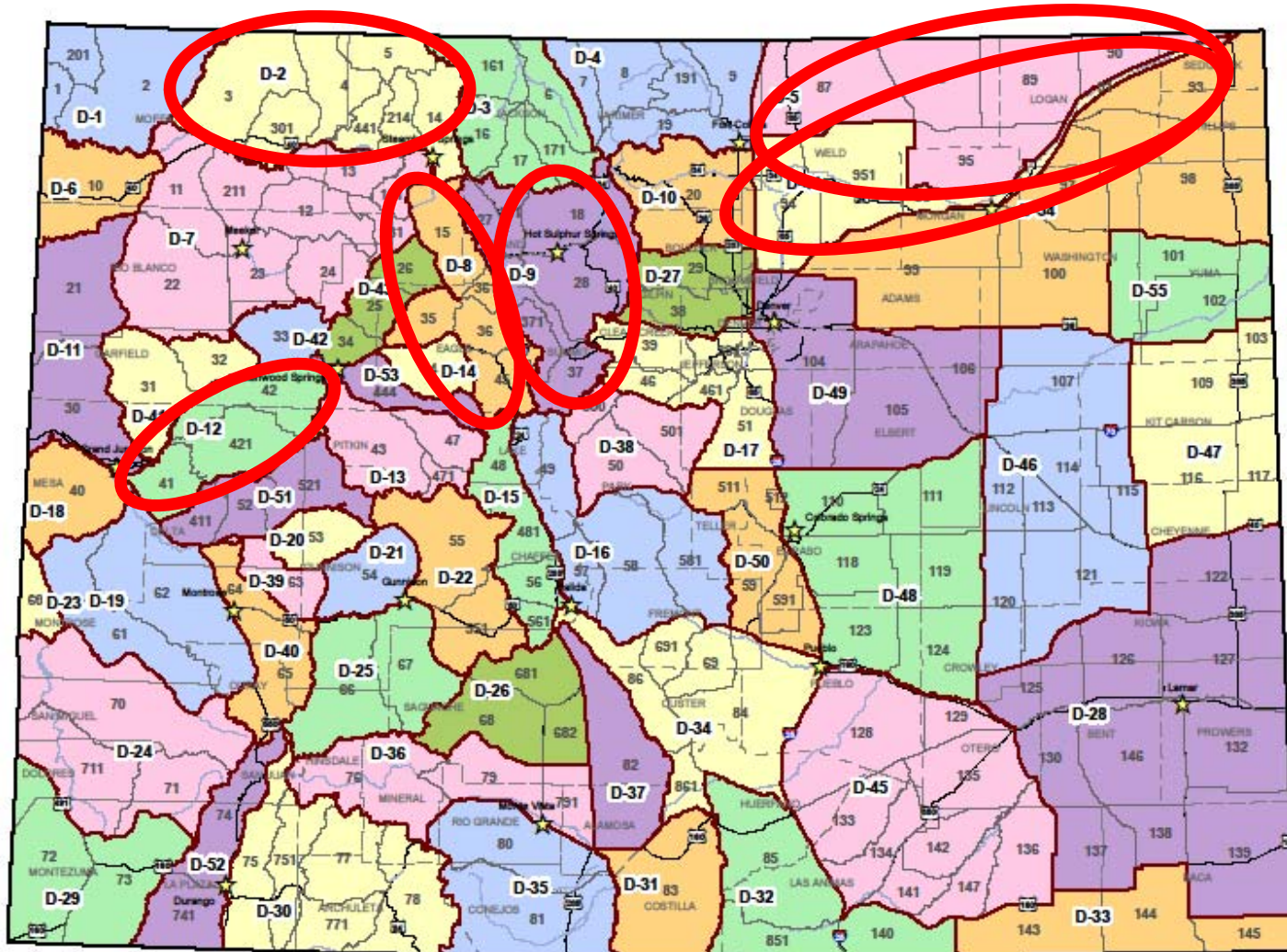
2017 mandatory testing herds



2017 mandatory testing results

DAU	Sample size	Prevalence (%) adult buck	95% confidence interval (%)
D-07	931	15	13–18
D-42	230	10	6–15
D-04	410	6	4–8
D-10	208	12	8–17
D-19	258	4	2–7
D-40	268	2	0.4–4

2018 mandatory testing herds



Lessons in chronic wasting disease

Sustained & sustainable effort..

❖ surveillance

❖ monitoring

❖ control

Recommendations for Adaptive Management of Chronic Wasting Disease in the West



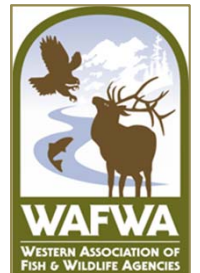
Potential Management Strategies

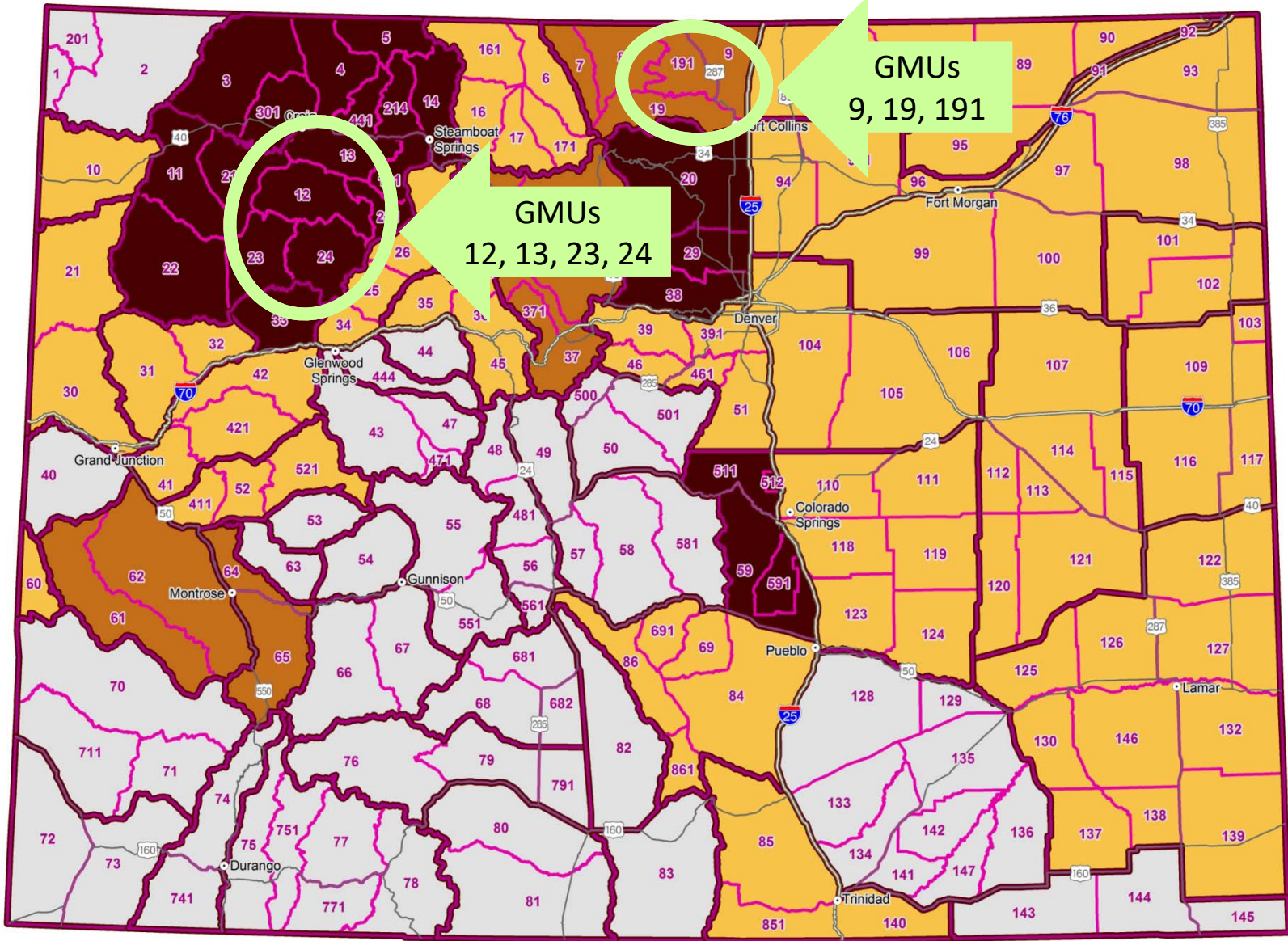
- ❖ Reduce Artificial Points of Host Congregation
 - Identify artificial point-sources of food/minerals/water; remove/reduce density of point-sources.
- ❖ Harvest Management
 - Increase male harvest, bias harvest toward infected males, &/or shift timing of harvest to post rut.
- ❖ Harvest Targeting Disease Foci
 - Targeted harvest strategy built upon ongoing fall harvest to maximize removal of infected individuals.



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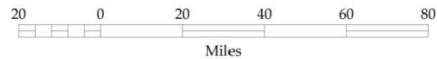


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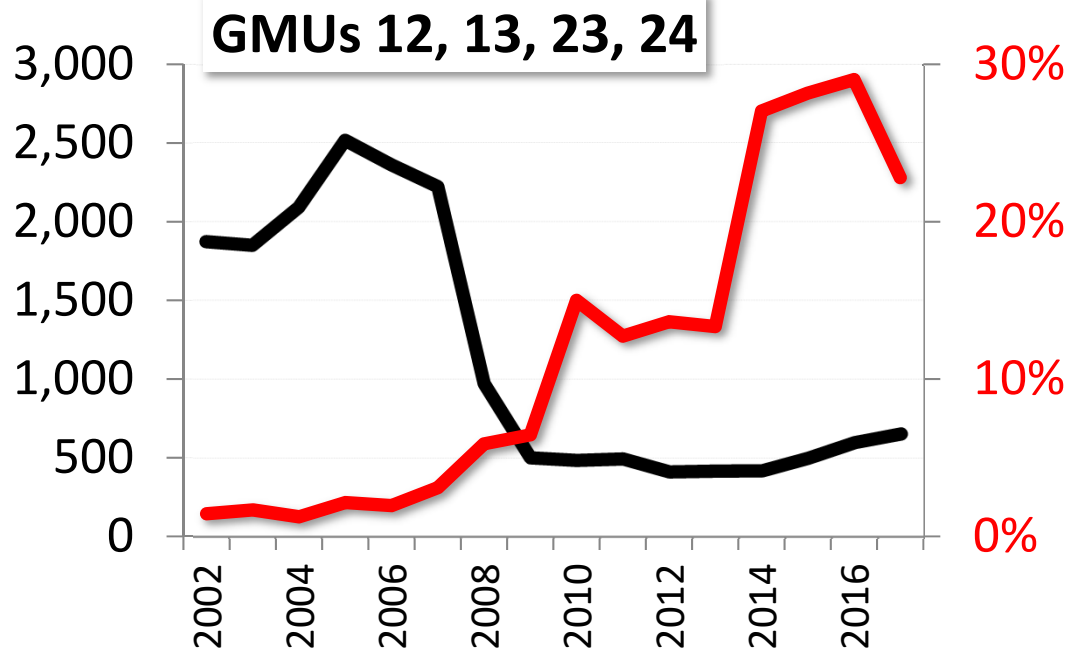
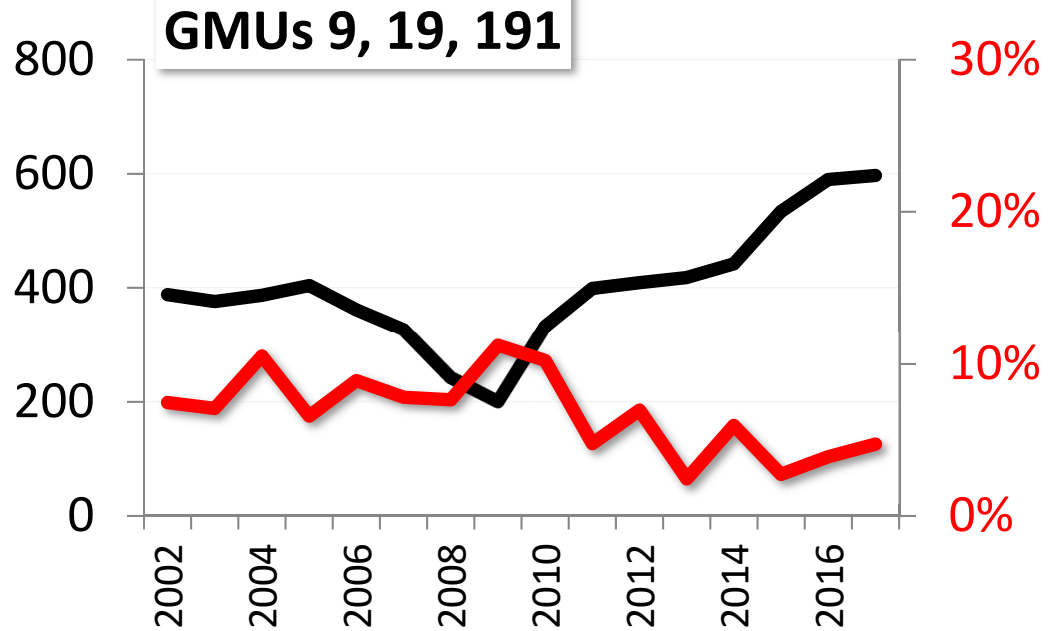
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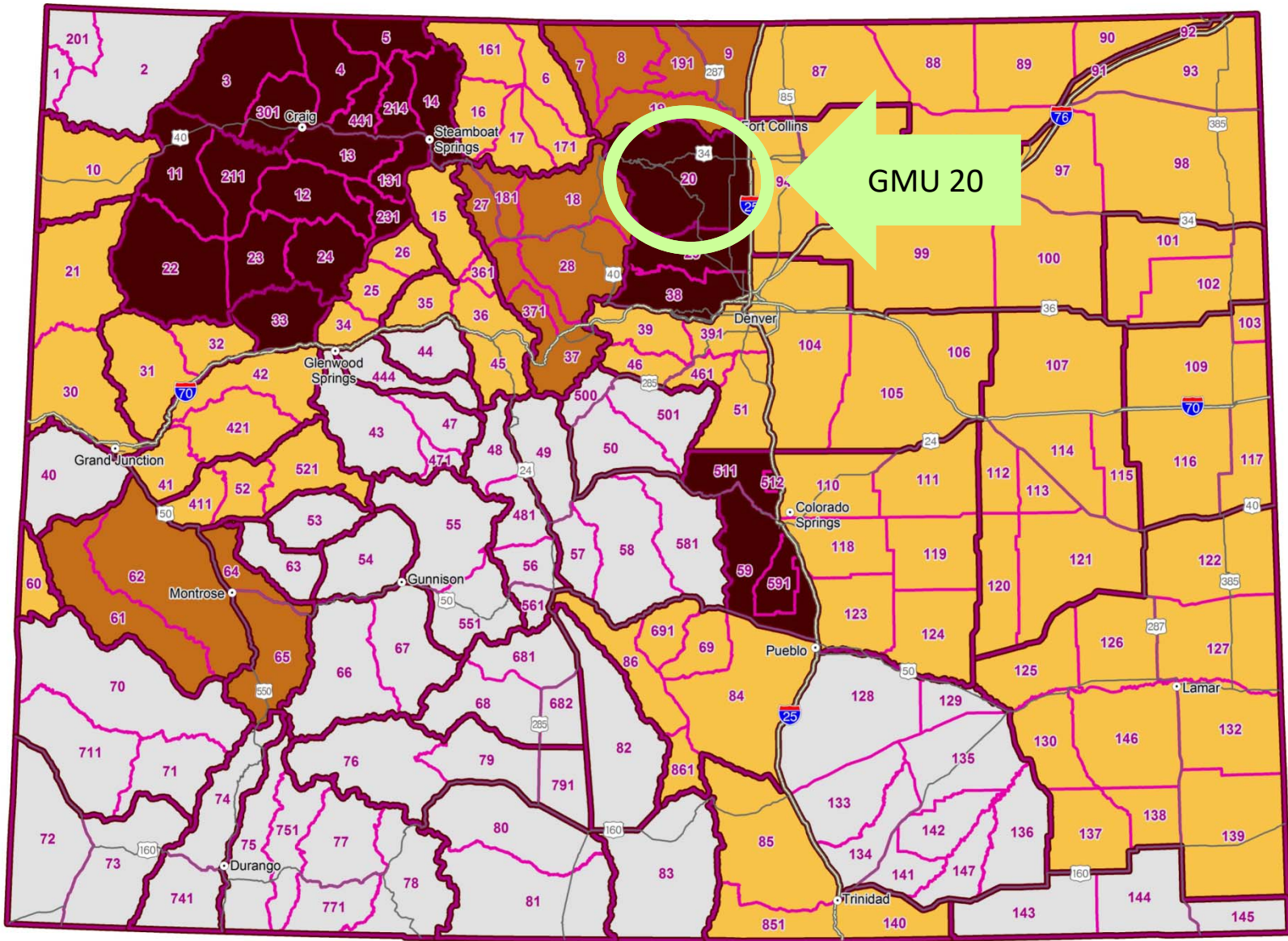
License & Prevalence Trends

Third season license numbers strongly affect prevalence in subsequent years.

Number of third season licenses



Chronic wasting disease prevalence

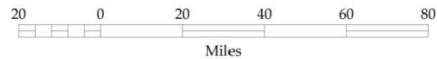


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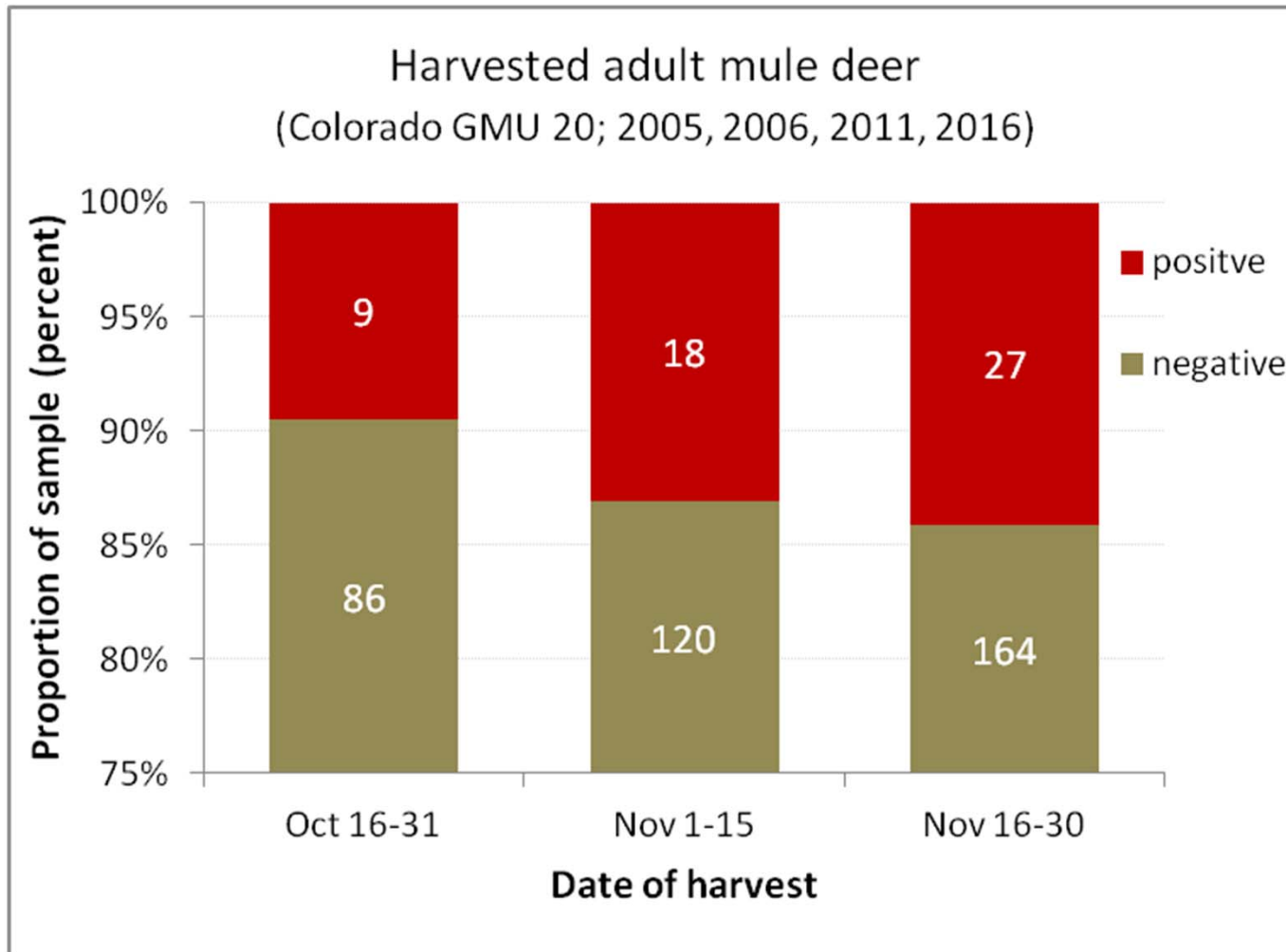
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17



Proportionally more infected deer may be removed via harvest in later seasons.

It is common sense to take a method and try it. If it fails, admit it frankly and try another. But above all, try something.

Franklin D. Roosevelt

Read more at: https://www.brainyquote.com/quotes/franklin_d_roosevelt_122780