BRUCELLOSIS

USING GIS AND OTHER *ALTERNATIVE APPROACHES TO ASSESSING DISEASE RISK*

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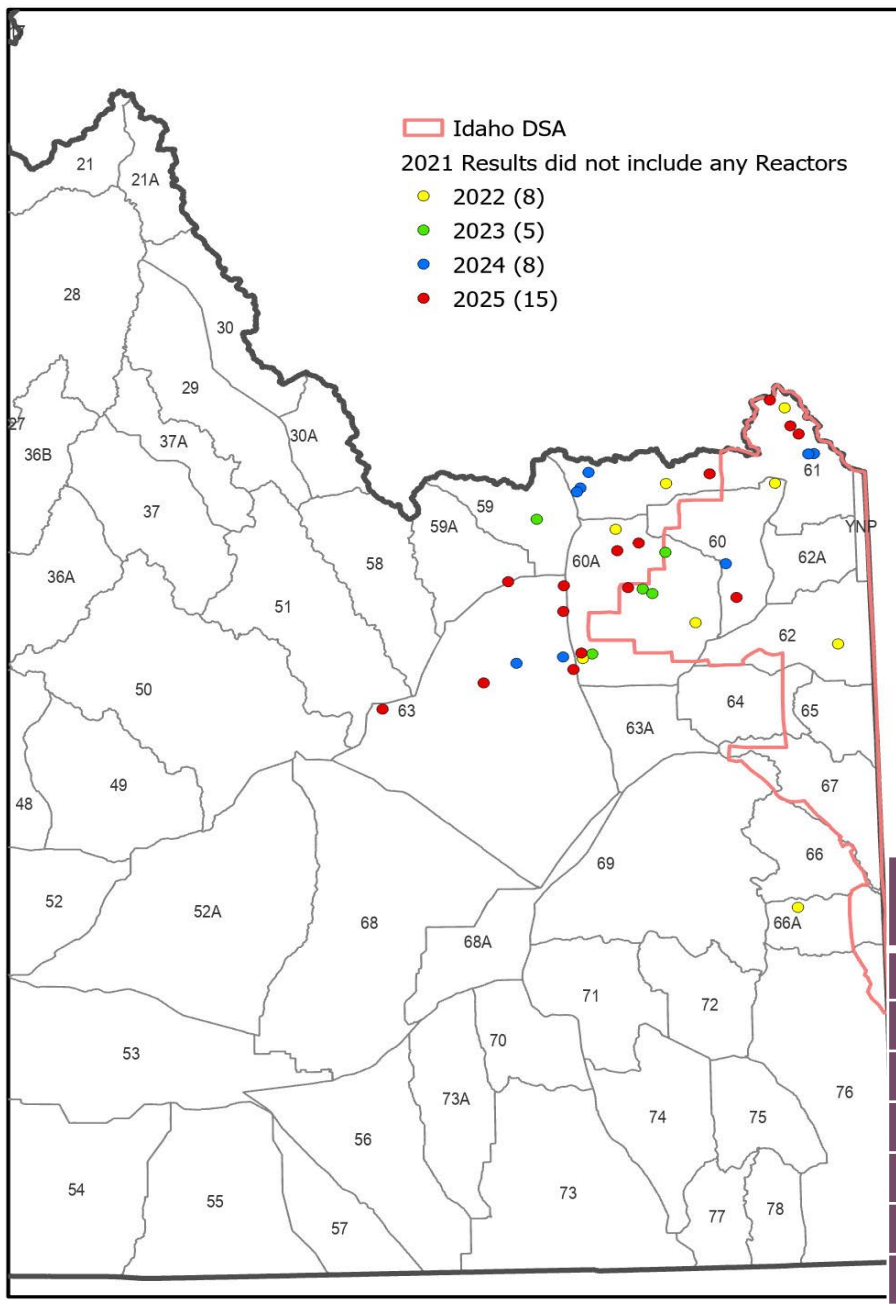
2025 US Animal Health Association
Brucellosis Sub-committee

BRUCELLOSIS IS A NATIONALLY AND INTERNATIONALLY REGULATED DISEASE OF LIVESTOCK WITH SIGNIFICANT CONSEQUENCES FOR ANIMAL HEALTH, PUBLIC HEALTH, AND INTERNATIONAL TRADE. *

- Wildlife migration are important but may increase the spatiotemporal overlap between elk and livestock, exacerbating disease transmission risk
- Brucellosis transmission risk from elk to livestock can occur on state and federal grazing allotments, as well as on private ranchland in areas around the GYE.
- Weather and persistent snowpack can increase the likelihood of exposure during risk periods.

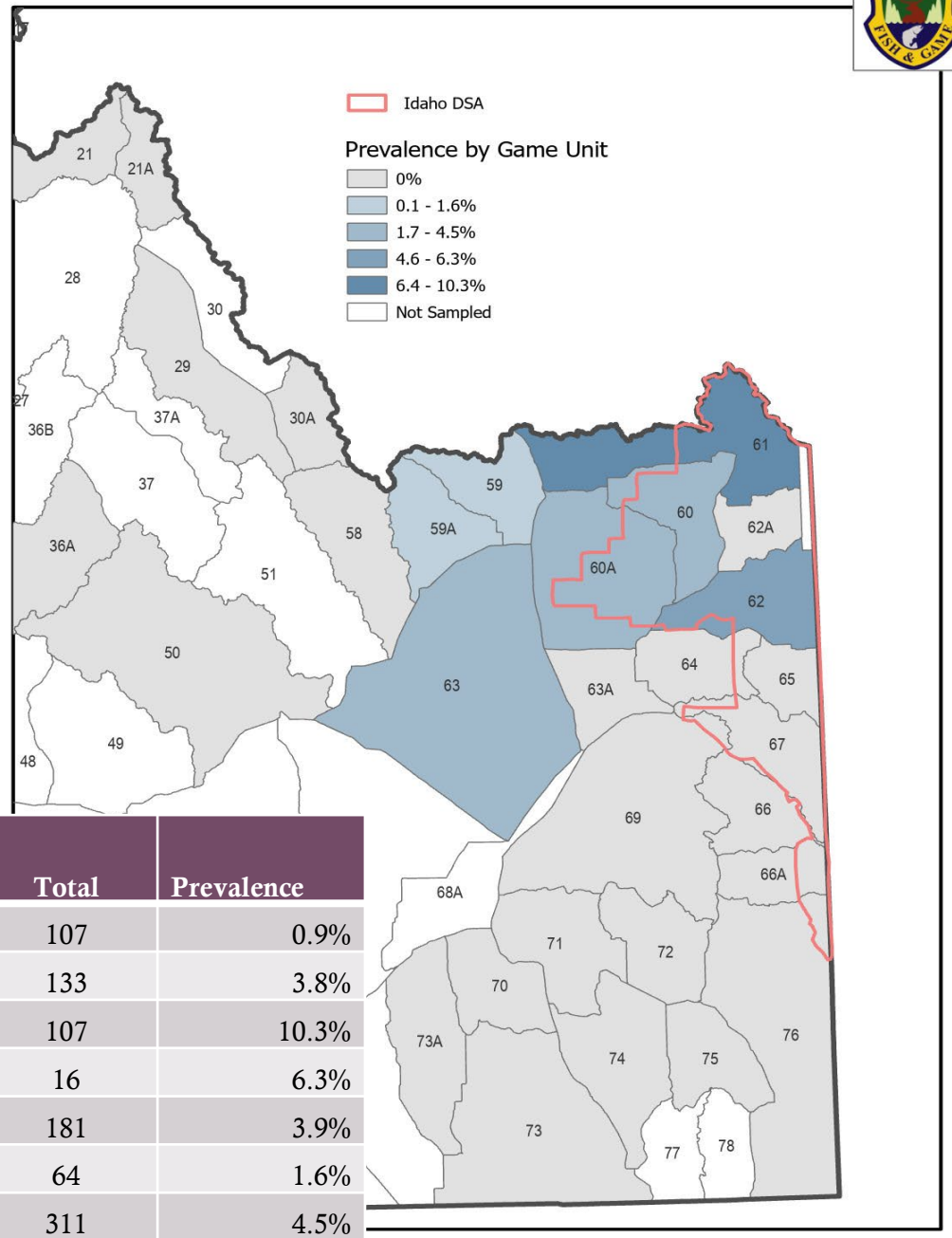
** www.usgs.gov/centers/norock/science/brucellosis*

Wild Elk Detections by Year
July 2021 - July 2025



Unit	Neg	Reactors	Total	Prevalence
59	106	1	107	0.9%
60	128	5	133	3.8%
61	96	11	107	10.3%
62	15	1	16	6.3%
63	174	7	181	3.9%
59A	63	1	64	1.6%
60A	297	14	311	4.5%

Wild Elk Brucellosis Prevalence
July 2021 - July 2025



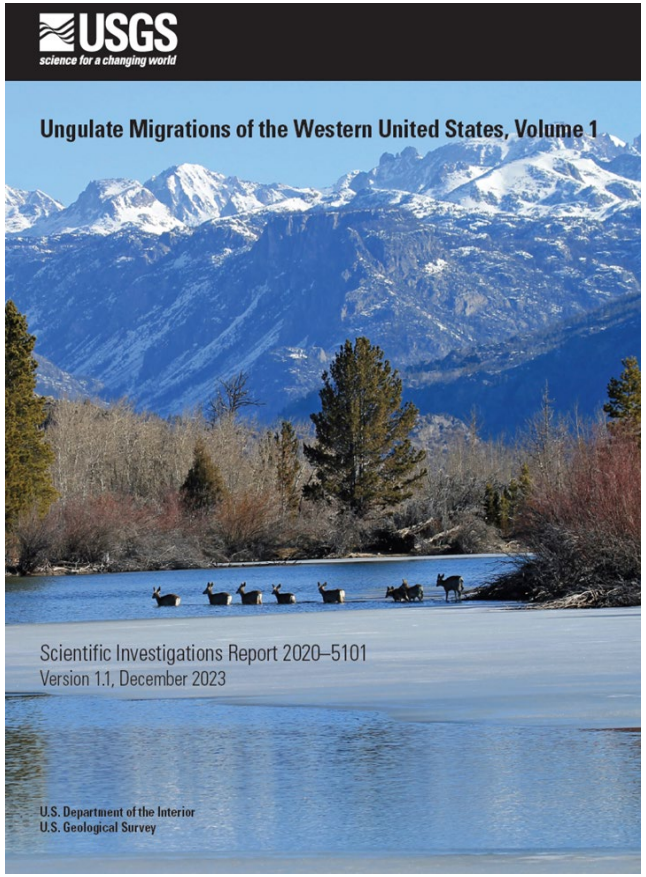
DISEASE RISK ASSESSMENT

Using a wide variety of methods and novel tools to help resolve conflicts between wildlife and domestic livestock

DISEASE RISK PARAMETERS

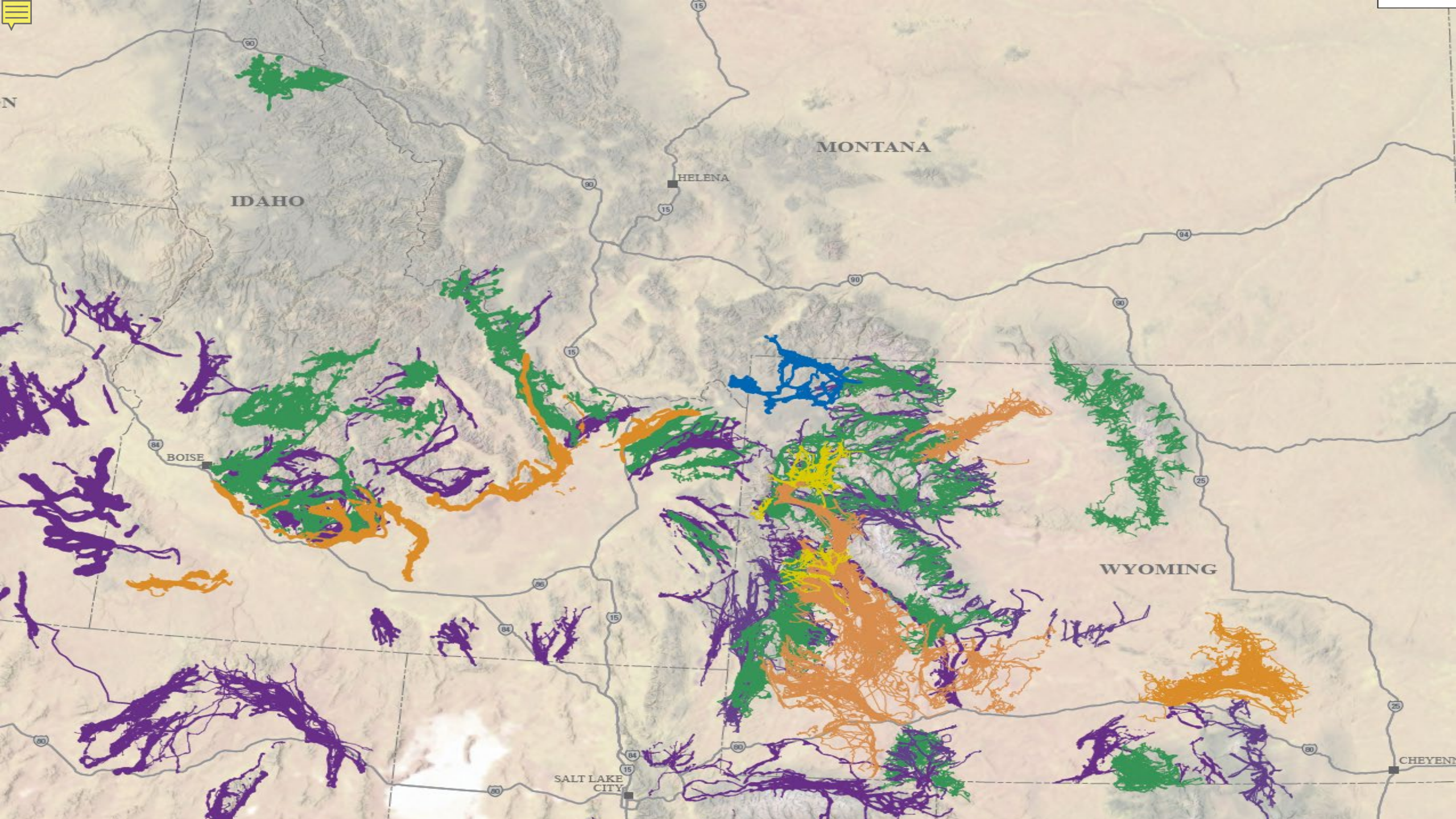
- Migration and Movements of Elk
- Disease prevalence and location
- Locations of Domestic Cattle Operations and Allotments
- Annual weather variation, severity, & snowpack

SECRETARIAL ORDER 3362



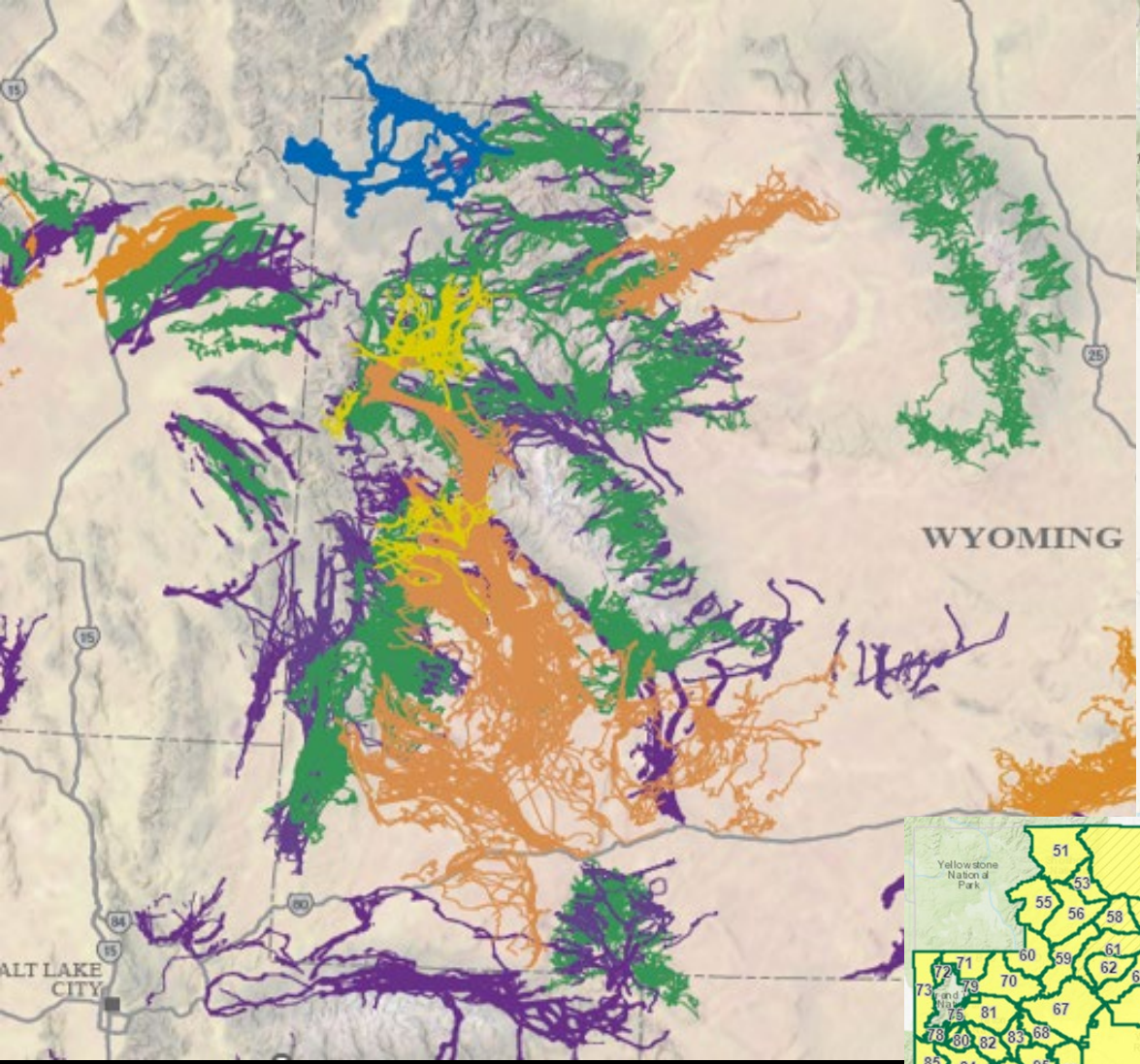
Feb. 9, 2018 – SO3362 was created to improve the quality of Western big game winter range and migration corridors by directing federal agencies to collaborate with states and private conservation organizations to conserve winter range and migration corridors for elk, deer, and pronghorn.

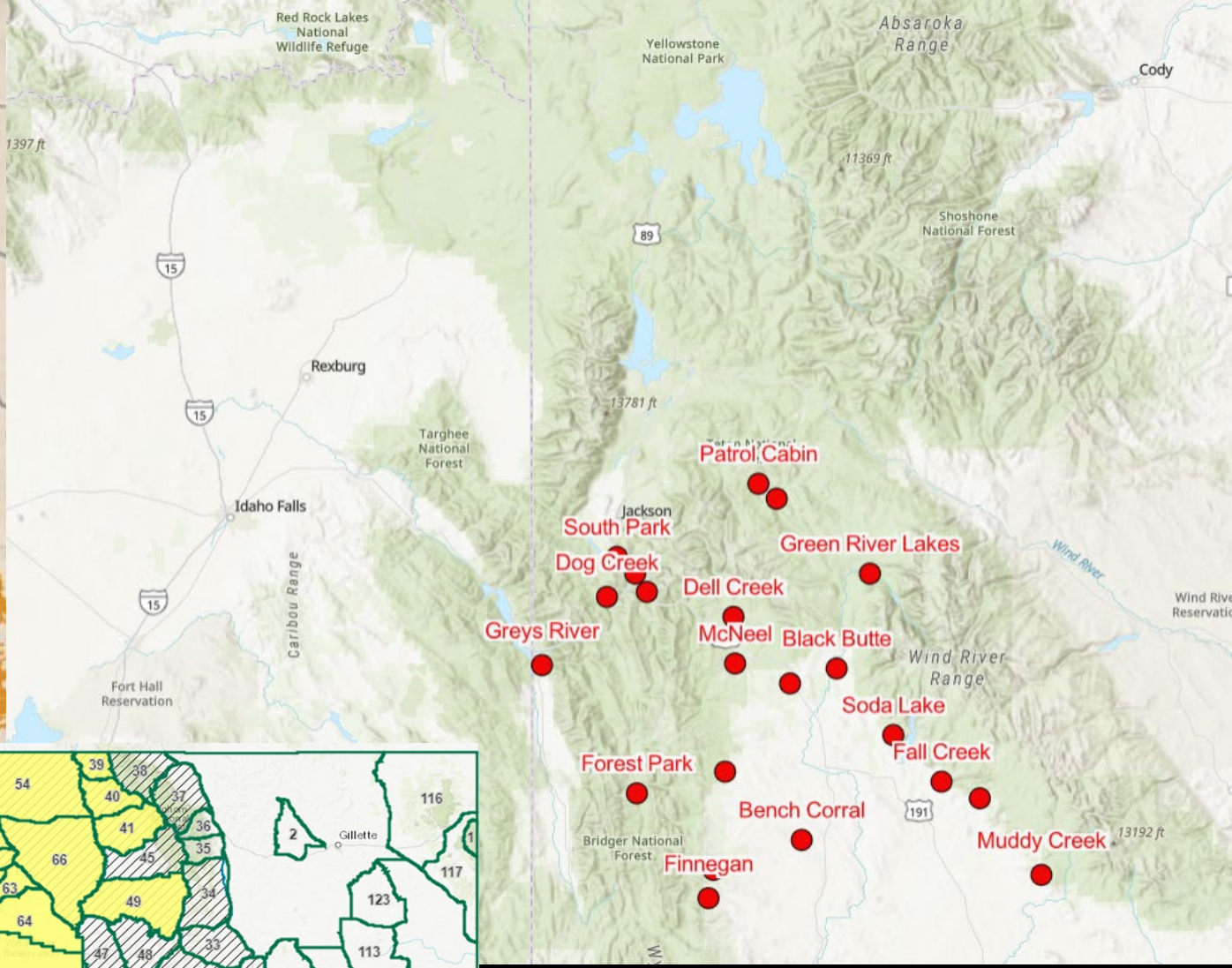
- Emphasized the importance of conserving and improving habitat for big game populations and other wildlife.
- Created one of the largest efforts in history to map the movements and migrations of big game animals in the west.

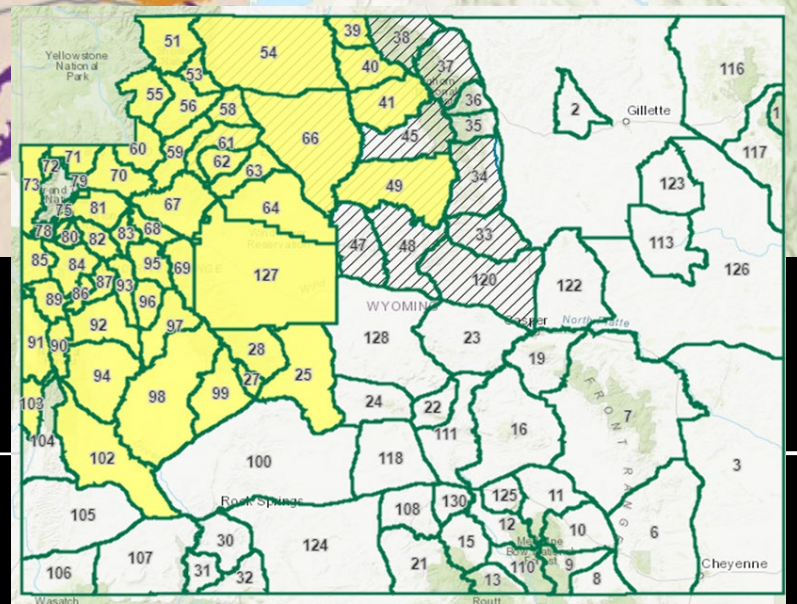

MONTANA
HELENA
IDAHO
BOISE
WYOMING
SALT LAKE CITY

ASSESSING OUR UNDERSTANDING

- The states in the Greater Yellowstone Ecosystem have Brucellosis reservoired in Elk and Bison populations
- Migration and movements of elk cross state boundaries
- Wyoming has numerous feed grounds in the Northwestern part of the state that artificially congregates elk in multiple migration routes but holds elk off private ranchland and public allotments.


WYOMING
ALT LAKE CITY


Red Rock Lakes National Wildlife Refuge
Yellowstone National Park
Absaroka Range
Cody
1397 ft
11369 ft
Shoshone National Forest
89
15
Rexburg
13781 ft
Targhee National Forest
Idaho Falls
Jackson
Patrol Cabin
South Park
Dog Creek
Green River Lakes
Dell Creek
Greys River
McNeel
Black Butte
Wind River Range
Soda Lake
Fall Creek
Forest Park
Bench Corral
Bridger National Forest
Finnegan
Muddy Creek
13192 ft
191
Caribou Range
Fort Hall Reservation
Wind River


Yellowstone National Park
Gillette
WYOMING
Rock Springs
Cheyenne

USING ALTERNATIVE RESOURCES OPTIMALY

- Mapping and Spatial Layers
  - ARC GIS tools
  - Ownership layers
  - USFS and BLM allotment data
  - Disease Information
    - Culture and Genetic Data

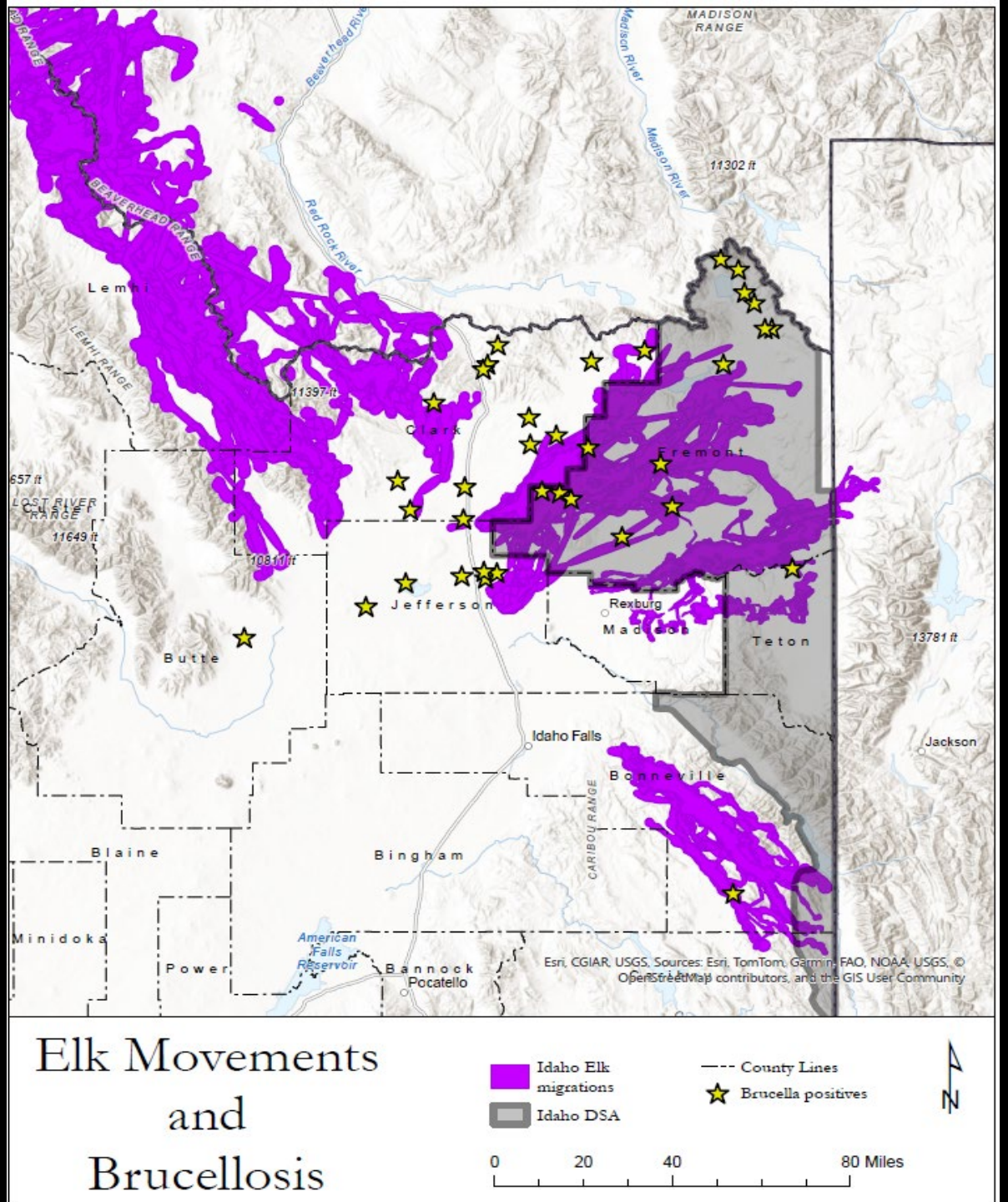
ASSESSING DISEASE

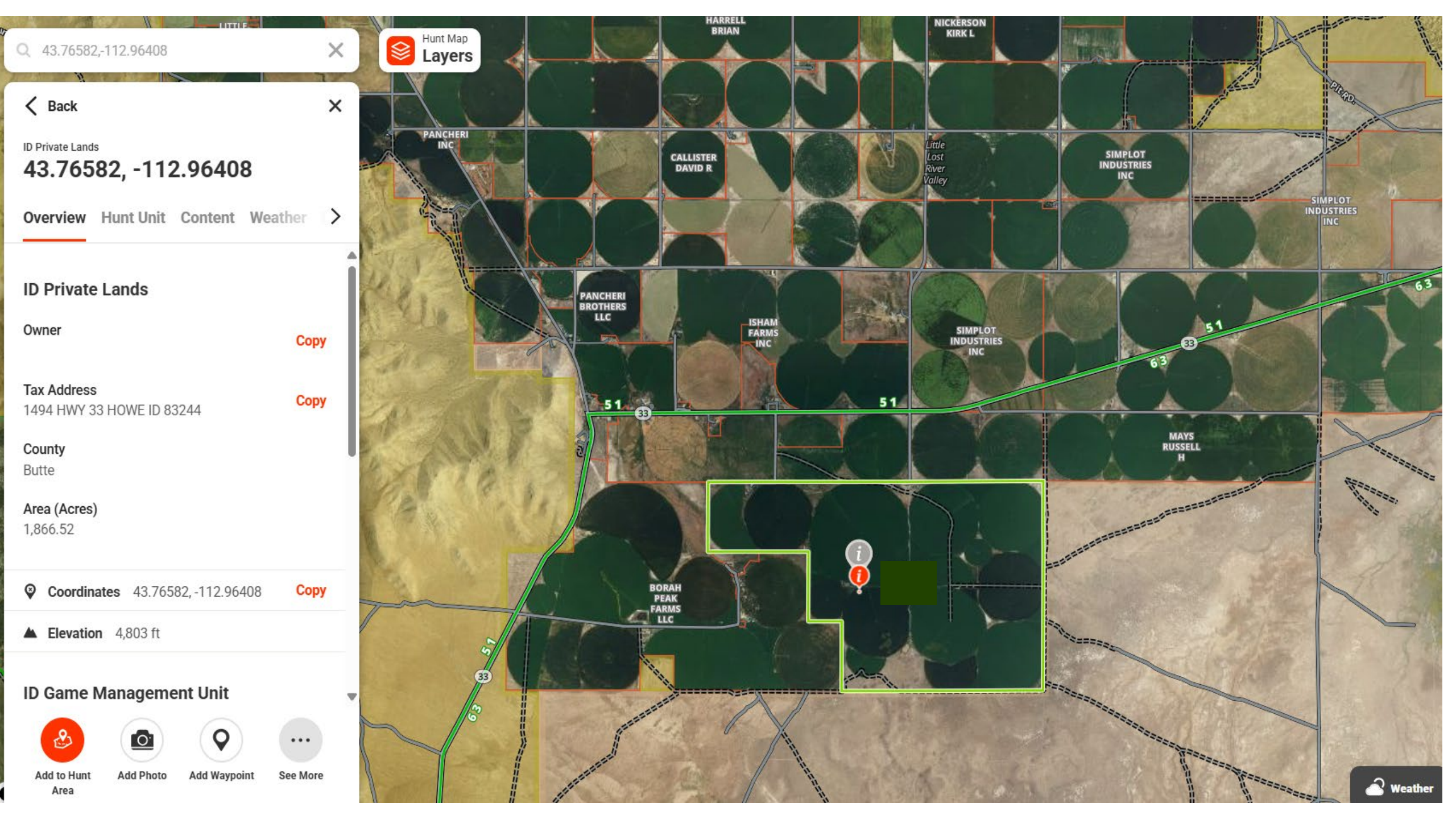
Current Data

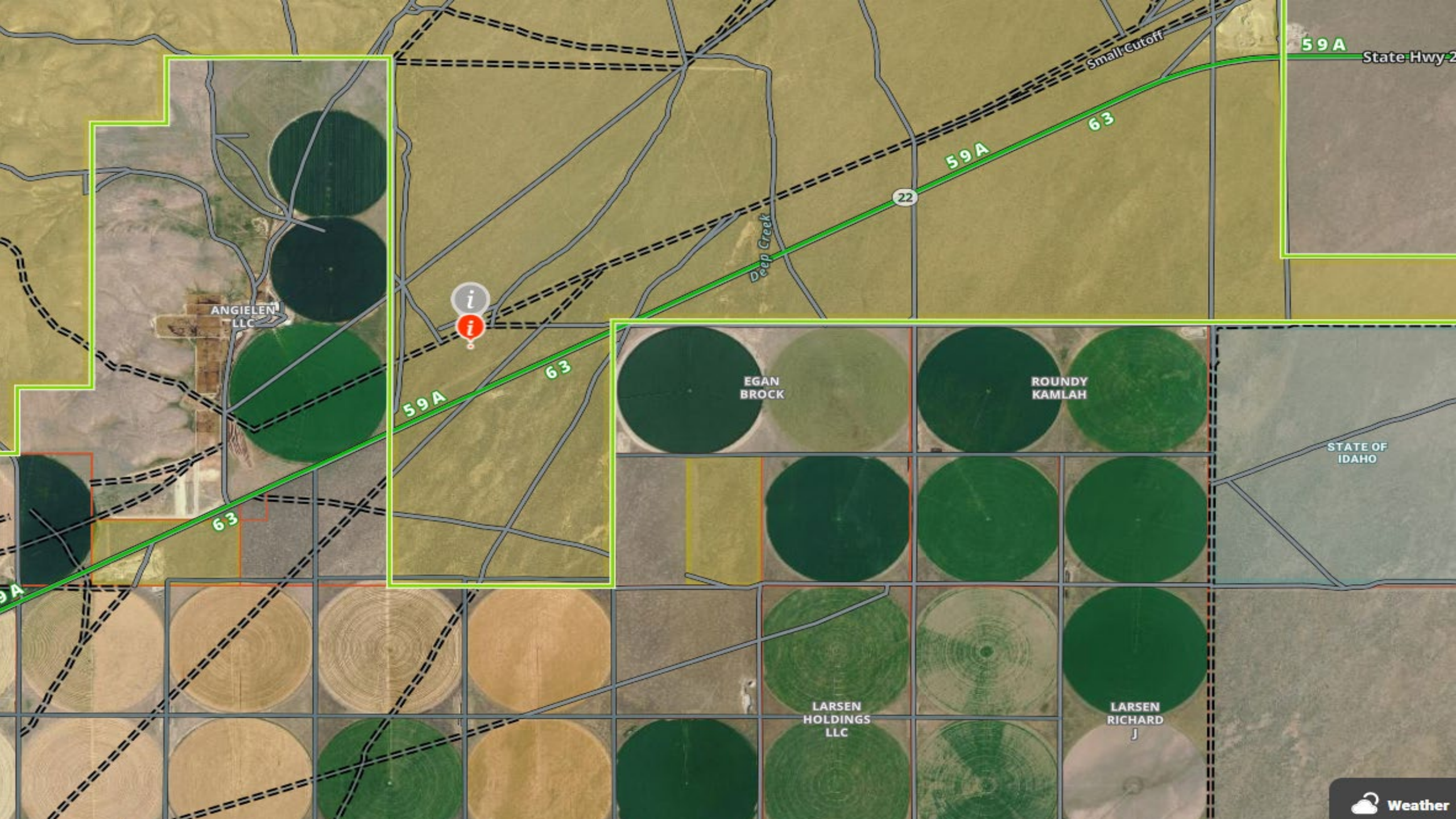
- Migration and Movement
- Sero-positive Hunter Elk Locations

Future Data

- Allotment & Producer Location Data
- Understanding how weather variation may shift risk periods




43.76582,-112.96408
Hunt Map
Layers
Back
ID Private Lands
43.76582, -112.96408
Overview
Hunt Unit
Content
Weather
ID Private Lands
Owner
Copy
Tax Address
1494 HWY 33 HOWE ID 83244
Copy
County
Butte
Area (Acres)
1,866.52
Coordinates 43.76582, -112.96408
Copy
Elevation 4,803 ft
ID Game Management Unit
Add to Hunt Area
Add Photo
Add Waypoint
See More
HARRELL BRIAN
NICKERSON KIRK L
PANCHERI INC
CALLISTER DAVID R
Little Lost River Valley
SIMPLOT INDUSTRIES INC
PANCHERI BROTHERS LLC
ISHAM FARMS INC
MAYS RUSSELL H
BORAH PEAK FARMS LLC
Pit Rd
51
33
63
Weather


59A
State Hwy-2
Small Cutoff
63
59A
22
Deep Creek
ANGIELEN LLC
63
59A
EGAN BROCK
ROUNDY KAMLAH
STATE OF IDAHO
63
LARSEN HOLDINGS LLC
LARSEN RICHARD J
Weather

ADAPTIVE MANAGEMENT

- Idaho Fish and Game and Idaho State Department of Agriculture are partnering to share data to create a GIS-based risk assessment tool to benefit producers in Idaho
- Re-initiation of the GYE multi-state research working group
  - Montana has called for a tri-state Brucellosis meeting in November 2025
  - Sharing of state research and hopefully data to better address disease risks and management options

THANK YOU

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