BRUCELLOSIS IN ELK OF IDAHO

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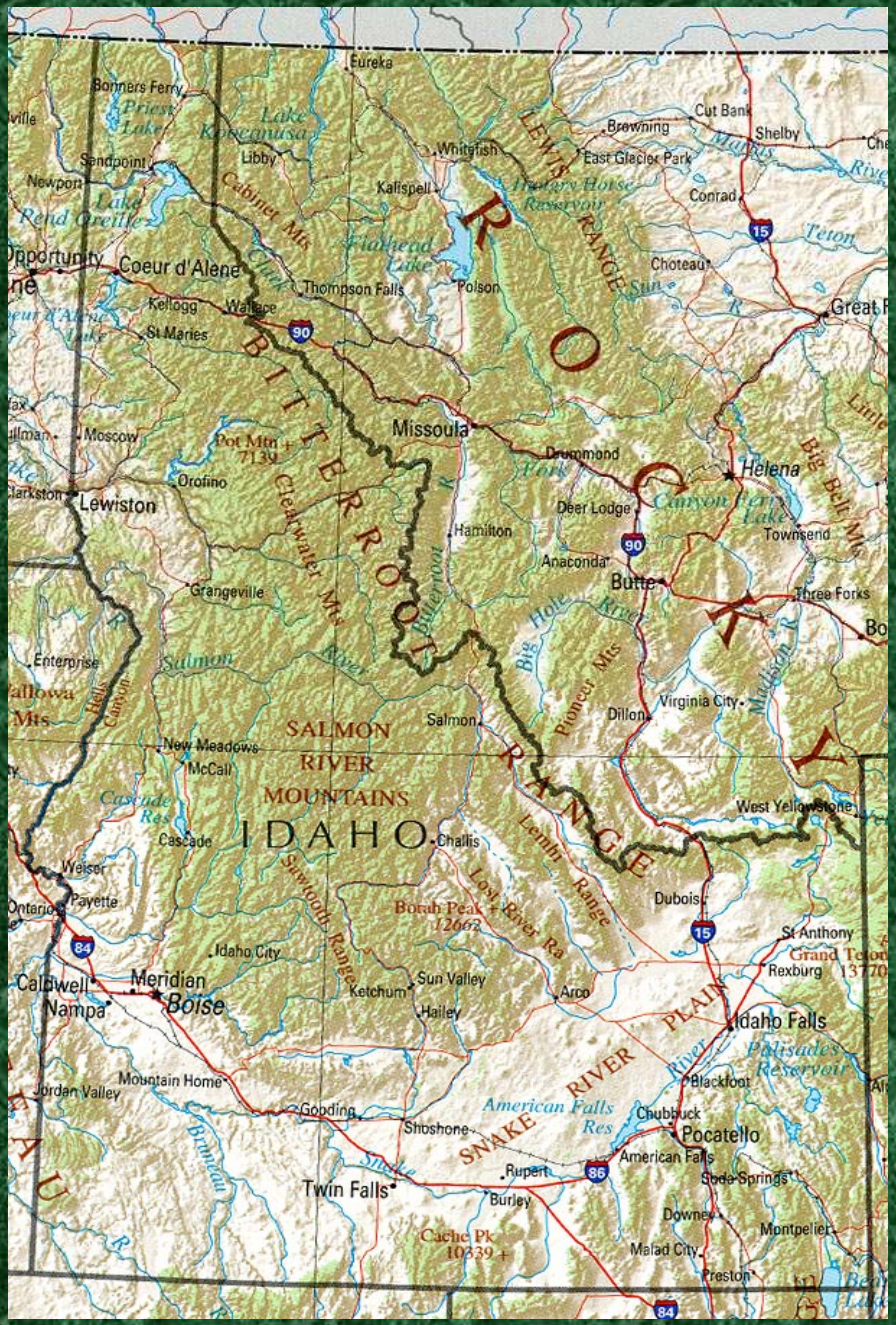
Idaho Department of Fish and Game

BRUCELLOSIS IN ELK IN IDAHO

- Present history overview
- Elk Surveillance
  - Elk sampled in Idaho
  - Hunter surveillance in Idaho 1998-2011
  - Data from wild elk at the Wildlife Health Lab
- Cattle Infections
- Elk management actions


Eureka
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Sandpoint
Libby
Newport
Whitefish
Kalispell
Browning
Cut Bank
Shelby
East Glacier Park
Conrad
Choteau
Lake Pend Oreille
Opportunity
Coeur d'Alene
Kellogg
Wallace
St Maries
Thompson Falls
Polson
Great F
Moscow
Pot Mtn 7139
Orofino
Lewiston
Clarkston
Missoula
Drummond
Helena
Deer Lodge
Hamilton
Anaconda
Butte
Townsend
Three Forks
Grangeville
Enterprise
Salmon
Dillon
Virginia City
New Meadows
McCall
SALMON RIVER MOUNTAINS
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Challis
West Yellowstone
Weiser
Payette
Borah Peak 12662
Dubois
St Anthony
Idaho City
Caldwell
Meridian
Nampa
Boise
Ketchum
Sun Valley
Hailey
Arco
Rexburg
Grand Teton 13770
Idaho Falls
Palisades Reservoir
Mountain Home
Jordan Valley
Gooding
Shoshone
Blackfoot
Chubbuck
Pocatello
American Falls
Soda Springs
Twin Falls
Rupert
Burley
Downey
Montpelier
Malad City
Preston
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BITTER ROOT RANGE
LEWIS RANGE
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Clearwater Mts
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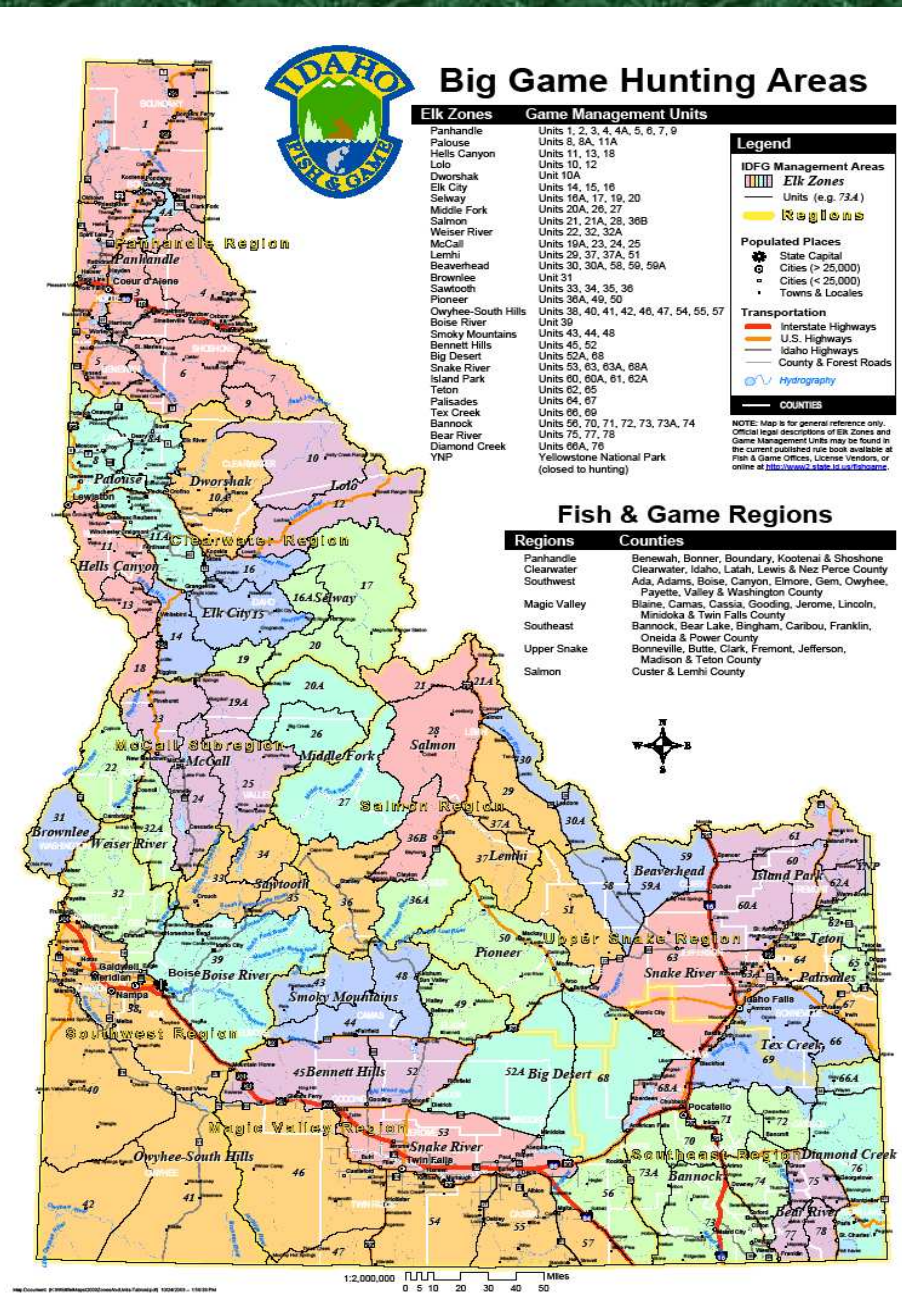
Hells Canyon
Wallowa Mts


IDAHO FISH & GAME
Big Game Hunting Areas
Elk Zones | Game Management Units
Panhandle | Units 1, 2, 3, 4, 4A, 5, 6, 7, 9
Palouse | Units 8, 8A, 11A
Hells Canyon | Units 11, 13, 18
Lolo | Units 10, 12
Dworshak | Unit 10A
Elk City | Units 14, 15, 16
Selway | Units 16A, 17, 19, 20
Middle Fork | Units 20A, 26, 27
Salmon | Units 21, 21A, 28, 36B
Weiser River | Units 22, 32, 32A
McCall | Units 19A, 23, 24, 25
Lemhi | Units 29, 37, 37A, 51
Beaverhead | Units 30, 30A, 58, 59, 59A
Brownlee | Unit 31
Sawtooth | Units 33, 34, 35, 36
Pioneer | Units 36A, 49, 50
Owyhee-South Hills | Units 38, 40, 41, 42, 46, 47, 54, 55, 57
Boise River | Unit 39
Smoky Mountains | Units 43, 44, 48
Bennett Hills | Units 45, 52
Big Desert | Units 52A, 68
Snake River | Units 53, 63, 63A, 68A
Island Park | Units 60, 60A, 61, 62A
Teton | Units 62, 65
Palisades | Units 64, 67
Tex Creek | Units 66, 69
Bannock | Units 56, 70, 71, 72, 73, 73A, 74
Bear River | Units 75, 77, 78
Diamond Creek | Units 66A, 76
YNP | Yellowstone National Park (closed to hunting)
Legend
IDFG Management Areas
Elk Zones
Units (e.g. 73.A)
Regions
Populated Places
State Capital
Cities (> 25,000)
Cities (< 25,000)
Towns & Locales
Transportation
Interstate Highways
U.S. Highways
Idaho Highways
County & Forest Roads
Hydrography
COUNTIES
NOTE: Map is for general reference only. Official legal descriptions of Elk Zones and Game Management Units may be found in the current published rule book available at Fish & Game Offices, License Vendors, or online at http://www2.state.id.us/fishgame.
Fish & Game Regions
Regions | Counties
Panhandle | Benewah, Bonner, Boundary, Kootenai & Shoshone
Clearwater | Clearwater, Idaho, Latah, Lewis & Nez Perce County
Southwest | Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley & Washington County
Magic Valley | Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka & Twin Falls County
Southeast | Bannock, Bear Lake, Bingham, Caribou, Franklin, Oneida & Power County
Upper Snake | Bonneville, Butte, Clark, Fremont, Jefferson, Madison & Teton County
Salmon | Custer & Lemhi County
Panhandle Region
Clearwater Region
McCall Subregion
Salmon Region
Upper Snake Region
Southwest Region
Magic Valley Region
Southeast Region
Panhandle
Coeur d'Alene
Palouse
Lewiston
Dworshak
Lolo
Hells Canyon
Elk City
Selway
Salmon
McCall
Middle Fork
Brownlee
Weiser River
Lemhi
Beaverhead
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Teton
Pioneer
Snake River
Palisades
Boise
Boise River
Smoky Mountains
Sawtooth
Nampa
Meridian
Idaho Falls
Tex Creek
Bennett Hills
Big Desert
Pocatello
Owyhee-South Hills
Twin Falls
Bannock
Diamond Creek
Bear River
1:2,000,000
Miles
0 5 10 20 30 40 50

IDAHO INFORMATION

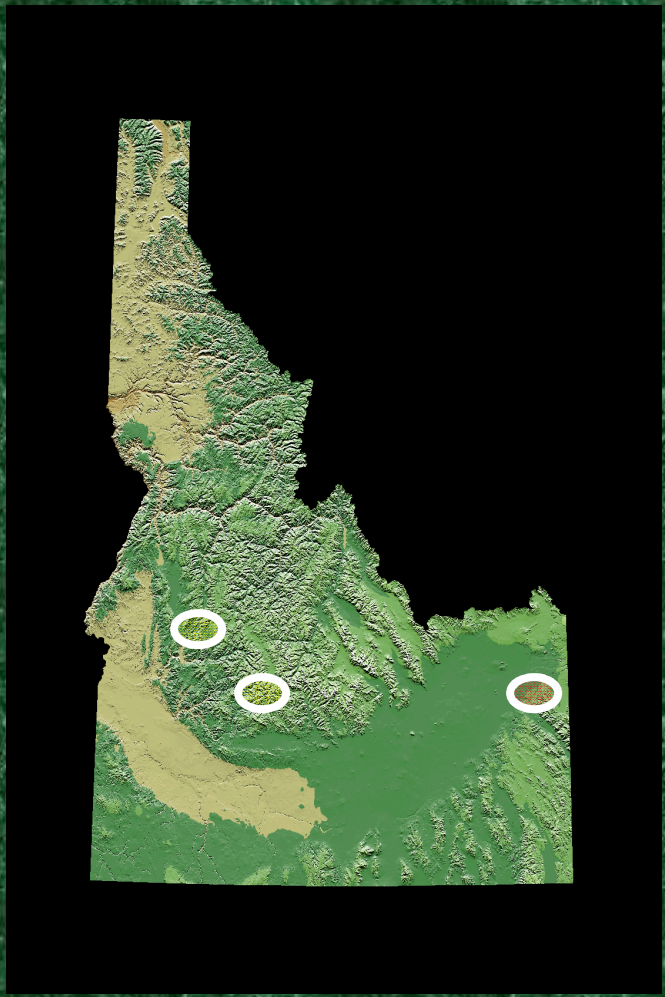
- Brucellosis Free Status in 1990
  - concerted effort of vaccination, testing, and depopulation of cattle
- No elk infected with brucellosis
- No elk winter feeding grounds

- However……

WINTER FEEDING OF BIG GAME IN IDAHO

- Private feeding relatively common throughout state prior to 2005
  - intentional vs. incidental
- Depredation on hay or cattle feed lines by big game dealt with on a case-by-case basis
- IDFG Winter Feeding Policy
  - Only under emergency conditions
    - snow depth
    - temperature
    - animal condition
  - Hay and/or pellets provided by IDFG
  - Numerous sites across state used as needed
    - 6-10 sites fed on annual basis, some > 20 years

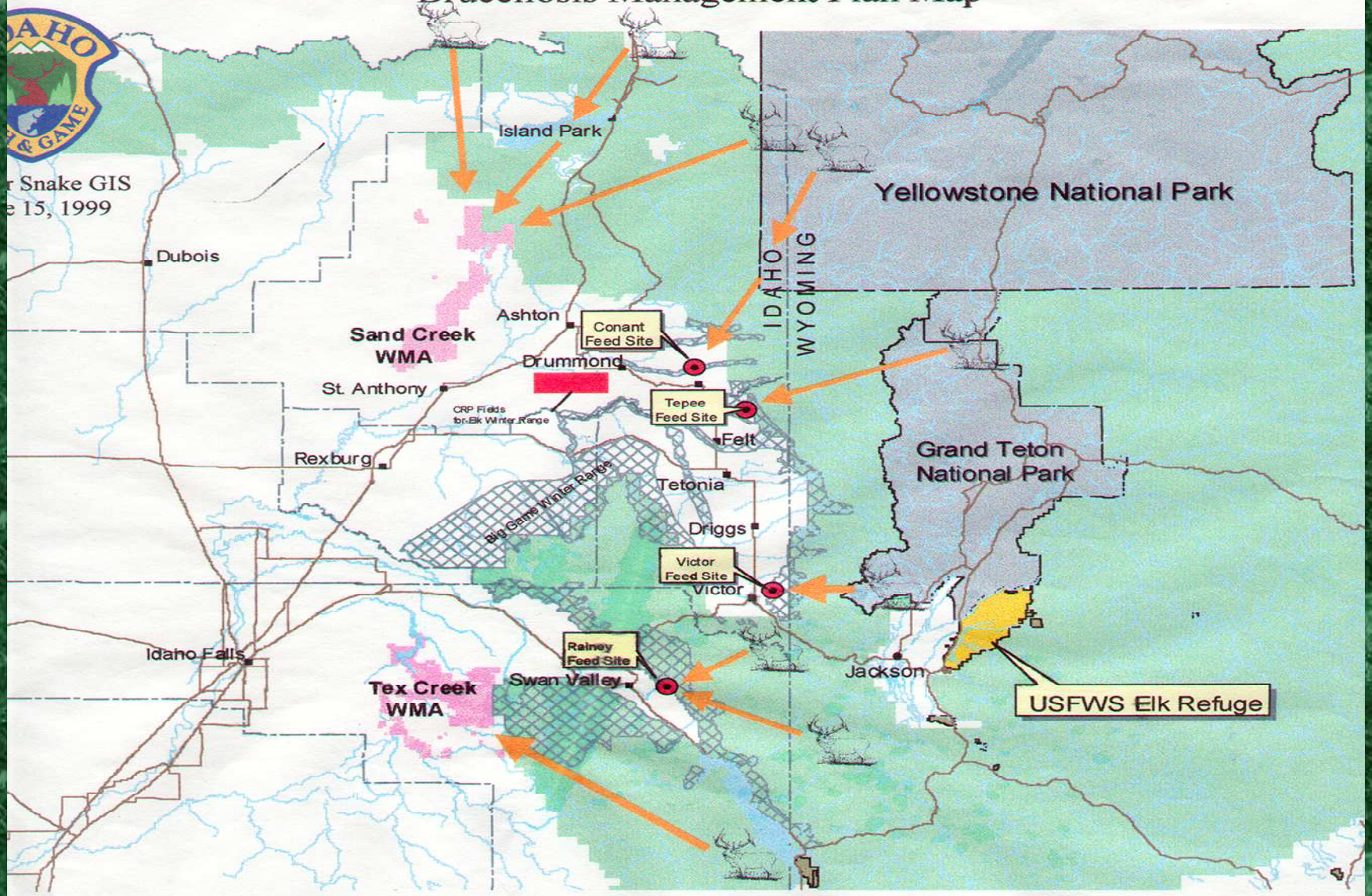
IDFG Elk Emergency Winter Feeding Sites



HISTORY OF BRUCELLOSIS IN ELK IN IDAHO

- March 1998, elk in eastern ID + for brucellosis
  - elk trapped at 2 private and 1 IDFG feeding sites
- ISDA reported situation to surrounding states & USDA
- ISDA and IDFG needed strategies to control outbreak and address problem
  - Governor's Task Force on Wildlife Brucellosis - July 1998

Brucellosis Management Plan Map



TASK FORCE RECOMMENDATIONS 1998

- Develop and implement elk management plans
- Develop and implement strategy to prevent spread in elk and into cattle
- Request USFS and BLM to assist with development of winter range
- Implement active and passive surveillance of cattle
- Clarify current laws for prohibiting private wildlife feeding by ISDA if livestock at risk

- Seek legislation to enable prohibition of private feeding by ISDA (not approved)
- Develop and implement plans to continue ability to freely market Idaho cattle
- Adhere to IDFG Commission policy on emergency winter feeding
- Seek funding from USDA-APHIS for elk trapping and testing and cattle testing
- Submit annual report to Governor on progress
- Inform interested parties and public about disease and its risks

History

- 2002 – Infected cattle herd (Conant Creek)
- Continued elk and cattle surveillance
- 2005 – Infected cattle herd (Pine Creek)
- 2006 - ISDA legislation to prohibit private feeding of big game in known brucellosis risk area
- 2006 – IDFG discontinued feeding elk at Rainey Creek
- 2006 – Idaho lost cattle state status
- 2006 – Governor's Task Force reconvened

TASK FORCE RECOMMENDATIONS 2006

- Fence all stack yards*
- Fence cattle feed sites
- Elk winter habitat enhancement
- Minimize elk disturbance in winter
- Kill permits for problem elk*
- Eliminate private elk feeding*

- Increase hunter access to problem elk*
- Encourage “problem” elk migration out of area*
- Late season hunts on private land and adjacent federal land to decrease problem elk*
- Targeted extra tag elk hunts in late winter to modify elk behavior*
- Collect blood samples from elk killed in special hunts
- Eliminate private big game feeding

Results of Task Force

- High risk area in eastern Idaho defined
  - Herds that have feed-line contact with wild elk in the high risk area during winter
- Cattle operations in high risk area
  - Ranch Brucellosis Action Plan
  - Cattle mitigation actions
    - Whole herd tests in spring
    - Vaccination of all eligible females
    - Cows booster vaccinated in spring
  - Elk mitigation actions
    - Build stackyards or feeding areas for cattle
    - Notify ISDA/IDFG if elk present
    - Develop plan to deal with elk

History

- 2007 – Idaho regained cattle state status
- 2009 – Infected cattle herd (Lewisville)
- 2010 – USDA interim rules allow test and slaughter of Lewisville herd
  - Completed fall 2010
- 2011 – USDA Designated Surveillance Area (DSA) finalized with no known brucellosis in cattle but low level seroprevalence in elk in the DSA

SURVEILLANCE FOR BRUCELLOSIS IN ELK

- Holders of controlled hunt permits for cows
  - blood sample collection kits
  - tested at Animal Health Lab in Boise
    - SPT, BAPA, Rivanol, CF and FPA
  - Typically send out 1500-2000 kits annually
    - Expect 10-15% return
    - Expect 50% of samples suitable for testing
- Landowner kill permits in known brucellosis area
- Depredation hunts in known brucellosis area

Surveillance of elk

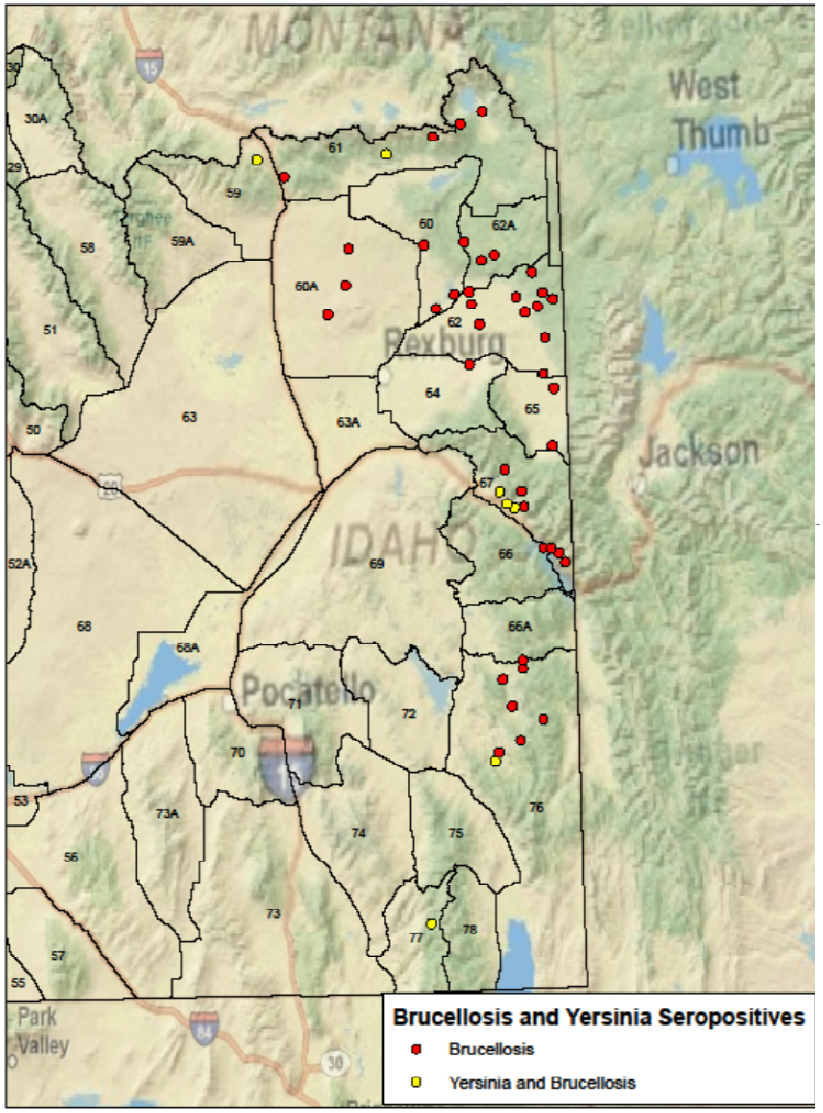
- Seropositive only in GMUs 60, 60A, 61, 62, 62A, 64, 65, 66A, 67, and 76
  - background seroprevalence 1-6%, but stable over years
  - cross reactions to *Yersinia* spp. in some areas
  - geographical distribution stable 1998 - 2011
- 1998-2011
  - 3508 samples returned
  - 2510 samples useable
  - 18 suspect animals and 51 reactor animals
  - Seroprevalence 2.8%

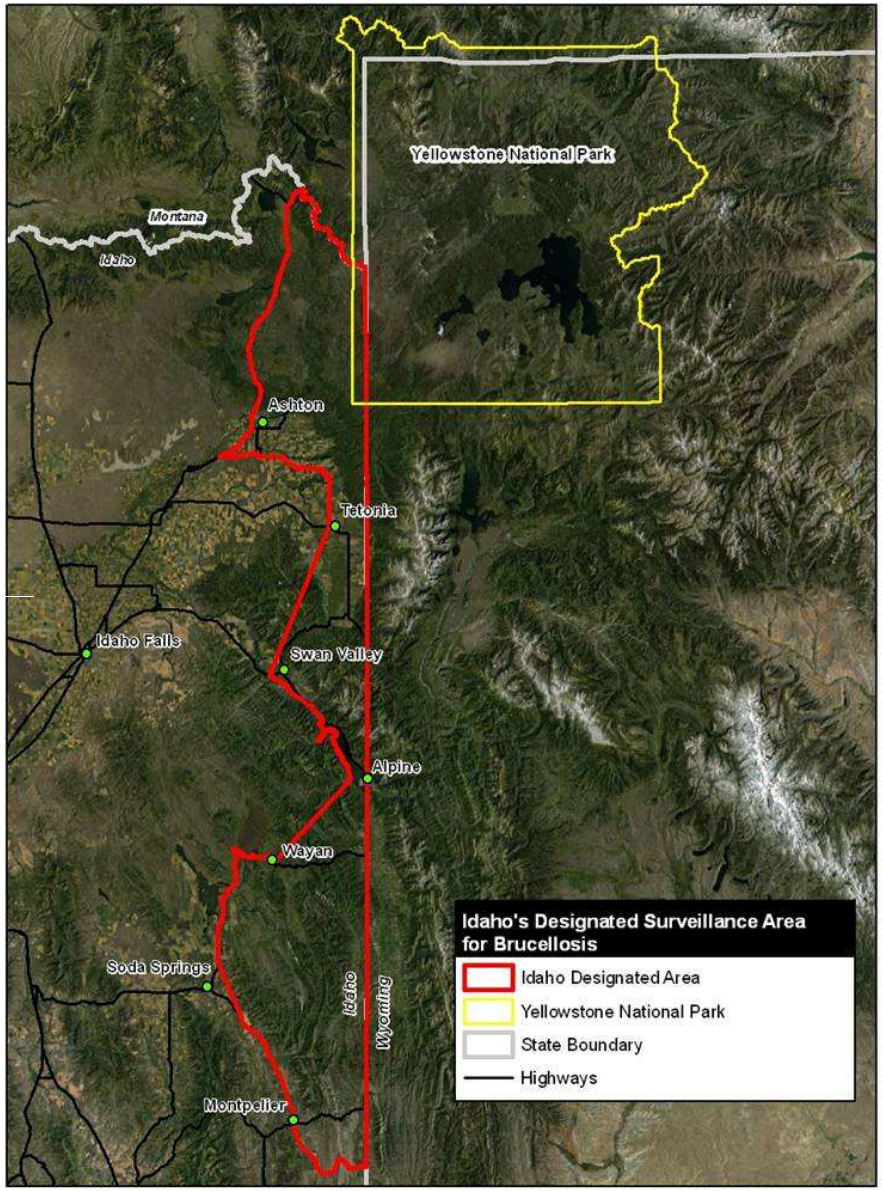
Hunter Kill Surveillance

	98	99	00	01	02	03	04	05	06	2007	08	09	10	Total
QNS/Hemo	8	21	279	463	80	nd	24	3	14	41	19	40	6	998
N	163	58	138	217	324	nd	267	305	257	295	33	80	304	2441
S	2	0	0	0	3	nd	2	6	2	2	0	0	1	18
R	10	4	1	2	4	nd	0	2	14	1	0	5	8	51
Yer					3		2	7	7	3		2		24
Yer + Bruc					3		0	1	1	0		0		5
Total	183	83	418	682	411	nd	293	316	287	339	52	125	319	3508
Total good	175	62	139	219	331	nd	269	313	273	298	33	85	313	2510
Seroprev	**6.8**	**6.5**	**0.7**	**0.9**	**2.1**	**nd**	**0.7**	**2.6**	**5.9**	**1**	**0**	**5.9**	**2.9**	**2.8**

Seroprevalence adult cows

GMU	98	99	00	01	02	03	04	05	06	07	08	09	10	%	Comments
59				0						3.9				3	Y
60A	3	0	0	0	0	nd		0	0			0	6.7	1.2	B
61	0		0	0				9.3	6.1			0	4.3	5.6	Y + B
62	5.3	0	50	0	11.1			0	33.3		0	50	100	16.7	Y + B
62A		100		0	0			0	0			0	0	3.9	Y + B
62A-1		16.7	0	0										10	B
64	0	50	0	0	0	nd			0				0	7.7	B
66A	0		0	0	2.9	nd	1.4					0	0	1.6	B
67	5.6	0	0	25	0	nd		0	20	66.6		25	11.8	12	B
76			0	3.8	3.4		0	0	0	0	0	0	0	1.3	B


MONTANA
West Thumb
Rexburg
Jackson
IDAHO
Pocatello
Park Valley
Brucellosis and Yersinia Seropositives
Brucellosis
Yersinia and Brucellosis


Yellowstone National Park
Montana
Idaho
Ashton
Tetonia
Idaho Falls
Swan Valley
Alpine
Wayan
Soda Springs
Montpelier
Idaho
Wyoming
Idaho's Designated Surveillance Area for Brucellosis
Idaho Designated Area
Yellowstone National Park
State Boundary
Highways

SURVEILLANCE FOR BRUCELLOSIS IN ELK

- Trapping of live elk
  - Cooperative effort between IDFG and ISDA in eastern Idaho
  - Bled and tested on site
    - Standard plate and BAPA
  - Retest at Animal Health Lab in Boise
    - SPT, BAPA, Rivanol, CF and FPA
  - Seropositive elk on site killed and cultured
- Capture of live elk (drive net, dart, net gun)
  - Bled and tested at Animal Health Lab in Boise
    - SPT, BAPA, Rivanol, CF and FPA

Rainey Creek 99-02

	1999	2000	2001	2002
AF	80.3%	83.3%	14.2%	27.8%
AM	33	0		50
YF	60	33		14.3
YM	0	25		0
CF	35.7	42.8	8.3	7.4
CM	18.5	25	20	2.9
Total	56.8%	46.7%	12.5%	13.5%

Brucella culture results Rainey Creek, 1999-2002

YEAR	Adults		Calves		
Biovar	1	4	1	4	1&4
1999	4	6	0	3	0
2000	0	3	0	0	1
2001	0	0	0	0	0
2002	1	1	1	1	0
Total	5	10	1	4	1

ELK TESTING WHL

- Wildlife Health Laboratory - calves
  - 1 abortion (11.1%)
  - 1 stillborn (11.1%)
  - 6 live calves (66.6%)
  - 1 fetus (11.1%)
  - 3/9 culture positive (37.5%)
  - 3 biovar 4 isolates
  - 4/9 reactors at birth to 72 hours old

Brucellosis in Cattle 2002

- Long term winter feeding of elk on ranch
- Seropositive elk found on ranch in 1998 resulting in annual cattle testing
- Elk tested on ranch March 22, 2002 – seropositive elk (3/3), culture of Biovar 1 on March 22, 2002
- Seropositive cattle (6/62) found April 13, 2002

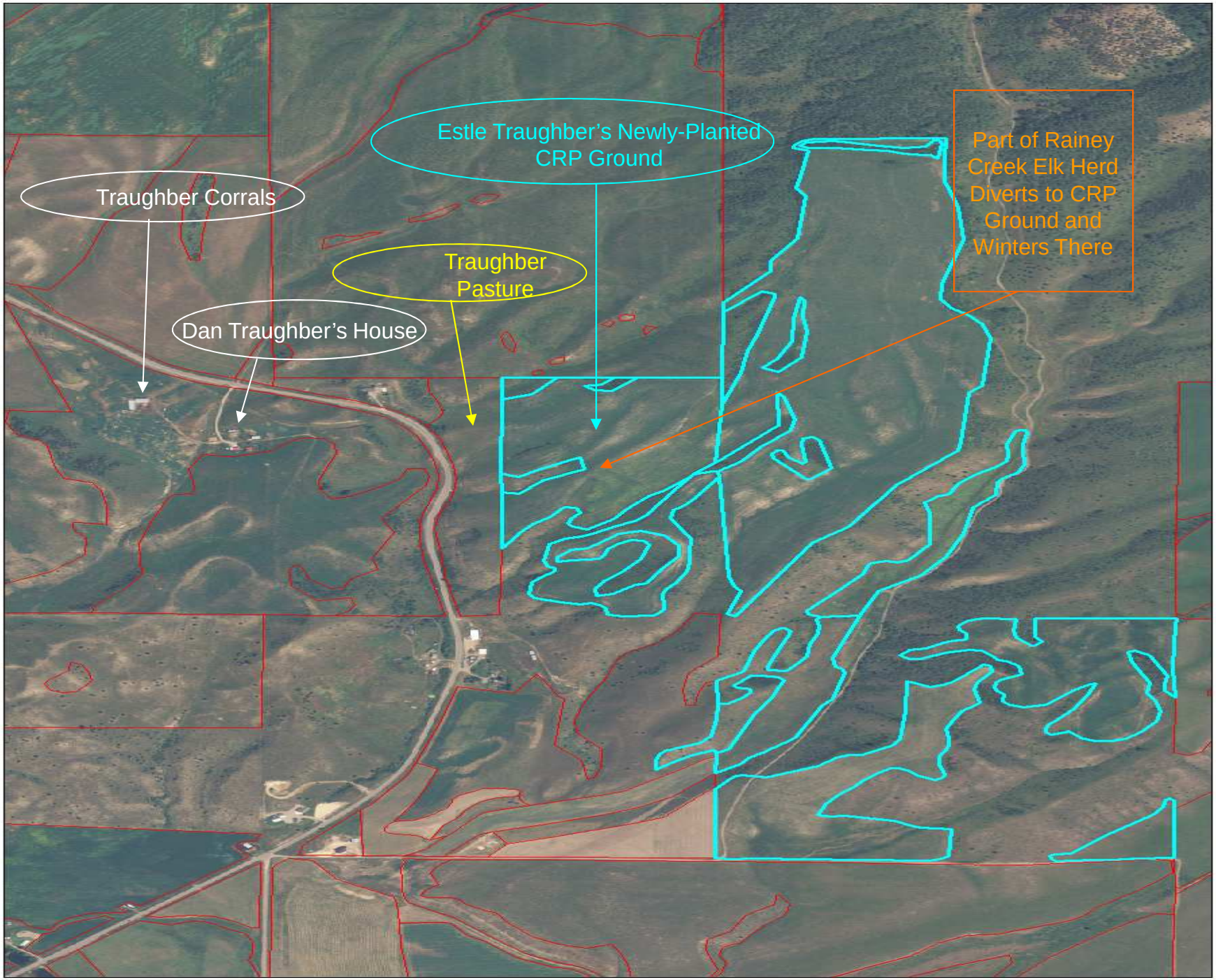
CATTLE INFECTION 2002

Brucellosis in Cattle, 2002

- Infected cattle found May 8, 2002
- Depopulation of cattle June 3, 2002
- Cleaning and disinfection completed June 31, 2002
- 802 adjacent or shared allotment cattle tested – all negative
- 313 cattle shipped from shared allotment herds – all negative
- No loss of state cattle status

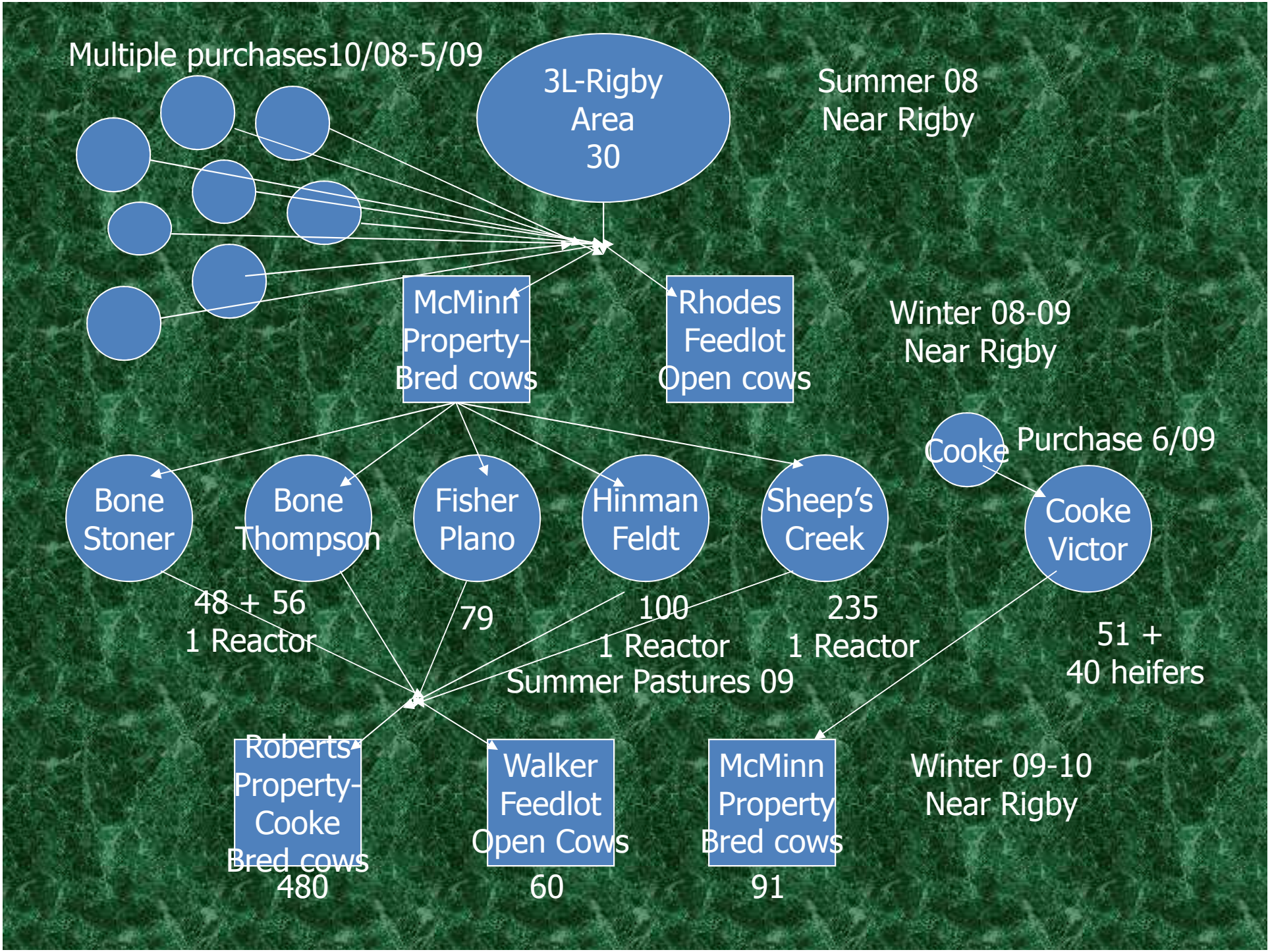
Brucellosis in Cattle 2005

- Part of Rainey Creek elk herd winters on newly planted CRP, 2004-05
- MCI trace to herd Sep. 9, 2005
- Herd test Oct. 7, 2005 – 8 R, 2 S, 3 culture +
- 1182 adjacent and in contact cattle bled – all negative
- Herd depopulation Dec. 6, 2005
- A 2005 heifer calf from the infected herd traced to feed-pen in Arco, ID and tested positive
- USDA classified the 23 animals in Arco feed-pen as Idaho's second affected herd.
- Jan. 12, 2006, ID reduced from "Class Free" to "Class A."


Estle Traughber's Newly-Planted CRP Ground
Traughber Corrals
Traughber Pasture
Dan Traughber's House
Part of Rainey Creek Elk Herd Diverts to CRP Ground and Winters There

Brucellosis in Cattle 2009

- MCI trace to herd July 24, 2009
- Multiple herd tests found 3 seropositve cows, 1 culture positive
- 532 in contact or shared allotment cattle tested, all negative
- USDA opted to test and slaughter herd without loss of state status
- Herd quarantined on multiple facilities to allow testing and kept through calving.
- All adult cattle depopulated August 2010


Multiple purchases10/08-5/09
3L-Rigby Area 30
Summer 08 Near Rigby
McMinn Property- Bred cows
Rhodes Feedlot Open cows
Winter 08-09 Near Rigby
Cooke
Purchase 6/09
Cooke Victor
Bone Stoner
Bone Thompson
Fisher Plano
Hinman Feldt
Sheep's Creek
48 + 56
1 Reactor
79
100
1 Reactor
235
1 Reactor
51 +
40 heifers
Summer Pastures 09
Roberts Property- Cooke Bred cows
480
Walker Feedlot Open Cows
60
McMinn Property Bred cows
91
Winter 09-10 Near Rigby

Brucellosis Management Program

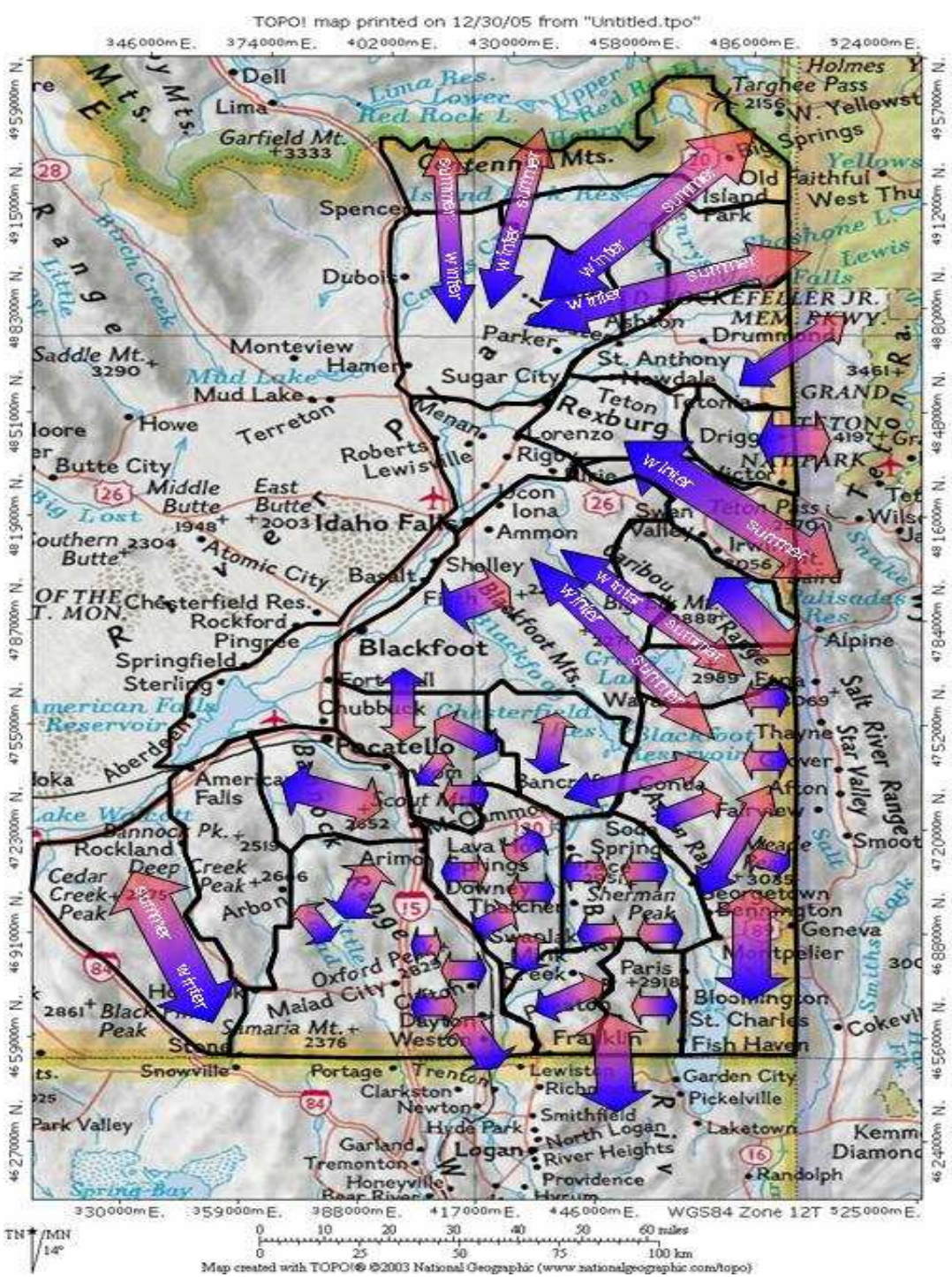
- Cooperative effort between IDFG and ISDA to address the brucellosis issue in Idaho
- Objectives
  - Manage elk populations within the carrying capacity of available winter habitat and provide for a harvestable surplus
  - Monitor elk and livestock for exposure to and infection with brucellosis
  - Reduce brucellosis prevalence in elk and maintain low seroprevalence
  - Habitat improvement on winter and spring range – BLM and USFS
  - Maintain separation between elk and cattle during high risk periods
    - Fencing, kill permits, depredation permits

Elk Management in Idaho

- In relation to brucellosis
  - No change in population objectives in areas with brucellosis
  - Hunting season changes
    - lengthened cow season to Nov and Dec to target cows late in the season and change behavior and wintering areas
    - Altered hunt boundaries to target elk in areas with possible cattle interactions
  - Liberal depredation hunts and kill permits when elk show up in near cattle

Eastern Idaho Elk Migration Patterns

Winter (blue) to Summer (red)



Brucellosis Management Challenges

- Uncertainty of management effects
- Legal challenges
- Adaptive management strategies
- Uniform management and decision points between three states
- Funding for elk management actions
- Decisions will be difficult
- Management will be expensive and long term
- Public must be involved
- Solutions require cooperation
- Solutions are possible