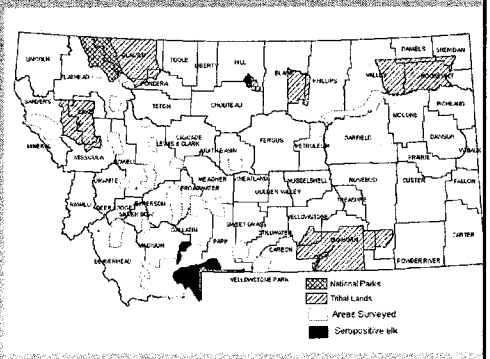
EXHIBIT 2
DATE 1-12-11
HB 2

Surveillance for Brucellosis in Elk 2008 & 2009

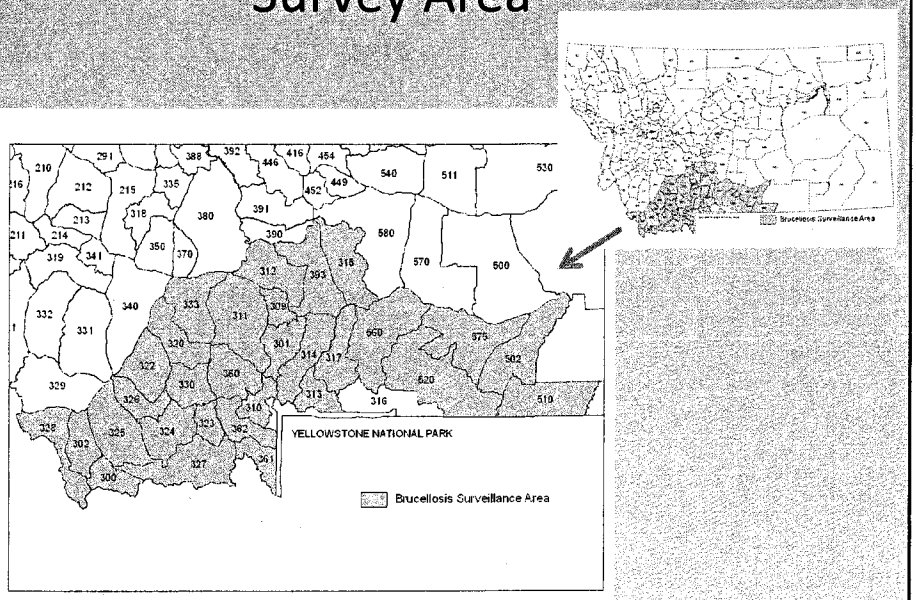
Montana Fish, Wildlife and Parks

Surveillance History

- Started in early 1980's
- Conducted over much of Montana
- Brucellosis only detected in GYA
- Recent surveillance focused on GYA
- WB - started 2004
- 2008 & 2009
  - Determine geographic distribution



Survey Area



2008-09 and 2009-10 Survey Strategy

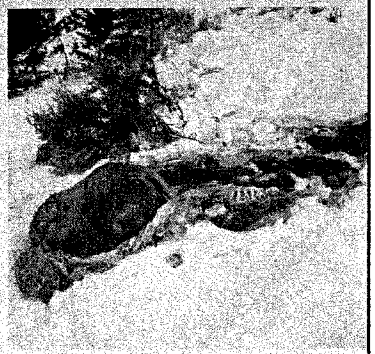
- Blood kits
  - Sent to hunters
  - Disseminated by landowners & FWP staff
  - FWP Regional offices
  - Businesses
  - Kiosks
- Blood
  - Mailed in
  - Drop-off points
- Research animals
- Tissue samples

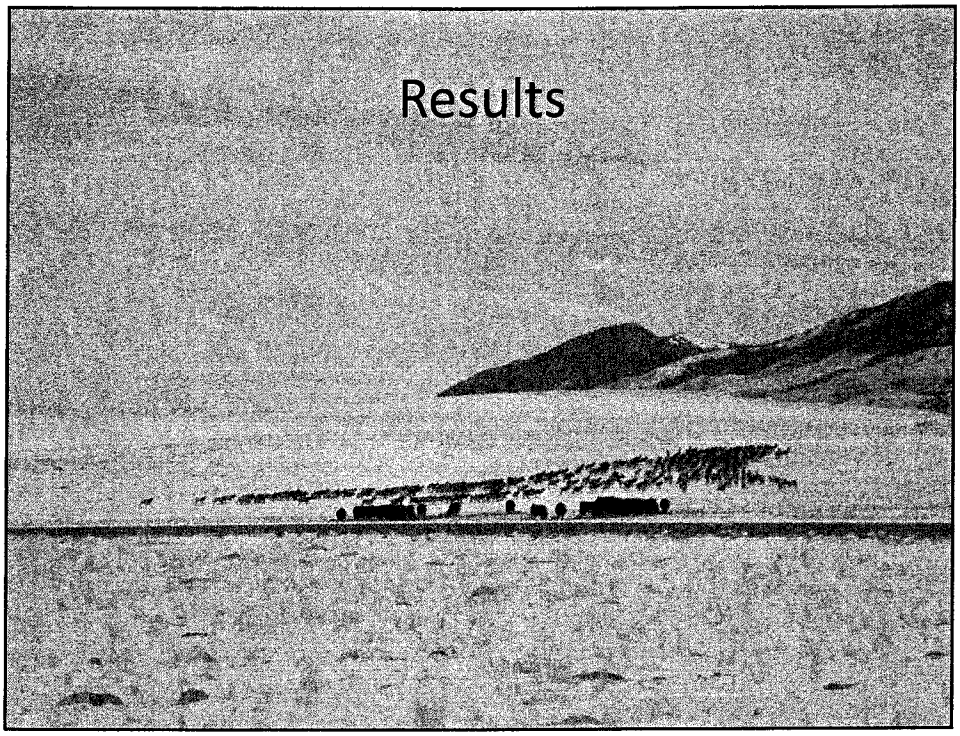
Blood Processing

- Serum collected at FWP Wildlife Lab
- Submitted to MT DoL, Diagnostic Lab
  - Rivanol, Fluorescent Polarization, Standard Plate
  - BAPA added in 2009-10
- Suspect and Reactors
  - Western Blot - LSU
  - Cross-reaction with Yersinia
- Exposure not infection

Tissue Collections

- Samples collected at
  - Game check stations, meat processors
  - Backtracking to kill sites
    - Gardiner Late Hunt
    - Madison Management Hunt
    - Other locations with large harvest
- Tissues collected for culture
  - Retropharyngeal L.N.
  - Supramammary L.N.
  - Cotyledons, amniotic fluid
  - Reproductive Tract (Non-pregnant)
- Culture Conducted by NVSL
  - Confirms infection





2008-09 & 2009-10

- Blood samples
  - Pooled over two years
- 829 adult female
- 234 adult male
- Focused on adult female elk
  - Primary concern for spreading brucellosis
  - Best indicate of brucellosis presence
- Tissue Samples
  - Pooled over two years
- 526 Samples
  - 463 female
  - 99 males
- Conjunction with CWD surveillance - 2009

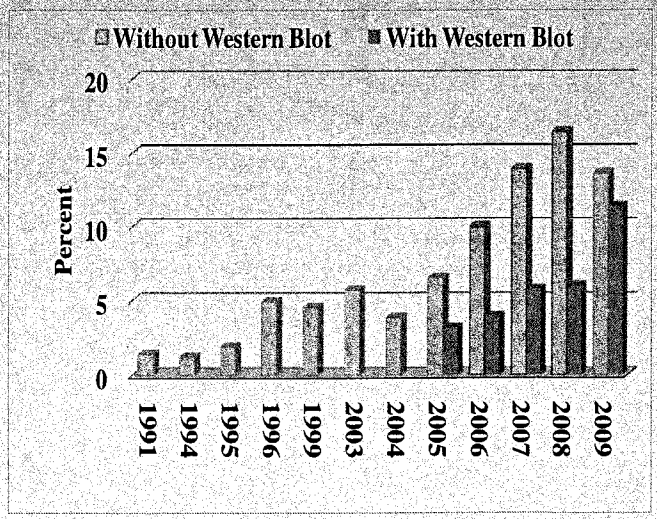
Serology Results

Adult Females
2008-09 and 2009-10

HD	Samples	Reactors without WB	Reactors with WB	# Cow elk - 2007/08
313	110	17 (15.4%)	9 (8.2%)	~3,000
314	192	10 (5.2%)	4 (2.1%)	~2,800
317	8	2	0	~490
323	12	3	0	~2,000
324	26	3	0	~1,600
326	6	2	0	~100
327	20	1	0	~1,500
360	89	8 (9.0%)	2 (2.2%)	~1,400
362	117	19 (16.2%)	5 (4.3%)	~1,600

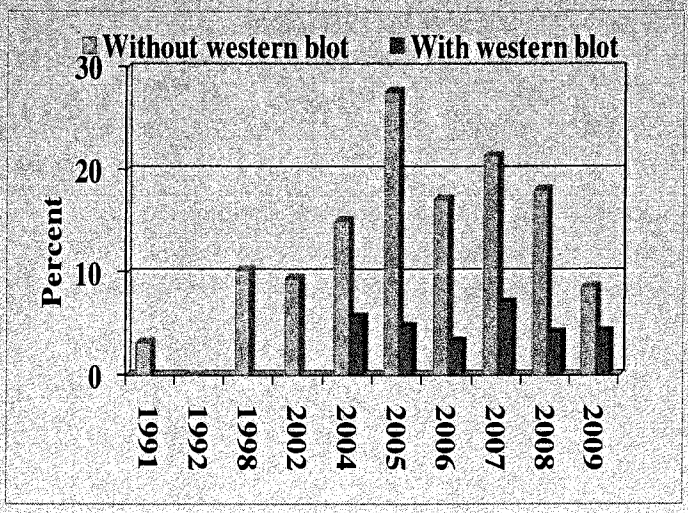
HD 313

Adult Female Elk



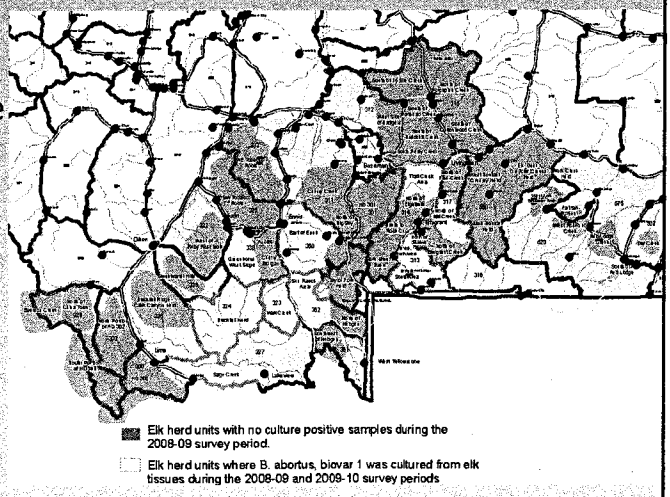
HD 362

Adult Female Elk



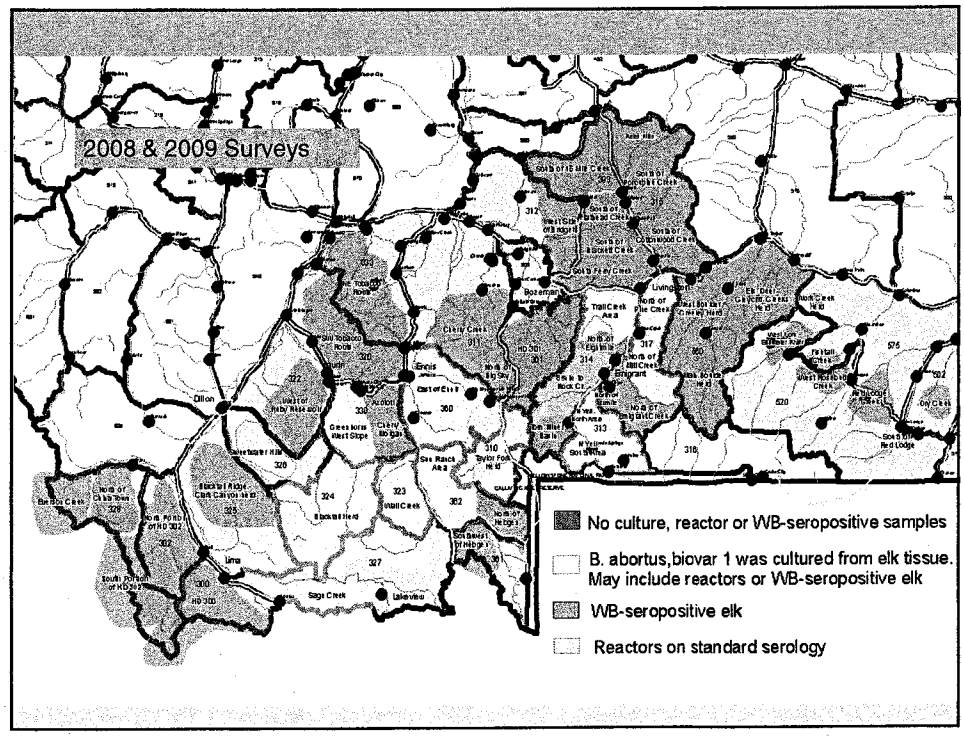
Culture Results

- 526 Elk
  - 463 female
  - 99 male
- 18 Positive
  - B. abortus, biovar 1
  - 13 female
  - 5 male

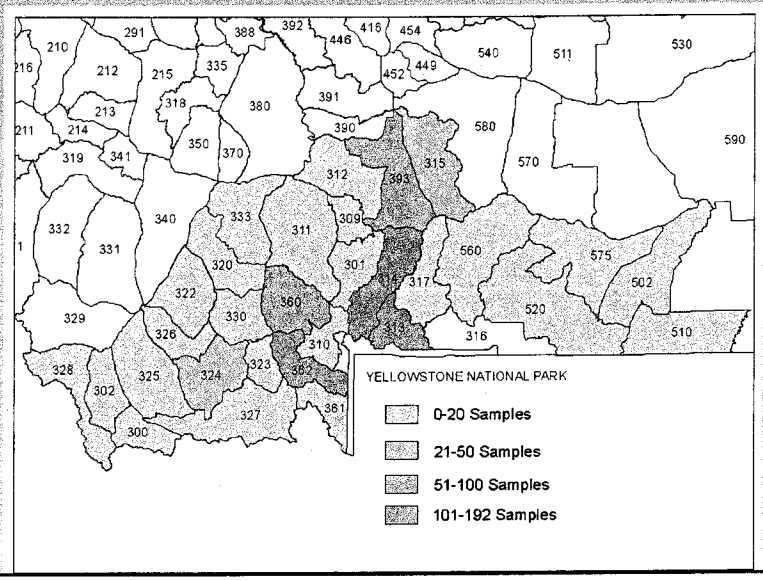


Blood and Culture Results

Serology	WB Results	Culture Results	Samples
Negative	Not tested	B. abortus not detected	118
Negative	Not tested	B. abortus, biovar 1	1
Reactor	Yersinia	B. abortus not detected	6
Reactor	Brucella and/or Yersinia	B. abortus not detected	5
Reactor	Brucella and Yersinia	B. abortus, biovar 1	2
Reactor	Yesinia	B. abortus, biovar 1	4



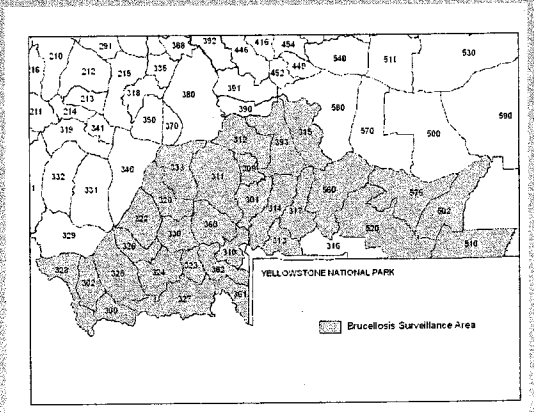
Sample Sizes
2008-09 and 2009-10



Future Surveillance and Research

- 2010-11 through 2014-15
- Funding available for 2010-2011
- Future efforts dependant on funding

Three Phases



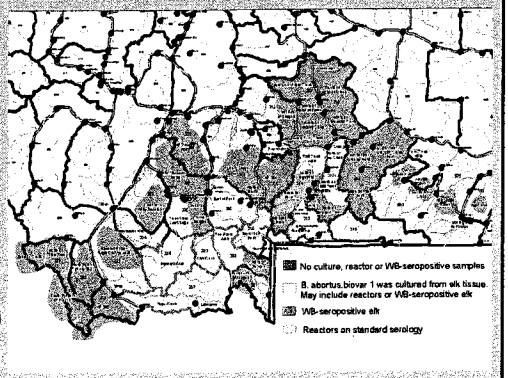
- Surveillance
  - Large area
  - Targeted
- Brucellosis epidemiology research
- Elk movement research

Surveillance

- Large area
  - Maintain hunter harvest surveillance
- Targeted
  - Focus on an area of concern
  - Utilize hunter harvest and live animal capture
    - Improve sample size
    - Capture ~100 elk
    - 50 Hunter harvested samples

Surveillance Outcomes

- Determine the presence/absence
- Improve understanding of distribution
- Baseline information on seroprevalence



Epidemiology

- Collar seropositive adult female elk
- Implant seropositive pregnant
- Monitor abortion/birth events
- Collect and test abortion/birth tissue
- Recapture and repeat for four additional years
- Remove seropositives, necropsy and test after five years

Epidemiology Outcomes

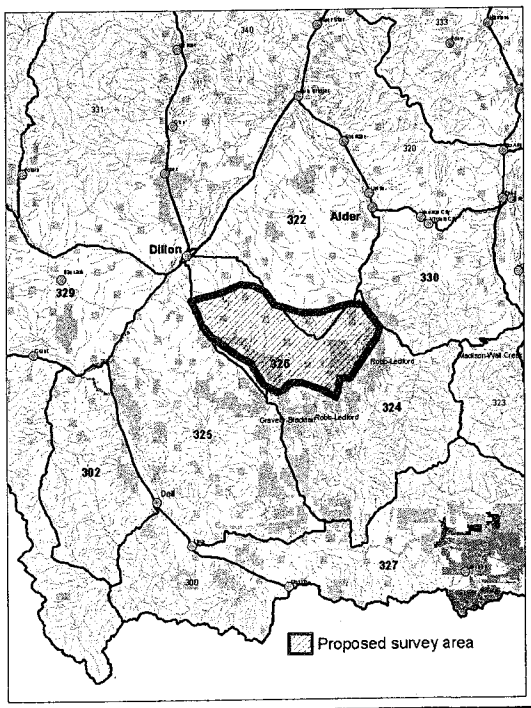
- Evaluate sero-status
- Determine risk of seropositive animals
  - Ability to shed B. abortus
- Additional information to evaluate testing methodology
- Increase number of isolates for comparison to other areas
- Difference in seropositive/seronegative movements

Elk Movement Research

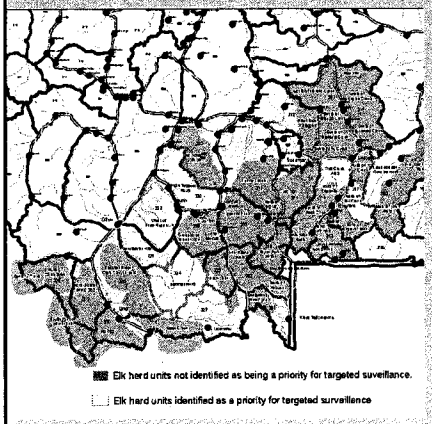
- GPS collar 30 adult female elk
- Double collar some of the seropositives

Movement Research Outcomes

- Determine movement patterns of elk
- Improve risk assessments for transmission
  - Elk - Cattle & Elk - Elk
- Improve understanding of brucellosis distribution
  - Future surveillance
  - Develop/improve risk models
- Better understanding of factors affecting brucellosis distribution and increasing seroprevalence



Future Targeted Surveillance & Research



- Dependant on funding
- Identify high priority areas
  - Use existing data, current modeling efforts, research data, management needs/concerns
- Repeated in 4 different areas