

IBMP Briefing Statement

Agency: Yellowstone National Park
Issue: Trends in Brucellosis Seroprevalence for Bison
Date: 8 September 2008

Background:

Seroprevalence rates were estimated from opportunistic sampling near the boundary of Yellowstone National Park during 1985 through 2008. Blood samples were collected from hunter-harvested bison and bison captured during brucellosis risk management operations.

Current State of Knowledge:

- Population seroprevalence rates have varied between 40 and 60 percent during the past two decades. We have not detected a change in sero-prevalence under the current IBMP risk management paradigm (Figure 1 and Table 1).

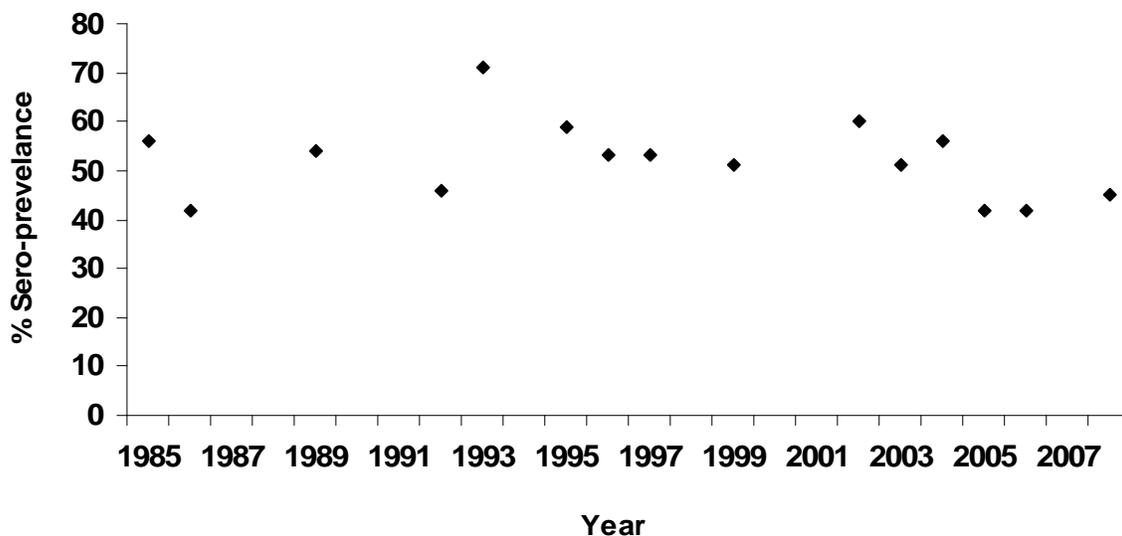


Figure 1. Estimates of population sero-prevalence in Yellowstone bison from 1985 to 2008. The sample size for each annual estimate varied between 57 and 1598 samples per year.

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Table 1. Rates of sero-positive bison by sex, age, and population estimate from samples collected near the boundary of Yellowstone National Park during 1985 to 2008.

YEAR	Seropositive Rate				Total Number of Samples				Source
	Male >1	Female >1	Calf	Population	#Male	#Female	#Calf	#Samples	
1984-85	0.55	0.73		0.56	11	11	0	88	Pac and Frey 1991, MT DOL
1985-86	0.29	0.50		0.42	17	8	0	57	Pac and Frey 1991, MT DOL
1986-87									
1987-88									
1988-89	0.61	0.44		0.54	279	202	0	484	Pac and Frey 1991
1989-90									
1990-91									
1991-92	0.54	0.40	0.27	0.46	127	98	15	241	Meyer and Meagher 1995
1992-93	0.89	0.88	0.33	0.71	9	8	9	80	MT DOL
1993-94									
1994-95	0.64	0.59	0.52	0.59	77	66	31	274	MT DOL
1995-96	0.59	0.65	0.20	0.59	100	71	10	181	MT DOL
1996-97	0.60	0.51	0.20	0.53				388	USGS
1997-98									
1998-99	0.54	0.63	0.20	0.51	65	57	20	142	MT DOL
1999-00									
2000-01									
2001-02	0.72	0.65	0.21	0.60	76	60	33	206	MT DOL
2002-03	0.48	0.64	0.19	0.51	66	97	43	229	NPS, MT DOL
2003-04	0.57	0.67	0.27	0.56	86	246	101	456	NPS , MT DOL
2004-05*	0.43	0.48	0.10	0.42	49	94	20	163	APHIS, MT DOL
2005-06	0.53	0.50	0.10	0.42	100	392	232	922	NPS ,MT DOL, IDDOA
2006-07									
2007-08	0.54	0.58	0.11	0.45	528	690	380	1598	NPS, MT DOL, IDDOA
<i>Mean</i>	<i>0.57</i>	<i>0.59</i>	<i>0.22</i>	<i>0.52</i>	<i>106</i>	<i>140</i>	<i>34</i>	<i>367</i>	

* During 1985-2004, sero-positive estimates were based on a panel of tests that included the standard tube agglutination test, complement fixation test, Rose Bengal card test, rivanol test and buffered plate agglutination test. After 2004, the fluorescent polarization assay (FPA) was added to the test panel because it provides greater specificity and sensitivity for detecting *Brucella abortus* antibodies. Procedures for use of FPA have been established to eliminate suspect test results and identify blood samples as either positive or negative.