

$\geq 512 = 1024$
 $1:16 = \textcircled{16}$
 $1:512 = \textcircled{512}$ NEG = $\textcircled{0}$ Toxic = -1

Results of disease testing on coyotes and foxes collected in northcentral Montana 19-27 January 1993.

ID	SEX	AGE	PS	Plague	PN	CD	TUL	TOX	LEP
Field Number	Sex	Age	Serum	Nobuto		Canine Distemper	Tularemia	Toxoplasmosis	Leptospirosis (5 Serovars)
COYOTE									
407	M	0	1:16	NEG	NEG	NEG	NEG	NEG	NEG
408	F	1	1:16	NEG	1:128	NEG	NEG	NEG	NEG
409	M	0	NEG	NEG	NEG	NEG	NEG	NEG	NEG
410	F	0	NEG	NEG	NEG	NEG	1:16	NEG	NEG
411	M	1	NEG	NEG	1:128	NEG	1:64	NEG	NEG
412	M	4	1:128	1:64	1:128	NEG	1:32	NEG	NEG
413	M	0	1:16	NEG	NEG	1:512	NEG	NEG	NEG
414	F	2	1:256	1:128	NEG	NEG	NEG	NEG	NEG
415	M	4	1:256	1:64	1:64	1:128	1:16	NEG	NEG
416	M	3	1:128	1:32	1:256	NEG	NEG	NEG	NEG
417	F	10	1:32	NEG	1:16	NEG	NEG	NEG	NEG
418	F	3	NEG	NEG	1:256	NEG	NEG	NEG	NEG
419	M	1	1:128	NEG	1:256	NEG	NEG	NEG	NEG
420	F	4	1:128	1:64	1:64	NEG	1:64	NEG	NEG
421	M	6	1:256	1:512	1:64	NEG	NEG	NEG	NEG
422	F	1	NEG	NEG	NEG	NEG	NEG	NEG	NEG
423	F	2	1:512	1:64	NEG	1:128	NEG	NEG	NEG
424	F	0	1:64	1:32	NEG	1:512	NEG	NEG	NEG
425	F	1	1:128	1:32	NEG	NEG	NEG	NEG	NEG
426	M	1	1:64	1:32	NEG	NEG	NEG	NEG	NEG
427	F	0	1:32	1:64	NEG	NEG	1:32	NEG	NEG
428	M	0	1:128	1:32	NEG	NEG	NEG	NEG	NEG
429	M	4	1:256	1:128	NEG	NEG	NEG	NEG	NEG
430	M	1	1:256	1:64	NEG	NEG	NEG	NEG	NEG

			Plague					
Field Number	Sex	Age	Serum	Nobuto	Canine Distemper	Tularemia	Toxoplasmosis	Leptospirosis (5 Serovars)
431	M	7	$\geq 1:512$	1:64	NEG	NEG	NEG	NEG
432	F	0	NEG	NEG	NEG	NEG	NEG	NEG
433	M	3	NEG	NEG	NEG	NEG	NEG	NEG
434	F	3	1:256	NEG	NEG	NEG	NEG	NEG
435	F	4	1:32	NEG	NEG	NEG	1:32	NEG
436	F	0	1:32	NEG	NEG	1:128	NEG	NEG
437	F	7	1:16	NEG	NEG	NEG	NEG	NEG
438	M	0	1:32	NEG	NEG	1:128	NEG	NEG
439	M	9	$\geq 1:512$	1:128	NEG	NEG	NEG	NEG
440	M	1	$\geq 1:512$	1:64	NEG	1:128	1:16	NEG
441	M	5	$\geq 1:512$	1:512	NEG	NEG	1:32	NEG
442	M	1	1:512	1:256	NEG	1:256	1:32	NEG
443	F	3	1:512	1:256	NEG	1:128	NEG	NEG
444	F	4	$\geq 1:512$	1:256	NEG	NEG	NEG	NEG
445	F	0	$\geq 1:512$	1:256	NEG	NEG	NEG	NEG
446	F	0	1:256	1:64	NEG	NEG	NEG	NEG
448	F	0	NEG	NEG	NEG	NEG	1:16	NEG
456	F	2	$\geq 1:512$	1:256	1:128	1:128	NEG	NEG
457	F	0	1:256	1:32	NEG	NEG	1:16	NEG
458	F	6	1:512	1:256	1:256	NEG	NEG	NEG
459	M	0	$\geq 1:512$	1:256	NEG	NEG	NEG	NEG
460	F	2	$\geq 1:512$	1:128	> 1:512	NEG	NEG	NEG
461	F	1	1:512	1:256	NEG	1:128	NEG	NEG
462	M	1	1:256	1:128	1:8 NEG	NEG	NEG	NEG
463	M	0	1:512	1:256	NEG	NEG	NEG	NEG
464	M	5	1:256	1:256	NEG	NEG	NEG	NEG

			Plague					
Field Number	Sex	Age	Serum	Nobuto	Canine Distemper	Tularemia	Toxoplasmosis	Leptospirosis (5 Serovars)
465	F	1	1:16	NEG	1:64	NEG	NEG	NEG
466	F	6	1:256	1:256	1:64	NEG	NEG	NEG
467	M	2	1:512	1:256	NEG	NEG	NEG	NEG
468	F	1	NEG	NEG	>1:512	NEG	NEG	NEG
469	M	1	NEG	NEG	Toxic	NEG	NEG	NEG
470	M	0	NEG	NEG	1:8 NEG	NEG	NEG	NEG
471	M	3	NEG	NEG	1:512	NEG	NEG	NEG
473	M	0	NEG	NEG	1:8 NEG	1:128	NEG	NEG
474	F	2	NEG	NEG	1:128 No test	NEG	NEG	No test
475	M	3	NEG	NEG	NEG	1:128	NEG	NEG
484	F	2	NEG	NEG	1:256	NEG	NEG	NEG
485	F	2	NEG	NEG	NEG	NEG	NEG	NEG
486	M	2	NEG	NEG	1:256	NEG	NEG	NEG
487	F	2	NEG	NEG	>1:512	NEG	NEG	NEG
489	F	1	NEG	NEG	Toxic	NEG	NEG	NEG
490	F	3	NEG	NEG	1:512	1:128	NEG	NEG
491	F	0	NEG	NEG	NEG	NEG	NEG	NEG
492	M	0	NEG	NEG	NEG	NEG	NEG	NEG
493	M	0	NEG	NEG	Toxic	NEG	NEG	NEG
494	M	3	NEG	NEG	>1:512	NEG	NEG	NEG
495	M	2	NEG	NEG	NEG	NEG	NEG	NEG
496	F	1	NEG	NEG	NEG	NEG	NEG	NEG
497	F	3	NEG	NEG	1:256	NEG	NEG	NEG
498	M	3	NEG	NEG	1:256	NEG	NEG	NEG
499	F	2	NEG	NEG	1:32	NEG	NEG	NEG
500	F	2	NEG	NEG	1:64	NEG	NEG	NEG

909

			Plague					
Field Number	Sex	Age	Serum	Nobuto	Canine Distemper	Tularemia	Toxoplasmosis	Leptospirosis (5 Serovars)
4401	M	2	NEG	NEG	> 1:512	NEG	NEG	NEG
4403	F	4	NEG	NEG	1:32	NEG	1:128	NEG
4404	F	0	NEG	NEG	NEG	NEG	NEG	NEG
4405	M	3	NEG	NEG	1:64	NEG	NEG	NEG
4406	F	3	NEG	NEG	NEG	NEG	1:64	NEG
4476	M	3	NEG	NEG	NEG	NEG	NEG	NEG
RED FOX								
488	M	0	NEG	NEG	NEG	NEG	1:128	NEG
4477	M	1	NEG	NEG	NEG	NEG	NEG	NEG
4478	F	0	NEG	NEG	NEG	1:128	1:128	NEG

9

DEPTM
FAX = 657-6028

Results of serology of coyotes, badgers, and fox, 1994.

512 512

12

Feb

Number Species	Canine distemper	Lepto	Plague	Tularemia	Toxo- plasma
4301	1:128*	QNS	<u>>1:512</u>	negative	negative
4302	1:64	negative	<u>>1:512</u>	negative	negative
4304 (Fox)	1:16	negative	1:64	negative	negative
4306	negative	negative	<u>>1:512</u>	negative	negative
4307	1:128	negative	<u>>1:512</u>	negative	negative
4308 (Fox)	negative	negative	negative	negative	negative
4309	negative	negative	negative	negative	negative
4310	1:256	negative	1:256	1:128	negative
4311	negative	negative	negative	negative	negative
4312	negative	negative	negative	negative	negative
4313	1:64	negative	1:8	negative	negative
4314	1:256	negative	negative	negative	negative
4315 badger	negative*	negative	negative	negative	negative
4316	negative*	negative	negative	negative	negative
4317	negative	negative	negative	negative	negative
4318	negative*	negative	negative	negative	negative
4319	negative	negative	negative	negative	negative
4320	negative	negative	negative	negative	negative
4321 fox	1:16*	negative	negative	negative	negative
4322	negative	negative	negative	negative	negative
4323	1:128	negative	negative	negative	negative
4324	1:256	negative	1:16	negative	negative
4325	negative	negative	negative	negative	negative
4326	negative	negative	negative	negative	negative
4327	1:256*	negative	negative*	negative*	1:16
4328	negative*	negative	negative	negative	negative
4329	1:32	negative	negative	negative	negative

3/18/94 —
CAMS STORM TO
SFRD AT 3V. (AT/COMS.)

Number Species	Canine distemper	Lepto	Plague	Tularemia	Toxo- plasma
FB 4330	1:256*	negative	negative*	negative*	negative
FB 4331	negative	negative	negative	negative	negative
FB 4332	negative	negative	negative	negative	negative
FB 4333	negative	negative	negative	negative	negative
FB 4334	1:16*	negative	negative*	negative*	negative
FB 4335	negative*	negative	negative	negative	negative
FB 4336	negative	negative	negative	negative	negative
FB 4337	1:32*	negative	negative*	negative*	negative
FB 4339	negative	1:400 pomona	negative	negative	1:32
FB 4340	1:128*	negative	negative*	negative*	negative
FB 4342	negative	negative	1:128	negative	negative
FB 4343	QNS	negative	negative*	QNS	negative
FB 4344	1:64	negative	negative	negative	negative
FB 4345	un- suitable	negative	negative*	negative*	negative
FB 4346 badger	1:16*	negative	negative	1:128	negative
OFF 4349	negative	negative	1:256	QNS	negative
OFF 4350	QNS	negative	negative*	QNS	negative
FB 4351	negative	negative	negative	negative	negative
OFF 4352	1:16	negative	1:512	negative	negative
OFF 4353	negative*	negative	negative	negative	negative
OFF 4354	negative	negative	1:64 Negative	negative	negative
OFF 4355	negative	negative	1:64	negative	1:128
OFF 4356	1:64	negative	negative	negative	1:128
ON 4357	1:64	negative	1:256	1:128	negative
ON 4358	1:128	negative	1:256	negative	1:32
ON 4360	negative	negative	1:32	negative	negative
OFF 4361	1:16	negative	negative	negative	negative
OFF 4362	negative*	negative	1:256	negative	negative

Number Species	Canine distemper	Lepto	Plague	Tularemia	Toxo- plasma
4363	negative	negative	$\geq 1:512$	negative	negative
FB no tag coyote	1:16*	negative	negative*	negative*	negative
4364	1:128*	negative	1:128*	negative*	negative
4365	1:64*	1:200 pomona 1:100 ictero	negative*	negative*	1:16
4366	negative	negative	1:128	1:128	1:16
4367	1:32	negative	negative	negative	negative
4368	1:128	negative	1:64	negative	negative
FB 4369	negative	negative	1:32	negative	negative
FB 4370	1:128	negative	negative	negative	negative
4371	negative	negative	$\geq 1:512$	negative	negative
4372	negative	negative	1:128	negative	negative
4373 fox	negative	negative	1:128	1:512	negative
4374	negative	negative	1:512	negative	negative
4375	negative	negative	1:64	negative	negative

If species is not indicated, the serum is from coyote.

QNS = quantity of serum not sufficient to conduct the test.

* = quality of the serum was poor and could have interfered with the test results.

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

SOUTH PHILLIPS COUNTY BLACK-FOOTED FERRET REINTRODUCTION

PREDATOR DISEASE SURVEY. AUG. 1994

PAGE 1. CMR NWR / UL BEND NWR.

=Refugee

		LOCATION			
TAG NO.	DATE	T	R	SEC	1/4
4376	08/09	21	29	06	SE
4377	08/09	21	29	06	SE
4378	08/09	22	29	09	NW
4379	08/09	21	29	02	NE
4380	08/09	21	29	02	NE
4381	08/09	21	29	12	SE
4382	08/09	21	31	07	NW
4383	08/09	21	31	07	NW
4384	08/09	21	30	07	NE
4385	08/09	21	30	07	NE
4386	08/09	21	29	08	NW

F Ad
M Ad
M Pup
M Pup
M Pup
F AD
M AD
M Pup
F Pup
M Pup
M Pup

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
SOUTH PHILLIPS COUNTY BLACK-FOOTED FERRET REINTRODUCTION
PREDATOR DISEASE SAMPLING. AUG. 1994

PAGE 2. BLM/PRIVATE LAND NORTH OF UL BEND NWR.

		LOCATION			
TAG NO.	DATE	T	R	SEC	1/4
4387	08/10	22	30	19	SE
4388	08/10	22	30	19	SW
4389	08/10	22	29	24	NW
4390	08/10	22	29	24	NW
4391	08/10	23	28	15	NE
4392	08/10	23	29	27	SW
4393	08/10	23	29	27	SW
4394	08/10	23	29	27	SW
4395	08/10	23	29	27	SW
4396	08/10	23	30	15	SW
4397	08/10	24	30	26	NW
4398	08/10	24	30	26	NW
4399	08/10	24	30	26	NW
4400	08/10	23	29	01	SW
4347	08/10	23	29	01	SW
4348	08/10	24	29	34	SE
399	08/10	24	29	34	SE
400	08/10	24	29	34	SE
SHOT	08/10	24	30	30	NW

Feb. 1994

Number Species	Weight (Pounds)	Age (Years)	Number Species	Weight (Pounds)	Age (Years)	Number Species	Weight (Pounds)	Age (Years)
4301 Male	29	1	4330 M	32	JUV	4363 M	31	2
4302 F	25	4	4331 M	29	JUV	no tag M	29	
4304 <u>Fox</u> M	13	7	4332 M	34	1	coyote(4338)		1
4306 M	29	1	4333 F	28	3	4364 F	26	JUV
4307 F	28	2	4334 M	34	2	4365 F	28	JUV
4308 F	23	1	4335 M	31	JUV			
4309 M	28	JUV	4336 F	25	JUV	4366 M	27	JUV
4310 F	25	2	4337 F	26	JUV	4367 F	28	5
4311 M	28	JUV	4338 F	24	JUV	4368 F	24	2
4312 M	29	4	4340 F	31	4	4369 F	24	JUV
4313 F	26	4	4342 M	30	1	4370 F	26	1-2(28)
4314 M	31	3	4343 M	34	1	4371 F	26	JUV
4315 <u>badger</u> M	16	JUV	4344 F	27	3-4(68)	4372 F	27	JUV
4316 F	25	JUV	4345 M	32	1	4373 <u>fox</u> M	12	JUV
4317 M	30	JUV	4346 <u>badger</u> M	15	1	4374 M	35	JUV
4318 F	26	JUV	4349 M	28	3	4375 M	29	JUV
4319 F	26	JUV	4350 M	28	JUV			
4320 M	28	JUV	4351 M	29	JUV			
4321 <u>fox</u> F	11	1	4352 F	27	6			
4322 M	25	JUV	4353 F	23	1			
4323 F	25	1	4354 F	24	JUV			
4324 M	29	1	4355 F	21	JUV			
4325 F	33	2	4356 F	25	2			
4326 M	31	1	4357 M	25	3-4(68)			
4327 F	29	5	4358 M	33	4			
4328 F	23	JUV	4360 M	23	JUV			
4329 M	32	6	4361 M	28	5			
			4362 F	25	JUV			

JUV ≈ 10 months

= FT. Belknap IR

Sex & Age Distribution of coyotes Collected Feb 1-5, 1994

South Phillips County

(Age in years)

	0	1	2	3	4	5	6	7+
♂♂	7	3	1	1	2	1	0	0
♀♀	7	1	4	0	1	1	1	0
Total	14	4	5	1	3	2	1	0

Fort Belknap I.R.

♂♂	7	7	1	1	1	0	1	0
♀♀	8	1	2	2	2	1	0	0
Total	15	8	3	3	3	1	1	0

COYOTES KILLED DURING DISASSESSMENT

	CMR	BCM	FT. BA.	POD TOTL
JAN 1993 =	24	29	32	85
AVG 1993 =	CANCELED			
FEB 1994 =	5	27	37	69
AVG. 1994 =	11	19	0 ?	1 30
FEB. 1995 =	20	31	20	71
	<hr/> 60	<hr/> 106	<hr/> 89	<hr/> 255

JAN 1993 - COORD. BY STONEBARGER & FURS
- 1st EXPERIENCES

FEB 1994 - COORD BY MATHERS - USFWS
- USED USING GPS - AMMOSITY OF VARIOUS
- ~~STATIONARY~~ ~~DETERMINED~~

AVG 1994 - NO FWS APPROVAL -
- COORD. BY STONEBARGER & FURS

FEB 1995 - COORD. BY STONEBARGER - FURS
- RESULTS NOT ANALYZED - GPS USED, STILL PROBLEMS, BUT
LAST DATA NOT ADAPTED TO IANON OF PROBLEMS.
~~NOT~~ EXPOSED TO ME. E.G. AGES

CARNIVORE SAMPLES -

DRAFT - 6/13/94 -

(1)

SOUTH PHILLIPS COUNTY, MONTANA -

MATCHETT

1993	SAMPLE	PLAQUE DISTEMPER		AVERAGE AGES		MALE :	PERCENT	AVERAGE	EXPLOITATION	
	SIZE	POSITIVE	POSITIVE	MALES	FEMALES	ALL	FEMALE	FEMALE	WEIGHT PARASITES	RATE
ON CMR	24	18	12	2.6	2.8	2.7	14:10	42	???	???
OFF CMR	29	27	3	2.1	1.9	2.0	11:18	62	???	???
SUBTOTAL	53	45	15	2.4	2.2	2.3	25:28	53	???	???
FBIR	32	0	18	1.6	1.7	1.8	16:16	50	???	???
TOTAL	85	45	33	2.1	2.1	2.1	41:44	52	???	???

1994	SAMPLE	PLAQUE DISTEMPER		AVERAGE AGES		MALE :	PERCENT	AVERAGE	EXPLOITATION	
	SIZE	POSITIVE	POSITIVE	MALES	FEMALES	ALL	FEMALE	FEMALE	WEIGHT PARASITES	RATE
ON CMR	5	4	3	???	???	???	4:1	20	27.2	???
OFF CMR	27	18	11	???	???	???	12:15	52	25.7	???
SUBTOTAL	32	22	14	???	???	???	16:16	50	???	???
FBIR	37	4	15	???	???	???	???:??	??	???	???
TOTAL	69	26	29	???	???	???	???:??	??	???	???

* 10 negative plague samples with poor quality serum - 2 off CMR, 8 FB

** 10 negative distemper samples with poor quality serum - 3 off CMR, 7 FB

1993	SAMPLE	PERCENT	PERCENT	PERCENT		PERCENT	PERCENT	PERCENT	EXPLOITATION	
	SIZE	PLAQUE	DISTEMPER	PERCENT	PERCENT	TULAREMIA	TOXOPLASM	LEPTOSPIR	EXPLOITATION	RATE
ON CMR	24	75	50	42	46	12	29	0	REL. LOW	
OFF CMR	29	93	10	62	31	28	17	0	REL. HIGH	
SUBTOTAL	53	85	28	53	38	21	23	0		
FBIR	32	0	56	52	34	10	7	0	REL. MED-LOW	
TOTAL	85	53	39	52	36	16	16	0		

1994	SAMPLE	PERCENT	PERCENT	PERCENT		PERCENT	PERCENT	PERCENT	EXPLOITATION	
	SIZE	PLAQUE	DISTEMPER	PERCENT	PERCENT	TULAREMIA	TOXOPLASM	LEPTOSPIR	EXPLOITATION	RATE
ON CMR	5	80	60	20	???	40	40	0	REL. LOW	
OFF CMR	27	67	41	56	???	8	11	3	REL. HIGH	
SUBTOTAL	32	69	44	50	???	13	16	3		
FBIR	37	11	41	???	???	3	5	3	REL. MED-LOW	
TOTAL	69	38	42	???	???	8	10	3		

* 10 negative plague samples with poor quality serum - 2 from off CMR, 8 from Ft. Belknap

** 10 negative distemper samples with poor quality serum - 3 from off CMR, 7 from Ft. Belknap

DRAFT -6/13/94

(2)

=====

22% of the 1994 samples from Ft. Belknap had insufficient quantity/quality serum for reliable plague tests.

9% of the 1994 non-Ft. Belknap samples had insufficient quantity/quality serum for reliable plague tests.

16% of the 1994 samples had insufficient quantity/quality serum for reliable plague tests.

41% of the 1994 samples from Ft. Belknap had insufficient quantity/quality serum for reliable distemper tests.

19% of the 1994 non-Ft. Belknap samples had insufficient quantity/quality serum for reliable distemper tests.

30% of the 1994 samples had insufficient quantity/quality serum for reliable distemper tests.

=====

=====

Statistically significant differences (χ^2 -test, $P < 0.1$) noted:

1993

Lower plague incidence on CMR and FBIR than on BLM

Higher distemper incidence on CMR and FBIR than on BLM ($P < 0.005$)

Higher tularemia incidence on BLM than on FBIR

Similar trend of higher tularemia on BLM than on CMR, but non-significant

Higher toxoplasmosis incidence on CMR than on FBIR ($P < 0.05$)

=====

1994

Lower plague incidence on FBIR than on BLM or CMR ($P < 0.001$)

The high rate of unreliable results for distemper may contribute to inability to discern differences

Higher tularemia incidence on CMR than on FBIR ($P < 0.05$)

17% of the samples had insufficient quantity/quality serum for reliable tularemia tests, adding uncertainty to comparisons

Higher toxoplasmosis incidence on CMR than on FBIR

=====

DRAFT - 6/13/94

(3)

SOUTH PHILLIPS COUNTY CARNIVORE SAMPLING - Revised 6/13/94 - Matchett

=====

1993 FLIGHT SAMPLES MIN. PER

TIME (min) OBTAINED SAMPLE

ON CMR ??? 24

OFF CMR ??? 29

FBIR ??? 32

TOTAL &

AVERAGE

??? 85

=====

1994 FLIGHT FLIGHT SAMPLES MILES PER MIN. PER

SUBUNIT MILES TIME (min) OBTAINED SAMPLE SAMPLE

1 7.4 11 2 3.7 5

2 12.9 19 0 NONE NONE

3 26.7 39 1 26.7 39

4 17.8 26 0 NONE NONE

5 87.5 128 3 29.2 43

6 74.7 109 2 37.4 55

7 54.7 80 2 27.4 40

8 57.8 84 2 28.9 42

9 14.2 21 1 14.2 21

10 30.4 44 3 10.1 15

11 9.9 14 1 9.9 14

12 49.4 72 2 24.7 36

13 40.8 60 2 20.4 30

14 34.4 50 4 8.6 13

15 52.3 76 1 52.3 76

16 13.6 20 2 6.8 10

17 19.5 28 2 9.8 14

18 23.3 34 2 11.7 17

OUT 63.3 92 2 31.7 46

TOTALS &

AVERAGE

690.6 1008 34 20.3 30

Eight of 34 samples (24%) were incorrectly mapped to a subunit
during field operations.

=====

FBIR unknown 384 35 ---- 11