

Volume

1

BOVINE TUBERCULOSIS STAKEHOLDERS ADVISORY
COMMITTEE

Bovine Tuberculosis (TB) Protecting Human Health

Aerial Survey Primer

Cattle Bovine Tb Testing Primer

REMA – Update and Workplans 2004/05

Early Bison History in RMNP

Bovine Tuberculosis Information Review

BOVINE TUBERCULOSIS STAKEHOLDERS ADVISORY COMMITTEE

Bovine Tuberculosis Information Review

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BOVINE TUBERCULOSIS (TB)

Protecting Human Health



Bovine TB has been identified in several herds of cattle and some elk in the Parkland region. As part of the National Bovine Tuberculosis Eradication Program, Federal Veterinarians are working to eliminate TB from this area. In addition, the Parkland Regional Health Authority (PRHA), in collaboration with the Public Health Branch (Manitoba Health) and the Central Tuberculosis Registry is evaluating people who may have been exposed to bovine TB.

What is bovine TB?

Bovine TB is a type of tuberculosis that can affect both humans and animals, such as cattle, deer, elk and pigs. Bovine TB is caused by a germ called *Mycobacterium bovis*, which is very similar to the agent that usually causes tuberculosis in humans, and it causes similar symptoms. In humans, bovine TB most often affects the lungs, lymph nodes or organs of the digestive system. It is a curable disease.

What are the symptoms of bovine TB in people?

Symptoms of bovine TB disease will depend on what part of your body is affected. In general, symptoms may include a productive cough, fever, night sweats, chest pain, or loss of appetite. You may have other symptoms as well, if other parts of your body are affected.

How can I catch bovine TB?

The general public has a very low risk of coming into contact with bovine TB. Bovine TB is transmitted from animals to humans primarily by consumption of raw (unpasteurized) milk or raw milk products containing the bacteria or by prolonged exposure to bacteria in the air in the immediate vicinity of live infected animals or their carcasses. On very rare occasions, bovine TB is passed to a human when bacteria from an infected animal get into a cut on the skin. Transmission of bovine TB between animals and humans occurs infrequently.

Pasteurized milk and cheese pose no risk to people because the pasteurization process kills the tuberculosis bacteria. If there is evidence of bovine TB infection at slaughter, the carcass is safely disposed of and the meat does not enter the food chain.

What happens if I'm infected with bovine TB?

People may carry the TB germ (be infected with TB) for long periods of time, but have no symptoms at all and cannot spread the germs to anyone else. In fact, most people infected with bovine TB will never get sick from the TB germs.

However, some people who are infected with TB will become ill and develop "TB disease", especially those who are very young or very old, or those with a weakened immune system. This is when you may spread germs to others. Bovine TB disease can lead to serious lung and other complications if not properly treated. However, with medication taken as prescribed, people with bovine TB can be cured.

How do I know I've been infected with bovine TB?

The first step to determine if you have been exposed to bovine TB is to see your doctor or go to your local public health office to be tested. You may be given a skin test or a chest x-ray. If a skin test is applied, you must return in 2 to 3 days to have the test read and interpreted. Your health care provider will measure the size of your reaction to the test, and will discuss the results with you.

A negative test usually means a person is not infected. However, it takes from 2 to 10 weeks after an exposure to TB before your skin test will react if you have been infected, so your health care provider may recommend that you have a repeat TB skin test in a couple of months to make sure it remains negative.

In general, a positive TB skin test is a good indication that you have been infected with TB at some time in your life. The TB skin test cannot tell the difference between the various types of TB (human or bovine), nor can it tell if your infection is recent, or from a long time ago. A positive test just tells you that you need further evaluation to determine whether you have TB infection or disease. Depending on your history and the test results, you may be prescribed antibiotics to cure the infection or disease.

How is bovine TB treated in humans?

Bovine TB infection or disease is treated with specific antibiotics that kill the tuberculosis bacteria. Treatment normally lasts for 6 months. A treatment plan will be made for each individual patient. To help take the antibiotics properly, Manitoba Health offers a program called "Directly Observed Therapy" (DOT), through which a health worker supervises the taking of medication.

If a person with TB does not take the required dosage of medicine or stops taking the drugs too soon, the TB bacteria can become resistant to the drugs already taken. This makes TB much more difficult to treat.

Who should be tested for bovine TB?

As stated earlier, the general public has a very small risk of coming into contact with bovine TB. It is recommended that testing related to bovine TB exposure be limited to the individuals in closest contact with infected animals or their carcasses, and individuals who may have consumed raw milk from infected cattle.

Testing is therefore recommended only for farm workers, veterinarians, and other workers who have had regular contact with an infected animal, individuals who have consumed raw milk from infected cattle, and other persons with significant contact to infected animals. Once testing of people with the greatest amount of contact has been completed, the results are reviewed and a decision is made about the need to test others with less exposure to the infected animal.

How can I avoid catching bovine TB?

Use only pasteurized milk and milk products. If you work in an occupation that requires you to come into close contact with known infected animals or their carcasses, ask your employer about what infection control precautions might be needed to protect you from airborne TB bacteria.

Where can I get more information on tuberculosis?

For more information on bovine tuberculosis, please contact your local public health office.

You can also visit these websites for more information:

Manitoba Agriculture and Food - Disease Facts for Manitoba Livestock Producers:

<http://www.gov.mb.ca/agriculture/livestock/anhealth/jaa04s03.html>

Manitoba Conservation - Bovine Tuberculosis in Elk:

<http://www.gov.mb.ca/conservation/wildlife/disease/bovine.html>

Aerial Survey Primer

Aerial counts in Riding Mountain National Park have been on-going, in one form or another, since the 1950's. During the first two decades, the effort and the methodology changed, making direct comparisons difficult from that time to today. However, under the guidance of the Canadian Wildlife Service, the surveys were standardized in the 1976. Since that time, the surveys have been flown as follows:

1. The team consists of a pilot, a data recorder, both seated in the front, and two observers seated in the back. As the plane flies, the observers record all elk, moose and deer spotted. The data recorder marks this information. Originally, the information was plotted on a map, but we now use modern technology – the locations are marked using a GPS unit, and the number and species of animals seen are recorded on a connected laptop computer.
2. The survey is flown in early February, when snow cover allows easier identification, and when hunting seasons are finished. The airplane flies at a height of 400 feet above the ground, and flies at a speed of approx. 120 miles per hour.
3. On a standard 25% coverage survey, the flight lines are spaced 1 mile (1600 metres) apart. The pilot stays on track by using visual cues and by following flight lines recorded on a GPS unit. The observers count all animals seen in a band 1/8 of a mile (200 metres) on each side of the plane, thus each flight covers a 1/4 mile width of the Park. The plane flies outside the Park as well, to survey areas where elk and moose spend time outside the Park. On this type of survey, approximately 1/4 of the Park and surrounding area is physically surveyed, hence the “25% coverage survey.”
4. Once the survey is completed, the data are processed, and an estimate of the population of elk and moose inside the Park, and immediately around it, is generated.

The results of the surveys are attached. As part of the process, density maps can also be generated, using the location points. This allows managers to see where

most elk and moose are observed at the time of the survey, and how the use of the Park changes over time. The surveying is a partnership between Parks Canada and Manitoba Conservation, and has included observers from the MCPA as well.

In 2004, a total survey was conducted using two airplanes. This survey covered 100% of the Park, rather than 25%. The cost of the total count is estimated at \$50 000.00, including staff time. The total count provides managers with more confidence of the true elk and moose populations for the region.

Classified Count:

At the same time, a classified count has been conducted for over 25 years. The methodology for this count is slightly different. The team consists of the same number/type of personnel, but the protocols are different as follows:

1. three areas or blocks are surveyed, each in blocks considered to contain good elk and moose habitat (note – historically 6 blocks were flown, but has been cut back to 3 in recent years).
2. flown in early December or late November, when snow is on the ground, but observers can still identify bulls, cows, and calves.
3. in each of these survey blocks, the number of cows, calves, and bulls are recorded.

This information is used in modeling wildlife populations. To date, there has been little Park analysis of the data generated by the classified count, but it does serve as a snapshot of the success of elk and moose calving the previous spring.

End Notes:

1. The 25% coverage survey records changes in elk and moose populations much better than providing a true estimate of elk and moose numbers for the region. Thus, the yearly changes in the populations have more scientific significance than the actual number of animals seen.
 2. While Whitetail deer (WTD) are recorded as part of the count, there is no attempt to create an estimate of deer populations in the region. WTD are difficult to observe in areas of heavy forest cover, and thus are underrepresented in the surveys. Also, while elk and moose are generally restricted to the Park and immediate environs, WTD are contiguous throughout rural Manitoba, so the small area outside the Park surveyed means very little in terms of WTD numbers.
 3. There are always difficulties associated with aerial surveys. Observer experience and observation errors, changes in weather, and the type of habitat mean that the survey is never 100% accurate. For example, wildlife is easier to see during cloudy days compared to clear days. Also, elk are known to seek protection under spruce trees during cold weather, making them difficult to see. The surveys offer only a single snap shot of densities. Thus, information on movements, spring, summer, and fall, use
-

of the Park, and other info is not provided by these surveys. It does, however, allow one to observe long term changes in the regional populations, information that can be corroborated by other observations.

Our bull/cow ratio of about 25-30 is considered healthy by biologists in North America. The worry is that if there are too few mature bulls to breed the cows (ie <10 bulls/100 cows), the number of pregnant cows is reduced, and the breeding season becomes later in the year. A good mature bull /cow ratio has a direct affect on the calf/cow ratio. Younger bulls aren't as "randy" as the older bulls and therefore don't "inspire" the cows as much, making for reduced calves at the prime time.

The Europeans think a higher ratio is less stressing on the mature bulls. With more males, you end up with a shorter rut and earlier conception, so they like to see ratios as high as one bull to one cow.

Our ratio is at about the mid point. While more males than females are shot during the hunting season, we are able to maintain a fairly high ratio due to the Park protecting some mature males. Whatever is occurring here, it seems the RMNP herd is healthy because we are approaching 100% pregnancy in the animals we kill. Ryan reports close to 100% calving on protected areas outside the Park in the Grandview area, as well..

Further information can be found on bull/cow ratio can be found at <http://wlapwww.gov.bc.ca/wld/elk/2/2aabiococonsiderations.html>

Attachments:

- chart of the results of the classified count from past years
 - graph of the elk and moose populations
 - map of survey routes across the Park
 - maps of elk and moose density for 2004
-

Species	Block	2000 Total	2001 Total	2002 Total	2003 Total	2004 Total	5 year Average
Elk	Audy	296	353	277	278	250	291
	Birdtail	59	162	70	64	65	84
	Whitewater	96	208	103	110	170	137
Elk Total		451	723	450	452	485	512
Total Count Data (Elk)		3569	2455	3565	2567		(6 yr ave) 3337
Moose	Audy	95	93	59	60	129	87
	Birdtail	85	89	64	10	29	55
	Whitewater	143	233	87	81	185	146
Moose Total		323	415	210	151	343	288
Total Count Data (Moose)		3709	3975	2535	2332		(6 yr ave) 3662

TABLE 1. Classified Count for 5 Years Data (total count data is included)

In all charts the classified count data is associated with the total count data which immediately follows for the year. E.g. If the classified count took place in Dec. 2003, the total count data from 2004 is what it is linked to graphically. Therefore the blank in the data for the 2004 total count is waiting to be filled with the 2005 survey.

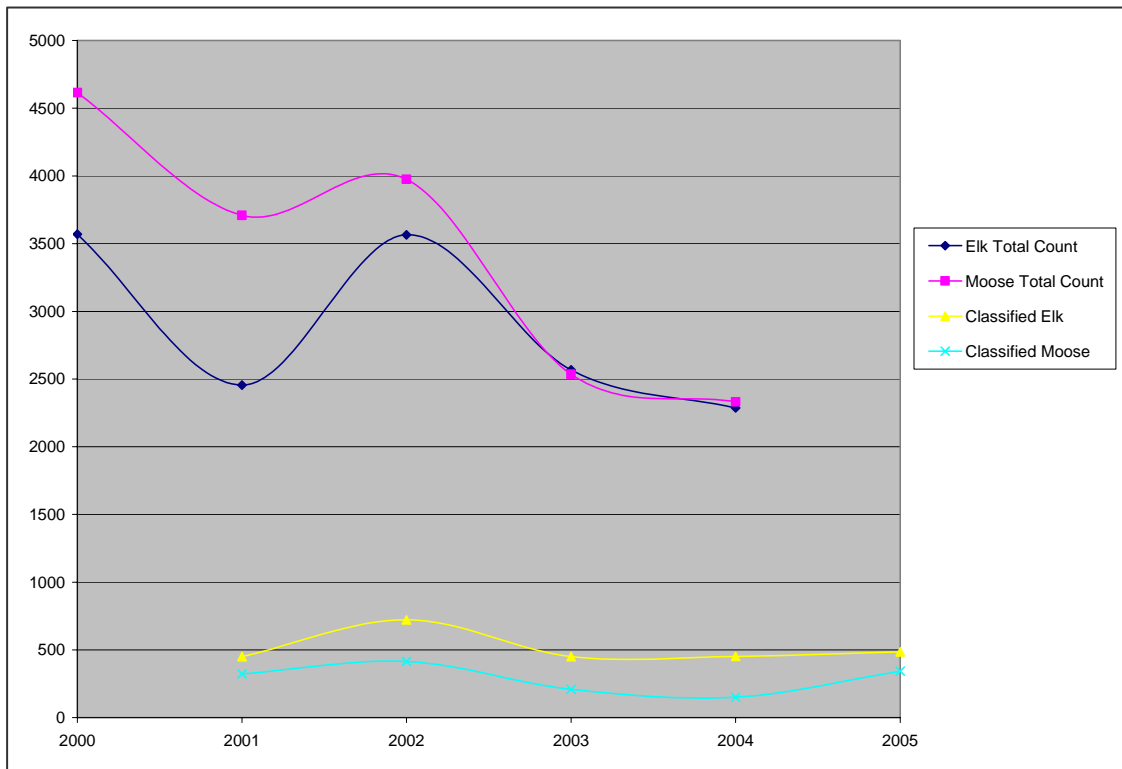


TABLE 2. Five years summary of classified counts – Graph Total Class vs. Count

Calves / 100 Cows	Block	2000 Calves / 100 Cows	2001 Calves / 100 Cows	2002 Calves / 100 Cows	2003 Calves / 100 Cows	2004 Calves / 100 Cows	5 year Average
Elk	Audy	54.8	34.7	59.8	60.0	42.9	50
	Birdtail	63.6	38.9	36.3	35.5	47.4	44
	Whitewater	38.9	28.1	35.0	35.7	48.8	37
Elk Overall		52.5	33.5	50.4	50.2	45.4	46
Total Count Data (Elk)		3569	2455	3565	2567		2287
Moose	Audy	58.3	64.2	74.1	33.3	78.0	62
	Birdtail	54.5	73.3	33.3	69.0	64.3	59
	Whitewater	45.5	62.9	35.0	46.3	64.0	51
Moose Overall		57.0	65.5	52.9	53.9	69.6	60
Total Count Data (Moose)		3709	3975	2535	2332		3138

TABLE 3. Calves/100Cows

(Classified Count for 5 Years Data (total count data is included))

Bulls / 100 Cows	Block	2000 Bulls / 100 Cows	2001 Bulls / 100 Cows	2002 Bulls / 100 Cows	2003 Bulls / 100 Cows	2004 Bulls / 100 Cows	5 year Average
Elk	Audy	17.9	13.5	25.2	22.0	22.4	20
	Birdtail	90.1	21.1	66.7	64.5	23.7	53
	Whitewater	4.5	6.7	35.0	20.0	50.0	23
Elk Overall		25.6	20.0	33.3	26.7	31.2	27
Total Count Data (Elk)		3569	2455	3565	2567		2287
Moose	Audy	14.9	13.5	32.3	34.5	32.2	25
	Birdtail	34.1	15.6	33.3	33.3	42.9	32
	Whitewater	35.1	45.7	33.3	43.9	80.0	48
Moose Overall		25.8	30.1	32.9	39.5	57.4	37

TABLE 4. Bulls/100 Cows (Classified Count for 5 Years Data (total count data is included))

Bulls (includes Spikes) / 100 Cows	Block	2000 Bulls / 100 Cows	2001 Bulls / 100 Cows	2002 Bulls / 100 Cows	2003 Bulls / 100 Cows	2004 Bulls / 100 Cows	5 year Average
Elk	Audy	39.3	18.7	28.6	25.3	27.2	28
	Birdtail	104.5	31.6	69.7	71.0	23.7	60
	Whitewater	4.5	14.4	36.7	21.4	53.6	26
Elk Overall		30.2	20.0	37.1	29.9	34.9	30
Total Count Data (Elk)		3569	2455	3565	2567		2287
Moose	Audy	24.2	11.3	32.3	37.9	40.7	29
	Birdtail	38.6	24.4	50.0	33.3	42.9	38
	Whitewater	40.3	59.0	39.6	51.2	82.7	55
Moose Overall		31.9	38.9	37.6	44.7	62.2	43
Total Count Data (Moose)		3709	3975	2535	2332		3138

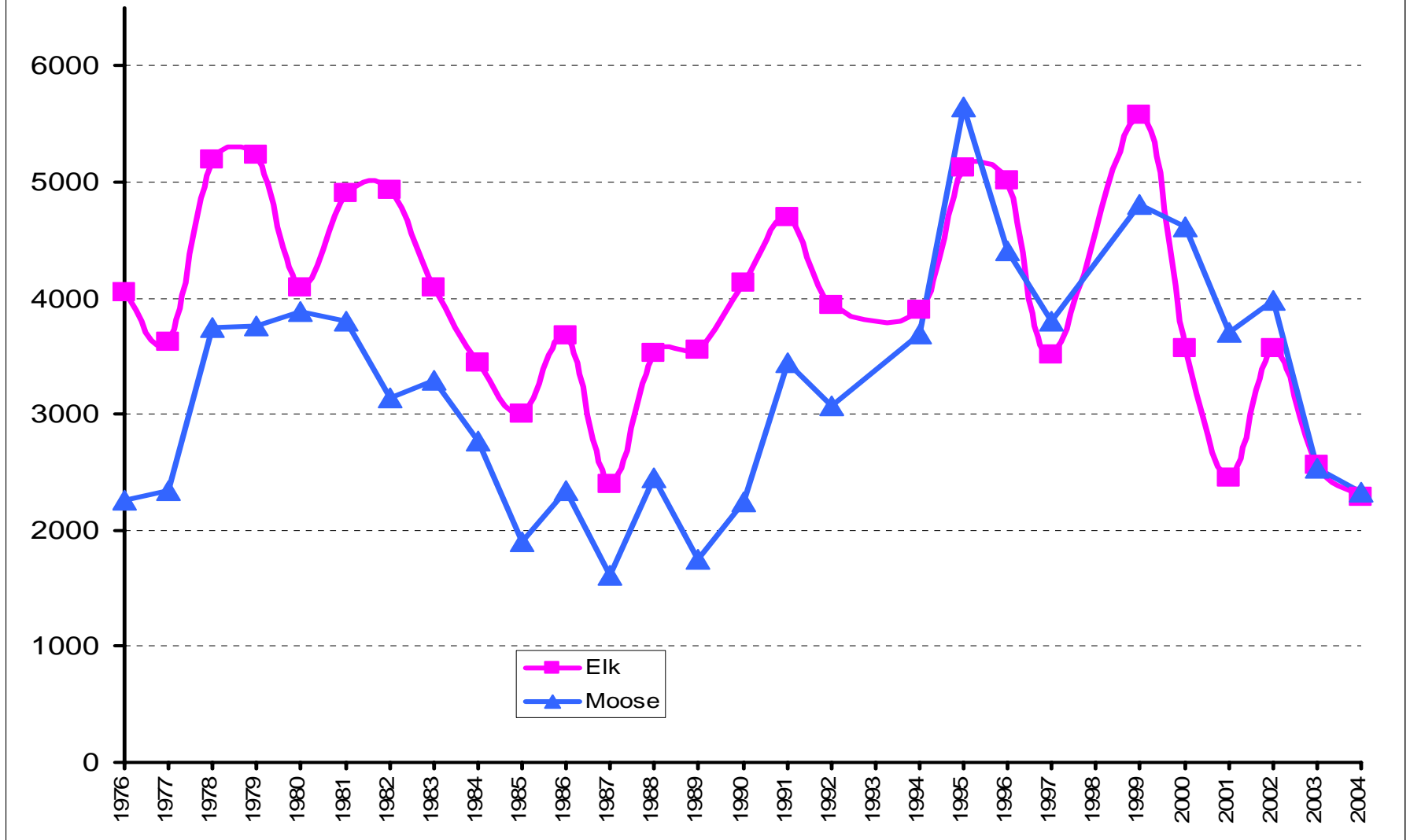
TABLE 5. Bulls (including spikers)/100 Cows (Classified Count for 5 Years Data (total count data is included))

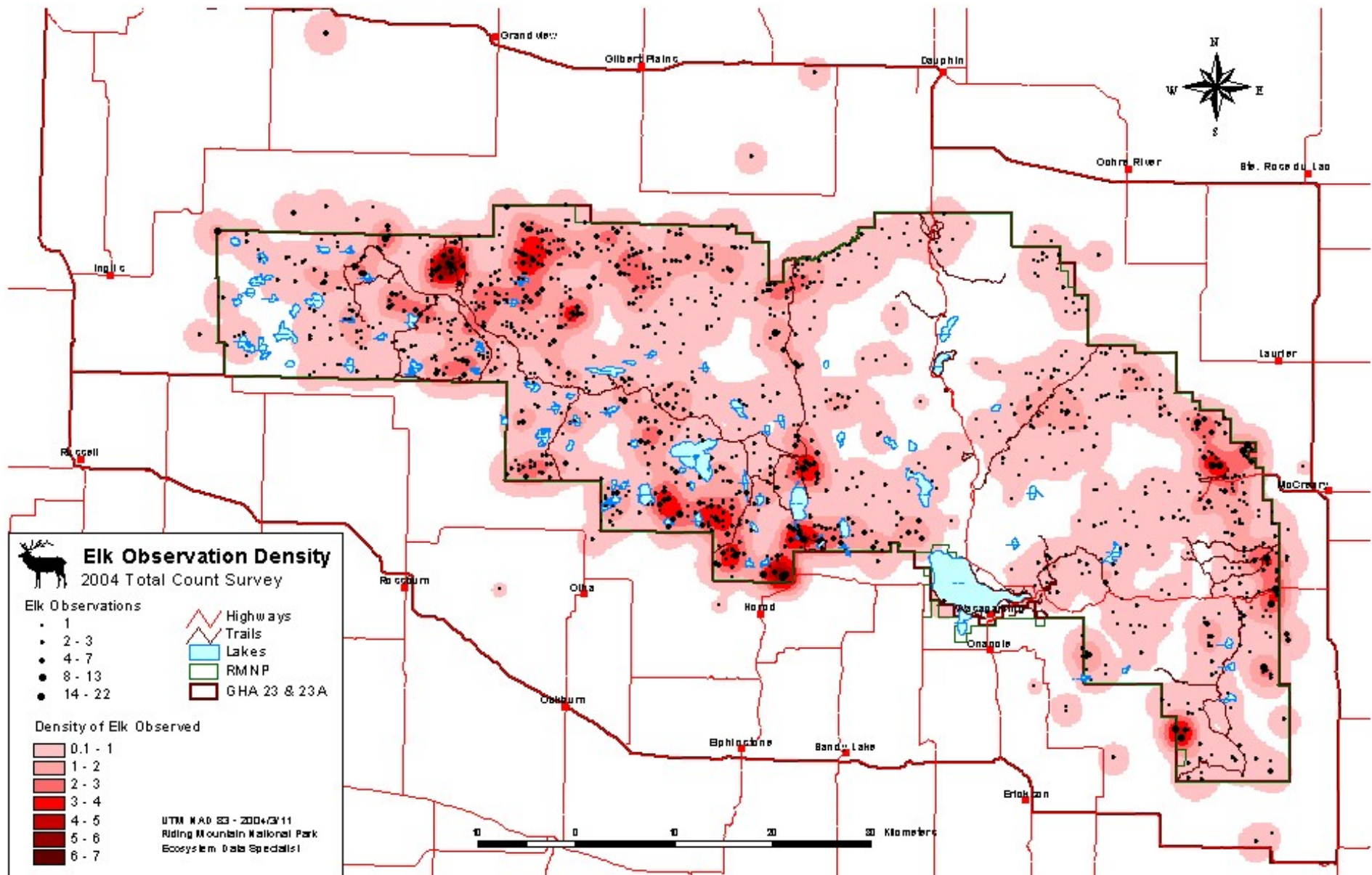
Year	Elk Total Count	Moose Total Count
1999	5577	4803
2000	3569	4615
2001	2455	3709
2002	3565	3975
2003	2567	2535
2004	2287	2332
2005	3336.666667	3661.5

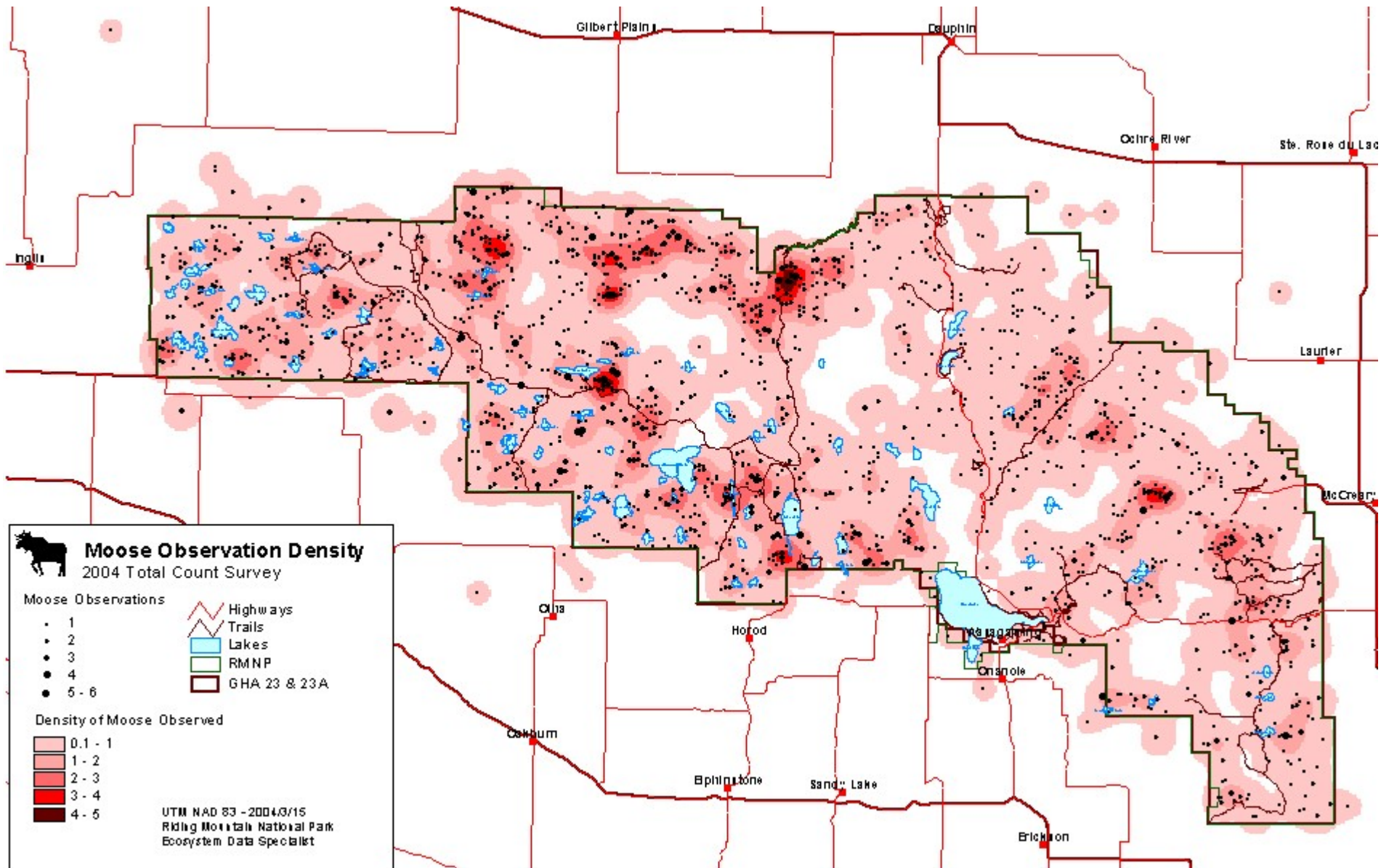
TABLE 6. Total Count Data

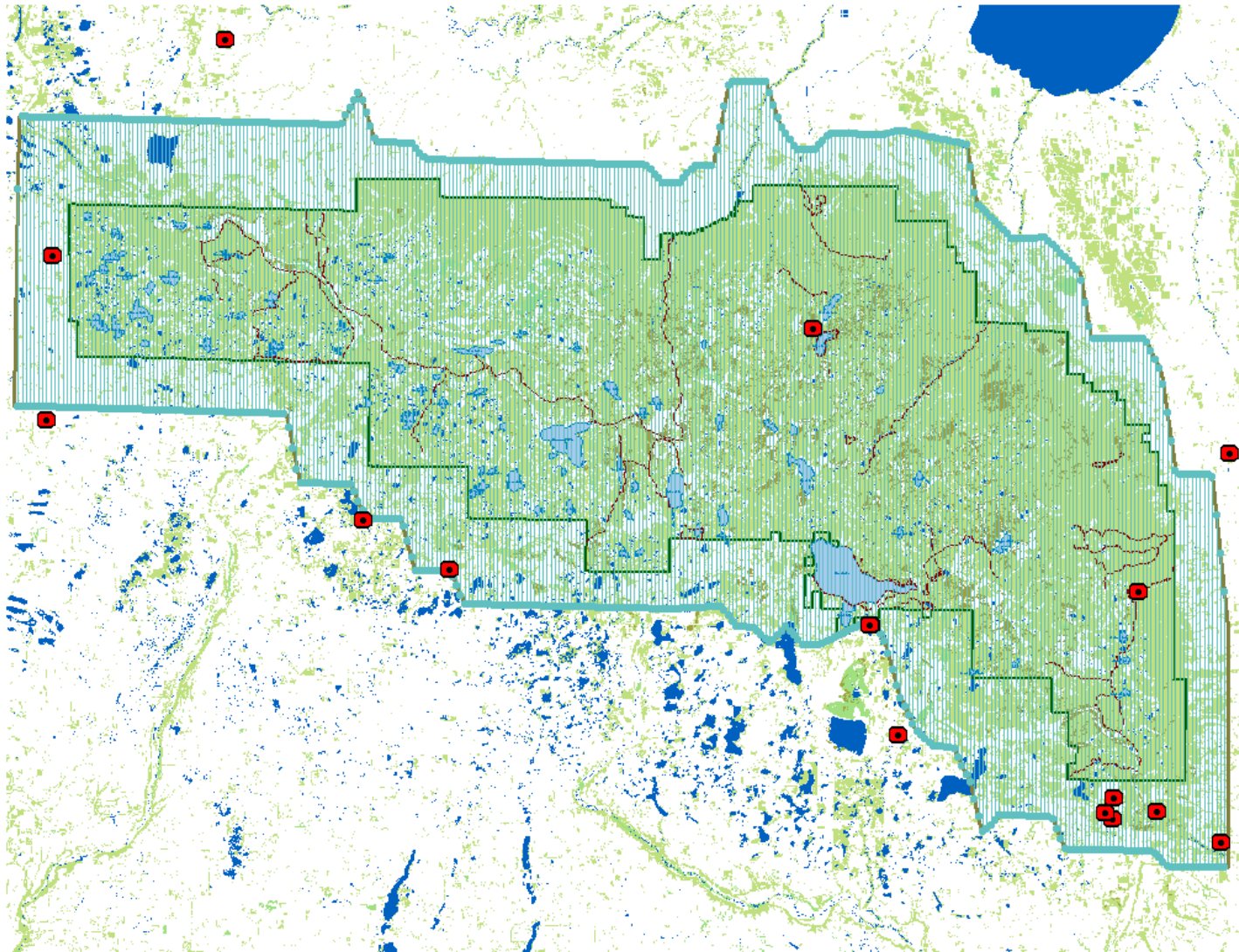
RMNP ESTIMATED ELK & MOOSE POPULATIONS

FROM AERIAL SURVEY 1976 -2004









2005 Ungulates Survey Flight Pattern.

Cattle Bovine Tb Testing Primer

Historical Background: Records for *M. bovis* in cattle are scattered throughout the history of their introduction to North America. Testing and eradication efforts began in the 1800's, but TB was endemic in cattle until at least 1970. This testing consisted of a test and slaughter program, in which cattle were tested and those that tested positive were removed from the herd.

Between 1979 and 1984, Agriculture Canada reviewed and redesigned the surveillance program, shifting away from test and slaughter to herd depopulation. The cornerstone of this new policy was the complete depopulation of all infected or exposed animals, with compensation paid to the owners of those animals. At the same time, with fewer positive animals being found on farms, routine TB testing moved away from area (on farm) testing to the more economical testing of cattle at slaughter. Manitoba was declared disease free in 1986.

Following the discovery of TB positive cattle on area farms in 1991, 1997, 2000, and 2003, the CFIA, on January 1, 2003, established the Riding Mountain Eradication Area (RMEA) around Riding Mountain National Park, and encompassed Manitoba Conservation's Game Hunting Areas 23 and 23A. From that date, movement permits for cattle and farmed bison, and enhance disease surveillance in the form of periodic whole-herd tests, have been required. The appropriate retesting interval for any given herds is based upon the infection findings in cattle or wildlife in previous years, and an assessment of the risk that TB may be introduced into the herd. The retest interval of any herd in the RMEA will generally not be less than 12 months, and not exceed 36 months.

Please note: a comprehensive review of historical data on the prevalence of TB in domestic cattle herds is being conducted by a student from the Natural Resources Institute. Her completed thesis is expected in March, 2005.

Testing methodology:

Please see the attached testing flowchart from the Canadian Food Inspection Agency and a brief description of the body's immuno-response behind the testing process, developed by John Whitaker.

Please note: For the coming year (2004/2005), any animal reacting to the caudal fold test will be retested using the Bovigam blood test, with the blood sample collected by a CFIA inspector trained in the proper collection, handling & preservation techniques required to maintain the sample at room temperature from the time of collection until its arrival at the laboratory. This blood sample is to be collected not less than 3 days and not more than 7 days following the caudal fold tuberculin injection. (**NB:** The CCT test will no longer be used.)

Results:

To date, over 80 000 head have been tested since area testing began in January, 2003. Since this time, a total of 3(?) cows have been confirmed with TB from inside the RMEA, affecting a total of 4 farms (3 TB infected farms, one exposed farm) inside the RMEA. In addition, one milk cow from a farm outside the RMEA was found to be TB positive. This cow, discovered at slaughter, had connections with a dairy herd from inside the RMEA, as she was purchased from a dispersal sale near McCreary).

Conclusion and Current Relevance:

With the three positive farms since 2003, the RMEA has been designated as TB-Accredited Advanced (very low prevalence of TB), while the rest of Manitoba, with a single case, is still considered to be TB-Free (rare or not present). Provided that there are no new cases of TB, the RMEA will be eligible for TB-Free status in April 2006 (3 years following the eradication of the last confirmed infection).

Note: even if/when the RMEA achieves a TB-Free status, the CFIA will continue to do area-testing of cattle and captive bison herds due to the presence of Bovine TB in wildlife.

Attachments:

- John Whitaker's paper on the body's immuno-response to testing
 - Update from CFIA, with outline of new testing protocols as of September 2004.
 - CFIA Testing Flowchart (new)
 - CFIA Testing Flowchart (original)
-

TB Testing – What it all means – One person’s view.

John Whitaker

When the CFIA come to test your cattle for TB, the tests they will use can be divided into 2 categories:

- 1) Tests which look for evidence that your cattle either have active TB, or have been exposed to TB in the past, and
- 2) Tests that look for the presence of an active TB bacteria.

Category 1 tests are looking for specific immune system responses (the animal’s response to the presence of TB), while category 2 tests are looking for living TB bacteria (*Mycobacterium bovis*).

Category 1: Immune system response tests.

Let us use the common cold as an example of how your body has an immune system response. When you get a cold, your body’s Primary Immune Response is to make chemicals called antibodies which circulate in your blood and kill the specific cold virus which has infected you. Because this Primary Immune Response is slow in developing (7 to 14 days from first infection), you suffer from cold symptoms for a few days before your antibodies can wipe out the infection. But a very important side benefit is that this Primary Immune Response also generates a Memory within your immune system for this specific infection. Should you again become infected with this specific cold virus, this Memory triggers a Secondary Immune Response, which is much faster to develop and much stronger than the Primary Response. The upshot is that the Secondary Response kills off the cold virus usually before you even feel symptoms (2 to 5 days from first infection), as long as it is exactly the same cold virus that attacks you a second time (the Secondary Response is only generated for a specific virus, and since the cold virus exists in a large number of varieties, and mutate to form other varieties we continue to suffer from colds).

This long-term protection which develops after exposure to a pathogen was recognized 2400 years ago by Thucydides of Athens, who described how those sick and dying of the plague were cared for by others who had recovered, “for no one was ever attacked a second time.”

The slate of Immune System Response tests for Tuberculosis are all based on determining whether your cattle demonstrate this rapid and strong Secondary Immune Response – in other words, whether their immune system contains the Memory of a current or past TB infection. These tests include:

- 1) Caudal Fold or Tail Test:

This is the initial test the CFIA do on a cattle herd. A very small amount (1/10 cc) of Tuberculin (a protein extract obtained from Bovine TB cultures, which can trigger a Secondary Immune Response, but **cannot infect** an animal with TB) is injected into the caudal fold at the base of the tail. The injection site is examined 3 days later, and a Secondary Immune Response is indicated if a large amount of swelling has occurred. But this response can come from exposure to any of the bacteria in the TB family (in 2002/3, during the testing of about 50,000 cattle around the Park, there were 1100 positive reactions to the tail test). In such animals, a second test (the neck test) is done to determine if this Secondary Immune Response is due to the more commonly-occurring Avian TB.

- 2) The Neck Test:
-

An area on the neck is shaved, and Tuberculin derived from cultures of both Avian TB and Bovine TB (the same Tuberculin that was used for the tail test) are injected side-by-side. The injection sites are examined 3 days later, and if the Avian site is more swollen and inflamed than the Bovine site, it is concluded that the tail test reaction was due to Avian TB, and that the animal is negative for Bovine TB. However, if the Bovine site is more swollen and inflamed than the Avian site, the herd is quarantined and the animal is slaughtered and further testing is done, looking for signs of active TB.

3) The Bovigam Test:

The acquisition of Memory by the Immune System following a TB infection occurs in 2 forms. The first is in B (Bone Marrow) cells, which produce specific anti-disease antibodies, is tested for using the above-described Tail and Neck Tests.

The second form of Immune System response is found in the T (Thymus) cells, which produce Interferon, a chemical which “interferes” with the spread of disease within an animal. The T Cells also acquires Memory for an infection, and the presence of this form of Memory indicates that the animal has been exposed to bovine TB in the past, and in turn may have an active case of TB. To measure the presence of T cell memory, a blood sample is taken, and the T cells in it are stimulated with a Bovine TB derivative. If the T cells have a Memory for TB, they will release Interferon. The amount of Interferon released is measured and determines a positive result.

The Cervigam Test, which can be used on deer and elk, operates in a similar fashion. The Bovigam and Cervigam tests have performed well in Australia and New Zealand. The Bovigam was first used in the RMEA in the fall of 2003, and produced an unexpectedly high number of positive results. Research on the effectiveness of this test in our area is continuing.

Category 2: Tests for Active TB:

1) Necropsy:

Animals coming up positive on the Neck Test are slaughtered, and a full necropsy by a qualified pathologist is performed. Visible suspicious signs of TB infection include lumps or lesions in the lungs, other organs, and the body cavity, and swelling and inflammation of the tonsils and lymph nodes. The purpose of the Lymphatic system is to collect the fluids which bathe and nourish the cells of the body, and to return them to the bloodstream. The Lymph Nodes are small filters, concentrated in the neck and chest, but also found throughout the body, which collect debris and disease-causing organisms from these fluids. They are often the site of the battles between diseases and the body's immune system. Because of their role in filtering out disease, they are natural sampling sites for further tests for the presence of TB. Both the Lymph Nodes and Tonsils are collected for further testing, which is done only at the CFIA Laboratory in Nepean, Ontario.

2) Acid-Fast Test:

Part of the Lymph Node sample obtained during Necropsy is preserved and exposed to a stain that can only be absorbed by bacteria from the TB family. The sample is examined by a pathologist using a microscope, who determines the presence/absence of stained bacteria. Since several Lymph Nodes are usually examined, and since several sites on each Lymph Node are checked, the Acid Fast Test can take several hours to come up with a negative result. A combination of a positive Bovigam, lesions observed during Necropsy, and a positive Acid Fast Test will lead to a whole herd quarantine. Producer samples in for Acid-Fast testing, take precedence over wildlife samples at the Nepean Lab.

3) PCR (Polymerase Chain Reaction) Test:

Should stained bacteria be found during the Acid Fast Test, DNA is withdrawn from these bacteria, and multiplied using the PCR method in order to get enough DNA material to test. The DNA is then tested to determine if the bacteria is from Bovine TB or another type of TB. However, positive PCR results, although thought to be a reliable indicator of Bovine TB, will not, by themselves, lead to herd eradication.

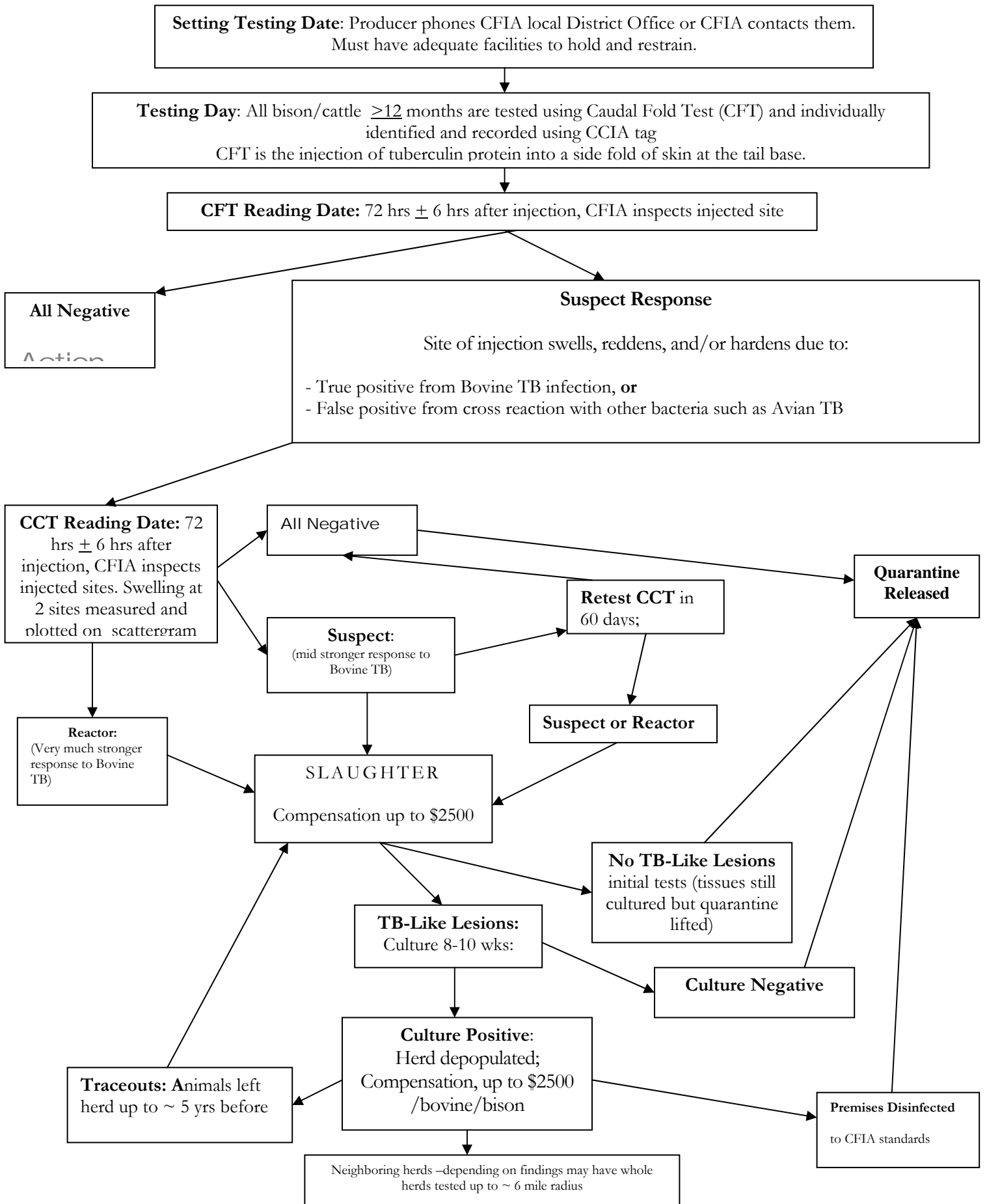
4) Culture Test:

The second part of the Lymph Node sample obtained during Necropsy arrives at the Nepean Laboratory in fresh, living condition. The sample is prepared, introduced into a nutritive culture medium, and incubated.

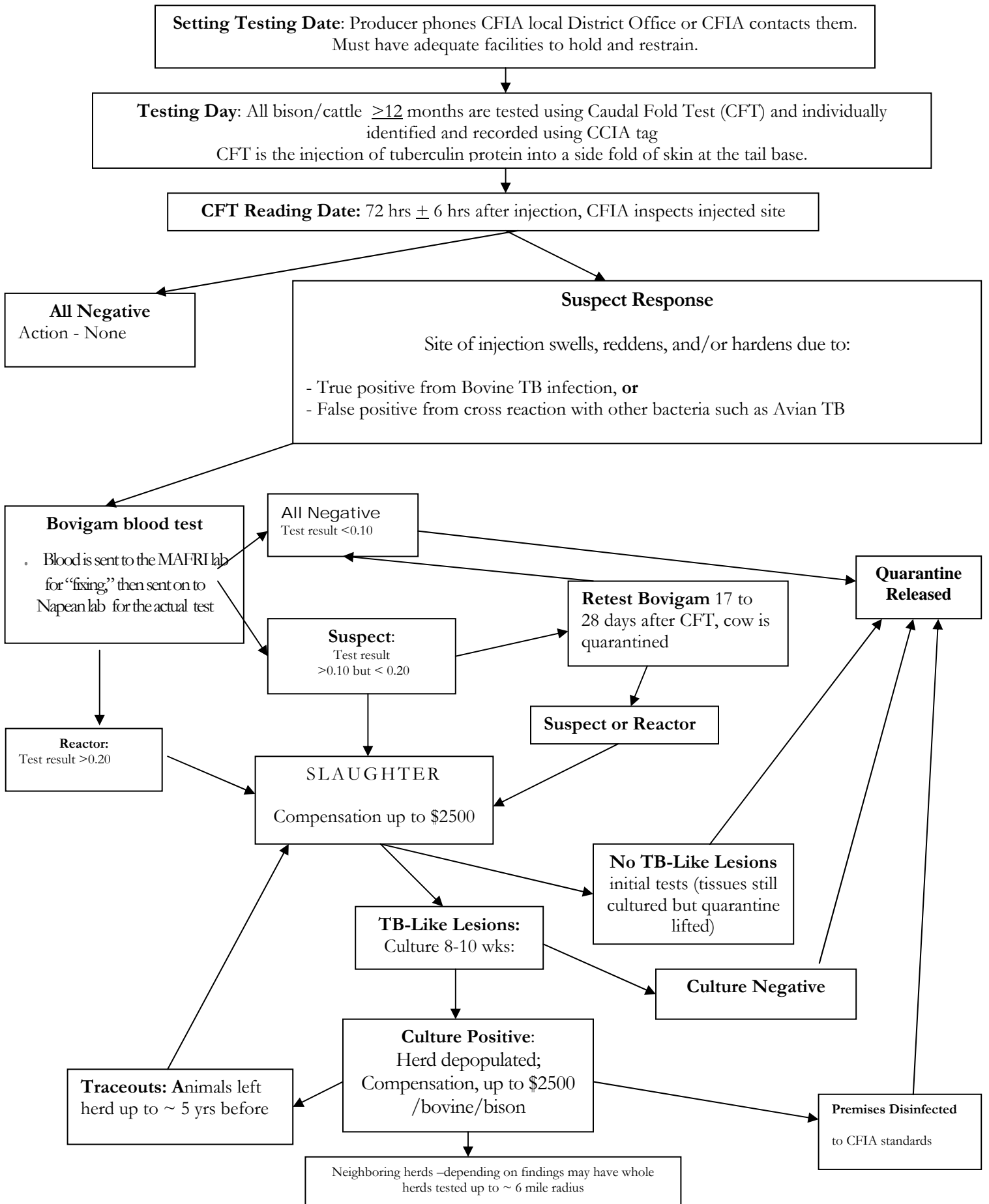
Because the Bovine TB bacterium is of weak constitution, and grows very slowly, 3 months are required before a negative or positive test result can be determined. Should apparent TB bacteria appear to be growing in culture after, perhaps, 6 weeks, a PCR Test can be performed on part of this culture to determine if it is Bovine TB.

The culture test is currently the gold standard in TB testing, and is the only way a positive animal can be conclusively identified. Herd eradications can only occur after a positive culture result.

FLOWCHART for BOVINE TB TESTING of WHOLE HERDS



FLOWCHART for BOVINE TB TESTING of WHOLE HERDS – September 2004



Additional Notes

REMA – Update and Workplans 2004/05

Riding Mountain TB Eradication Area Update & Work Plans for 2004/05

On January 1, 2003, the Riding Mountain TB Eradication Area (RMEA) was established around Riding Mountain National Park. From that date, movement permits for cattle and farmed bison, and enhanced disease surveillance in the form of periodic herd tests have been required. As agreed to by livestock industry and government agencies, the RMEA consists of Manitoba Conservation game hunting areas (GHA) 23 & 23 A. The Canadian Food Inspection Agency (CFIA) may modify the boundaries of the RMEA at any time as appropriate.

RMEA Livestock Surveillance Testing Update

The first phase of the area surveillance testing involved the testing of all cattle & farmed bison herds in the RMEA between July 1, 2000 and July 1, 2003. This testing resulted in the finding of three infected cattle herds (two in the rural municipality [RM] of Grandview and one in the RM of Rosedale) in January & April of 2003. These herds were depopulated. A portion of a fourth herd, located in the RM of Grandview, was found to have been exposed to one of the infected herds and was subjected to a partial depopulation involving only the exposed animals.

In the fall of 2003, the surveillance testing moved into the next phase, involving the periodic re-testing herds within the RMEA and the selective testing of herds adjacent to, but outside, the RMEA, as part of the ongoing disease surveillance program. The appropriate re-testing interval for any given herd is determined by the infection findings in livestock & wildlife in previous years and an assessment of the risk that TB may be introduced into the herd. The re-test interval for any herd in the RMEA will generally not be less than 12 months and will not exceed 36 months.

During the most recent round of testing in the fall/winter/spring of 2003-04, approximately 22,000 cattle & farmed bison were TB tested in approximately 300 herds, including herds located in those parts of the RMs of Hillsburg & Grandview that are located outside the RMEA.

Of these 22,000 head, 409 cattle reacted to the caudal fold (CF) tail test for TB and were subjected to both the comparative cervical tuberculin (CCT) test and the Bovigam blood test, resulting in:

- 3 cattle with a non-negative CCT result
 - 1 classified as positive (also Bovigam positive) & ordered destroyed
 - 2 classified as suspect & owner elected to slaughter;
- 80 cattle with a non-negative Bovigam result
- 46 classified as positive (including the one CCT positive) & ordered destroyed 1 classified as positive & inadvertently re-tested negative so not destroyed
 - 13 classified as suspect & ordered destroyed as herd mates to a positive animal 7 classified as suspect & owner elected to slaughter
 - 12 classified as suspect & re-tested negative
 - 1 classified as an unfit sample & owner elected to slaughter instead of re-test

Of the 82 animals with a non-negative CCT or Bovigam result:

- 59 were required to be destroyed 10 were elected to be destroyed by the owner
- 13 were retested with negative results & not destroyed

Although bovine TB was not confirmed in any of the 69 animals that were destroyed in order to collect tissue samples for confirmatory laboratory testing, evidence strongly suggestive of the presence of a very early or very low level of infection was seen in two cattle from herds located in the RMs of Grandview & Rossburn. Because the infection could not be definitively confirmed by culture, these herds have been released from quarantine and will be re-tested during the coming winter.

Bovine Tb Found In Southeast Manitoba In March 2004

In March 2004, as a result of routine slaughter house inspection by the CFIA, bovine TB was confirmed in a dairy herd in the La Broquerie area in south eastern Manitoba. This was the first case of the disease reported in Manitoba in a herd outside the RMEA since 1996. Eradication measures were instituted, including the destruction of approximately 160 cattle, and compensation was paid to the owner.

The CFIA's investigation found that the source of the La Broquerie infection was the purchase of an infected cow from a herd located in the RMEA in the RM of McCreary near the eastern boundary of the park. This dairy herd was dispersed in February 2002, when the infected cow was sold to the La Broquerie producer. This occurred prior to implementation of the special TB control measures around the park in January 2003. The beef cattle herd

currently on farm in the RMEA was tested in the winter of 2002/03 and again this past winter, with negative results, as part of the CFIA's area testing in the RMEA. Analysis of the DNA of the organism cultured from this cow indicated that it has the same "fingerprint" as the organisms which have been isolated from cattle and wild elk & deer in the Riding Mountain area.

The CFIA worked with the Dairy Farmers of Manitoba to ensure that all milk produced from this dairy herd was pasteurized, which kills any tuberculosis bacteria that may be present in the milk.

The measures (periodic herd testing & movement permits) which have been in place in the RMEA since January 2003 are designed to prevent future similar cases of spread of TB from the RMEA into the rest of Manitoba or other provinces in Canada.

Bovine Tb Status Of Manitoba

Since January 1, 2003, Manitoba has a split status for TB: the RMEA is classified as TB-accredited-advanced (very low prevalence); and the rest of Manitoba, like all other provinces, is classified as TB-free (rare or not present). Under the *Health of Animals Regulations*, a TB-free area may experience one infected herd during a 48-month period without losing its TB-free status.

Therefore, because the previous infected herd in the TB-free part of Manitoba occurred in 1996, the case in the La Broquerie area in 2004 constitutes the one allowed infected herd and did not affect this status. Nor did it affect the classification of the RMEA as TB-accredited-advanced, Provided that no further cases of bovine TB are confirmed in the RMEA, this area will be eligible for TB-free status in April 2006 (3 years following the eradication of the last confirmed infection).

Proposed Tb Surveillance In Livestock For 2004/05 Season

1. Boundaries of RMEA

The current boundaries of the RMEA will remain as they currently are, encompassing provincial game hunting areas 23 and 23 A.

2. Herds To Be Tested in 2004/05 Test Season

The following cattle & farmed bison herds located **inside the RMEA**, and estimated to comprise approximately 24,000 head, are required to be tested prior to June 1, 2005, and the CFIA will send a letter confirming this requirement to the individual affected producers prior to the end of September 2004:

- a) as a result of the findings observed during 2003/04 testing season:
 - herds with a positive or suspect CCT result (1 herd);
 - herds with a microscopic diagnosis of mycobacteriosis (5 herds);

- herds with a Bovigam positive result that was higher than 0.75 (3 herds); and
 - one herd that had a Bovigam positive animal that was inadvertently not slaughtered.
- b) as a result of being located in a RM that is scheduled for periodic testing this season:
- herds located in the RMs of Hillsburg, Gilbert Plains, Ochre River, Dauphin, Park, Clanwilliam, Strathclair, Harrison, Russell, Silvercreek & Shoal Lake, except those herds which were tested hi the 2003/04 season and which are not included in a) above will not be tested this year; and
 - approximately 15 herds located in the RM of Grandview which were not tested in 2003/04 seasons.

Information regarding the movement of wild elk in & out of the northwest part of the RMEA and the limited amount of wild elk & deer surveillance data gathered thus far from GHAs 18A-C, will require the testing of certain cattle & farmed bison herds located **outside the RMEA**. The CFIA will contact the individual affected producers located in the following areas and inform them of this requirement:

- a) the portion of the RM of Gilbert Plains that is outside the RMEA & west of Hwy 10;
- b) the portion of the RM of Ethelbert that is west of Hwy 10;
- c) the entire RM of Park adjacent to the SK border;
- d) the portion of the RM of Shell River that is east of Hwy 8

(Note: Testing of the herds identified in c) & d) above will be contingent on obtaining assistance from the CFIA's Yorkton District Office staff.)

Under the RMEA surveillance-testing program, test eligible animals include all sexually intact cattle & farmed bison 12 months of age and older, except that calves born in 2004 are not required to be tested. This testing is carried out by CFIA inspectors, at no charge to producers.

A number of farmed bison herds in the RMEA remained quarantined until animal handling facilities can be put into place. The CFIA expects the owners of these herds to make their animals available for testing by the end of 2004. Any owner who has, as of Nov.01/04, not arranged a herd test date, will be served with a legal notice.

3. CCIA Electronic Identification Project

The CFIA will continue to participate in the Canadian Cattle Identification Agency (CCIA) Electronic Identification Project by applying radio-frequency identification (RFID) tags during the course of testing the cattle herds of producers inside the RMEA participating in this project. Free RFID tags may also be provided to cattle herds outside the RMEA that require testing, pending CCIA approval and the availability of sufficient tags. Producers wishing to have free RFID tags applied to their cattle should advise their local CFIA District Office prior to testing.

Further CFIA participation in the project (using RFID tags as official identification for TB testing purposes) is contingent on the necessary equipment & software programming being in place and functioning properly. In those herds where RFDD tags are not being piloted, and in the event that the equipment or programming are not functioning properly, the test teams will use bar code tags as the official identification if the owner elects to use these tags, or Health of Animals ear tags.

4. TB Testing & Investigation Protocol:

- a) Screening Test: All herds identified for testing will be tested by CFIA inspectors using the caudal fold (CF) tuberculin test.
- b) Ancillary Test: Any animal reacting to the CF test will be re-tested using the Bovigam blood test, with the blood sample collected by a CFIA inspector trained in the proper collection, handling & preservation techniques required to maintain the sample at room temperature from the time of collection until its arrival at the laboratory. This blood sample is collected not less than 3 days and not more than 10 days following the CF tuberculin injection. Blood sample collection days will be Mondays & Tuesdays unless specific alternate arrangements are made.

The Manitoba Agriculture, Food & Rural Initiatives (MAFRI) laboratory in Winnipeg will receive blood samples on Tuesdays & Wednesdays and conduct the first phase of the Bovigam test (incubate whole blood with antigens & harvest plasma). The CFIA will immediately notify the MAFRI laboratory (by e-mail) regarding blood samples that have been shipped to the lab.

MAFRI laboratory will ship harvested plasma to the CFIA Ottawa Lab on Thursdays, where the second phase of the test will be performed on Fridays and reported back to the CFIA District Office by 5:00 p.m. on the same day.

(NB: The CCT test will **not** be routinely used as an ancillary

test.)

c) Interpretation of Ancillary Test (Bovigam):

If the Bovigam result (B minus A) is **<0.10**:

- animal is classified as **negative** and no further action is taken.

If the Bovigam result (B minus A) is **>0.10 but <0.20**:

- animal is classified as a **suspect** and the owner may elect to slaughter animal (with compensation) OR hold animal under quarantine for a Bovigam re-test.
- If owner elects to hold the animal for a Bovigam re-test:
 - suspect animal is quarantined;

- suspect animal is re-bled for Bovigam not less than 17 days and not more than 28 days after CF tuberculin injection date;
 - if re-test result ≤ 0.10 , classify animal as negative, release quarantine & schedule herd for caudal fold re-test in 2005/06 season;
 - if re-test result > 0.10 , classify animal as reactor & order destroyed with compensation.
- If owner elects to slaughter the suspect animal, quarantine the animal, classify it as reactor, and order destroyed with compensation. (Herd will only be scheduled for caudal fold re-test in 2005/06 if the lab reports a diagnosis of mycobacteriosis for the suspect animal.)

If the Bovigam result (B minus A) is > 0.20 :

- animal is classified as a **positive/reactor**;
- herd is quarantined for movement control purposes;
- reactor is ordered destroyed with compensation.

Key changes to interpretation of Bovigam test from last year are:

- animals with Bovigam result between 0.05 & 0.10 (33 out of 80 non-negative animals last year) that were classified as suspect last year will now be classified as negative;
- animals with Bovigam result between 0.10 & 0.20 (19 out of 80 animals last year) that were classified as positive/reactor last year & were required to be destroyed, will now be classified as suspect, with the owner having the choice to re-test the animal or elect slaughter with compensation;
- owners of suspect animals who elect to re-test the animal and the re-test is negative, will have their herd scheduled for caudal fold testing the following year to confirm the absence of bovine TB; (This is because the suspect animal was not subjected to confirmatory testing - post mortem & laboratory tests on tissue samples.)
- all Bovigam blood samples will be collected after one tuberculin injection, whereas last year some animals were bled after one injection (CF) and others were bled after 3 injections (1 in the tail & 2 in the neck for the CCT);
- herds that have one or more animals classified as positive/reactor will not be required to slaughter Bovigam suspect herd mates (13 of the 69 animals slaughtered last year).

d) Confirmatory Testing of Positive/Reactor Animals

Animals classified as positive/reactors as per c) above are:

- ordered destroyed with compensation paid;
- subjected to post mortem examination, with any visible lesions suggestive of bovine TB and a profile of apparently normal lymph nodes submitted to the CFIA Ottawa Laboratory for microscopic (histopathology) & microbiologic (culture) analyses;

e) Herd Quarantines

If no visible lesions (NV) suggestive of bovine TB are observed at post mortem exam:

- and microscopic examination reports no evidence of acid-fast bacilli (AFB) any quarantine that may be in place is released and a qualified herd permit is issued;
- and microscopic examination reports evidence of AFB, the herd is quarantined, if not already done, until culture results are reported.

If gross visible lesions (GVL) suggestive of bovine TB are observed at post mortem exam:

- and microscopic examination reports no evidence of AFB and evidence of another etiological agent/cause of the lesion, any quarantine that may be in place is released and a qualified herd permit is issued;
- and microscopic examination reports no evidence of AFB and no evidence of another etiological agent/cause of the lesion, but there is evidence of a granuloma or tubercle, the herd is quarantined, if not already done, until culture results are reported;
- and microscopic examination reports evidence of AFB, the herd is quarantine, if not already done, until culture results are reported.

Key change to quarantine policy from last year: In the case of NVL reactors, those herds that were quarantined last year on the basis of the rinding of a tubercule or granuloma without AFBs (17 of the 22 quarantined herds last year), will no longer be quarantined.

Only the 5 herds with an NVL reactor that was found to have AFBs would be quarantined. Last year, there were no reactors considered to have GVLs.

Compensation

Compensation will be paid to the owners of all animals that are ordered destroyed for confirmatory testing as per section d) . The amount of compensation shall be the CFIA veterinarian's opinion of the market value of the animal up to the prescribed maximum of \$2,500, minus any carcass salvage value. Compensation will also be paid for reasonable disposal costs (trucking & kill fees). The CFIA veterinarian will generally consider a reactor that is being ordered destroyed to be breeding animals (not a cull animal).

Movement Controls & Permits

Since January 1,2003, all movements of cattle & farmed bison out of the RMEA have required a permit from CFIA. The CFIA may only issue a permit when it is satisfied

that moving the animal(s) will not spread TB. These permits are provided by CFIA at no charge to the producer.

Everyone to whom a permit is issued and everyone who receives an animal that has moved under a permit must keep a copy of the permit and all documentation relevant to the permit (i.e. test records, inventory records, purchase & sale records) for two years from the date the movement occurred.

1. Qualified Herd Permit

Cattle and farmed bison producers located in the RMEA will require a **new Qualified Herd Permit** prior to the expiry date shown on their current permit in order to continue to be able to remove animals from the RMEA. All current Qualified Herd Permits will expire between December 31, 2004 and June 1, 2005, depending on the date the herd was last tested. The process for issuance of a new Qualified Herd Permit depends on whether the herd is scheduled for testing in the fall/winter/spring of 2004/05.

A producer inside the RMEA whose herd **is not included** among the herds identified for testing this year, will be issued a new Qualified Herd Permit based on a review of their file and, if necessary, a telephone or on-site interview conducted within three months prior to the expiry date of the current permit. The purpose of this review is to ensure that the producer has complied with the requirements to complete a permit for all animals removed from the RMEA and to provide a copy of each movement record to their CFIA District Office. If the review finds that the producer has complied with the conditions of the permit, a new Qualified Herd Permit will be issued with an expiry date that is 12 months from expiry date shown on the current permit, but not more than 36 months from date of the last herd test.

A producer inside the RMEA whose herd **is included** among the herds identified for testing this year, will be issued a new Qualified Herd Permit following completion of the TB test of their herd, and a review of their file to ensure that the producer has complied with the requirements to complete a permit for all animals removed from the RMEA and to provide a copy of each movement record to their CFIA District Office. If the herd test is negative and the review finds that the producer has complied with the conditions of the permit, a new Qualified Herd Permit will be issued with an expiry date that is 12 months from expiry date shown on the current permit

or 12 months from the date of the herd test, whichever is later, but with no permit having an expiry date later than June 1, 2006.

Cattle and farmed bison producers located inside the RMEA who currently hold a Qualified Herd Permit should ensure that they have completed a movement permit for all animals removed from the RMEA since January 1, 2003, and that they have submitted a copy of each such permit to their CFIA District Office. Failure to do so

may result in revocation of their current permit, no new permit being issued, and/or quarantine of their herd pending further investigation.

Every time a bovine (cattle or farmed bison) is removed from the RMEA, the producer must complete 3 copies of his/her Qualified Herd Permit showing:

- the name & address of the destination of the animal(s);
- the number of animals being moved;
- description of the animal(s) being moved including breed, age, sex (male, female, neuter), and class/purpose of the animal(s) being moved (i.e. breeding, feeding, slaughter);
- date the animal(s) are being moved; and
- that each animal being removed from the RMEA under this permit is identified by an official ear tag approved by the Canadian Cattle Identification Agency (CCIA).

A completed copy of the permit must accompany the animals to the destination outside the RMEA, with a copy provided to the local CFIA District Office within 10 days of the animal(s) being removed from the RMEA, and a copy retained by the producer.

2. Individual Animal Permit

Individual Animal Movement Permits are only available for: a) newly established cattle or farmed bison herds located in the RMEA and only until CFIA is able to complete a whole herd test and issue a Qualified Herd Permit; b) an animal from a quarantined herd that is being removed from the RMEA for immediate slaughter or veterinary treatment, where the permit accompanies a licence issued by a CFIA inspector; or c) at the discretion of the CFIA District Veterinarian in exceptional emergency situations. Any TB test required for an Individual Animal Movement Permit is to be performed by an accredited private veterinarian at the producer's expense. Details pertaining to Individual Animal Permits are available from local CFIA District Offices (Ref: Management of the RMEA - Dec.06/02).

3. Summer Pasture Permits

For cattle or farmed bison that were transported into the RMEA for summer grazing on or after May 1, 2004, and are removed from the RMEA on or before October 31, 2004, the owner may obtain a Summer Pasture Permit for the removal of the animals from the RMEA, without additional TB testing being required. This request must be accompanied by:

- proof that the entry of the animals into the RMEA was registered with the CFIA prior to entry (location of pasture, number of animals, list of identification numbers);
- proof that each animal was identified with a CCIA tag prior to entry into the RMEA;
- the name & address of the destination of the animal(s);

- official CCIA identification number of every animal being removed from the RMEA, except for natural additions born at pasture;
- a description of the animal(s) being moved including breed, age, sex, and class/purpose.

A completed copy of every Summer Pasture Permit must accompany the animal(s) to the destination outside the RMEA, with a copy retained by the producer.

Cattle or farmed bison that were transported into the RMEA for summer grazing before May 1, 2004, or that are removed from the RMEA after October 31, 2004, will be required to be tuberculin tested.

4. Feedlot Permits

Feedlots located in the RMEA will be visited by a CFIA veterinary inspector to ensure that the conditions of their Feedlot Movement Permit have been fully complied with prior to issuing a new permit for these premises.

For animals being reared in a feedlot, the owner may request a Feedlot Permit for the removal of animals from the RMEA, without additional TB testing being required. This request must be accompanied by:

- on-going proof that all animals on the premises originated from outside the RMEA or from a qualified herd located in the RMEA;
- on-going proof that no animal has resided in the feedlot for a period longer than 4 months, except animals that are less than 24 months of age; and
on-going proof, including the maintenance of records showing that all animals on the premises are identified with an official CCIA ear tag at all time while on the premises;

Every time an animal is removed from a feedlot in the RMEA, the owner must complete 3 copies

of his/her Feedlot Permit showing:

- the name & address of the destination of the animal(s);
- the description of each animal(s) being moved including breed, age, sex (male, female, neuter), and class/purpose of the animal(s) being moved (i.e. breeding, feeding, slaughter);
- date the animal(s) are being moved; and
- that each animal being removed from the RMEA under this permit is identified by an official ear tag approved by the Canadian Cattle Identification Agency (CCIA).

A completed copy of every Feedlot Permit must accompany the animal(s) to the destination outside the RMEA, with a copy provided to the local CFIA office, and a copy retained by the feedlot owner,

5. Auction/Assembly, Special Event, and Veterinary Care Permits

Auction/assembly premises located in the RMEA will be visited by a CFIA veterinary inspector to ensure that the conditions of their Auction-Assembly Movement Permit have been fully complied with prior to issuing a new permit for these premises.

The management of special events held in the RMEA, such as an exhibition, show, or production sale, may request a Special Event Permit in order to remove from the RMEA, without additional TB testing, any cattle or farmed bison that attended the event, including both animals temporarily transported into the RMEA for the event, as well as animals attending the event that originate from within the RMEA.

Veterinary clinics located in the RMEA, may request a Veterinary Care Permit for the removal from the RMEA, without additional TB testing, of cattle and farmed bison that are temporarily transported into the RMEA for medical treatment, surgery, breeding evaluation, etc., at the clinic.

Details pertaining to Auction/Assembly, Special Event, and Veterinary Care Permits are available from local CFIA District Offices (Ref: Management of the RMEA - Dec.06/02).

Notes:

A permit is not required to remove cattle or farmed bison from a herd located inside the RMEA if its destination is another location inside the RMEA.

Those cattle & farmed bison herds which have been identified for herd testing that are located outside the RMEA do not require a permit to move their animals.

The establishment of the RMEA had no impact on the movement permit requirements already in place for the movement of farmed cervidae (elk and deer) from any place in Canada to any other place in Canada.

Bovine Tb In Wild Elk And Deer

Diseased wildlife in and around Riding Mountain National Park (RMNP) are believed to be the source of bovine TB for the infected cattle herds found in 2001 and 2003 in the RMEA, as well as the dairy herd found in south-eastern Manitoba in March 2004. Since 1997, bovine TB has been confirmed (culture or histopathology + PCR) in 29 wild elk and deer:

- 9 elk and 2 white-tail deer out of a total of approximately 4,000 animals harvested by hunters around RMNP;
2 white-tail deer out of 226 harvested in a special hunt conducted by the government of Manitoba around RMNP in March 2004;
- 2 elk found dead inside RMNP; and

- 14 elk destroyed inside RMNP under the Parks Canada capture, test & removal program initiated in March 2003.

Eight (8) of the above 29 wildlife cases were detected through surveillance & control activities carried out by the government of Manitoba & Parks Canada during the fall/winter of 2003/04:

- 1 elk (Rossburn) and 1 white-tail deer (Grandview) harvested by hunters around RMNP;
- 2 white-tail deer (Grandview) out of 226 harvested in a special hunt conducted in selected parts of GHAs 23 & 23 A in March 2004;
- 1 elk found dead (wolf-kill) inside RMNP in the western part of the park;
- 2 elk out of 50 previously (Mar/03) blood test-negative elk destroyed inside RMNP in Dec/03 under the Parks Canada capture, test & removal program (1 of the 2 had become blood test positive, and the other was still negative on the blood tests);
- 1 elk (in west end) out of 26 blood test-positive elk destroyed inside RMNP in Mar/04 under the Parks Canada capture, test & removal program, in which 151 elk were captured & blood tested inside the park (50-west, 20-central, 81-east).

The results of the wildlife surveillance & control activities of the past year suggest that:

- a) if bovine TB is present in wild elk & deer in the eastern part of the RMEA, it appears to exist at a lower level than in the western part of the RMEA; and
- b) the CFIA's blood test for TB (lymphocyte stimulation test [LST]), which has been used in the Parks Canada capture, test & removal program, appears to have a reasonable specificity (few false negatives), supporting its usefulness in on-going and future capture, test & removal strategies.

The CFIA has no mandate to eradicate TB from wildlife.

The CFIA will continue to provide diagnostic & research laboratory testing services and veterinary science expertise to support the efforts of the Parks Canada Agency and the government of Manitoba in their efforts to detect and eliminate bovine TB from wildlife in the Riding Mountain area.

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 September 01, 2004

A Brief History of the Early Days of Bison Management in RMNP

According to Tabulenas, 1983, the first bison shipment arrived in 1931, and consisted of 4 bulls and 16 cows. These animals were shipped “free of charge by the CPR railway from Wainwright, Saskatchewan (sic).” The first enclosure was 300 acres, but was later expanded to 1000 acres prior to 1940. Shortly after the arrival of the bison herd, other animals for which Riding Mountain was noted were added to the enclosure, including elk and moose. One mule deer and one white-tailed deer were also included by 1933.

In 1937, a bison was found dead of unknown causes, and a necropsy was performed. The diagnosis was tuberculosis. The veterinarian for the Department of Agriculture made some bison management suggestions:

1. The oldest animals in the herd were to be slaughtered immediately (no avenue of infection was apparent, thus it was assumed that TB arrived with the bison, and by keeping only young stock, the disease could be kept at a minimum).
2. The yearly slaughter of all apparently barren cows, or those showing signs of TB.

In 1937, 21 surplus bison, including 8 sterile cows were slaughtered. A caretaker was hired to monitor the health of the herd year-round in 1938. In 1939, 18 animals were killed, and the remaining 57 animals in the herd were believed to be free of bovine TB. Thus ends the story according to Tabulenas.

However, Sheilagh Ogilvie, in “The Park Buffalo,” picks up the thread of the story. “In 1946, T.B. tests of one thousand buffalo in the park (Elk Island) showed negative. Since the display herds in Banff and Riding Mountain Parks were heavily infected, the animals were destroyed and the herds restocked with animals from Elk Island, a procedure that continues to the present day.”

I was unable to track down more information about how or when the eradication of the original herd occurred. I assume, from what Ms. Ogilvie writes, that the original bison herd was killed in 1946 and replaced in that same year. To date

(2002) official management records for the bison herd from the mid-1930's to 1946 have not been found.

"Since the re-establishment of a TB free herd in 1946, the bison have been regularly tested for TB, both through skin tests and through inspection at slaughter. The Park herd remains disease free."

Ken Kingdon
Communications Officer
Riding Mountain National Park
October 25, 2002

Sources:

Tabulenas, D. T. 1983. A Narrative Human History of Riding Mountain National Park and Area: Prehistory to 1980. Parks Canada Publication. pp.227-228, pp. 266-268.

Ogilvie, Sheilagh C. 1976. The Park Buffalo - The role of Canada's National Parks in the Preservation of the North American Bison. Parks Canada Publication. p. 70.

