

Bovine TB Program Update

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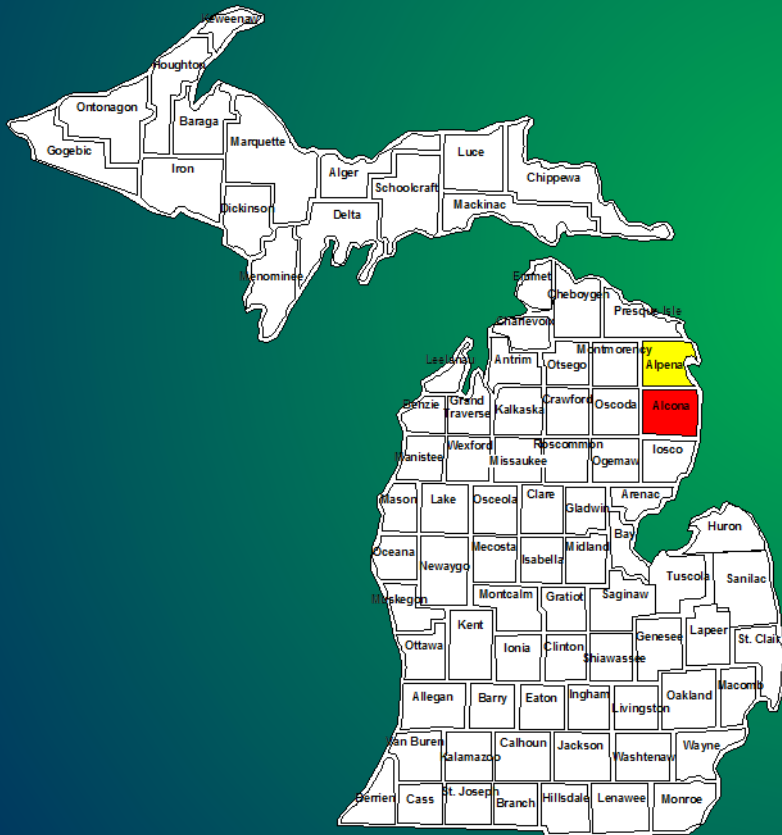
Bovine TB Program Coordinator



OVERVIEW

- Brief history of bovine TB in Michigan
- Cattle TB in North Eastern Lower Peninsula 1998-2015
- Progress with TB Zoning since 2000
- TB in Saginaw Valley 2013-2014
- Texas Traces in Michigan 2015-2016

Brief history of Bovine TB in Michigan



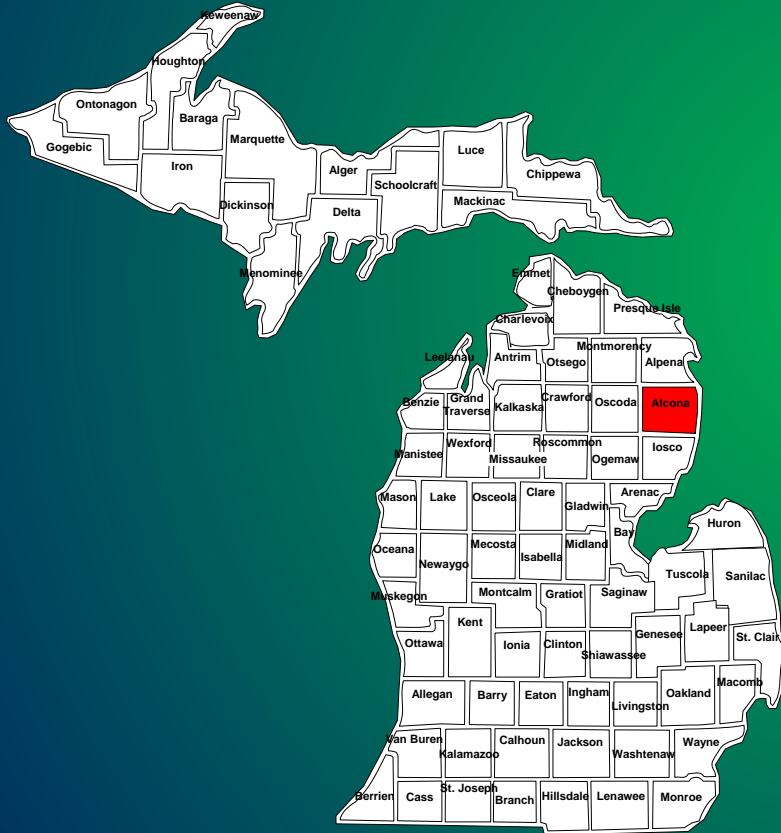
- National TB Eradication Program began in 1917
- Nationally the cattle responder rate to the caudal fold test was 4.9%
- In 1922 in Alcona County (red) the responder rate was 32% and in neighboring Alpena County (yellow) the reactor rate was 30%
- In the 1950s Michigan cattle accounted for 30% of all CFT responders in the U.S.A.

Brief history of Bovine TB in Michigan



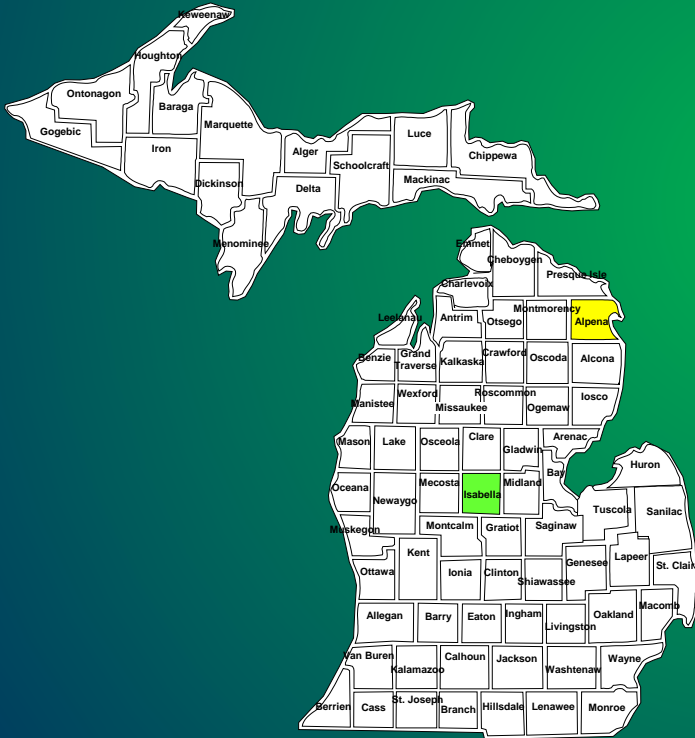
- TB testing in Michigan continued from 1917 through 1979
- Last cow found positive during this effort was in 1974 in Ingham County (yellow)
- Michigan achieved TB Free Status from USDA in 1979 after having tested 5 years without finding a single infected animal

Brief history of Bovine TB in Michigan



- In 1975 a 9.5 year old doe was harvested in Alcona County (red) that was infected with bovine TB
 - DNR considered this as an anomaly
 - Wildlife biologists did not think WTD could serve as a maintenance host
 - There were no cattle herds in the area the doe was taken so the Michigan Department of Agriculture (MDA) had nothing to test

Brief history of Bovine TB in Michigan



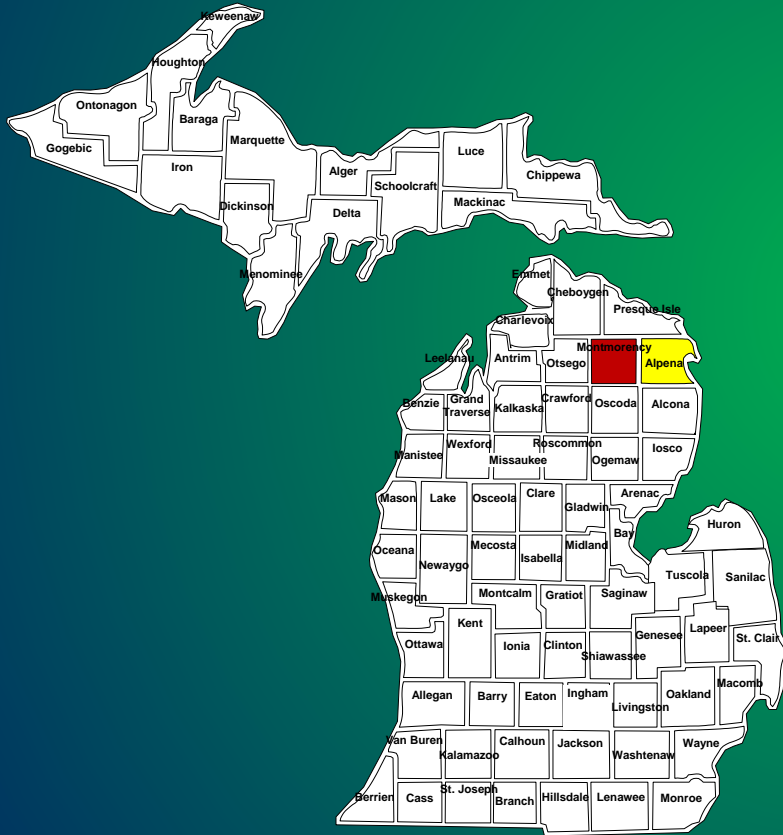
- Nov. 2, 1993 a dairy cow was found at slaughter infected with bovine TB
- Animal traced to dairy in Isabella County (green)
- Infected animal had been purchased the year before at dispersal sale in Alpena County (yellow)

Brief history of Bovine TB in Michigan



- In 1994 a 4 year old buck was harvested in Alpena County (yellow) with TB lesions - 9 miles from the 1975 deer
 - The MDNR decided to investigate this phenomenon further
 - The 1994 TB positive deer prompted the MDA to do a 5 mile circle test around the location of the infected deer in 1995 - nothing was found

Brief history of Bovine TB in Michigan

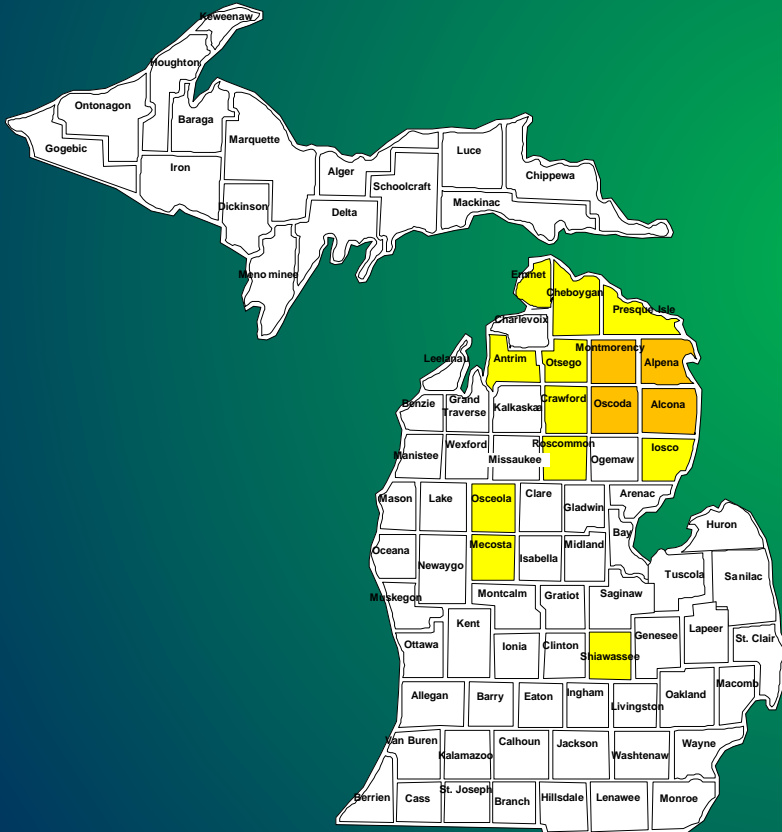


- As a result of the additional infected deer found by the MDNR in 1995 MDA expanded the cattle testing during 1996 doing 5 mile circle testing around each infected deer
- A deer farm was found to be infected in Montmorency County (red) in Oct. 1997
- The first infected cattle herd was found in June 1998 in Alpena County (yellow)

Since 1975 Where Infected Wild White-Tailed Deer Have Been Found

- Since 1975 **794** TB positive deer have been discovered in 15 different counties

- **Alcona – 282 (36%)**
- **Alpena – 214 (27%)**
- Antrim - 1
- Cheboygan - 2
- Crawford - 4
- Emmet - 2
- Iosco - 4
- Mecosta - 1
- **Montmorency – 155 (19%)**
- Osceola - 1
- **Oscoda – 97 (12%)**
- Otsego - 5
- Presque Isle - 20
- Roscommon - 1
- Shiawassee - 1
- Unknown – 4

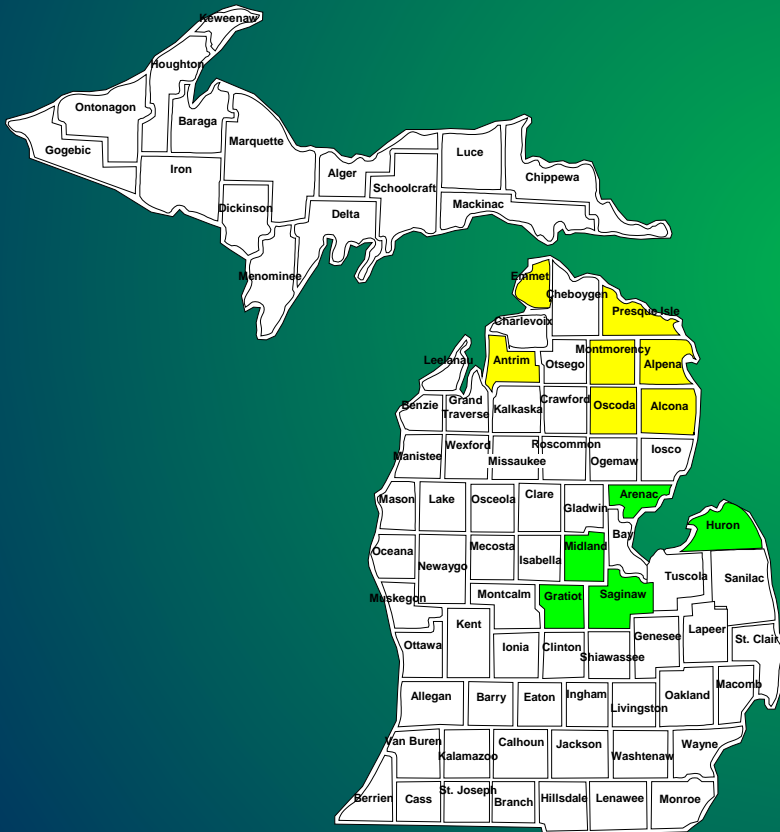


- **4 County MAZ - 94%**

Since 1998 Where Infected Cattle Have Been Found

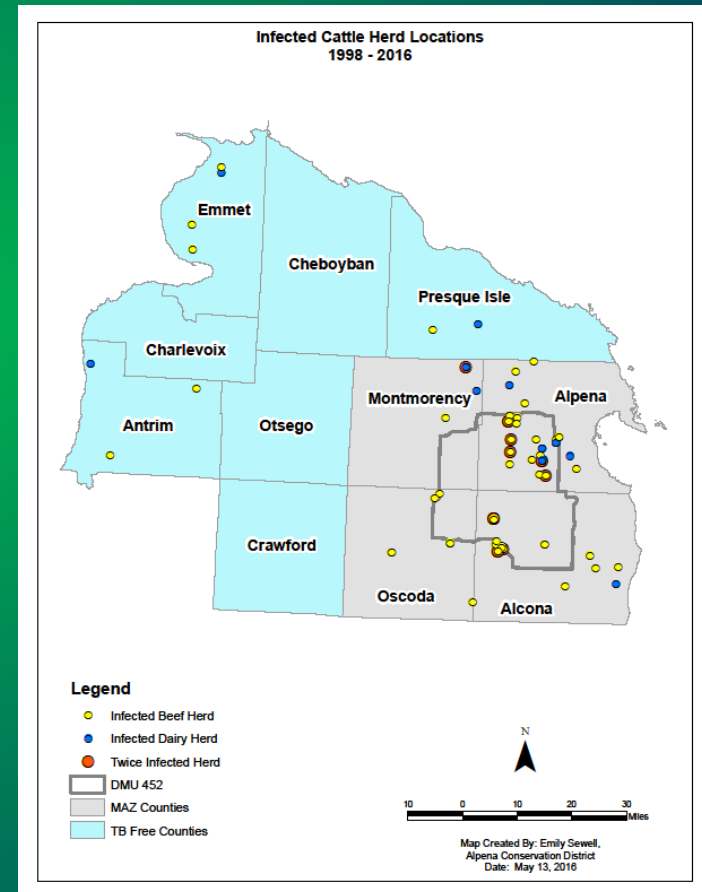
- Since the discovery of the first TB Affected cattle herd in 1998 bovine TB has been found in 12 of Michigan's 83 counties:

- 7 Counties in the northern lower peninsula (yellow) 1998-2016
- 5 counties in mid lower peninsula (green) 2013-2014



Bovine TB In Cattle in Northern Lower Peninsula

- 62 of the 65 infected herds found in Northern Lower Peninsula
- 11 of these herds were dairies
- Two of these dairies were infected twice
- Most infected farms in Deer Management Unit 452 (gray outlined area)



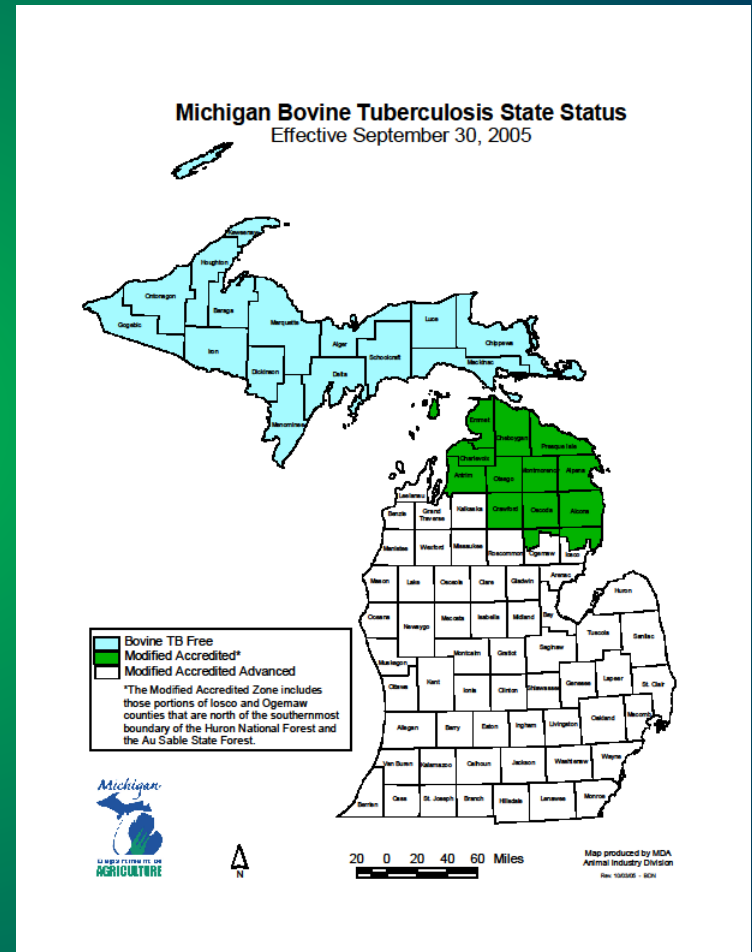
2000-2005 TB Zoning

- First bovine TB affected herd found in Alpena County in June 1998
- Entire state zoned Modified Accredited in June 2000



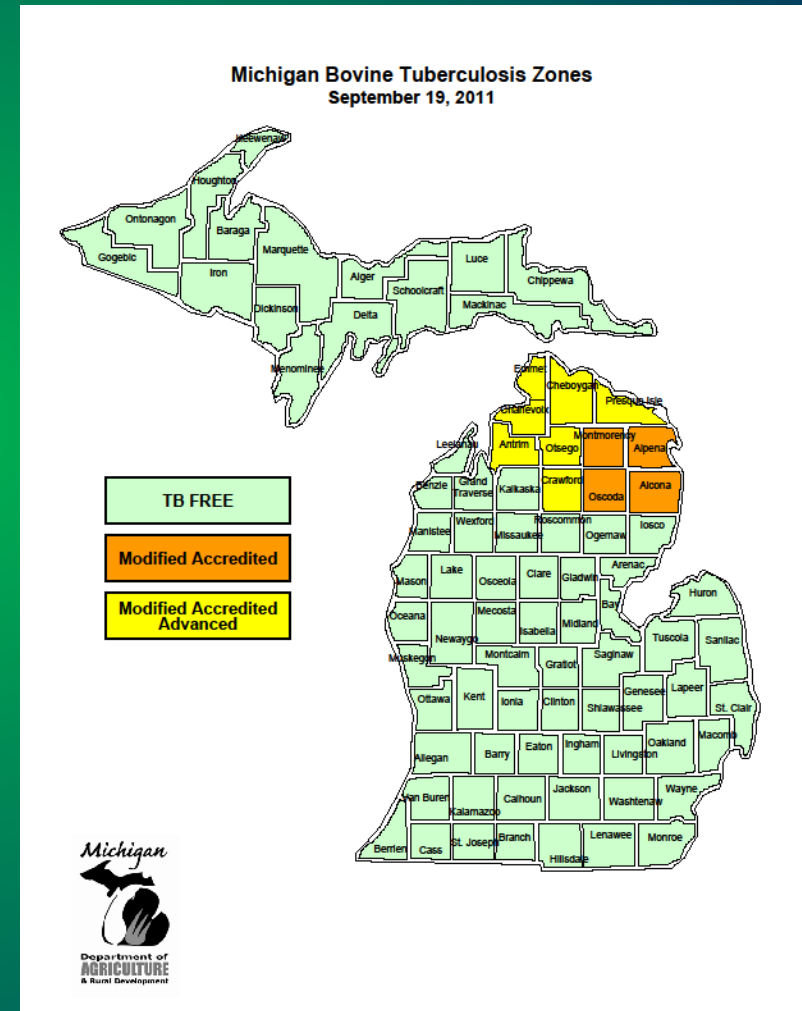
2005-2011 TB Zoning

- 15 counties in Upper Peninsula were zoned TB Free Sept. 30, 2005
 - 18% of Michigan's counties TB Free
- 57 counties in Lower Peninsula zone Modified Accredited Advanced
- Tip of Lower Peninsula remained MAZ



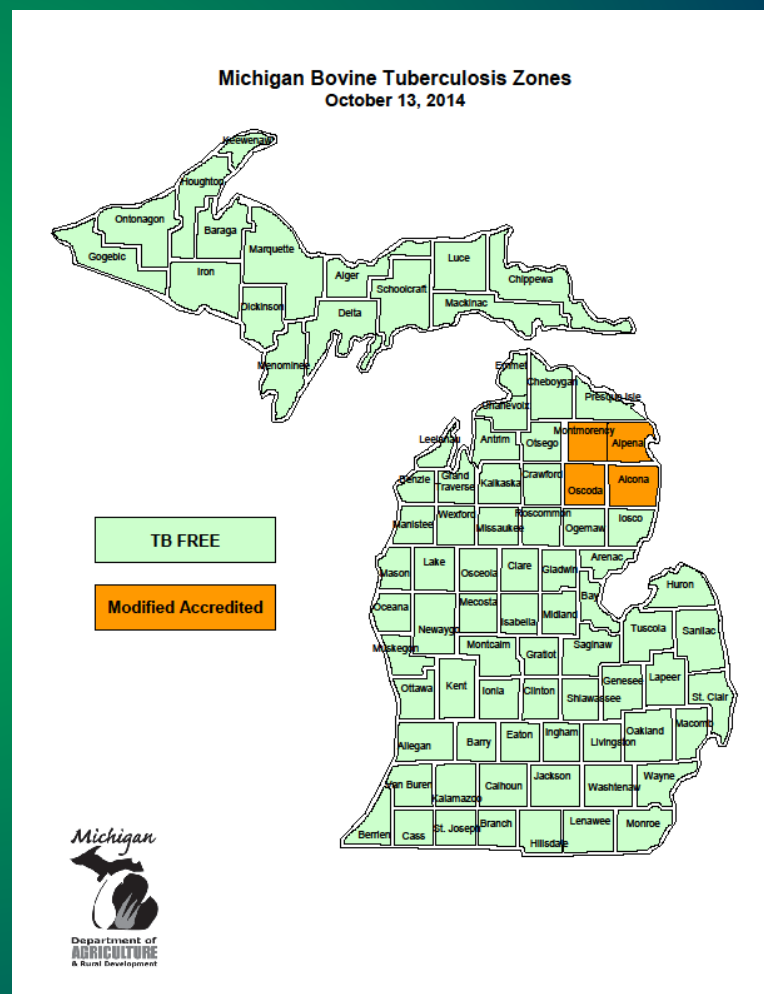
2011-2014 TB Zoning

- Sept. 19, 2011
57 counties in Lower Peninsula move to TB Free Status
 - 87% of Michigan's counties TB Free
- 7 MAZ counties move to MAAZ (yellow)
- 4 counties remain MAZ (orange)



2014 to Present

- Oct. 13, 2014
7 MAAZ counties moved to TB Free status
 - 95% of Michigan's counties TB Free
- 4 counties remain MAZ (orange)



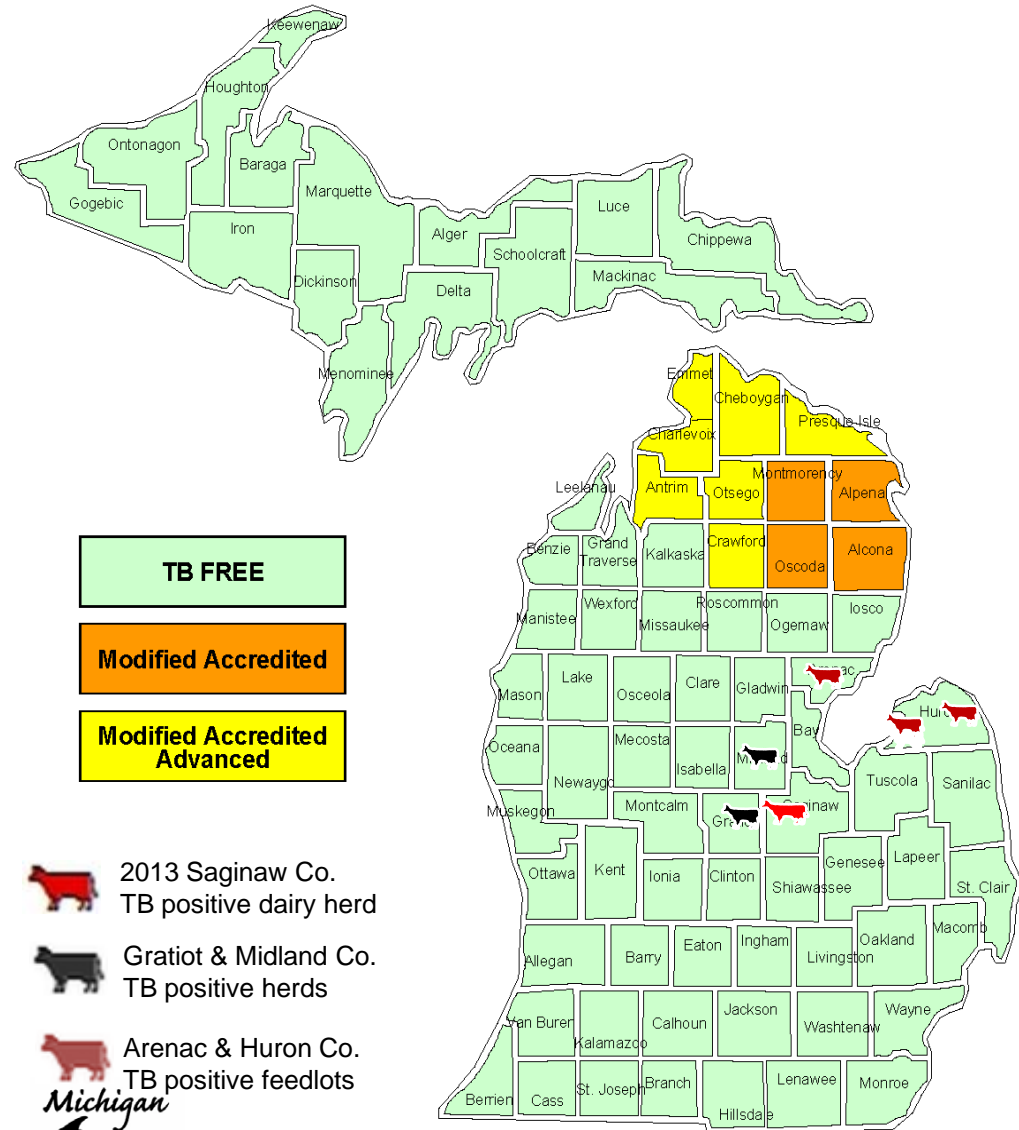
2013

- **March 25 -**
Saginaw dairy
- **May 1 -** Gratiot &
Midland herds
- **September 5 -**
Arenac feedlot

2014

- **February 27 -**
Huron feedlot #1
- **April 3 -**
Huron feedlot #2

Michigan Bovine Tuberculosis Zones September 14, 2011



Outcomes - Infected Herds

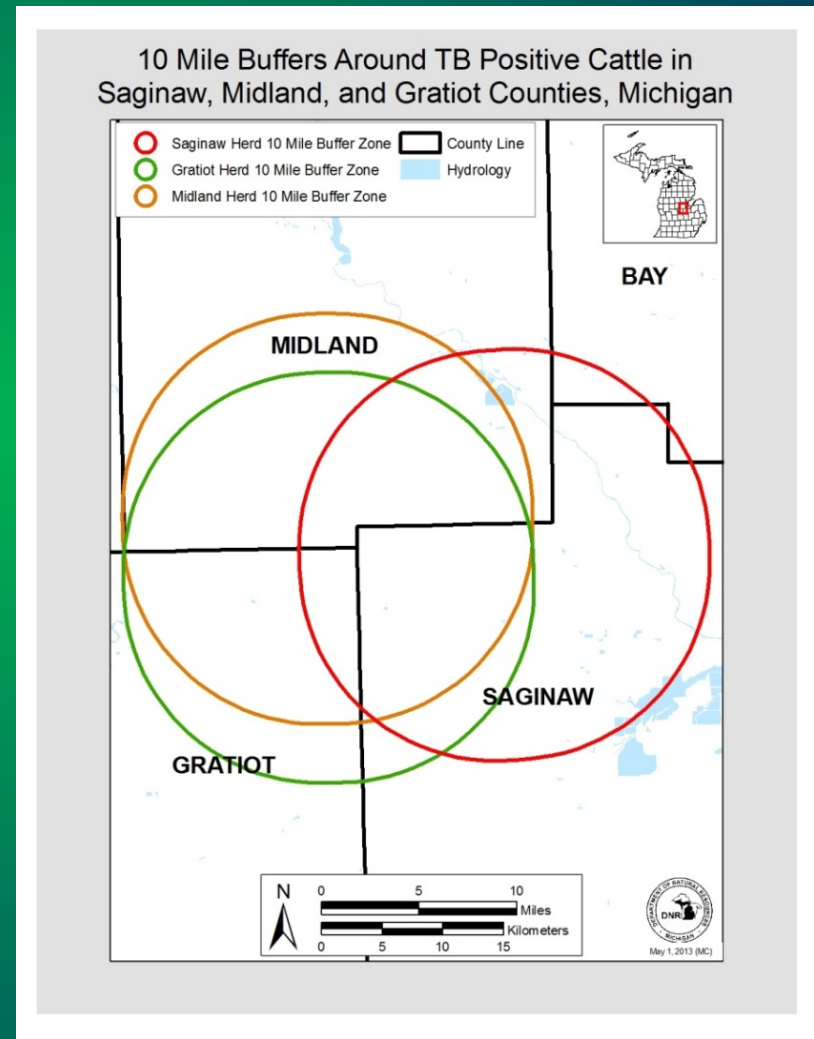
- **June 7, 2013** - Small freezer beef herd depopulated in Midland County
- **June 19, 2013** - Small dairy beef herd depopulated in Gratiot County
- **August 8, 2013** - Saginaw dairy herd depopulated
- **February 3, 2014** - Arenac feedlot depopulated with assistance from law enforcement
- **October 31, 2014** – Huron #2 feedlot depopulated
- **March 18, 2015** – Huron #1 feedlot depopulated

Trace Investigations Outcomes

- State and Federal veterinarians followed 248 traces to **198** unique farms that were linked to the infected farms and feedlots
- Two TB affected herds (Gratiot, Midland counties) and one feedlot (Arenac county) were found as a result of these investigations
- **78** of the 198 herds needed to TB test - **17,209** head of cattle

Circle Testing

- Public Act 466 - requires circle testing
- Typically 10-mile circles
- Three overlapping 10-mile circles - Saginaw, Gratiot, Midland
- Feedlot circles – 3 miles - Arenac, (2) Huron



2013 Circle Testing Outcomes

- 144 farms tested in Saginaw-Gratiot-Midland-Arenac-Huron County circles
 - 18,461 cattle tested

No further disease discovered !

Deer Surveillance

- Since discovery of infected herd in Saginaw County in 2013 **2,138** free-ranging white tailed deer have been checked for TB in Saginaw, Gratiot, Midland, Arenac and Huron counties

All deer have been free of TB!

How Saginaw Herd Infection Happen

- Genetic testing of TB found in Saginaw herd linked Saginaw herd's infection to bovine TB found in wildlife (deer, raccoons, opossums) and cattle in NE Lower Peninsula's Modified Accredited Zone and to Isabella County case from 1993

How Saginaw Herd Infection Happen

- Most likely source of infection was from a cow purchased in mid-90s, perhaps from dispersal sale in TB zone
- Smith *et al* - JAVMA, August 1, 2013
 - One infected animal introduced into dairy herd
 - 58% fade out due to culling and deaths
 - In the 42% of cases where the infection does not fade out it takes 6 to 19.42 years to discover the infection through slaughter surveillance

How Saginaw Herd Infection Happen

- Multiple factors likely involved in causing the infection to spread through the herd during the summer of 2012
 - Stress of heat and drought in summer of 2012
 - Stress of calving
 - Spatial stress – tight quarters
 - Feeding unpasteurized milk to calves

How Other Herd Infections Happen

- **Gratiot** - infection introduced from feeding infected unpasteurized milk from Saginaw dairy
- **Midland** - infected animal originated from Saginaw dairy
- **Arenac** - infection introduced by feeding unpasteurized milk from Saginaw dairy at Gratiot farm in 2012
- **Huron County feedlots** - infected cattle purchased from Saginaw herd

Lessons Learned

- Important to identify all cattle moving off Michigan farms with RFID tags
 - Because Saginaw farm's 2012 bull calves were not identified with RFID tags it complicated the trace investigation
- Not feeding unpasteurized milk to calves
 - Two other farms found with TB were infected by feeding unpasteurized milk to calves

Texas Traces 2014-2015

- October 2014 – two related dairies in Texas panhandle (Castro County) found affected
- April 2015 – two related organic dairies in North Texas, and an associated feedlot found affected

Impact of Texas Traces in Michigan

- 87 Texas cattle traced to Michigan
- 5 Michigan dairies with 11 locations and two calf raisers implicated
- **31,335** Michigan cattle tested as a result of Texas traces in 2015-2016
- **No Disease discovered!**

Questions?