Michigan bovine TB Update

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Outline

• Background
• Current status
• Mid-Michigan outbreak
• What’s next?
Background
Partnerships

- MI Dept. Natural Resources
- MI Dept. Community Health
- USDA-APHIS-VS & WS
- USDA-NRCS
- Michigan State University
- Michigan Cattle Industry
- Michigan Farm Bureau
- Michigan United Conservation Clubs
Program Structure

- Whole Herd Testing
- Movement Testing
- Movement Permits
- Outbreak Investigation
- Electronic ID
- Compliance

Risk of cattle to cattle transmission
Program Structure

- Hunter Surveillance
- Road Kill
- Wildlife Risk Mitigation

Risk of wildlife to cattle transmission
Current Status

Mesenteric lymph node

*Mycobacteria bovis* under microscope
Michigan Bovine Tuberculosis Zones
DRAFT November 8, 2010 DRAFT

[Map of Michigan showing different zones marked as TB FREE, MAZ, and MAAZ]
Cattle Numbers

• Over 1.9 million cattle tested
  – 40,000 + herds

• 60 Positive cattle operations
  – 78% within current MAZ

• 193 cattle found positive
White-Tailed Deer Numbers

- 732 of 200,006 found positive
  - 95% within the current MAZ
Wildlife Risk Mitigation

• Key principles
  – Feed cattle safely
  – Store feed safely
  – Water cattle safely

• Status
  – 1019 enrolled
  – 983 verified
Management of on-farm risk to livestock from bovine TB in white-tailed deer within Deer Management Unit 452:

Predictions from a spatially-explicit model

David Ramsey, Daniel O’Brien, James Averill, Melinda Cosgrove, Rick Smith, Stephen Schmitt, Brent Rudolph
Mid-Michigan Outbreak
Timeline

• **February 19** - cow discovered at slaughter

• **March 12** - Michigan strain of bovine TB

• **March 4-7** - herd TB tested

• **March 25** - MDARD designated 56th TB
  Affected herd since 1998

• **April** – Epidemiological investigation began

• **August 8** – Herd depopulated
Epidemiological Investigation

• Herd grown from within
  – Last female purchase mid 1990’s

• Buy bulls for breeding

• Seasonal breeding program

• Last whole herd test in 2001
Ante-Mortem Results

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<th>Cohort</th>
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<td>Bulls</td>
<td>2008</td>
<td>2009</td>
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<td>11-8</td>
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<td>Population</td>
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# Post-Mortem Results

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## Anatomic Site

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Farm Layout

- Housing:
  - Free-stall barn
  - Pasture during growing season
  - Calving and newborns in same barn
  - Hutches used for calves
  - Summer barn
Potential Risk Factors

• Cattle movement
  – RFID

• Unpasteurized waste milk

• Hay

• Herd stressors

• Wildlife
Trace Numbers

• Over 200 traces
  – 3 source traces
  – Remainder exposed traces

• Led to 3 additional herds
  – Gratiot, Midland, and Arenac

• Traces to other states
  – IN, OH, IA, MN, NE
Circle Testing

- 225 cattle herds
  - 80% done
- 300 deer / year
  - 3 years
# Wildlife/Animal Testing

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<tr>
<th>Wildlife</th>
<th># Tested</th>
<th># TB Positive</th>
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<td>Dog</td>
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Conclusions

• Disease seen across all age groups at various levels

• Explosion late spring 2012

• Multiple routes of exposure

• Not limited to cattle only

• No clear cause of infection
What’s Next
Risk Assessment

• Key questions:
  – Introduction from free-ranging deer
  – Introduction *M. bovis* from cattle in-shipments

• Data input:
  – Populations
  – Positive cases
  – Cattle movement
  – Wildlife risk mitigation
Preliminary Results

- Overall risk contained to MAZ
- Presque Isle moderate risk
- Low risk 6 MAAZ counties
Next Steps

- Draft report being reviewed
- MI will be asking some questions
- Restart MOU discussions
- Lead to Split State Status Application
18 Years Later

• Communication critical
  – Good or bad

• Risk mitigation helps control disease

• Thankful for RFID

• Eradication not likely for decades

• Still many unknowns
  – Research, research, research
Questions