

M. bovis situation in Minnesota

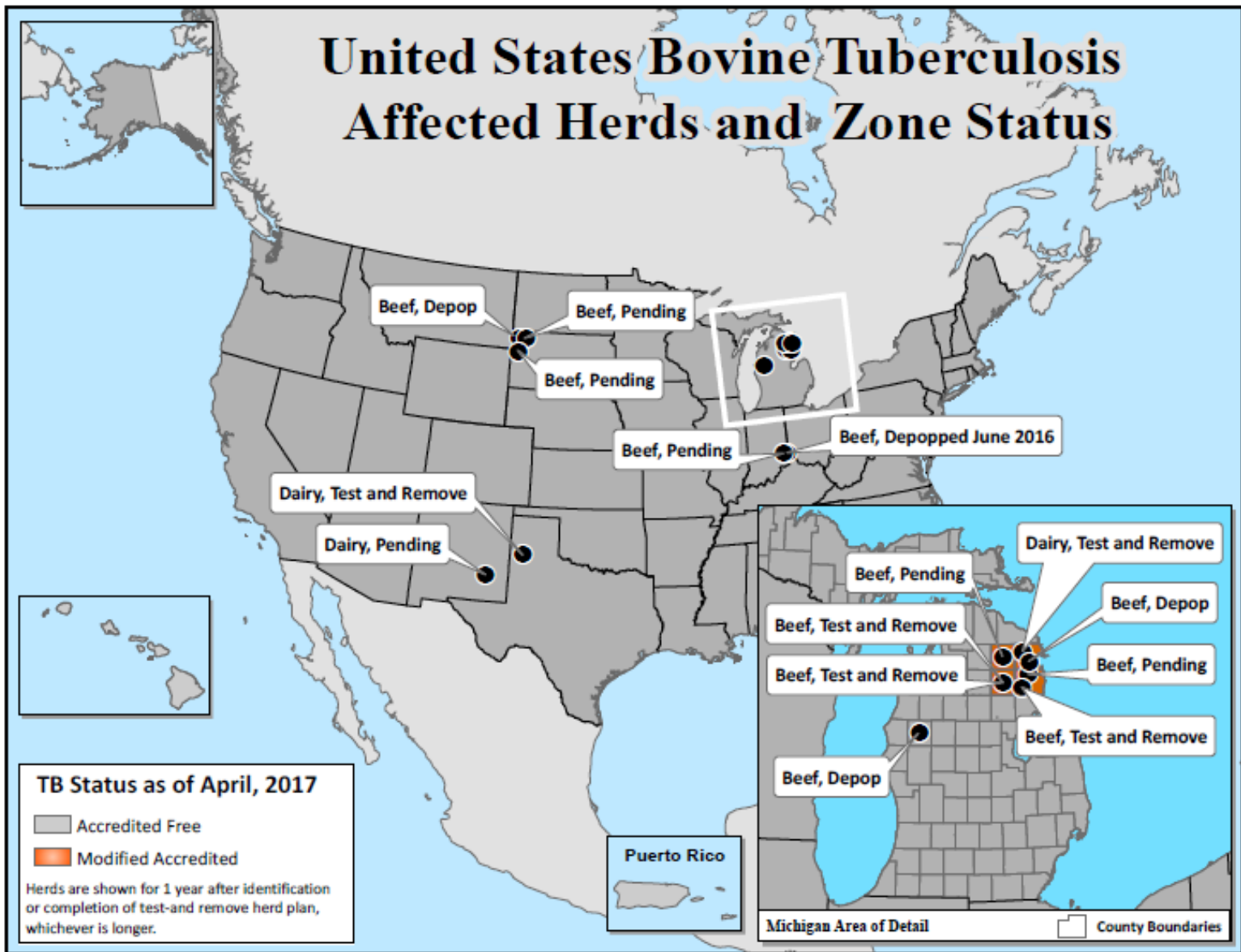


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United States Bovine Tuberculosis Affected Herds and Zone Status



US Bovine Tuberculosis Control Program

Slaughter surveillance

- Observe carcass for visible lesions (granulomas) with traceback of positive cattle to herd of origin
- Minimum standard of 1 granuloma per 2,000 adult cattle slaughtered per plant.



US Bovine Tuberculosis Control Program

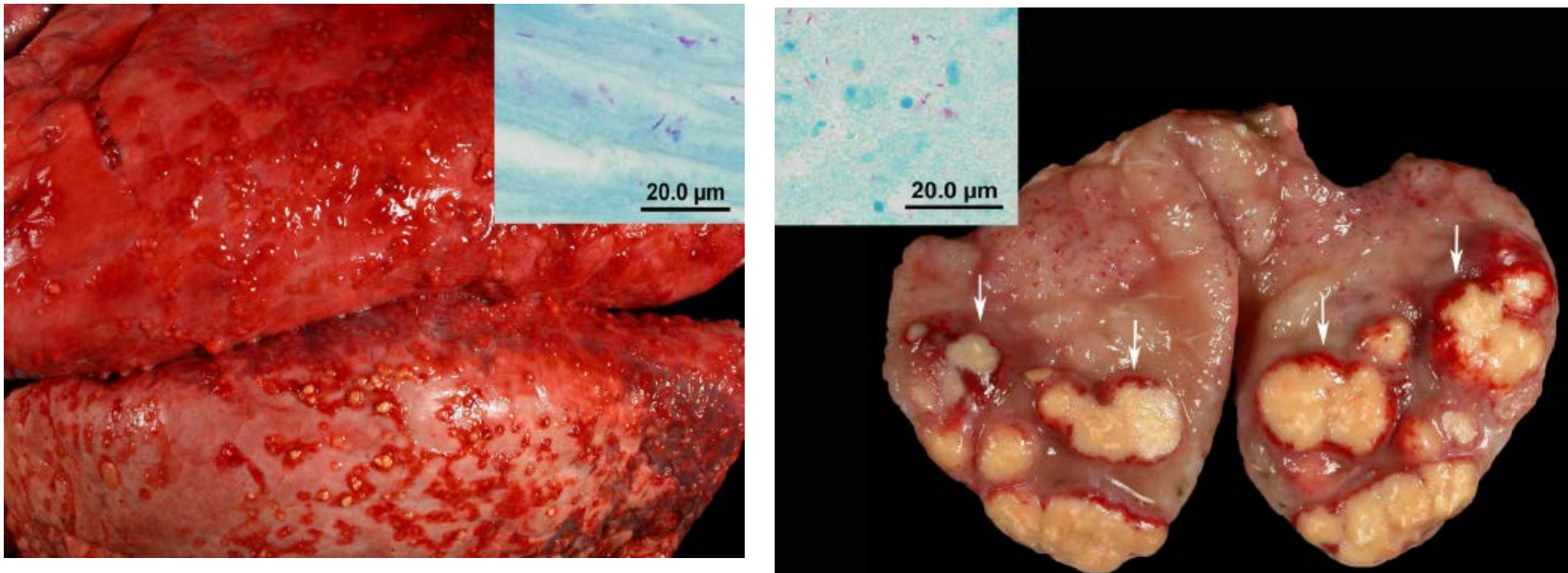
Individual cattle testing

- Not routinely used currently in US, except for testing epidemiologically traced herds
- Accredited vets test cattle using **Caudal Fold Tuberculin test**
 - Suspect = any swelling or reaction
- State or federal vets test suspect cattle using **Comparative Cervical Tuberculin (CCT) test**
- Herds with CCT positive cows
 - All cattle removed to slaughter with indemnity OR
 - Reactor cattle removed and slaughtered and herd quarantined with repeat testing



Bovine TB identified at Wisconsin slaughter plant February 2005

5 year old cow traced to Minnesota beef herd
using back tag applied prior to sale for slaughter



Glaser, 2016, Plos One



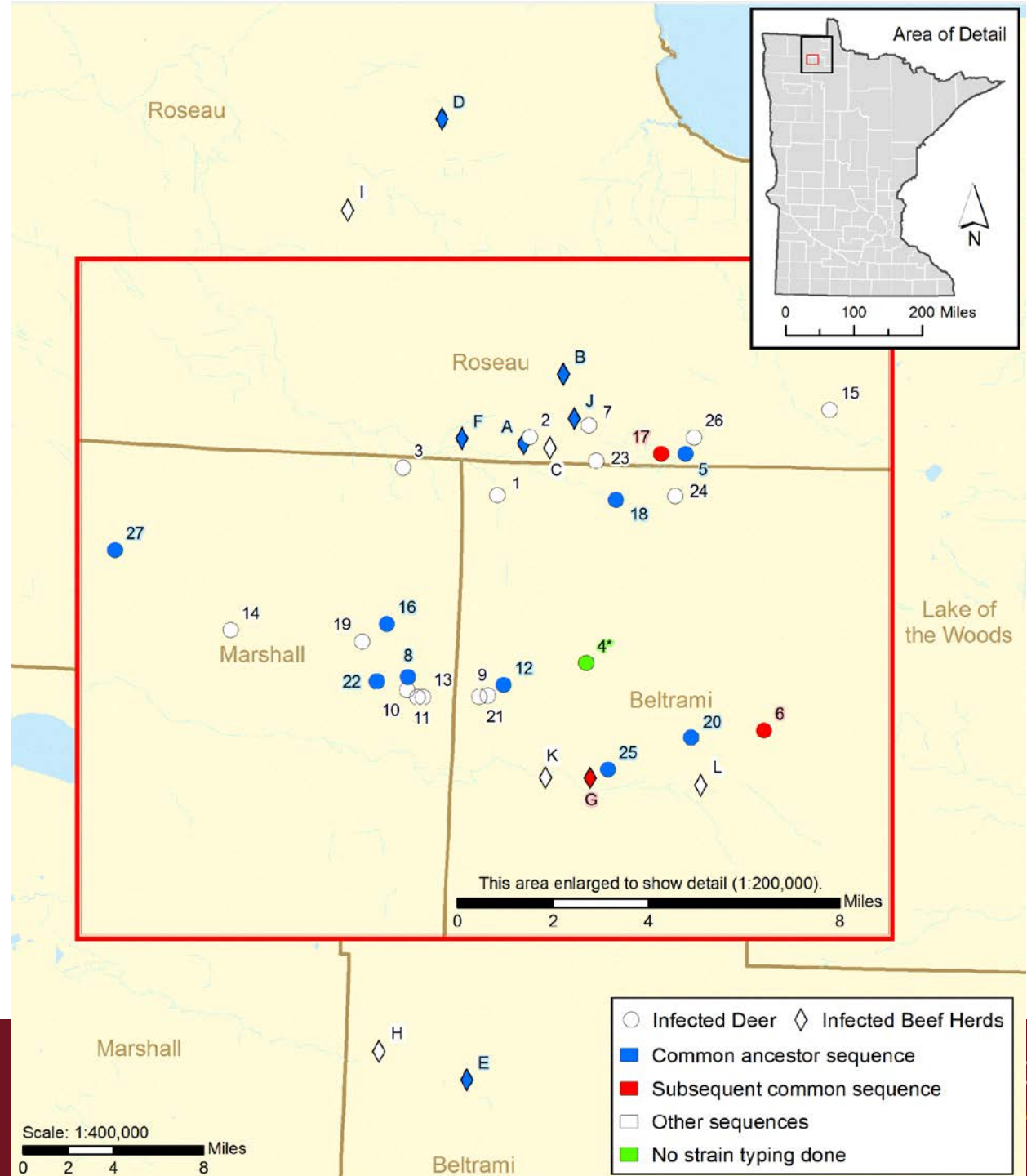
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Bovine TB in Minnesota, 2005-2009

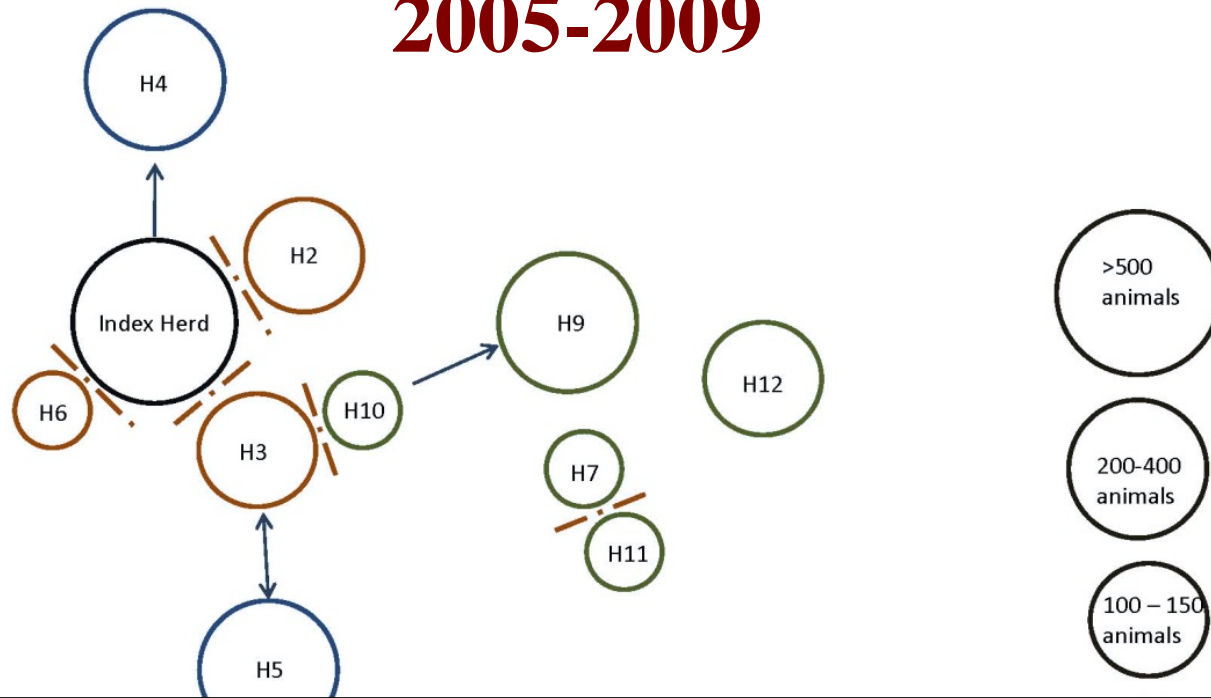
- Animals detected
 - 12 infected beef cattle herds
 - 37 lesioned cattle
 - 27 free-ranging deer
- Source of *M. bovis*
 - *M. bovis* in cattle and deer linked to isolates from cattle in southwest US and Mexico



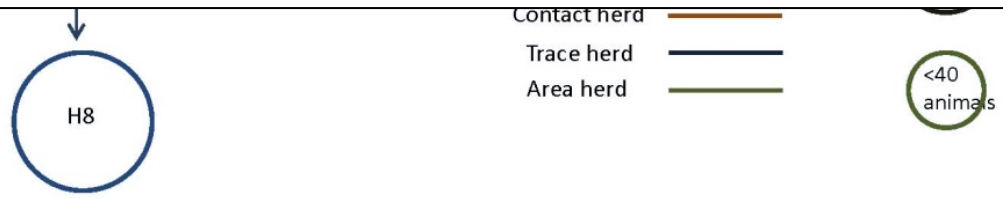
Minnesota Bovine TB Outbreak 2005-2009 (Glaser, 2016, Plos One)



Epidemiologic links between cattle herds in Minnesota Bovine TB outbreak, 2005-2009



All but 2 herds connected through known cattle movements



Linda Glaser, MN Board of Animal Health

Control of bovine tuberculosis in Minnesota

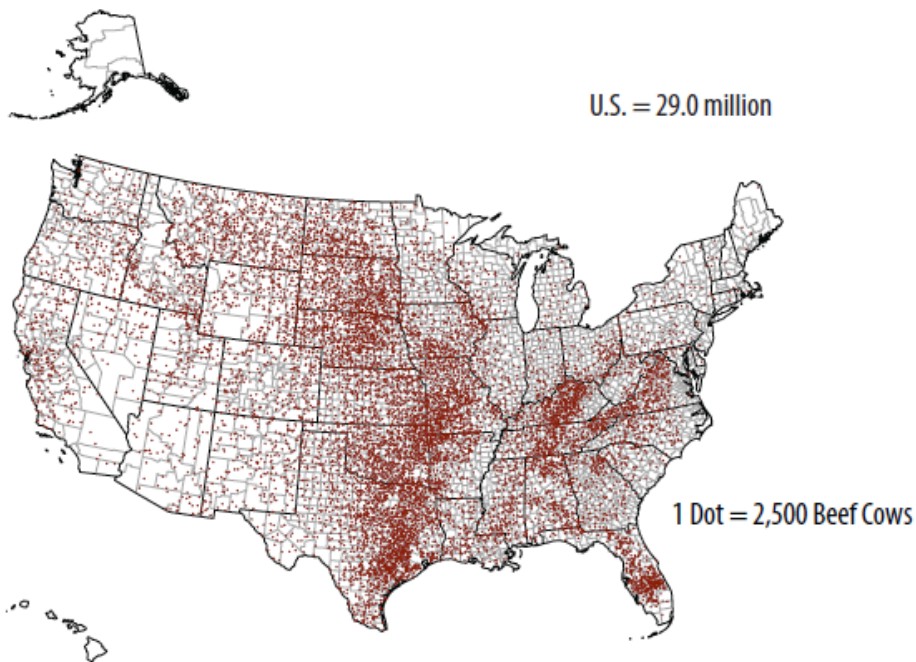


- TB testing of epidemiologically linked herds with movement restrictions
- Annual testing of cattle and other ruminants in affected zone
- TB testing for fairs
- Statewide cattle surveillance
- Depopulation of positive cattle herds with indemnity payments
- Buy-out of cattle producers in Management Zone (45/60 farms)
- Hunter-kill deer surveillance
- Ban feeding of deer
- Reduce deer population



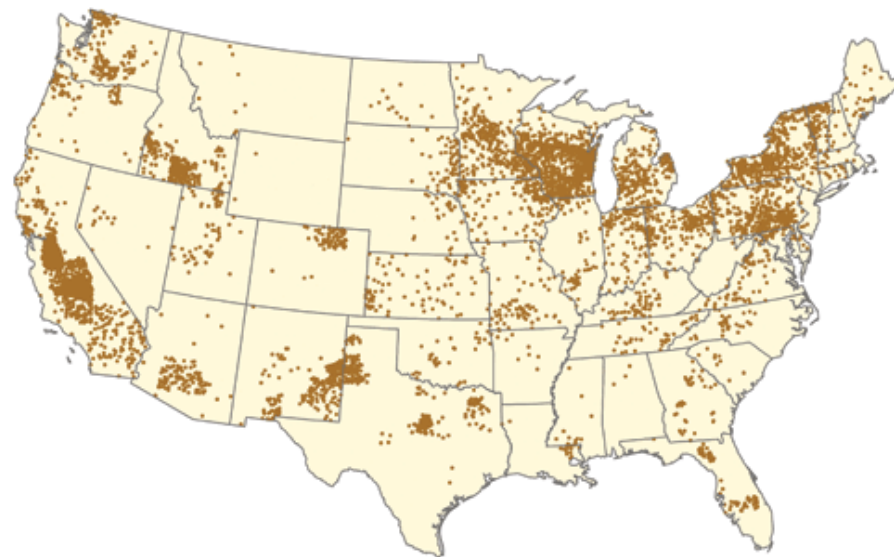
Cattle in United States

Beef Cattle Inventory, by County, 2012



Source: USDA NASS, 2012 Census of Agriculture.

Milk cow inventory, 2011



Source: Hoard's Dairyman
1 dot = 1500 cows

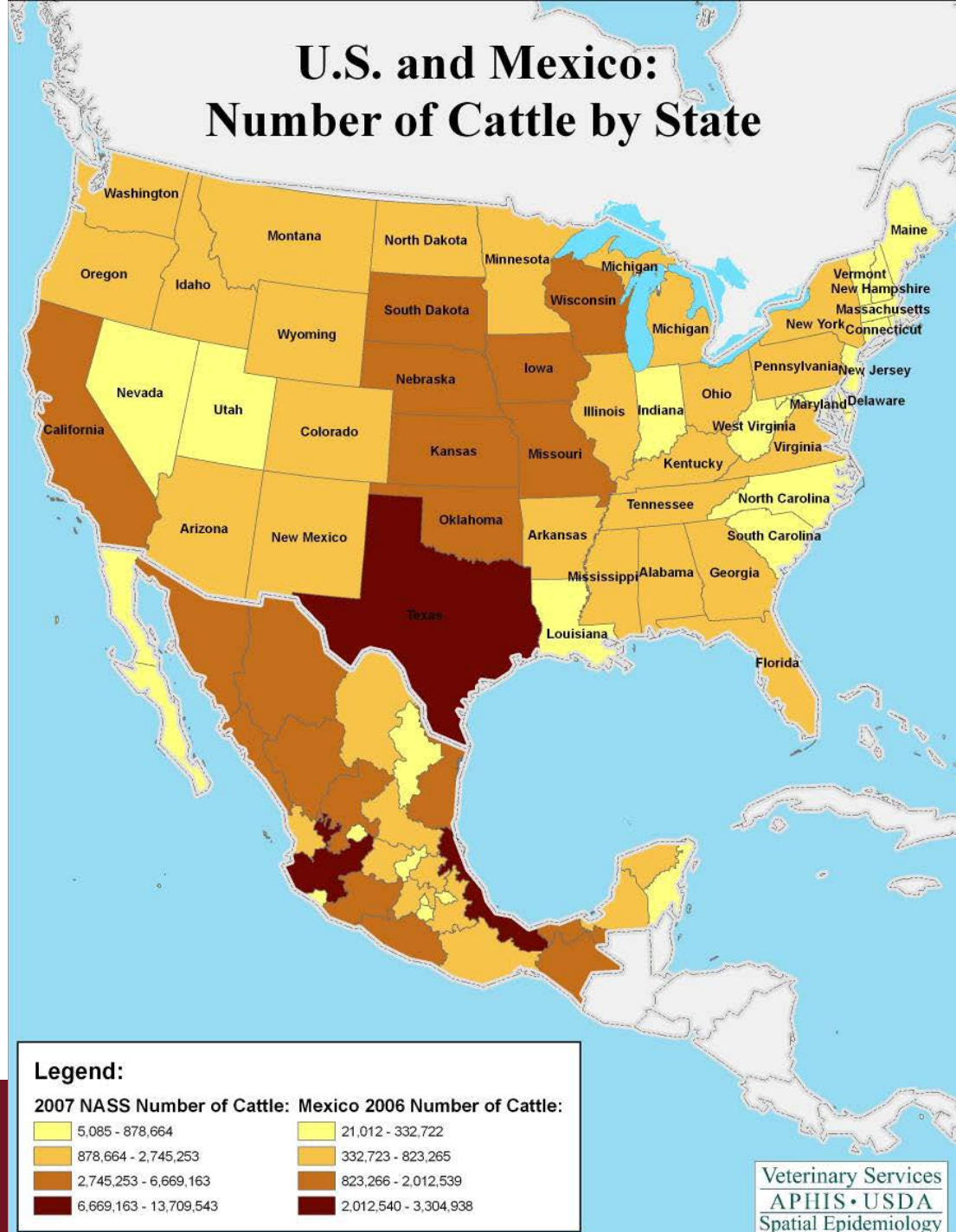
2014/2015:

90 million cattle: 30 million beef cows, 9 million dairy cows

913,000 cattle farms: 728,000 beef farms, 64,000 dairy farms

U.S. and Mexico: Number of Cattle by State

About 1,000,000
cattle legally
enter the US
from Mexican
each year



Risk-based Surveillance

- Disease does not behave randomly
 - Underlying risk factors enhance or limit spread
 - Cattle movement primary risk factor for bovine TB
- How to target surveillance?
 - Focus on strata of the population more likely to have a disease cases as consequence of risk profile



Cattle movements in Minnesota BTB zone

Top 20% of farms

