

## **Assessing the Risk of Contact and Transmission of Bovine Tuberculosis between Cattle and Deer for the Purpose of Regionalization**

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Bovine TB has been identified in nine geographically distinct wildlife populations in North America and has become endemic in at least five of these populations. In 1994 and 2005 *Mycobacterium bovis* (bTB) was found to be endemic in free ranging white-tailed deer (*Odocoileus virginianus*) populations in Michigan and Minnesota causing significant challenges for control of the pathogen. The establishment of a wildlife reservoir for bTB in these states prompted the regionalization to reduce the risk of spread of bTB. In Minnesota the USDA applied OIE risk assessment process to evaluate the risk associated with a proposed region to control the spread of bTB after the detection of *M. bovis* in 11 cattle herds and free-ranging white-tailed deer.

Geospatial methods were used to aid in determining the size and extent for the regionalized zone. Information obtained from epidemiologic investigations was used to identify potential pathways and the likelihood of *M. bovis* spread outside of the proposed TB control region. Using these methods we evaluated the potential movement (dispersal) of white-tailed deer out of the zone, the relationship between affected cattle herds and affected white-tailed deer and the potential movement of cattle into and out of the zone.

The epidemiologic analysis concluded that transmission of *M. bovis* in the proposed region is active and due to local area spread. The majority (61%) of infected deer were within 5 km of affected cattle herds, implicating deer as a possible source of infection. Deer dispersal was evaluated and it was determined that the zone would contain potential deer movement. The risk analysis provided information to decision makers that can be used to guide modification to the proposed plan to help minimize the risk of *M. bovis* spread outside of the control region.

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