

## Application of the risk assessment process for regionalization of bovine TB in an outbreak situation

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The World Organization for Animal Health (OIE) provides guidelines for Risk Analysis for international trade. Within the OIE framework, the risk assessment process can be used to evaluate risks and consequences of disease introduction associated with importation of agricultural products. This process is flexible enough to be applied to domestic regionalization. The USDA-Animal and Plant Health Inspection Service (APHIS) used this process to evaluate risks associated with regionalization and disease status stratification for bovine tuberculosis (TB) control efforts after the detection of *M. bovis* in cattle and free-ranging white-tailed deer (*Odocoileus virginianus*) in one State.

Epidemiologic investigations were conducted in each of 11 affected cattle herds in the State, including whole herd caudal fold tuberculin testing of all cattle traces and herds within 16.09 km (10 mile) radii of affected herds or infected wildlife. Information from these investigations was used to identify potential pathways for the spread of *M. bovis* outside of the proposed TB control region.

The likelihood of exposure to cattle and deer outside the control region was evaluated, especially in areas considered to be high risk. The surveillance of cattle herds and white-tailed deer outside of the control region was evaluated for the ability to demonstrate less than 0.2% prevalence of *M. bovis*. In addition, the proposed scheme for future surveillance was reviewed to determine likelihood of rapidly detecting *M. bovis* in the event of an exposure.

The epidemiologic analysis concluded that active transmission of *M. bovis* was still occurring in the proposed control region. Even with annual whole herd testing, there is a 0.13 probability of at least one undetected infected animal leaving the control region. Due to the proximity of infected deer to affected cattle herds, deer were implicated as a possible source for continued spread. Given the seasonal migratory patterns and dispersal behavior of white-tailed deer, white-tail deer pose a risk for the transmission of *M. bovis* outside of the region.

Historic surveillance outside of the control region was sufficient to demonstrate the prevalence of *M. bovis* in cattle is less than 0.2% with 95% confidence. However, the future surveillance required reformulation to ensure rapid detection given the continued risk of introduction of *M. bovis* from infected cattle, deer or hay leaving the control region. Additional studies are underway to characterize the risk and identify mitigation measures associated with cattle and deer interactions.

The OIE Risk Analysis Framework can be applied to domestic disease issues, including regionalization, to evaluate proposed mitigation measures. This assessment identified several risk pathways associated with the implementation of the control region. Decision makers can use this information to guide modification to the proposed plan to help minimize the risk of *M. bovis* spread outside of the control region.