

Farm Visitation by White-tailed Deer (*Odocoileus virginianus*): Implications for Mitigation of Bovine Tuberculosis Transmission

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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. Currently, the contact rate between cattle and deer, rates of farm visitation by deer, and co-use foraging resources by cattle and deer is not well understood.

To evaluate the extent to which deer and livestock share forage resources and to evaluate farm visitation by deer, 25 female white-tailed deer were captured and fitted with global positioning system collars. Collars were programmed to record geographic locations every two hours for a period of one year. Deer were captured on four cattle farms in and adjacent to the bTB infected zone in Michigan's Lower Peninsula. In addition, on farms frequented by collared deer data were collected on farming practices, including pastures used by cattle, timing of cattle use, timing of cattle feeding and locations of stored cattle feed.

Results indicate 66% of farm visitation was conducted by 19% of deer. Visitation peaked June 1 accounting for 33% of visits. One-third of locations were in cattle use areas. Deer visited 54% of farms within their home range, primarily at night (64%) and commonly visited multiple farms in a day.

These findings suggest that mitigation and control efforts employed on farm to guard against potential transmission of bTB between cattle and deer should account for frequency and timing of deer visitation. Deer visitation of multiple farms may contribute to local area spread of bTB. Focusing mitigation efforts, lethal or non-lethal, on individual deer that are most likely to visit farms may reduce overall mitigation costs while maximizing reduction in potential bTB transmission to cattle and between farms.

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