National Wildlife Disease Program

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Program Activity Report (PAR)

Modeling the Spread of Avian Influenza

The NWDP has been collaborating with scientists in the Department of Biology at Colorado State University, the Centers for Epidemiology and Animal Health branch of Veterinary Services, and the National Wildlife Research Center to focus future surveillance for avian influenza in areas of highest risk. A model was created to predict the spread of low pathogenic avian influenza (LPAI) virus. The model was validated using surveillance data from the high pathogenic avian influenza early detection system. Factors such as minimum temperature, migratory patterns, and host demographic factors were examined to determine their effect on spread of LPAI viruses in the United States. The results of this collaboration were compiled into a manuscript that has been submitted to Nature. Migratory patterns and physical environmental factors were identified as important factors to consider when developing surveillance plans. Additional collaborations to examine clusters of certain bird species in relation to bird banding data are also planned. For more information on this collaboration please contact Kerri Pedersen,

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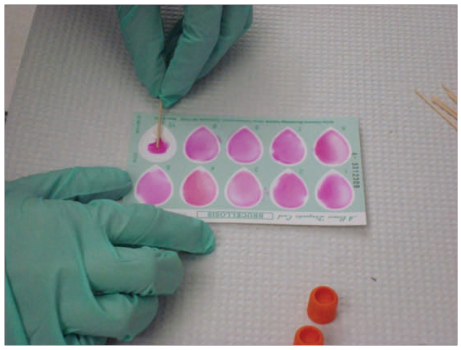
Swine Surveillance for Brucellosis

The NWDP staff in Fort Collins, CO, coordinates feral swine disease surveillance and monitoring on a national scale and conducts diagnostics for some diseases such as brucellosis. The program works cooperatively with the Kansas State/Federal Brucellosis Laboratory in Topeka, KS, to screen serum samples for antibodies to *Brucella*, indicating prior exposure to the pathogen. Serum samples collected by wildlife disease biologists or other Wildlife Services personnel are sent to Fort Collins where they are screened using the "card" test; a standard screening method for domestic livestock. The card test is fairly sensitive (likely to detect *Brucella* if it is there), but not very specific (will cross-react to antibodies for other diseases). To confirm card test results, any suspect or presumptive positive samples are forwarded to the Kansas laboratory. There, the samples are assayed again using a sequence of a Fluorescence Polarization (FP) Plate assay, followed by a FP tube assay. The USDA considers the FP tube assay a confirmatory test for brucellosis in domestic swine. A caveat to this testing protocol is that all currently available brucellosis serological assays are designed to detect the bovine form of the disease, *Brucella abortus*; however, swine can be infected with the porcine form (*B. suis*) or the bovine form and these test methods cannot distinguish the two. A collaborative project is underway with the National Veterinary Services Laboratory to explore methods to distinguish the two species of *Brucella* in serum samples (see Program Activity Report, January 10, 2011). A second project to assess the rate of false negative results using the card test with feral swine serum is being performed at the Kansas laboratory. For more information please contact John Baroch,



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