University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Wildlife Damage Management Conferences -- Proceedings | Wildlife Damage Management, Internet Center for

1-1-2005

Fence-Line Interactions Among Farmed and Free-Ranging Cervids: Preliminary Results

Kurt VerCauteren
USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Justin Fischer
USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Robert Pooler
USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Michael Lavelle
USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Greg Phillips
USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Follow this and additional works at: http://digitalcommons.unl.edu/icwdm_wdmconfproc

Part of the Environmental Sciences Commons

VerCauteren, Kurt; Fischer, Justin; Pooler, Robert; Lavelle, Michael; and Phillips, Greg, "Fence-Line Interactions Among Farmed and Free-Ranging Cervids: Preliminary Results" (2005). *Wildlife Damage Management Conferences -- Proceedings.* Paper 94.
http://digitalcommons.unl.edu/icwdm_wdmconfproc/94

This Article is brought to you for free and open access by the Wildlife Damage Management, Internet Center for at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Wildlife Damage Management Conferences -- Proceedings by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

FENCE-LINE INTERACTIONS AMONG FARMED AND FREE-RANGING CERVIDS: PRELIMINARY RESULTS

KURT C. VERCAUTEREN, USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA
JUSTIN W. FISCHER, USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA
ROBERT POOLER, USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA
MICHAEL J. LAVELLE, USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA
GREG PHILLIPS, USDA, APHIS, Wildlife Services, National Wildlife Research Center, Fort Collins, CO, USA

Extended Abstract: Occurrences of disease outbreaks within and near captive cervid (mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), and Rocky Mountain elk (*Cervus elaphus nelsoni*)) farms have recently drawn attention to these facilities. Some state wildlife and agricultural agencies have pondered making double fencing mandatory or otherwise increasing regulation of captive operations. Diseases such as Chronic Wasting Disease (CWD) and Bovine Tuberculosis (bovine TB) are a threat to captive and free-ranging cervid populations. Concerns over these and other diseases being transmitted from captive to wild cervids, and vice versa, have increased. In most cases, captive cervids are separated from wild cervid populations by a single fence, which could allow direct contact between populations through the fence. Transmission of CWD appears to be primarily from animal to animal (Williams and Young 1992, Spraker et al. 1997, Miller and Williams 2003, Miller and Wild 2004) and is likely density dependent (Peterson et al. 2002, Williams et al. 2002). Fence-line contact is believed to be a means of transmission of CWD between wild and free-ranging cervids (Miller and Thorne 1993, Williams et al. 2002, Williams and Miller 2003). Fence-line contact is also a concern in the transmission of bovine TB (Rhyan et al. 1995), as the most common means of transmission being through inhalation (Sauter and Morris 1995, Palmer et al. 1999, Clifton-Hadley et al. 2001, Palmer et al. 2003).

Through the use of track plots and motion-activated video, we evaluated interactions between farmed and wild cervids through fences. Our primary objective was to establish how much contact occurs between captive and wild cervids. We conducted the study on 15 private deer and elk ranches, ranging in size from 3 - 464 hectares, in northern Michigan and across southwestern and northern Colorado. Six of the study sites were white-tailed deer ranches in Michigan and 9 were elk ranches in Colorado. We collected track-plot data bi-weekly and video data continuously. Track plot data revealed where animals shared the same space during a 24-hr period and video data showed physical contacts and distances among cervids. We divided the year into 4 time periods for Colorado data (spring migration/calving, summer, rut/fall migration, and winter) and 2 time periods for Michigan data (summer and winter).

Colorado trackplot data revealed that most activity for captive elk was in the spring. Colorado and Michigan free-ranging elk and deer activity was somewhat variable across all seasons according to trackplot data. Preliminary camera data suggest that interactions are more frequent between farmed and wild elk than between farmed and wild white-tailed deer**.** In conclusion we found considerable variation from site-to-site in the species, sex, age class, and

number of wild cervids frequenting cervid facility fence lines. Elevation, habitat type, and proximity to prime habitat appeared to play a role in the time of year that the interactions took place. Cervid facility management practices (animal stocking rates, proximity of males to females, feeding practices, and fence construction) also had a strong effect on fence-line activity.

Key words: cervid, disease transmission, fence-line, game ranch, interaction, trackplots

Proceedings of the 11th Wildlife Damage Management Conference. (D.L. Nolte, K.A. Fagerstone, Eds). 2005

LITERATURE CITED

CLIFTON-HADLEY, R.S., C.M. SAUTER-LOUIS, I.W. LUGTON, R. JACKSON, P.A. DURR, AND J.W. WILESMITH. 2001. Mycobacterial Diseases. Pages 340-361 *in* E.S. Williams, and I.K. Barker, editors. Infectious Diseases of Wild Animals. Iowa State University Press, IA, USA.

MILLER, M.W., AND E.T. THORNE. 1993. Captive cervids as potential sources of disease for North America's wild cervid populations: Avenues, implications and preventative management. Transactions of the North American Wildlife and Natural Resources Conferences 58:460-467.

_____, AND E.S. WILLIAMS. 2003. Horizontal prion transmission in mule deer. Nature 425:35-36.

_____, AND M.A. WILD. 2004. Epidemiology of chronic wasting disease in captive white-tailed and mule deer. Journal of Wildlife Diseases 40:320-327.

PALMER, M.V., D.L. WHIPPLE, AND S.C. OLSEN. 1999. Development of a model of natural infection with *Mycobacterium bovis* in white-tailed deer. Journal of Wildlife Diseases 35:450-457.

_____, W.R. WATERS, AND D.L. WHIPPLE. 2003. Aerosol exposure of white-tailed deer (*Odocoileus virginianus*) to *Mycobacterium bovis*. Journal of Wildlife Diseases 39:817-823.

PETERSON, M.J., M.D. SAMUEL, V.F. NETTELS, JR., G. WOBESER, AND W.D. HUESTON. 2002. Review of chronic wasting disease management policies and programs in Colorado. Blue Ribbon Panel External Review - Final Report.

RHYAN, J., K. AUNE, B. HOOD, R. CLARKE, J. PAYEUR, J. JARNAGIN, AND L. STACK. 1995. Bovine tuberculosis in a free-ranging mule deer (*Odocoileus hemionus*) from Montana. Journal of Wildlife Diseases 31:432-435.

SAUTER, C.M., AND R.S. MORRIS. 1995. Behavioural studies on the potential for direct transmission of tuberculosis from feral ferrets (*Mustela furo*) and possums (*Trichosurus vulpecula*) to farmed livestock. New Zealand Veterinary Journal 43:294-300.

SPRAKER, T.R., M.W. MILLER, E.S. WILLIAMS, D.M. GETZY, W.J. ADRIAN, G.G. SCHOONVELD, R.A. SPOWART, K.I. O'ROURKE, J.M. MILLER, AND P.A. MERZ. 1997. Spongiform encephalopathy in free-ranging mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*) in north central Colorado. Journal of Wildlife Diseases 33:1-6.

WILLIAMS, E.S., AND S. YOUNG. 1992. Spongiform encephalopathies in Cervidae. Revue Scientifique et Technique, Office International des Epizooties 11:551-567.

_____, M.W. MILLER, T.J. KREEGER, R.H. KAHN, AND E.T. THORNE. 2002. Chronic wasting disease of deer and elk: A review with recommendations for

management. Journal of Wildlife Management 66:551-563.

_____, AND M.W. MILLER 2003. Transmissible spongiform encephalopathies in non-domestic animals: Origin, transmission and risk factors. Revue Scientifique et Technique, Office International des Epizooties 22:145-156.