FOOT-AND-MOUTH DISEASE OUTBREAKS SPILL OVER TO MONGOLIAN GAZELLES FROM LIVESTOCK

Through support from the AZA Conservation Endowment Fund, Dunemere Foundation and the United States Department of Agriculture, Wildlife Conservation Society scientists collaborated with local Mongolian veterinarians to investigate the disease transmission dynamics in Mongolian gazelle and livestock. The researchers concluded that Mongolian gazelles are not a reservoir for foot-and-mouth disease virus (FMDV), but rather, the virus enters the gazelle population after spillover from livestock during sporadic outbreaks. This research, “Serosurveillance for Foot-and-Mouth Disease in Mongolian Gazelles and Livestock on the Eastern Steppe of Mongolia”, was published in the January 2012 edition of the Journal of Wildlife Diseases.

FMD is a highly contagious, viral disease that affects cattle, sheep, goats, camels and Mongolian gazelles (Procapra gutturosa). Given that one-third of the human population of Mongolia depends directly on livestock production for subsistence, outbreaks of FMD have caused severe disruptions to Mongolia’s pastoral economy. FMD can directly threaten the long-term conservation of the Mongolian gazelle, a keystone species on the Mongolian Eastern Steppe, directly through morbidity and mortality, and indirectly, through disease management actions aimed at wildlife.

The research culminates a decade-long effort to examine the potential role of the gazelles in FMD ecology. In the recently published study (undertaken between 2005-2008), the research team collected blood samples from 36 gazelle calves and 57 adult gazelles in order to determine the prevalence of antibodies to FMDV. The team also collected samples from domestic animals kept in areas frequented by gazelles, including 138 sheep, 140 goats, 139 Bactrian camels, and 138 cattle for comparison.

The patterns of FMDV antibody prevalence in gazelle reflect dynamics of FMD in livestock across the Eastern Steppe of Mongolia: 0% prevalence during outbreak-free years in livestock, 1998–99; 67% prevalence during a concurrent FMD outbreak in livestock in 2001; and declining prevalence in the gazelle population following periods without livestock outbreaks, during which livestock vaccination occurred.

The episodic nature of FMD outbreaks on the Eastern Steppe, with evidence of FMDV exposure in gazelles only during or following concurrent outbreaks in livestock, suggests that FMDV spills over into the gazelle population during livestock outbreaks and that successful control of FMD on the Eastern Steppe requires a focus on control in livestock populations through creation of an effective level of herd immunity in the domestic livestock population by regular and routine vaccination. Based on all evidence to date, Mongolia gazelle are more likely to be victims than important reservoirs of FMDV.

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