



Release:
July 2012

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Testudinid Herpesvirus 2 Detected in Wild Desert Tortoises for the First Time

Much attention has been given to detecting emerging infectious diseases in Agassiz's desert tortoise (*Gopherus agassizii*), a federally listed threatened species. Thousands of wild desert tortoises are being translocated as a result of military and industrial development. In addition, well-meaning citizens release unwanted captive tortoises, although such unauthorized releases are illegal. Infected translocated or released tortoises can spread pathogens through close contact during courtship, combat, and other intraspecific activities.

Herpesviruses are well-recognized pathogens of tortoises and turtles. Herpesvirus-like lesions were first reported in a captive tortoise in 1982, and wild tortoises with oral lesions suggestive of herpesvirus were described in 2003. Four types of herpesvirus genotypes have been recognized in turtles and tortoises to date: TeHV1, TeHV2, TeHV3 and TeHV4.

In a paper published in *Journal of Wildlife Diseases* in 2012, researchers from the University of Florida, USGS, University of Bern, and San Diego Zoo necropsied two wild adult male desert tortoises with gross lesions consistent with trauma and puncture wounds. One tortoise was from the central Mojave Desert of California and the other tortoise was from the north-eastern Mojave Desert in southern Nevada. DNA samples from the tongue of the California tortoise and from the tongue and nasal mucosa of the Nevada tortoise showed 100% nucleotide identity with TeHV2. Researchers also reported antibody prevalence of 30.9% for a second herpesvirus, TeHV3, in surveys of 256 wild and 55 captive tortoises from the Mojave and Colorado deserts of California.

Although several cases of herpesvirus infection have been described in captive desert tortoises, these findings represent the first conclusive molecular evidence of TeHV2 infection in wild desert tortoises.

Management Implications

- This is the first conclusive evidence of TeHV2 in wild desert tortoises, and the first published evidence of antibody to TeHV3 in wild tortoises in the Mojave/Colorado deserts of California.
- Herpesvirus commonly exists as a subclinical infection (lacking clinical signs of illness), with virus sequestered in the central nervous system. Testing is a challenge because ELISA tests for exposure currently are not available, and molecular tests for identifying pathogen genomic sequences often work best when an infection is active.
- Suites of tests provide the best diagnostic approach for identifying infected individuals. To help prevent spread of herpesvirus and other infectious diseases, desert tortoises should be tested with the best available methods prior to translocation. Wildlife biologists and land-use managers can coordinate with disease specialists to keep abreast of the latest findings on infectious diseases and new methods for sampling in this rapidly developing field.
- Unauthorized release of captive tortoises to the wild is illegal. The public should be educated about laws and options for unwanted tortoises.
- Further studies are needed to determine the ecology, prevalence and clinical significance of the TeHV2 virus in desert tortoise populations.

THIS BRIEF REFERS TO:

Jacobson, ER, KH Berry, JFX Willehan Jr, F Origgi, AL Childress, J Braun, M Schrenzel, J Yee, B Rideout. 2012. Serologic and molecular evidence for testudinid herpesvirus 2 infection in wild Agassiz's desert tortoise, *Gopherus agassizii*. *Journal of Wildlife Diseases* 48(3): 747-757.

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