

Association of Fish & Wildlife Agencies

Guidance on SARS-CoV-2 in Susceptible Free-Ranging Deer Species

*Prepared by the Fish and Wildlife Health Committee
Updated August 2022*



This guidance document is intended to be adaptable as new information becomes available. It was developed for AFWA members and is not meant to be prescriptive or to mandate programs at the state, provincial, federal, tribal, or territorial level; the guidance and supporting evaluations should be regarded as recommendations for agencies to consider as they make policy involving wildlife and SARS-CoV-2.

Based on results from recent studies, white-tailed deer (WTD) are susceptible to experimental infections with SARS-CoV-2 (Palmer et al. 2021; Cool et al. 2022; Martins et al. 2022). These experimental studies demonstrated that WTD do not become ill (as reported thus far), but virus can be transmitted for a short time (<7 days) between WTD housed or comingled indoors. The potential for infection in other cervids and ungulates exists due to the presence of the ACE2 cellular receptor and amino acids important for binding SARS-CoV-2 (Damas et al. 2020), and other biological considerations and transmission mechanisms. Studies in mule deer and other cervids are ongoing.

After antibodies specific for SARS-Cov-2 were reported from WTD deer sampled in Michigan, Illinois, Pennsylvania, and New York (Chandler et al. 2021), several groups began testing free-ranging WTD populations for the presence of the virus. Collectively, these efforts have confirmed SARS-CoV-2 in wild WTD from 28 states and the District of Columbia. Some of these efforts have provided evidence of virus circulation within WTD populations (Hale et al. 2021; Kuchipudi et al. 2022; Marques et al. 2022; Pickering et al. 2022). Susceptibility, transmission, and surveillance results such as these are important first steps to better understand a new disease. While the risk of WTD spreading the virus to humans is considered to be low, the prevalence of SARS-CoV-2 in WTD populations over most of the US is still largely unknown.

Although humans currently represent the major reservoir for SARS-CoV-2 and the highest risk for human exposure, there are two potential transmission risk scenarios involving WTD that may be of concern to stakeholders and biologists: 1) humans acting as a source of infection to WTD and 2) SARS-CoV-2 infected WTD acting as a source for human infection. Evidence of transmission from humans to WTD appears valid, but the mechanisms are unknown. Conversely, results from a study under peer review (Pickering et al. 2022), describe a unique SARS-CoV-2 genetic sequence in WTD from Southwest Ontario, Canada and suggest possible transmission to a single person.

Enhanced transmission risk between humans and deer may occur in certain situations where people are in close contact with deer including wildlife research involving the capture and handling of wild deer, wildlife rehabilitation activities, exhibition settings, deer farming, and captive animal research. Such circumstances represent situations where preventive measures should be emphasized. Resources listed at the end of this document provide additional guidance on risk mitigation strategies for such situations.

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The high prevalence of antibodies to SARS-CoV-2, the confirmation of the virus in some wild WTD populations, and the persistence of the Alpha and Delta variants after their replacement by Omega as the dominant lineage circulating in people, suggests that deer-to-deer transmission has occurred. At present, risk factors that may enhance such deer-to-deer transmission are not defined.

The risk factors and mechanisms enabling human to deer, deer to deer, and potentially, deer to human transmission need to be defined. It may be possible that such risks are localized and preventable and may be dependent on continued human to WTD transmission. The potential for transmission between an infected human and free-ranging WTD can be reduced using the standard biosafety precautions (masks, hygiene) that are effective in lowering risk of SARS-CoV-2 transmission among humans.

We do not currently understand how wild deer are being exposed to SARS-CoV-2. Nor do we know how variants of concern may impact transmissibility among species, or the implications of viral mutation and evolution in deer resulting in new variants. Therefore, we recommend keeping domestic animals away from wildlife and wildlife carcasses as a precautionary measure. With both direct and indirect transmission pathways possible, reduction of SARS-CoV-2 infection in the human population through preventive measures including vaccination is the best defense against human to deer transmission. The CDC recommends that immunocompromised individuals have a COVID-19 plan, which includes staying current on SARS-CoV-2 vaccinations.

Considerations for hunters:

- There is evidence that WTD and mule deer have been, or are, infected with SARS-CoV-2, and evidence that deer-to-deer transmission has occurred.
- Information regarding current SARS-CoV-2 infection status in North American deer populations is limited.
- Based on current information, SARS-CoV-2 infected deer may be a source for human infection; however, the risk of humans becoming infected from WTD and mule deer is likely low.
- When field dressing a deer, wearing gloves and masks, and hand washing are recommended.
- The risk of acquiring SARS-CoV-2 from deer and developing severe or fatal COVID-19 can be greatly reduced through personal vaccination.
- Hunters at risk for severe COVID-19 may consider seeking assistance with field dressing deer.
- Currently, there is no evidence that you can develop COVID-19 by eating properly prepared and cooked food, including wild hunted game meat. (See <https://www.cdc.gov/coronavirus/2019-ncov/your-health/wildlife.html> and <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/food-and-COVID-19.html>)

Relevant Resources:

- Link to CDC guidelines for reducing the risk of SARS-CoV-2 spread between people and wildlife: <https://www.cdc.gov/healthypets/covid-19/wildlife.html>
- Link to OIE statement on monitoring white-tailed deer for SARS-CoV-2: <https://www.oie.int/en/oie-statement-on-monitoring-white-tailed-deer-for-sars-cov-2/>
- Link to CDC guidance for immunocompromised individuals: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-who-are->

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