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Wildlife scientists have discovered the presence of SARS-CoV-2 — the coronavirus that causes COVID-19 — in white-tail deer across a half dozen states. New research shows white-tail deer are biologically vulnerable to the COVID-19 virus, which is spreading deer-to-deer. As Jacqueline Froelich reports, although deer are abundant in Arkansas, none of have been tested yet, so the rate of infection remains unknown.

EMAIL KUAF WEB LINK Web:

<https://www.pnas.org/content/118/47/e2114828118>

https://www.aphis.usda.gov/publications/aphis_general/arp-strategic-framework.pdf

V1 As many as 30 million white-tail deer freely roam American forests and prairies, towns and cities. Deer are popular creatures, intensely admired and fed by wildlife enthusiasts, and widely hunted as a game species.

But since a global pandemic was declared, white tail deer are showing signs of COVID-19.

Thomas DeLiberto <dee luh BERTO> is assistant director at the USDA Animal and Plant Health Inspection Service or APHIS, National Wildlife Research Center, headquartered in Fort Collins, Colorado.

De1: “This goes back to a year ago summer when a paper was published in the National Academy of Sciences which identified certain species around the world of animals that had receptors that were capable of binding to the SARS-CoV-2 virus.”

V2 After the discovery that white-tail deer angiotensin-converting enzyme 2 receptors have an affinity for SARS-CoV-2, USDA Agricultural Research Service scientists deployed an experiment infecting captive white-tail deer, held in biosafety containment.

Del2: And they found that deer could not only become infected with the virus, they can subsequently shed it to other deer who are not infected, but maintained in the same room as the infected deer.”

V3 What's referred to as deer-to-deer transmission. Next DeLiberto and colleagues conducted sero-surveillance of deer blood, contained in deer blood banks, for various research purposes.

Del4: "And we went to those freezers, sampled the blood we had, and sampled from before the pandemic and during and when we looked at that, didn't find any antibodies prior but during the pandemic we began to see free ranging white tail deer exhibiting antibodies to the SARS-CoV-2 virus, indicating they had been exposed to the virus."

V5 Blood samples were then collected by APHIS researchers January thru March of this year, from wild deer in Illinois, New York, Pennsylvania and Michigan. Antibodies were detected in 40 percent of deer.

DeLiberto is among 13 scientists whose findings on SARS-CoV-2 in white tail deer were recently published through the Proceedings of the National Academy of Sciences, after going through peer review.

He's also a member of the APHIS American Rescue Plan, or ARP, Coordinating Group, responsible for reviewing and approving projects. APHIS received more than \$300 million dollars this year to develop a plan to monitor and surveil susceptible animals species for SARS-CoV-2 —part of a continuing effort to strengthen the nation's ability to detect and contain zoonotic <<zow·uh·naa·tuhk>> disease outbreaks in animals.

Del5: USDA APHIS has just developed a specific plan, to expand what's been ongoing at the state/university level to a broader geographic area within the range of WTD to look at additional areas where deer might be exposed and infected with SARS-CoV-2."

V6 DeLiberto says a growing number of universities and state natural resources agency research scientists are now investigating Covid-19 in white-tail deer, most recently in Ohio and Iowa.

Those studies are pending peer review, but are presently posted on BioArchive, an open access preprint repository for the biological sciences.

For the Iowa study, a Penn State University veterinarian research team analyzed lymph nodes from dead deer, either road killed or hunted, finding rates of infection are rising over time —including COVID-19 variants which are also circulating in humans.

Del6: “We don’t know how deer are becoming exposed and infected, which is one of the priorities of the USDA activity, embarking on in the next couple of weeks to look at where deer are infected, but chart to gain some knowledge about how they might be coming infected and once infected able to transmit virus among themselves within deer populations. We don’t know how they are becoming infected but given we are finding deer in four states, and Ohio and Iowa ... different ways in different areas of the country.”

V7 DeLiberto says, however, unlike humans who can be gravely sickened and die from COVID-19 infection, deer appear to be unharmed by the virus.

Del7: “There is no evidence that deer are currently be adversely affected by the infection. The USDA studies on captive white tail deer demonstrated very little clinical signs or illness, and to date, and no reports of wild deer exhibiting any clinical signs or mortality from infection due to SARS-CoV-2. “

V8 Almost hunted to extinction in Arkansas at the turn of the 20th century, deer have more than rebounded, says Robert Byrd, state director of USDA Wildlife Services.

R1: “They’re not evenly distributed, some counties higher densities, NE AR, delta have lowest densities, and the most in the southcentral portion of Arkansas.”

V9 Deer are also found on the Arkansas highlands, Carroll, Benton and Washington Counties, including near urban centers, like Fayetteville and Eureka Springs.

But Byrd says Arkansas deer have not yet been tested for COVID-19.

R2: “As far as I know there is not surveillance, we’ve had discussions, no sampling currently.”

V10 Although deer to deer transmission of SARS-CoV-2 is occurring, the incidence or possibility of cross-species transmission, as well as deer to human transmission remains unknown.

There’s also concern that with increasing infection rates, white-tail deer could incubate new COVID-19 variants.

I’m JF reporting in Fayetteville.

