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Seek: research magazine for Kansas State University. [Introductory matter] Fall 2020

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Dorhout: Seek: research magazine for Kansas State University. [Introducer

Seek **k**

RESEARCH MAGAZINE FOR KANSAS STATE UNIVERSITY

SPRING • 2021

Research that ticks

Seeking answers to tick-borne diseases

The grid

Making our electric grid smarter, safer

Redefining the classroom

Bringing research, robots together

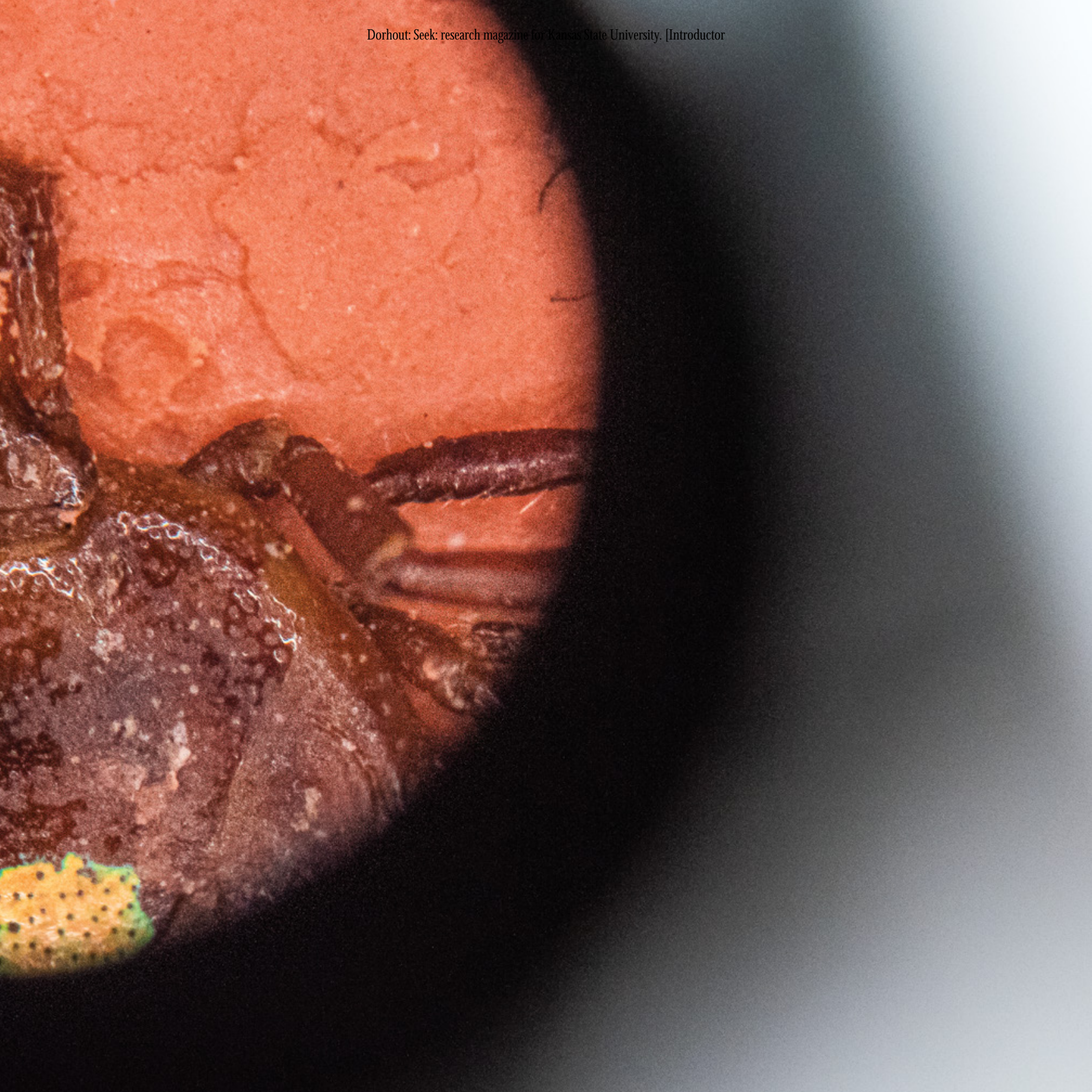
Under the microscope

This photo — taken through a microscope — offers a close-up look of the mouthparts of an adult female lone star tick, *Amblyomma americanum*.

This tick is part of the National Equine Tick Survey, which is housed at Kansas State University and is the first large-scale tick collection study from horses.

The lone star tick can cause multiple human and animal diseases, including ehrlichiosis, tularemia, Heartland virus disease, Bourbon virus disease and Southern tick-associated rash illness. See page 12 to read more about tick-borne disease research at K-State.





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Researchers work across disciplines to end COVID-19 pandemic



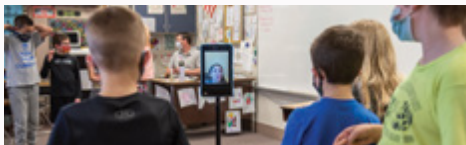
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Seeking answers to tick-borne diseases



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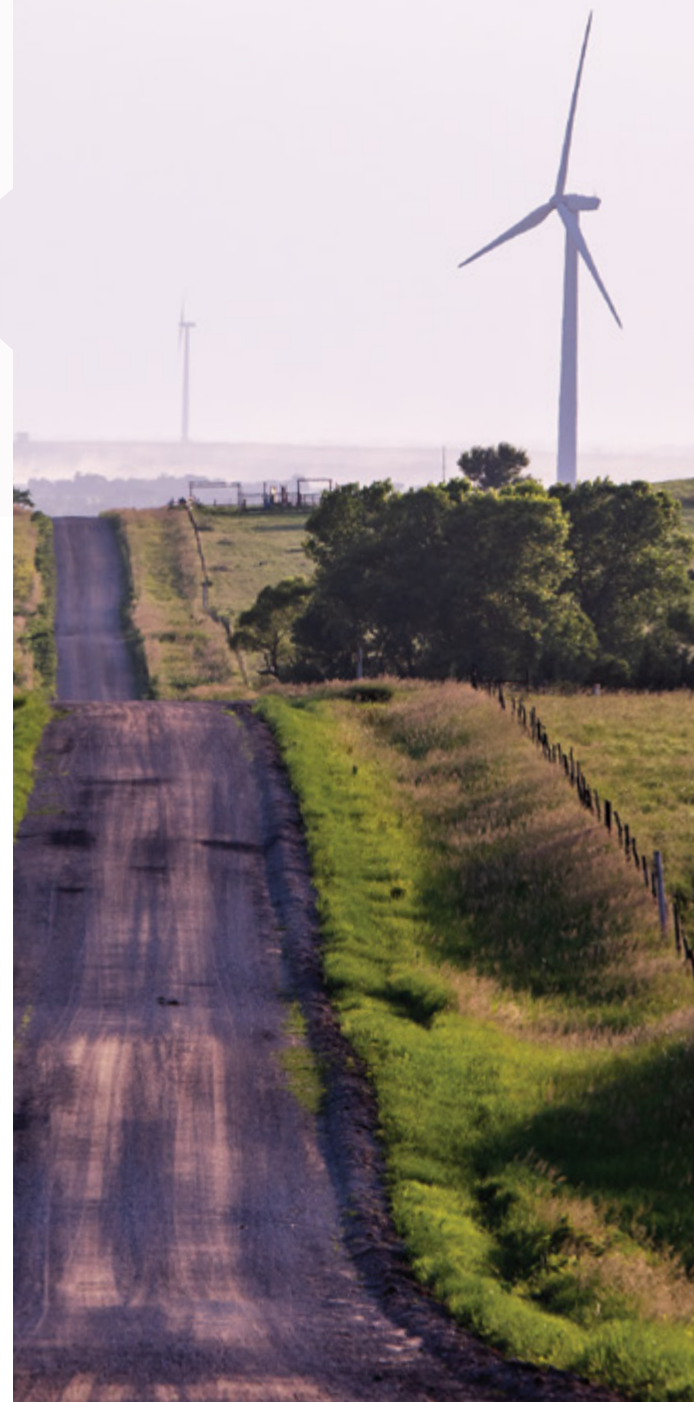
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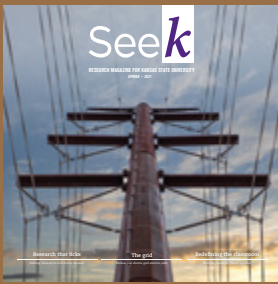
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Editor's note:

Some of the photos in this issue were taken before the COVID-19 global pandemic and before face coverings and physical distancing became common practices. In the photos that have been taken during the pandemic, people are wearing face coverings and practicing physical distancing and other safety measures.





Welcome to the spring 2021 issue of Seek! I am honored to be in a position to greet you during your visit to our research highlights, as I am serving as interim vice president for research, following the departure of our former vice president for research, Peter K. Dorhout.

I'll tell you just a little about myself. I have been at Kansas State University since 1988 and am a professor of biology. I have had a variety of administrative roles, including associate dean for research in the College of Arts and Sciences, interim research director of the Biosecurity Research Institute, and most recently, senior associate vice president for research. The Office of the Vice President for Research continues to move the university research mission forward in conjunction with our faculty researchers. We will tell you some of their stories in this issue.

February 2021 provided a climate shock to most of the continental United States in the form of a huge southward dip in the jet stream that caused the displacement of the polar vortex. This resulted in far below-normal temperatures in a lot of the country, with many record lows set during the second and third weeks of the month. The impacts on our electric grid were particularly striking. Our cover story on "The grid" highlights K-State research that focuses on power electronics and improving the nation's power grid. Becoming an international leader in power and energy systems is a key priority area of the Carl R. Ice College of Engineering.

Two of our feature stories in this issue focus on our infectious disease research: One provides updates on various coronavirus research projects across multiple disciplines as we continue to struggle under the SARS-CoV-2 pandemic; the other highlights work by researchers of the Center of Excellence for Vector-Borne Diseases on combatting diseases carried by ticks.

Another feature story highlights work of the College of Education designed to help teachers and families overcome the intrinsic challenges posed by remote learning, including the robotic learning program of the Rural Education Center.

Our final feature describes several recent research achievements related to Kansas' signature crop, wheat, including the International Wheat Yield Partnership, the recent genome sequencing of 15 wheat varieties and work on the continuing threat of wheat blast.

Our shorter features highlight the research of University Distinguished Professor Christine Aikens of the chemistry department; K-State Polytechnic researcher Tom Haritos, geology graduate student Sarah Lamm; and undergraduate scholar Anna Welsh, a senior in psychological sciences, art and modern languages. Anna's project is highly interdisciplinary, involving art, history and Spanish, and is supported by an Office of Undergraduate Research and Creative Inquiry undergraduate research scholarship.

K-State's commitment to engagement is demonstrated by our story on the Shelter Medicine Mobile Surgery Unit of the College of Veterinary Medicine, which recently completed its 27,000th spay/neuter procedure in the six years it has been in existence. The unit has traveled statewide and has helped dozens of animal shelters, community organizations and the citizens of the communities they serve, save on veterinary care costs.

I hope you enjoy your tour of just a few of K-State's recent research, scholarly and creative activities. I encourage you to read this issue of Seek and learn more.

Beth A. Montelone, vice president for research

About Seek

Seek is Kansas State University's flagship research magazine and invites readers to "See" "K"-State's research, scholarly and creative activities, and discoveries. Seek is produced by the Office of the Vice President for Research and the Division of Communications and Marketing.

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