Quarterly Newsletter of the Caesar Kleberg Wildlife Research Institute
at Texas A&M University-Kingsville

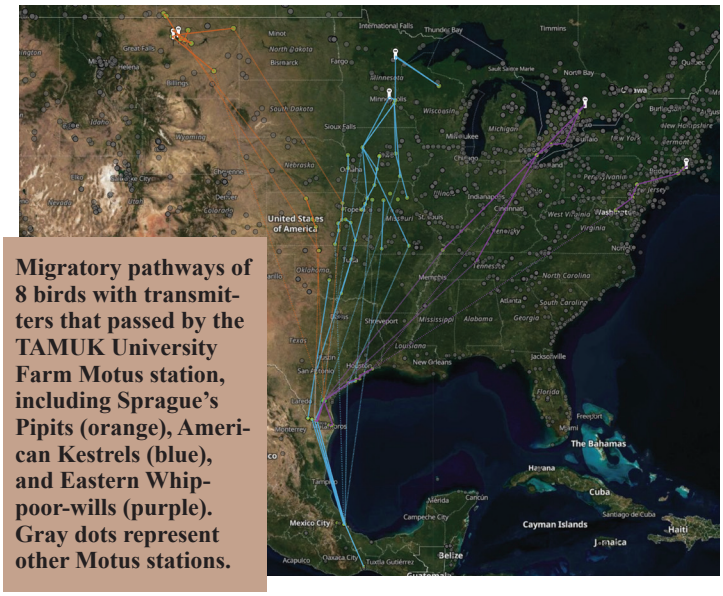
Fall 2024
Volume 28, No. 3

All Movements Great and Small

by Ashley Tanner, Daniel Woolsey, and Kyle McManus

In 1970, NASA teamed up with wildlife researchers to deploy the first ever GPS transmitter on an elk named "Monique" near Yellowstone National Park. The transmitter cost $25,000 and weighed 23 pounds. It collected ambient air temperature and skin temperature, and transmitted 1 location per day to a weather satellite called the Nimbus 3. Previously, such locations were the result of a hard day in the field physically searching for and relocating a marked animal to record its location. Now, it was possible to gather the same data from a computer.

Over 50 years later, wildlife tracking technology has advanced at an astonishing pace. Modern transmitters are light enough to track the movements of even the smallest animals, including hummingbirds and bees. Expansion and improvement of cell phone towers has enabled the development of devices that transmit data via the cellular network, with researchers paying for the collection of location data in much the same way that we pay for our cell phone plans. This summer, graduate students at CKWRI used their cell phones to connect to the transmitters of actively nesting quail via Bluetooth, allowing us to monitor nests at a distance to avoid disturbing the animal during this sensitive period. The public is even engaging with animal location data, with organizations like OCEARCH now offering free apps where users can follow the locations of tagged sharks and sea turtles around the world.



Migratory pathways of 8 birds with transmitters that passed by the TAMUK University Farm Motus station, including Sprague's Pipits (orange), American Kestrels (blue), and Eastern Whip-poor-wills (purple). Gray dots represent other Motus stations.

The Texas A&M University-Kingsville Farm is currently home to an innovative network of equipment monitoring local and even international animal movements. In 2023, we set up a series of devices called "nodes" to create a digital grid over the University Farm that can detect any transmitters within the grid every 2 minutes. Most transmitters rely on cellular networks or satellites to determine their position, requiring many internal components. However, in our grid system, the nodes do the heavy lifting of determining where the transmitters are located. This frees up space in the transmitter itself, enabling the development of devices smaller than a grain of rice.

Support our work by donating right from your phone with this QR code!

Over the past year, we collected thousands of locations from ~10 cattle fitted with these transmitters as ear tags. Locations have been used to monitor grazing intensity and cattle response to management activities, such as prescribed fire, as part of ongoing research and management at the farm. Perhaps more importantly, it has also enabled TAMUK students to interact with new technology, work with large datasets, and learn important concepts in range and wildlife management from data collected in their own backyard. For example, at a local level, cattle location data can be used by students to look at how quickly cattle began grazing in burned units and for how long, and assess what effects that might have on vegetation structure across the pastures.

This equipment is also part of the international Motus Wildlife Tracking System, tracking the movements of small, flying animals (birds, bats, insects) around the world. Last fall, the TAMUK University Farm Motus station detected 8 individual birds during migration, including 2 Sprague's Pipits tagged in Montana, 2 American Kestrels tagged in Minnesota, and 4 Eastern Whip-poor-wills tagged in Ontario and Rhode Island. Motus stations across the world are helping to fill knowledge gaps about migration, habitat use, dispersal and more; concepts which our students can now connect to with equipment they can see 5 minutes from campus. ~

Dr. Ashley Tanner is a Research Scientist and Assistant Professor at the CKWRI. Mr. Daniel Woolsey is a RWSC Undergraduate Student at TAMUK. Mr. Kyle McManus is Facilities Manager at the TAMUK farm. ~

A cow at the TAMUK University Farm wears a transmitter sewn into the ear tag pictured on the left.

CKWRI News

Ocelot Conservation Facility

On October 9, CKWRI, Texas A&M-Kingsville, East Foundation, and the US Fish and Wildlife Service held a ground breaking ceremony for the new CKWRI Ocelot Conservation Facility to be built in the Tio and Janell Kleberg Wildlife Research Park on the A&M-Kingsville campus. This facility will promote ocelot conservation by providing a location to study ocelot reproduction and behavior, and to produce kittens that can be trained to be wild ocelots for release in unoccupied habitat in South Texas. In doing so, the endangered ocelot in the United States will be less vulnerable to wildfires, storms, and disease.

New Science Team Members

Jennifer Smith, PhD

Aditya Singh, PhD

The CKWRI is excited to have two new Research Scientists and Assistant Professors! Drs. Jennifer Smith and Aditya Singh have joined our ranks. Dr. Smith is an Assistant Professor of Quail Ecology and Management, and Dr. Singh is an Assistant Professor of Geospatial Ecology. We are looking forward to all the fantastic research they will lead over the years!

What Do They Eat?

Pitcher plants in the *Sarracenia* genus feed on a variety of insects that they capture passively by luring them to the mouth of the trap with color, nectar, and/or scent. (National Park Service, Big Thicket, https://www.nps.gov/bith/learn/nature/carnivorous-plants.htm).

Researching Chronic Wasting Disease

by Breanna Green, Joseph Hediger, and Michael Cherry

Chronic Wasting Disease (CWD) is a highly infectious and fatal disease of deer, elk, and other cervid species. CWD is a disease of prions which are normal proteins within cells whose function is to keep cells healthy. The infectious agent of CWD is an abnormally-shaped prion. When the abnormal prion interacts with the normal prion, the normal prion bends and misfolds into the abnormal, infectious form. While this disease is inevitably fatal, it can take up to 18 months before an animal begins to show clinical signs (e.g., drooling, emaciation, confusion). All the while, the infected animal can spread CWD prions to other cervids through direct contact and environmental contamination.

Mixing up the bedding and housing configurations, as well as offering enrichment items like a squeaky pig, help fawns like this one become comfortable with encountering novel items and environments.

Did You Know?

Lands classified as "rangelands" include natural grasslands, shrublands, woodlands, wetlands, and deserts.
(Ecology Society of America. esa.org/rangeland/).

First documented in Colorado in 1967, CWD has been detected in 35 US states, four Canadian provinces, Finland, Norway, South Korea, and Sweden, as of August 2024. In Texas, CWD was first discovered in free-ranging mule deer in 2012 and captive white-tailed deer in 2015. Since then, CWD-positive deer have been recorded in free-ranging deer in 12 Texas counties and in over 30 captive facilities.

While state and federal agencies attempt to combat the spread of this disease, they are limited by a lack of understanding of CWD. Particularly, there are still many unknowns about transmission dynamics. Additionally, there is a need for new diagnostic tests to detect CWD earlier in an infection and at lower levels in the environment. Addressing these needs would greatly enhance the ability of agencies to monitor and combat this disease. These studies, however, require captive herds in laboratories under strict biosecurity.

The CKWRI is partnering with the U.S. Geological Survey (USGS) National Wildlife Health Center to build the capacity to conduct this research. During fall 2023, the USGS awarded a grant to the CKWRI to provide 10 fawns to populate a new bio-secure deer research facility in Madison, Wisconsin, dedicated to the study of CWD. These funds supported the employment of eight Texas A&M University-Kingsville undergraduates charged with raising these animals. The undergraduate students developed animal husbandry, research, and communication skills and had the opportunity to interact with USGS scientists.

Scientists at CKWRI regularly breed deer to support research in the Albert and Margaret Alkek Captive Ungulate Research Facility. Fawns at the facility spend the first day of life with their mom to gain vital colostrum from her milk. After the first day, fawns are hand-reared for 12 weeks. This approach provides research subjects that are less wild and more comfortable with human interactions required during research and husbandry operations. Unlike the animals permanently housed in our facility, the USGS fawns undergo additional training to ensure they are prepared for their lives in the lab in Wisconsin. This training includes habituation to novel experiences through introducing extra enrichment items like sprinklers during hot weather, more regular movement to new stalls, and extra handling by staff.

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Management of CWD will require the scientific community to address many of the unknowns that have hindered past efforts to stop the spread of the disease. By this autumn, the USGS will have a brand-new facility completely dedicated to research to support the management of CWD. That facility will be populated with deer born and bred in Kingsville, Texas. We are excited to partner with the federal government to build this important capacity to study CWD. ~

By The Numbers

6 The Roseate Spoonbill (*Platalea ajaja*) is 1 of 6 spoonbill species in the world and the only 1 in the U.S. (Cornell Lab, https://www.allaboutbirds.org/guide/Roseate_Spoonbill/overview).

Breanna Green

A buck fawn born at Albert and Margaret Alkek Captive Ungulate Research Facility for future use in USGS CWD studies.

Ms. Breanna Green and Dr. Joseph Hediger are Graduate Research Assistants, and Dr. Michael Cherry is the Stuart W. Stedman Chair for White-tailed Deer Research and Associate Professor at the CKWRI. ~