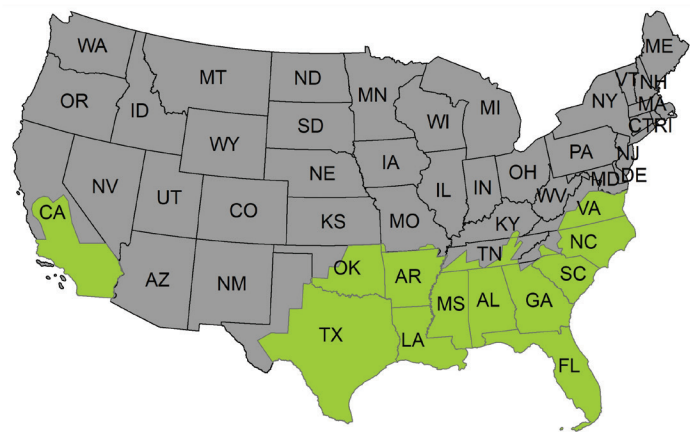


Cattle Fever Ticks

by Jeremy Baumgardt, Randy DeYoung,
and David Hewitt

Cattle Fever Tick is the name we give to two closely related species of ticks. They were given this name because they carry a microscopic protozoan parasite that causes the disease “Cattle Fever.” An infected tick spreads the disease when it latches on and begins to feed on a cow. The disease destroys the cow’s red blood cells, causing anemia and often leading to its death. These ticks, and their disease, were first brought to North America by European settlers in the 1500s. The potential damage of these ticks was not realized until a few hundred years later.

With the great cattle drives of the late 1800s, cattle fever ticks were granted free rides and transported to naïve cattle herds in Kansas and Nebraska. Soon, entire herds of cattle were dying each year and the link to the ticks was made. In 1906, the U.S. established the Cattle Fever Tick Eradication Program, which combatted the disease by enforcing a program that included running cattle through dipping vats and removing cattle from infested pastures long enough to starve out the remaining young ticks. White-tailed deer were also recognized to be suitable alternative hosts for the ticks. However, at this particular point in history, whitetails were still at critically low numbers in much of their range as they had not recovered from decades of over-harvesting and habitat conversion. Thus, they were of little consequence with regards to historic outbreaks. By the late 1940s, the



By the end of the 1800s, cattle fever ticks had spread to 15 southern states and southern California.

program was successful in eradicating the ticks in the U.S. Today, cattle fever ticks remain common in Mexico, and USDA APHIS and Texas Animal Health Commission jointly maintain a narrow Permanent Quarantine Zone along the Texas-Mexico border to prevent future outbreaks.

Unfortunately, outbreaks north of the Quarantine Zone have recently become common. Some of these have been linked to transporting cattle that are carrying the ticks. Yet, many of the outbreaks have been linked to wildlife. White-tailed deer populations have drastically increased due to improved management. In addition to native wildlife, populations of exotic species have been growing across many areas of Texas. Nilgai antelope is the most common cattle fever tick carrier of these, with numbers estimated over 35,000 near the quarantine zone. Additionally, nilgai have been determined to be competent hosts to cattle fever ticks.

The Eradication Program has recently incorporated the use of feeders baited with corn that has been

Editor’s note: Dr. Jeremy Baumgardt is an Assistant Professor of Research. Dr. Randy DeYoung is a Research Scientist and Professor. Dr. David Hewitt is the Leroy G. Denman, Jr. Endowed Director of Wildlife Research. All are with CKWRI. ~



© Jeremy Baumgardt

Nilgai antelope carry multiple species of ticks and help spread cattle fever ticks beyond the Permanent Quarantine Zone.

treated with ivermectin to reduce the spread of cattle fever ticks by white-tailed deer. These feeders seem to help; however, the treated corn must be removed from the feeders at least 60 days before the hunting season begins to ensure any harvested meat is safe to consume, leaving the deer untreated for about half the year. On top of this, there are currently no tools for reducing the spread of the ticks by nilgai since they rarely use feeders.

In the past few years, we have been collaborating with other scientists from various agencies and institutes who have been focusing on developing new tools to combat these ticks, including tick vaccines for cattle and topical treatments for both livestock and wildlife. Our involvement has focused on delivery modes of potential treatments to wildlife, and improving our understanding of how wildlife spread these ticks. Recently, we started a new study where we are putting GPS satellite collars on deer, nilgai, and cattle in pastures where all three species occur. This research should help us better understand the similarities and differences in the areas each species prefers. Through this, we hope to identify areas that may act as tick reservoirs on the landscape that will help with continued development of treatment methods, as well as land management recommendations to reduce the potential for future outbreaks. ~

What Do They Eat?

White-tailed deer do eat mistletoe. This has been documented primarily in the winter when other food is scarce. (Fulbright and Ortega. White-Tailed Deer Habitat Ecology and Management on Rangelands. 2013, 2nd Edition.)

CKWRI News

Texas Native Seeds

We have a new director of our Texas Native Seeds program! Dr. Anthony Falk is now the Dan L. Duncan Endowed Director of Texas Native Seeds. Dr. Falk will lead TNS into a new era of meeting the state's needs for locally-adapted native seeds.



College of Agriculture Awards

The TAMUK College of Agriculture and Natural Resources held its annual awards dinner recently, and several CKWRI members received awards:

- ~ Ms. Becky Trant received a lifetime achievement award.
- ~ Drs. Lenny Brennan and Mike Cherry both received awards for their outstanding research.
- ~ Tio and Janell Kleberg were named Friends of the College.

Distinguished Alumni Award

Dr. Clay Hilton, Wildlife Veterinarian for the CKWRI, has been awarded the Wilford S. Bailey Distinguished Alumni Award for the Auburn University College of Veterinary Medicine.

Boone and Crockett Club

Dr. Levi Heffelfinger, a 2021 PhD graduate of the CKWRI, was recently recognized as the Outstanding Boone and Crockett Graduate Fellow for his research achievements and professional activities.

Congratulations to all our recent award winners!

Recovering Ocelots in Their Historic Habitat in Southern Texas

by Jason V. Lombardi

Ocelots, the rarest of Texas's wild cats, have clung to survival in dense mixed thornshrub communities and oak forests in Willacy, Kenedy, and Cameron Counties. When Texas was first colonized by European settlers in the 1830s, accounts of "leopard cats," as they were formerly called, were reported throughout eastern Texas, western Louisiana, and southwestern Arkansas. Over the next 100 years, ocelots would be documented all across Texas.

Ocelots were observed in the Ashe juniper forests in the Hill Country, in Kinney County as late as 1931, and in San Antonio in 1932. Ocelots were harvested in Fort Stockton in 1917 and in the eastern portion of Big Bend National Park in 1950. In South Texas, ocelots were found throughout the Lower Rio Grande Valley, along the Nueces River and the Texas Gulf Coast.

Ocelot populations declined in the twentieth century due to hunting and trapping, commercial pet trade, and extensive forest and brush clearing. By the 1970s, ocelots were rare, and they were classified as endangered in 1982. And in the 40 years since, less than 100 ocelots have held on to existence in southern Texas.

Editor's note: Dr. Jason V. Lombardi is an Assistant Professor of Research at the CKWRI. ~



© Fin & Fur Films

Lombardi and his partners hope to help endangered ocelots reclaim some of their former range.

Did You Know?

Female redhead ducks parasitize each other's nests. They also lay eggs in the nest of around 10 other species, including American bitterns and even northern harriers. (www.audubon.org/field-guide/bird/redhead)



Existing populations are threatened by low genetic diversity and lack of connectivity between populations. Coupled with increasing road mortality and expanding agricultural and urban zones in the Lower Rio Grande Valley, ocelots are vulnerable to the negative impacts of genetic defects and diseases. Further, major hurricanes and associated impacts can wipe out existing populations.

To help bolster the viability of ocelots in Texas, a multifaceted and large collaborative study is underway to explore where we can reintroduce ocelots back into their historic range. The hope is to establish a new population of ocelots in a part of southern Texas that has been without ocelots for 75-100 years. Future re-introductions will be aimed at advancing ocelot recovery under the Endangered Species Act. Creating a new population increases the number of wild ocelots, grows their current range, expands the genetic diversity of ocelots, and provides a safeguard for ocelot populations.

How does one identify an area for future potential ocelot re-introduction? The geospatial modeling begins with an area of interest that spans from the Hill Country west of San Antonio, south to Brownsville, north to Victoria, and everywhere in between. Computer-generated models are used to identify suitable woody cover with the distribution and configurations preferred by ocelots. Reintroduction sites are narrowed down by removing projected future expanded urbanization and areas within 3,200 feet of high traffic volume highways. Areas along the coast that fall in line with severe hurricane models are removed to ensure reintroduced populations are not in jeopardy.

Additional landscape considerations used to narrow the proposed sites include selection of large

By The Numbers

1 - 5 The range in number of eggs in a Texas tortoise clutch in southern Texas. (Judd and Rose. 1989. Egg production by the Texas tortoise, *Gopherus berlandieri*, in southern Texas. *Copeia*:588-596.)

Advisory Board

The Advisory Board of the Caesar Kleberg Wildlife Research Institute (CKWRI) provides leadership in all aspects of our work. We are indebted to them for their commitment to the CKWRI and its mission.

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woody patches, land ownership, and number of properties within each patch to assess potential fragmentation in these areas. Active support and involvement of private landowners and for those landowners to receive regulatory assurances from U.S. Fish and Wildlife Service are critical for reintroduction efforts. Lastly, an estimation of the low shrub vegetation sought out by ocelots is necessary across these areas to derive identification of areas where ocelots could be reintroduced.



© Jason Lombardi

An ocelot kitten is captured on a game camera.

This identification process of new habitat within the historic ocelot range is a key step in the recovery of ocelots in the United States. Information will directly influence population viability and future captive breeding efforts. We hope that one day in the not-too-distant future, we can look back on this as the beginning of successfully recovering ocelots in Texas and securing their place on the landscape for the next generation of Texans.

For more information about the partners and process in this project, or to sign up for project updates, you are welcome to visit RecoverTexasOcelots.org ~

Visit our website for more publications, videos, and our podcast.
<http://www.ckwri.tamuk.edu>

Deer Research Meeting Is Now Online

Presentations from the 2022 Deer Research Meeting held in San Antonio, TX on March 4th are now available on the CKWRI website. To view the presentations, please visit www.ckwri.tamuk.edu.



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