

## Droughts Threaten Ocelot Survival

*Michael Tewes*

Droughts are common in South Texas – home to fewer than 100 endangered ocelots. These weather phenomena represent an ominous threat to the survival of the last few remaining ocelots in the United States, and we must prepare now for that certain future. First, let me offer some background to explain this threat.

Normally, a large wildlife population over the landscape is capable of absorbing the impacts of catastrophic events, such as a widespread wildfire, disease epidemic, or weather extremes. However, I believe that the two small isolated groups of ocelots – the ranch population with about 50-100 ocelots and the refuge population with about 20 ocelots – are extremely vulnerable to severe, even moderate droughts.

The biology of droughts threatening ocelots is interesting. Over my 40 years of studying ocelots, I have developed a conceptual model that explains why I believe this is a critically important conservation threat that needs to be addressed.



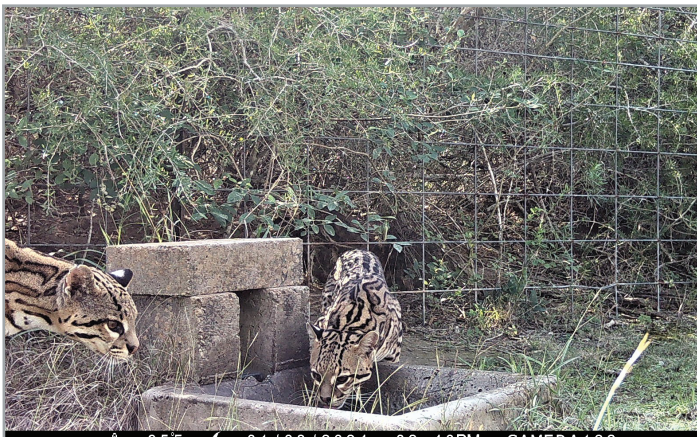
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Drought impacts that threaten ocelots include the loss of three key habitat elements: cover, prey, and water. Ocelots require extremely dense cover for survival in South Texas. Droughts defoliate leaves on their brushy home. The dense stands of thornshrub still provide some cover because of the dense woody profile. But the adjacent patches of moderately dense brush, sometimes used by ocelots, transform from marginal habitat to poor habitat, forcing ocelots to abandon their territories.

Even the surrounding grass pastures that provide important prey to ocelots such as cotton rats and cottontail rabbits quickly succumb to drought. The grass patches transform into bare ground which subsequently exposes the prey to a variety of hungry predators. The primary prey of ocelots mostly disappears in a drought.

The absence of free-standing water within ocelot territories can also become a major stress for ocelots. Hunter Vasquez is an undergraduate wildlife student who has been studying ocelot use of water guzzlers on the Laguna Atascosa Refuge for over two years. He has found numerous photos of ocelots using these artificial water units, which suggests they could become a critical survival strategy during multi-year droughts.

*Continued on the next page.*



An ocelot mother and her kitten take advantage of a water guzzler in the dry South Texas brush.

Thus, severe reduction of these three critical habitat elements – cover, prey, and water – causes many ocelots to disperse, usually into poorer environments, and then they die. In addition, reproduction ceases in the population, representing another major concern for an extremely small population.

We need to prepare for the inevitable occurrence of upcoming 5- to 10-year droughts. Although shorter droughts are common, these major droughts occur about once every 50 to 100 years, and we are past due for another one. If we want ocelots to be a part of the United States, then there are many steps that must be taken immediately in advance of these devastating events that have and will occur again.

We must urgently provide drought resiliency for the existing ocelot population to be able to withstand loss of these three habitat elements. Creating a new ocelot population in an area distant from the current population can increase chances of overall survival. And drought-specific management tactics and strategies should immediately be implemented to help ocelot resiliency for future droughts. This program would include restoring “drought resistant habitat patches” and construction of additional water guzzlers in the best locations.

I believe the ocelot represents the crown jewels of our animal kingdom in Texas. We should strive to preserve this natural treasure. ~

Dr. Michael Tewes is the Frank D. Yturria Endowed Chair in Wild Cat Studies.



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## CKWRI News

### South Texas Quail Short Course

We hope you will join us for the upcoming South Texas Quail Short Course! Topics will include Invasive Grasses: Managing Quail on Guinea Grass-dominated Rangelands, Conflicting Interests: Managing for Quail and Deer, Supplemental Feeding and Birds: A Broad View of the Evidence, Point & Counter-Point: Are Eyeworms Responsible for the Quail Decline in Texas? and more!

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### Student Interns

This summer, the Institute has three interns who are gaining valuable hands-on experience in the field and learning from our talented team. H-E-B provided funding for two interns, and Riley Griffin and Rebekah McPeck are focusing on ocelot research this summer under the guidance of Dr. Lisanne Petracca.

The Meredith Long Internship Program entered its fifth year with Presley Griffin, who is conducting research under the guidance of Drs. Bart Ballard and Jordan Giese on colonial waterbirds along the Texas coast.

### What Do They Eat?

Purple martins (*Progne subis*) forage almost entirely in the air, feeding on flying insects. Dragonflies may be an important part of their diet, which also includes wasps, bees, winged ants, flies, beetles, moths, butterflies, and true bugs.

(Audubon. Purple Martin. <https://www.audubon.org/field-guide/bird/purple-martin>)



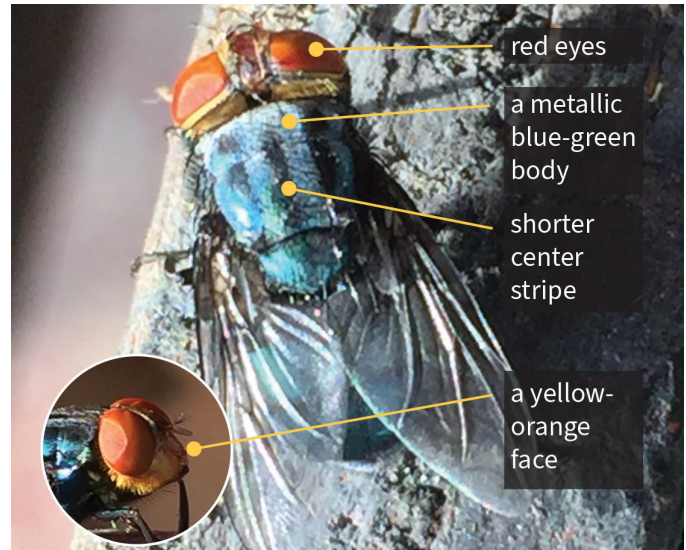
## Trouble Brewing for Texas?

David Hewitt, Michael Cherry, and Alynn Martin

This summer has brought a potential problem for Texas wildlife. The New World screwworm (*Cochliomyia hominivorax*) is a parasitic fly that was endemic in Texas and the southeastern United States until the 1960s. During the 1950s and '60s, Texas landowners and the federal government spent over \$750 million eradicating the screwworm fly from the United States. They did this because this species of fly lays its eggs in the open wounds and mucus membranes of mammals and birds. The larvae consume the living flesh of the host, producing large, deep wounds that often kill the host within 14 days. These impacts resulted in significant costs to livestock producers and wildlife populations. The fly's lifecycle continues as larvae crawl out of the wound in the animal, fall off into the environment, burrow into the soil, and days to weeks later, depending on environmental conditions, emerge as flies. With a female laying up to 200 eggs on a single animal, the fly's population can grow rapidly.

The fly was blamed for the low densities of white-tailed deer before the 1960s, especially in South Texas. The flies would infest the umbilical region of newborn fawns, the reproductive tract of female deer after they gave birth, the shedding velvet and pedicle after antler drop, tick bites, and wounds on any deer, especially bucks scraped or cut in fights during the rut. A recent example of the effect of screwworms on deer occurred in 2016-17 when screwworm flies were found in the Florida Keys. The Key deer, an endangered subspecies of white-tailed deer, had 9-20% of its population killed by screwworms in a few months. Ninety percent of the deer that died were bucks, mainly because the infestation became a problem in late summer and autumn, when Key deer are in the rut, and was essentially controlled before the fawning season the next year.

Now, the fly is working its way north through Mexico this summer. United States and Mexican officials are striving to keep the fly from moving north, but resources are limited. The key resources are sterile male flies that breed with the female flies, resulting in the female laying infertile eggs. This is the technique that enabled the fly to be eradicated in the 1960s. The problem now is that the infrastructure needed to pro-



New World screwworm fly (USDA APHIS).

duce the 500 million sterile flies required each week is not in place. Currently, only about 100 million flies can be produced weekly.

So, what can you do? The first task would be to learn more about screwworms and their impacts. Websites by the USDA and Agrilife Extension have reliable information. Second is to monitor your livestock, pets, and wildlife for unusual wounds. If you see wounds with maggots, notify your local vet or a Texas Parks and Wildlife biologist. This monitoring can be done visually, with remote cameras, and by closely inspecting harvested deer, pigs, javelina, and exotics this fall. Third, think about changes in your wildlife management you might adopt should screwworm flies make it to Texas. For example, reducing your doe harvest may be justified to accommodate the increased fawn and adult mortality expected if screwworms arrive. There will also be recommendations for handling carcasses of animals infested with screwworms so that those larvae do not mature and add to the fly population.

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### By The Numbers

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The number of species of bladderwort, a genus of carnivorous plants, identified to date in the Big Thicket National Preserve of Texas.

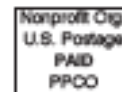
(National Park Service. Big Thicket: Carnivorous plants. <https://www.nps.gov/bith/learn/nature/carnivorous-plants.htm>)

Dr. David Hewitt is the Leroy G. Denman, Jr. Endowed Director of Wildlife Research; Dr. Michael Cherry is the Stuart W. Stedman Chair for White-tailed Deer Research, and Dr. Alynn Martin is a Research Scientist at the CKWRI. ~



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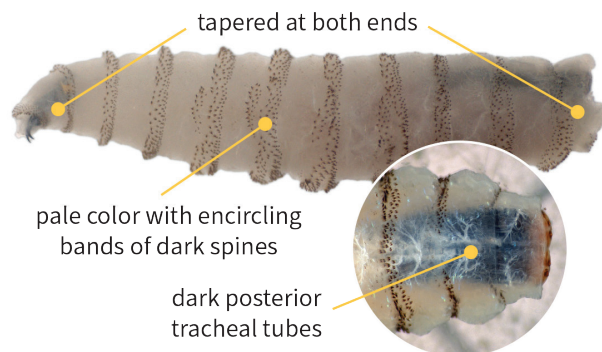
Although screwworms will be incredibly disruptive to wildlife and livestock operations, we have the tools to eradicate them again. It will take 2-3 years to ramp up production of sterile flies and 3 or more years beyond that to reduce their populations, but there is momentum building to get that done. Our job in the meantime will be to help identify where the flies are located and to alter our management so that when the flies are eradicated, we have strong wildlife populations that can readily bounce back. ~

### Did You Know?

The Texas tortoise (*Gopherus berlandieri*) is the smallest living species in its genus with a maximum upper shell (carapace) length of 9 inches.

(Rostal, D. et al. (Eds.). 2014. *Biology and Conservation of North American Tortoises*. JHU Press. Baltimore, MD)

Screwworm larvae (maggots) burrow into a wound, feeding as they go like a screw driving into wood. The maggots cause extensive damage by tearing at the hosts' tissue with sharp mouth hooks. The wound becomes deeper and larger as more maggots hatch and feed on living tissue.



**New World screwworm larva (USDA APHIS).**

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