



TEXAS LONGHORNS, NOT WRONG-HORNS

Texas Longhorn cattle, listed as Critical on the Conservation Priority List, on pasture. Photo by Jeannette Beranger.

By Cathy R. Payne

Debbie and Don Davis, ranchers at DWD Longhorns in Tarpley, Texas, are each powerful individuals in their own right. Together, they are a force of nature. The power couple has done it all when it comes to Texas Longhorns, and lead both the Cattlemen's Texas Longhorn Conservancy (CTLC) and the Cattlemen's Texas Longhorn Registry (CTLR).

Don is a director emeritus of the CTLR and a past president of both the registry and the American Grassfed Association. In this capacity since 2020, he promotes grassfed meats of many breeds. Debbie has served the CTLR as treasurer, director, president, and registrar. There are probably few married heritage breeders that have done more to provide leadership in their breed organizations than this impressive duo.

"Both of them have been essential to the future of Texas Longhorns," said D. Phillip Sponenberg, DVM, Ph.D. and technical advisor to The Livestock Conservancy. "Debbie has been instrumental in using science to guide conservation decisions."

500 YEARS OF HISTORY IN AMERICA

The Texas Longhorn evolved in the southwestern United States. The stock they descended from was Iberian, meaning Spanish and Portuguese cattle.

"In 1521, cattle traveled from Cuba to Florida and what is now Tampico, Mexico," Debbie said. "Explorers and missionaries traveled through Neuvo Leon and Coahuila, eventually reaching the Rio Grande sometime in the 1500s."

Francisco Vázquez de Coronado, in his search for gold, branched west in 1540 toward Arizona, then east into New Mexico before he crossed what is now the Texas panhandle. He had numerous cattle and horses with him. That places cattle in Texas between 1541 and 1542.

Most of the early settlements in Texas were founded in the early 1700s. By the time communities were named, civilization had long been established, and wild cattle had inhabited the area for more than a century.

"These rugged survivors became the Texas Longhorns," Debbie said. "They are a landrace breed related to other Criollo cattle, including the Florida Cracker and Pineywoods found in the southeastern United States.

Although the genetics are similar to Spanish cattle, Texas Longhorns look different. They evolved to their environment and formed a breed uniquely adapted to Texas.

"They evolved through natural selection. The cows that protected their offspring produced calves that survived and had young of their own."

Don also believes Texas Longhorns' iconic twisted horns helped them thrive. The twist allows the animal to scratch a fly bite and protect their calves. "If the horns went straight out, there would not be a protective function," he said.

CRITICAL STATUS

Even with such a significant history, Texas Longhorn cattle are listed as Critical on The Livestock Conservancy's Conservation Priority List. "People often ask me why Texas Longhorns are listed as critically in danger of extinction," Debbie said. "For one, these cattle don't have the 108-inch, flat-out horns that are popular right now. In the 1970s, hobby breeders used impure bulls that became very

popular. In non-CTLR registries, those bulls are in the pedigrees of almost every animal in the country."

Hobby farmers often only breed for color or for horns. Ten generations later, those offspring's DNA still show the impact of that non-Texas Longhorn breed. Popularity of the cross-bred type trumped the desirability of conservation for breed type.

"In 1970s and 1980s cattle shows, all that was needed to judge the animals was a scale," Don said. "Those that were the biggest and the heaviest would win. That is not a natural trait of the Texas Longhorn. Longevity, fertility, hardiness—all of what we think of as a Texas Longhorn cannot be measured on a scale."

The animals that had been crossbred with other breeds to give them heaviness won the shows, leading to a change in the breed. Tip-to-tip measurement of the horns also played a big part in introducing Watusi and other genetics.

"We call them wrong-horns," Debbie added with a grin. "It's pretty easy to look at the cattle and see. Our cattle continue to look the same, and some of the cattle out there are freaky looking."

Transportation methods also brought about a decline in numbers. As producers began transporting stock and meat by train to feedlots around a century ago, the Texas Longhorns did not fit the needed conformation. Their very long horns made it difficult to fit them into boxcars. They are also a very athletic breed that can jump fences and do not like to stay in confined spaces. Ranchers found that English and Indian cattle breeds were more docile and obedient, and held onto fat better.

"The American mind-set is to always improve on the original instead of respecting historically refined perfection," Debbie said. "Modern-day breeders took that perfect animal and wanted longer horns or beefier bodies. They mixed African horn genetics and Indian beef genetics to create a composite. Now, some breeders are witnessing calving problems, fertility difficulties, and loss of disease resistance because they bred out the adaptive traits of the original animal."

In spite of the smaller numbers of original type Texas Longhorns, those that remain are very valuable genetic



Historical photo of cowboys with Texas Longhorns from 1910, courtesy of Debbie Davis.

packages. They've gone from undesirable to extremely desirable as farmers face droughts related to climate change.

"Their fertility, disease-resistance, the distance they can travel to water, the way that they can survive in extreme and marginal environments is pretty impressive," Don said. "That is something that I feel we're going to need more and more as the better land is developed for homes, apartments, and urban development. A lot of agriculture has been pushed to more marginal lands. I think these cattle really thrive in that, compared to other breeds."

Texas Longhorns are also no match for predators, including wild boars, bobcats, coyotes, and others. In addition to the intimidation factor of those horns, the cows display instinctive behaviors bred out of domestic cattle,

"On this ranch, we have quite a few predators and we don't usually lose cattle to predators," Don said. "They will take a long path around our cattle. It's really amazing. All the calves will be watched by two mamas. That allows the rest of the mother cows to go and graze. With one little noise or snort, all of those mamas are there in very quick order."

These strong instincts and an ability

to forage on less desirable property are irreplaceable genetic treasures. Superficial traits like color or size might be linked to fertility, hardiness, thriftiness, and the ability to survive during drought. Members of the CTLR and the CTLC understand that it is important to choose conservation over fads to retain these genetic traits.

The CTLR currently has around 500 active breeders of registered cattle with about 3,000 cattle in the registry. There are still herds of cattle in the west that would fit into the CTLR standards but have never registered their animals and the CTLR is actively pursuing bringing those breeders and their genetically-important herds into the registry. Every appropriate animal makes a difference to a critically endangered breed.

BREEDING FOR BIODIVERSITY

Novice conservation breeders need to understand the importance of selection in preserving the biodiversity of heritage breeds. This demands an eye on each animal's phenotype, or set of observable characteristics, and an understanding of where those traits come from genetically.

"I'm a real nerd when it comes to pedigrees," Debbie admitted. "I will



Left, Don and Debbie Davis handle their herd of Texas Longhorn cattle at DWD Longhorns in Texas. Photo by Monroe "Bubba" Sullivan.

research back six to seven generations."

In her research, Debbie finds it nearly impossible to breed animals that don't share at least one common ancestor because the Texas Longhorn genetic pool is so small. It's one of the downsides to working with a critically-endangered breed. As she thinks about continually building her herd, her goal is to keep as many different bloodlines in her cows as she can. To achieve this goal, she swaps bulls every three or four years. Sometimes she grows one of hers out on the farm, but usually she brings them in from outside. She's also used artificial insemination from a bull that lived twenty years ago to bring some old genetics back into the herd.

"The CTLC has assembled a fairly extensive semen collection from older animals that we can bring into the gene pool," Don said.

The registry discovered through mating pedigrees that some breeders were over-using their favorite bulls. The same few bulls showed up in many pedigrees, and that became alarming. Debbie worked with Dr. Sponenberg to develop a strategy to reduce inbreeding from this popular sire effect. Through education within the CTLC membership they worked to make the herds more genetically diverse.

"Lately, we've been a little more aware of breeding records and selecting animals that are more fertile over the

years," Don said. "If you look at an eight-year-old cow, has she had six, seven, or eight calves? What is the interval between calves? It makes sense to pick bulls out of the most fertile mother."

Debbie added, "Phil Sponenberg taught us that. An eight-year-old should have at least seven calves, because she should be calving more frequently than every twelve months."

More than just the number of calves from a cow is the proper conformation. "I look for a cow that exhibits good mothering traits in her udder, her neck, body, flank, and just the way she's put together," Debbie said. "If she looks like our breed standard's drawing, then she's going to be a good cow."

When selecting a bull, Debbie likes to choose one from her favorite cows. "The cow has to prove herself worthy," Debbie continued. "Not just by having pretty horns, but an excellent mother. She must wean heavy, healthy calves compared to others in the herd. Let's say an average weaning weight for me is 400 pounds. I would not keep a bull calf that is 300. I'll go for a hardier animal."

GENETIC DEFINITION

Even though Texas Longhorns are a landrace breed, the CTLC follows a breed standard that includes a visual inspection and a DNA sample to be accepted into the registry, regardless of whether parents were registered.

"The animal must pass a visual inspection before you do the DNA," Don said. "Years and years ago we used to do blood-typing."

Today, instead of using Jerry Caldwell's blood-typing method, the registry is working on a genetic definition. For years, they worked with Dr. Cecilia Penedo at the University of California Davis campus to genetically define the Texas Longhorn through DNA.

"We have the start of the definition," Debbie said. "As far as the indicine [a subspecies of cattle originating in the Indian sub-continent] percentage there is a range that we consider acceptable in a Texas Longhorn. We're hoping to get a better definition that includes other taurine [a subspecies of cattle originating in western Asia] breeds soon."

Over the years, Debbie and Don worked with various labs to develop a screening tool that will tell them the relative influence of various genetic origins. "They pay attention to Y chromosome variants as well as the rest of the genome," Dr. Sponenberg said. "Cecilia has a rather extensive data set of mitochondrial DNA, which is the older DNA. Now they're working with SNPs, but she has the older stuff."

SNP, pronounced snip, stands for Single Nucleotide Polymorphism. These are locations within the genome where nucleotides A, T, G, or C can vary between individuals. They are a common type of



genetic variation. Because the SNP is inheritable, comparing these variations can help determine relatedness between different cattle.

"Cecilia can identify integration from eleven different breeds that are probably the most common, to be compared with the Texas Longhorn," Debbie said. "We are in the process of developing our own DNA database to compare between the different breeds."

MARKETING AND MONETIZING

Don and Debbie's full-time work revolves around growing these amazing Texas Longhorn cattle, moving the best genetics forward, and marketing beef. The income from beef sales allows them to live comfortably and continue to raise the breed.

Debbie markets female offspring each year as breeding stock to other breeders. There is less need for bulls. Therefore, they are raised as steers and then sold as "Texas Longhorn Grassfed Beef."

Don and Debbie's business Grassfed Longhorn Alliance (GLA) was started in 2002 to operate this custom meat marketing business, Bandera Grassland, for Texas Longhorns beef only.

In 2006, Don organized a grassfed producers' group to market grassfed beef that is not Texas Longhorn to Whole Foods Market. The previous group was renamed "Grassfed Livestock Alliance" and retains the initials GLA. Debbie still direct markets as Bandera Grassland™.

"Currently, I have a producers' group called the Grassfed Livestock Alliance," Don explained, "We have twenty-plus producers, and we provide local grassfed beef to Whole Foods Markets in Texas, Louisiana, Arkansas, and Oklahoma.

This is a great model for producers wishing to conserve rare genetics while earning an income that allows them to continue their work.

Cathy R. Payne first learned about The Livestock Conservancy in 2008. When she retired from teaching in 2010 and started a sustainable farm, she decided to focus on heritage breeds. She became a member and raised Khaki Campbell ducks, Silver Fox rabbits, American rabbits, Gulf Coast sheep, and American Guinea Hogs. Cathy sold her farm in 2018 and advocates for heritage breeds year-round as a part-time Program Research Associate for The Livestock Conservancy.

Cathy is also the award-winning author of "Saving the Guinea Hogs: The Recovery of an American Homestead Breed" with a foreword by D. Phillip Sponenberg, DVM, Ph.D. It is available for purchase on The Livestock Conservancy's web store at <https://livestockconservancy.org/resources/online-store/>

Middle, Texas Longhorns with their distinctive curved horns on pasture at DWD Longhorns in Texas. Photo courtesy of Debbie Davis. Above, Debbie Davis with a Texas Longhorn named Cole. This breed is known to be docile and easy to work with. Photo by Sandra Stevens.