

Conservation of Landrace Breeds

By D. P. Sponenberg

The following piece highlights some recent conservation discussion around critically endangered landrace horse breeds. Successful conservation techniques used for the Choctaw horse are used to demonstrate steps that can be used to protect the genetics of landrace breeds of all species.

Conserving heritage livestock breeds is never easy, and the effective conservation of local landraces is always challenging.

Landraces get their character from a combination of **foundation** (the original animals put into the area), **isolation** (the fact that few other animals were added), and **selection** (what folks used instead of what they discarded). An important overarching influence is the fact that these landrace breeds were used for a variety of tasks, which have their own effects on the breed. These all work together to yield a final “type” that characterizes the breed, and this ideally leads to a breed standard that encompasses the type in all its variations. This standard should ideally reflect what the breed actually is, and not what it should be in someone’s (or some group’s) imagination.

In the old days, the foundation of landraces would remain intact because isolation was assured by the difficulty of bringing other animals into the area. Put another way, once folks had work animals, the hassle of bringing in another one (even if marginally “better”) simply was not worth the effort. So, before improvements in communication and transportation in the 1900s, local breeds all tended to remain isolated. After improvements in communication and transportation infrastructure, the isolation of these livestock gems became much more uncertain.

After the end of isolation (and in the current era this is true nearly everywhere), it is important to more deliberately define and conserve local landrace breeds, or we risk losing them forever. The isolation that once protected them is simply gone. For example, it may have been easy to say in 1913 that a Newfoundland Pony was any pony from Newfoundland. That is not the case in 2013 because other breeds of ponies have been introduced to the region. How a breed like the Newfoundland Pony is defined, then, becomes a critical issue, because the goal of conservation is to include *every* pony that meets the definition and to exclude all of those that do not.

As an aid to conserving landraces, most breeders eventually organize a registry. Registries are great, but only if they help to define and conserve the landrace. They are not so great when they impede those goals. It is important to note that for any breed, an animal is a member of the breed not because it is registered, but that it is registered because it is a member of the breed. That is, the status of an individual animal as a member of this breed is not because of its registration status, but because its ancestors had the history of foundation, isolation, and selection typical of the breed. A registry is only valid and useful if it acknowledges all such qualifying animals equally, and also if it excludes animals outside of that group. Again using the example of Newfoundland Ponies, animals are not “more Newfoundland Pony” or “less Newfoundland Pony,” they are either Newfoundland Ponies, or they are not, and the goal of the registry should be to identify and validate all of those that are.

It is common among most landraces for breeders to eventually want to close the registry after a certain number of animals have been registered. In most cases this is a mistake, because it is routine to encoun-

ter animals of the right type, foundation, and isolation for many years after the organization of breeders starts. These “found” animals are likely to be extremely important to the future genetic soundness of the breed, because usually they are not closely related to what has already been registered. For maximum benefit to the breed, these found animals need to be carefully evaluated, and then once accepted, they need to be fully accepted on equal footing with other animals in the registry.

The usual successful steps in landrace conservation include:

1. Define the foundation, isolation, and selection behind the breed.
2. Describe the overall type that resulted from step 1. This is physical, mental, and also genetic. One or the other of these might be more important, depending on the breed.
3. Identify all the animals that qualify by steps 1 and 2 and register them.
4. Develop a protocol for evaluating candidate animals that will be presented in the future but that do not have registered ancestors. This is politically tricky, but essential for the breed’s genetic future.
5. Accept these qualified outside animals completely and fully into the registry. It is a common mistake to limit this to females, or to require a number of generations of mating to those lines previously registered. This completely defeats the benefit that these overlooked animals can bring to the breed.

The steps can be taken one at a time. This evaluation will use experiences with the Choctaw horse, a Colonial Spanish horse, that has had good success in conservation breeding. Possible actions with other landrace breeds will also be outlined.

Step One: Define the foundation, isolation, and selection behind the breed.

This can be broken down into substeps:

Foundation

Knowing the exact foundation of a landrace can get difficult, but the animal history of the local area can help. In the case of the Choctaw horse, the foundation is the Colonial Spanish horses brought to the coast of Mississippi and Alabama by the Spanish in the 1600s and 1700s. The horses flourished there, and then were brought west with the Choctaw nation in 1830 along the Trail of Tears. The goal of conservation is to try to get back to that

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foundation as much as possible, although obviously there will be gaps in the records back to that time frame.

In the case of some landrace breeds, the original source of animals is unknown, but it is possible to say that in the case of the Choctaw horses, local horses were the usual source of equine power for centuries. Based on oral or written histories of the area and animals that were common in the region in the early period of colonization, many of the influencing founders can be inferred. The exact foundation may be tough to ferret out, but it is more possible to reflect on later additions to the scene, and to try to eliminate those influences. For example, for horses these likely include other breeds of "blooded" saddle or carriage horses that were common throughout the Americas in the late 1800s, and perhaps increasingly since then. In a sense the search for the foundation becomes "what it is not" as much as "what it is."

Isolation

When identifying the influence of isolation on Choctaw horses, fortunately, it is helpful that the Colonial Spanish type is easily disrupted by crossbreeding to the more common North American breeds such as Morgan, Quarter Horse, Thoroughbred, or draft breeds. In other words, a trained observer can fairly accurately distinguish herds that have been influenced by crossbreeding from those that are minimally influenced. That helps to focus on more isolated herds. Between the herds, though, some have more geographic isolation than others, and also no direct indication of recent crossbreeding. Those are the herds of most interest.

The documented history of landrace breeds of conservation interest usually boils down to little or no evidence of crossbreeding to other likely candidate breeds that could have been in the area since the late 1800s. This is unlikely to be absolute. Understanding the typical appearance of the breed, as well as of the introduced breeds, can help to sort through this detail.



The Choctaw horse, a Colonial Spanish horse, has had good success in conservation breeding. Photo by Jeannette Beranger.

Selection

Selection is the final contributor to breed type. In the case of Choctaw horses, the selection history is one of free-range production, with recruitment into ranch and riding use that emphasized easy gaits, endurance, soundness, and gentle, agreeable temperament. The goal was a reliable horse that could work all day long.

While important to document, selection history is more important in influencing final type than it is in assessing the candidate animals. Nevertheless, if a candidate herd has a known history of selection that diverges strongly from the norm, that could make that herd of less interest because the final product is likely to be different.

Step Two: Describe the overall breed type.

Animals consistent with a certain combination of foundation, isolation, and selection history are going to have a consistent appearance and attitude. While there will be some variation, as is normal in all breeds, a majority type is going to emerge in the stage of defining the breed. It is animals of this type that are most useful in further defining the breed, noting that some animals vary in certain regards. This analysis is physical, mental, and also genetic. The genetic analysis must be broad enough to be inclusive, but should focus primarily on the most typical animals, unless these are all from a closely

related substrain.

The overall type of the Choctaw horse is a Colonial Spanish type, which it shares with many other branches of the family tree. This type was established by traditionalists with a long history of association with the breed. The breed standard describes both the most typical and nontypical conformation and type, which allows for variation within the type. This is an essential detail if important variants are not to be lost for future generations. The horses have also been sampled widely for genetic analysis, which helps to identify typical and nontypical DNA types.

Step Three: Register the qualifying animals.

Registration of Choctaw horses has a fairly long history, especially for the branch of the breed in Oklahoma. This is through various of the multiple registries for Colonial Spanish Horse. Wherever possible, it is advantageous to bring multiple registries into congruence to see where registrations overlap, and where certain animals are excluded by one or the other, and for what reasons. If those reasons are biological (type) then they may be valid. If they are more politically motivated, then this impedes effective breed conservation. Ideally a single entity with registrations can be developed that takes the registered ponies back to their ancestors, giving them pedigrees and longer known family lines.

Step Four: Develop a protocol for accepting animals with unregistered parents.

For landraces it will nearly always be the case that ongoing searches will find animals in unusual locations and circumstances that just happen to be previously undocumented purebreds. Finding and including these is very important and has no "cutoff" date.

Recently, while investigating old Spanish cattle and sheep along the Gulf Coast, a few stallions that were typically Spanish were encountered in Mississippi. This was in the region of the old original homeland of the Choctaw nation. The next step was to investigate the history, which revealed that the horses and their ancestors were bought with the large farm, and were of a stock that "had always been there." This is the sort of history typical of a genuine and important discovery. The DNA on the stallions was evaluated, and they cluster closer to Choctaws than to anything else, and so were accepted as Choctaw horses.

For any landrace breed, it is important to realize that they might turn up in a variety of locations. The first step in evaluation is to check the type, and the breed type needs to be unmistakable on the candidate animals. That is, they should be very typical, and not out on the fringes of breed type. Then the history should always

be one of isolation, and if the type is right this will likely be the case. Those with the best "eye" for type will be readily able to distinguish a specific breed. After evaluating type and history, the candidates should be evaluated by DNA analysis, if possible, and if nothing odd is flagged at this step they should be accepted.

Step Five: Accept all qualifying animals equally.

With the Mississippi Choctaw stallions as an example, the next step is to use them as full members of the breed. In this case, the breeders have discovered a strain separated from the Oklahoma horses by 200 years, so this is a distantly related strain that can bring some welcome genetic variation into the existing horses. One way to do this is to mate Oklahoma mares to a Mississippi stallion, and then to mate daughters back to the other Mississippi stallion. This would secure that line a place in the future of the breed, for the vitality and long-term viability of the breed.

Something similar needs to be possible with any landrace breed for candidate "found" animals that pass all evaluations. Again, the issue is that an animal is purebred because of its foundation, isolation, and selection history, and not because of its registration status. The goal of the registration status is simply to reflect the accuracy of purebred designation. It is a

mistake to doom these animals to minimal influence by insisting on multiple generations of crosses back to registered stock, for that assures that the breed cannot take advantage of the genetic breath of fresh air they offer.

Summary

These steps have proven valuable in the effective conservation of many North American Landraces (Choctaw horses, Pineywoods cattle, Texas Longhorn cattle, Navajo-Churro sheep, Gulf Coast sheep, Florida Cracker sheep, Spanish goats, Myotonic goats, and many others!). When used in a clear-headed and logical way they can help to drive decisions that effectively secure these unique breed resources for a successful future. ❖

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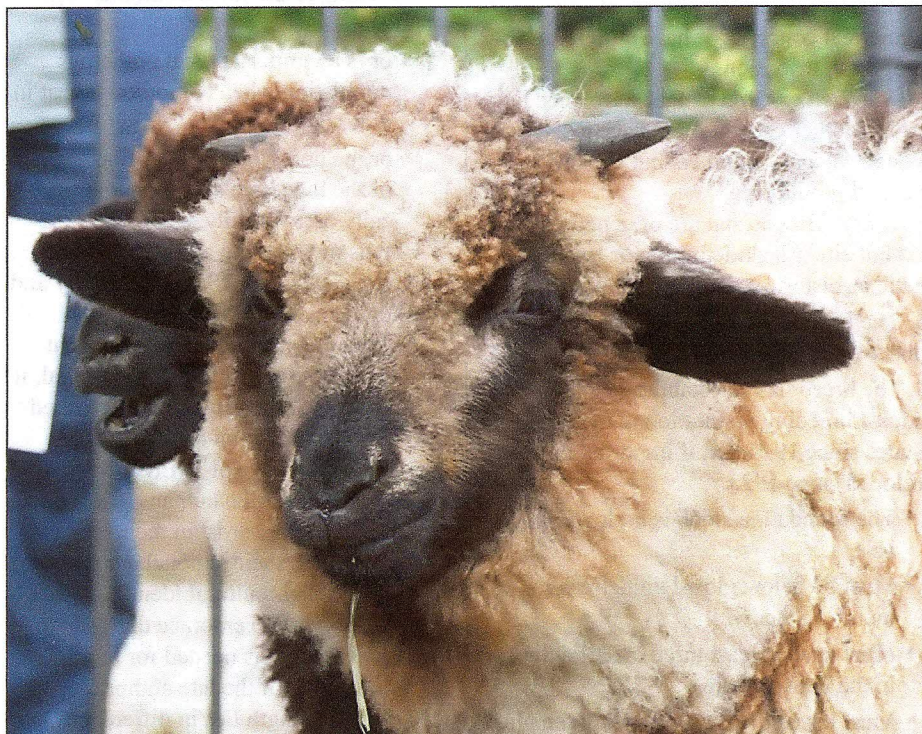


The Livestock Conservancy has recently joined Twitter and LinkedIn! With growth of our Facebook fan base by over 300% in the past year, social media has become a terrific way to reach some of our members between newsletters, connect with other organizations and find new people interested in our mission. You can find us on Twitter @LConservancy, or through the social media links on our website.

Some interesting social media stats:

- Twitter - over 550 million users
- LinkedIn - around 259 million users
- Facebook - 1.2 billion users
- The Conservancy's most popular Facebook post reached over 200,000 people in 24 hours
- The Conservancy's YouTube video "Turkey Talk" has been viewed over 230,000 times to date
- Twitter's fastest growing demographic is the 55-64 year age bracket
- YouTube reaches more 18-34 aged adults than any cable network

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Navajo-Churros are a classic American landrace breed. Shown are lambs owned by Cassie Larsen of Little Creek Plantation in Brunson, South Carolina.