

Rescuing Rare Pineywoods Cattle Strains 2005

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Some of the Pineywoods cattle strains are rare, and some are close to extinction. In order to keep the genetic material from these available to the breed, it will be important to rescue some of them.

For a strain to survive in genetic isolation, it is necessary to have adequate numbers of animals in order to avoid inbreeding. This is not always possible with very low numbers, and in some situations the best that can be done is to include animals that are 3/4 or 7/8 the breeding of the rare strain. In most situations it is all right to include any animal with 7/8 the breeding of a strain as a member of that strain. This is especially the case if the other 1/8 of the breeding is from a related or similar strain.

Strategies for genetic rescue vary, but need to be carefully planned and thought if they are going to succeed. In most situations what happens is rare strain cows are mated to common strain bulls, and their heifers are once again mated to common strain bulls. The result is a constant reduction in the genetics of the rare strain, instead of a concentration of it. A rescue needs to do the opposite – concentrate the genetic contribution of the rare strain.

A first, and frequently difficult, step to a rescue is to assemble as many animals (usually cows) of the rare strain as can be found. 15 is a minimum, 20 is better. The rescue works best if a “same strain” bull is available, but can also work if a “different strain” bull is all that is available.

Rescue Procedure When Same Strain Bull Is Available:

The original cows are all mated to a bull of the same strain. If multiple bulls from the strain are available, then the herd can go directly into a strain conservation type breeding system, so this present discussion will assume that only one bull is available. The result is a calf crop that is 1/2 the strain of rescue interest. In all likelihood, two calf crops will be produced, because the bull calves from the first calf crop will not be available to use until a year old.

When the bull calves are old enough, use two of them on different portions of the rare strain cows. What is usually most important is to use them on old cows, as these frequently have the highest contribution of the old original strain breeding. The dam of one bull calf can be mated to the other bull calf, to minimize son-mother matings. Or, if space is limiting, then mate one bull calf from the first calf crop in one year, and then the next year use a second bull calf from the second year's crop of calves.

This mating produces two different calf crops, each 3/4 the rescue strain, and 1/4 the other strain. When the 3/4 bulls are old enough, use these back on the old cows for a 7/8 calf crop. Try to use two from one sire, one from another, to give genetic distance among the 7/8 bull calves. At this point, three relatively unrelated bulls can be saved. Each is 7/8 the rare line, and these three can then be used sequentially in the herd in a conservation breeding program. The “conservation and maintenance” strategy is outlined in a separate article.

Rescue Procedure When No Bull Available from the Strain

The situation in which only cows are available from a strain, and no strain-pure bulls, is all too frequent. What usually happens in this situation is to use a sequence of bulls from other strains on the herd. The first generation calves are only 1/2 the original strain, the next generation is only 1/4 the original strain. By this strategy the strain is eliminated fairly quickly, and replaced by the genetic material from the introduced bulls. An effective rescue does the opposite, but is more difficult.

The first step is to find a suitable bull from another strain or line. Ideally this is a bull from another rare line, rather than from one of the more common lines. This bull is used on the original cows. The calf crop is 1/2 the rescue strain. Two bull calves are saved, either both in the first year, or one in the first and one in the second year. The bull calves should be selected on the basis of their type, but also any relationship between their dams should be considered as well, because it is best to save bulls from unrelated dams.

The 1/2 bulls are used when they are old enough (yearlings) to sire a calf crop of 3/4 the rescue strain. Ideally three of the 3/4 bulls are saved – one from one sire, two from the other. At this point it is possible to begin a conservation breeding protocol, especially if the original cows still have useful years ahead of them. If they are showing age, it is best to split the herd and to use the 3/4 bulls all in the same year, just on different portions of the herd. By that strategy it is possible to maximize the number and genetic distance of the 7/8 calves that will result.

Rescuing the Single, Old Cow

In some situations strains can get to the point of only a single or a very few old cows. Not much can be done to bring back these strains. However, one good use of the old cow is to mate her to a son, hopefully producing a 3/4 son. This is usually safe as far as the level of inbreeding goes, and can provide most of the genetic material in the old cow for wider use in a conservation composite. This is because bulls see more use than cows and produce more offspring. In addition the bull should have semen frozen.

In some situations it is also good to mate the 3/4 son back to the original cow for a 7/8 son. This is pretty intense inbreeding, but for unique old cows is still valuable. This technique was used by Justin Pitts to provide Griffen Yellow bulls, and these have now spread the Griffen strain's genetic influence much further than would have otherwise been possible.

If two or three cows are available, then the same sorts of crosses can be used, but the sons of one can be used on the other old cows. This still concentrates the genetic influence of the original cows, but does so with less risk of inbreeding depression. With such low numbers it will be impossible to regenerate an entire herd of the endangered strain, but it will be possible to salvage much of it into a composite herd heavily influenced by the old, rare strain.

Rescue Is Messy, but Essential

Rescuing strains that are becoming extinct is satisfying when it is finished – but it can be frustrating in the early stages. Strains that need to be rescued are usually in situations where owners or breeders do not have a high priority on conservation. That can make the initial location and acquisition of breeding stock difficult to impossible. Patience and creativity can help here!

After locating and acquiring the breeding stock, then it is important to manage the stock well, and to mate them with specific goals in mind. This can be awkward in some situations, but it essential if the long-term genetic health of the strain is to be conserved. It is especially necessary to keep the older cows in good shape in order to maximize the number of calves they can have. The earliest stages of a rescue are

essential, but the latter stages are the point at which the older cows can have their maximal input. Each situation is unique, and programs can be tailored to fit the requirements of each.