



FROM THE

PINEYWOODS

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Conserving the Pineywoods

Newsletter of the Pineywoods Cattle Registry & Breeders Association

This issue's masthead photo features Mitchel Amason and his yoke of Pineywoods oxen reminiscent of the days when the breed provided labor and transportation as well as food and livelihood.

Note to Readership. At the request of the membership, this issue is circulating two weeks after the PCRBA meeting held April 22, 2006. More information and pictures should be forthcoming in later issues. Meanwhile, we are grateful to our registrar Phil Sponenberg for report of the meeting and for his series of articles ***Breeding Pineywoods in the 21st Century.***

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Thoughts from the Registrar

Phil Sponenberg

Pineywoods Cattle Registry Annual Meeting – 2006

I always enjoy coming down to the Pineywoods heartland, visiting folks, seeing cattle, and eating too much! When the menu includes slaw, hushpuppies, and catfish, it is EASY to eat too much! Thanks to the Berrys for their wonderful hospitality. I was impressed by the folks turning out for the meeting, and by their commitment to this breed and its heritage. It was reassuring that different sorts of folks were at the meeting – this shows great strength for the future of the breed. A few examples may help to explain what I mean – these are only examples, so if I left you out, don't feel bad! The breed needs everyone!

Among the attendees were some few from the original folks that kept these cows going for years and years. Bruce Conway and Fred Diamond were among these, and all of the breeders owe these breeders a huge debt of gratitude for providing us with the cattle we have today. The sobering thought is how few of these people remain with us – unless “outsiders” come in, get involved, and succeed with these cattle, the Pineywoods breed is doomed. Without the old founding families we would have no breed – but neither will we without the next generation of breeders from outside.

Another general group was those folks who obtained cattle from the original families and are working to keep those lines going. I am going to miss some names here, but Justin Pitts, David Ozborn, and Randy Dutiel and their work with Carter cattle come to mind. Mitchel Amason keeps doing important work in maintaining the Conway line, and he also registers his calves (that's a hint for the rest of you!). Billy Frank Brown and Jess Brown are keeping the Hickman, Broadus, and Dedeaux cattle going. This is just a partial listing –many people are playing important parts in saving lines that are no longer raised by their original families. Without these people stepping in and picking up the reins we would be losing yet more lines of these cattle.

There were also some newcomers with no cattle - yet. This group includes Danny Free, Jim Price, and no doubt others. These folks are essential to the future, and it was great to see them there at the meeting.

Other efforts by folks like Justin Pitts, David Ozborn, and David James are working to document several different strains, locate them, and hopefully make sure that we can save them from extinction.

Finally – I was there with no cattle at all! But, even folks like me have a role to play in supporting and encouraging, and pitching in with the mundane details of registry work.

Everybody has a part, and each needs to do that part or the whole breed will suffer.

Upcoming Sale

The Fall sale is important for the registry and its breeders. I have seen sales succeed, I have seen them fail. It is in the long-term interest of all breeders to make this sale a success. One way to do that is for larger breeders to resolve to consign two or three nice heifers to the sale. Smaller breeders should try to consign at least one heifer. A sale with all bulls is simply no sale at all, and the “sale heifers” are vital ambassadors for the breed. Think of it as advertising – or as baiting a fishhook. Good heifers hook folks on the breed, and they'll be back for more. I saw several nice heifers in a number of herds while I was down there – and some of those would do the breed and its breeders a world of good by showing up in the sale ring.

Pineywoods Cattle Registry Annual Meeting – 2006

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Visit to Fred Diamond's Herd

Following the meeting (and that wonderful meal) Justin drove on down to Fred Diamond's place to look at cattle. The trip was well worth the time – even though Justin seems to estimate travel time differently than I do!

Fred Diamond's herd comes from local cattle and is in the same general area as Hickman and Broadus. In addition to those old family cattle, he has used a Seales bull, which is a line that is otherwise extinct as far as we know. The Seales cattle were from the Wiggins area. The current bull was a heavily Griffen-bred bull who was still impressive even though now a teenager. These bulls, coming from rare or extinct lines, blend wonderfully with the original Diamond genetics

I was impressed and thrilled to see several old, traditional type cows in the herd. These are what first attracted me to the Pineywoods breed, and they keep me coming back! Some were dark red, some were spotted, and one was about the closest to a purple cow as I'll ever see. Some of the older cows had long, twisting horns that are so typical of old Spanish type cows and had the frame and look of productive cows that are truly Pineywoods.

Fred uses one of the cows as a milk cow. She is a wonderful dark brown and roan cow, and he gets about a gallon a day when he starts milking her after weaning her calf. That is plenty for household use – especially when it is as rich and creamy as this cow produces. This is a wonderful testimony to the utility and practicality of these cows. It would be interesting to hear from some of the old-timers about how widespread it was to use Pineywoods cows for milk.

As with all breeding programs, the Diamonds have decisions to make. Their situation is special, though, and a few thoughts might help to flesh out some of the issues facing several bloodlines within the Pineywoods breed. With a base of old line cattle, it is possible to go a few different ways.

One of those ways is to use outside bulls, generating beautiful and useful calves. The resulting calves from the first bull are half the genetic influence of that old strain. Those heifers, if taken to yet another "brought in" bull are only one-fourth the old original strain – and even that dwindles down as more and more bulls are bought in.

A different strategy is to use an outside bull, but then to save a son of that bull from one of the old, family strain cows. The result is a bull that is $\frac{1}{2}$ the original old family strain. If he is used on the old cows, then the result is $\frac{3}{4}$ that old blood – and instead of getting progressively less and less, the contribution of the old strain is maintained and even enhanced. Programs that use young bulls from old cows can help to assure that the genetic makeup of those great old cows is not lost for future generations. Fortunately Fred has two young bulls, out of old cows, that can help with this strategy. And, even more fortunately – they looked like they would mature into good, useful animals that will succeed in maintaining the old Diamond line for future generations.

Breeding Pineywoods in the 21st Century: Parts II, III, and IV in a series by Dr. Philip Sponenberg.

Part I of this series, *General Issues for Pineywoods Breeders*, was printed in the last issue. Here Dr. Sponenberg discusses cattle strains in Part II, rescuing strains in part III, and conservation breeding in Part IV.

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Part II: Pineywoods Cattle Strains 2005

Pineywoods cattle are a landrace breed, which means that the breed formed under local conditions for local purposes – usually with a great deal of isolation. The result of the isolation of different groups of these cattle makes the cattle within the breed reasonably variable, and that can make defining the breed difficult. One starting point for a definition is that the Pineywoods cattle have an origin in Spanish cattle and a long history of selection and adaptation in the Gulf Coast region of the USA. The important key here is the adaptation and environmental resistance of Pineywoods cattle as major definers of the breed. It is appropriate to include within the breed any cattle of long-term residence in the region, reasonably free of recent incursions of outside breeding (last 100 years, ideally), humpless (no Brahman influence), and well adapted. This is a “short” definition of this important landrace breed. Longer definitions are possible, but this definition includes the core of the breed and its heritage.

One real strength of landraces is the moderate variability that they have. This variability reflects their genetic breadth and strength and contributes to their adaptation. It is important to remember that this idea that a breed can have reasonable variation is not the usual model for breeds in the USA. Most breeds in the USA are standardized breeds, with a prescriptive breed standard that dictates what is ideal. Breeders then select towards that standard, usually producing productive and useful cattle along the way. A key point, though, is that in the process of selecting for a single ideal, much variation is lost, and with it can go adaptive traits and genetic strength. A trivial example is color – it would be easy to make all Pineywoods cattle red and white, but the breed would lose many interesting and historically accurate colors in the process.

To some extent, any breed can be imagined to be a building. At one extreme are industrial breeds like the Holstein and industrial poultry breeds. The population structure of these breeds is somewhat like a tall skyscraper, with the narrow genetic base supporting a tall (but narrow) population above it. Most other standardized breeds are like a multistory office building. The base is somewhat broader in relation to the height, but still supports a relatively tall population. The other extreme are the landraces, which are like a low, rambling ranch house. The base is broad in relationship to the height, and this implies stability. Within this low house the strains can each be imagined as rooms in the house. Some rooms interconnect, just as some strains have exchanged breeding animals in the past. Other strains are more isolated, but all strains serve to give the overall house its structure and help in its function.

A key here is that the broader, lower form of genetic organization of landraces, such as the Pineywoods cattle breed, is fairly resistant to damaging effects of changes in the environment. Imagine the three different types of “breed structure buildings” in an earthquake, or major shift in production system. The lower, broader, more variable organization is likely to persist more than is the tall, narrow skyscraper. This is a compelling reason for breed conservation – and also for strain conservation within breeds.

The strains of the Pineywoods cattle breed provide genetic breadth to the breed. The genetic breadth, in turn, makes it such an ideal breed for resistance and adaptation. This breadth is always in risk of diminishing, and this is especially true as communication among breeders increases. As communication increases and breeders start comparing animals across strains, some will be deemed to be “better” or “more ideal” than others, and are likely to be used across strains. The result of this is to collapse the breed into fewer and fewer genetically unique strains.

The collapse of strains of a landrace can easily be seen in part of the Texas Longhorn breed. Originally the Texas Longhorn had seven or eight major founding strains (the number depends on who does the counting). As breeders got together and swapped breeding stock around, it became more and more usual for selection to favor large, smooth, speckled, very long horned cattle. As a result of this selection the majority of the breed now centers around a composite of only three of the founding strains, with very minor input from the other strains. The resulting breed is easily identifiable, but has lost some of the interesting types and variants that once characterized some of the strains. Fortunately a group of conservation-minded breeders has organized an effort to save the more traditional Texas Longhorn type, but this effort is still occurring after the loss of some of the founding strains of the main breed.

The temptation to select all Pineywoods cattle in the direction of a single popular strain should be avoided in all landraces, but especially in Pineywoods cattle. For example, if all dairy cattle become Holsteins, then the unique attributes and genetic strengths of the other dairy breeds become unavailable to future generations. If all beef cattle become Angus, then the unique attributes and

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Part II: Pineywoods Cattle Strains 2005

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genetic strengths of the other beef breeds become unavailable for future generations. In a similar vein, if all Pineywoods cattle became Conway type cattle (or any other single strain), then the unique attributes and genetic strengths of the Hickman strain (or whatever other strain) become unavailable for future generations. The breed needs all of the strains that it now has, and each should have a role in the breed's future.

The breeders of Pineywoods cattle need to try to save all of the strains and variations that they can. These components can then be safely combined into different composites among the strains that meet specific production goals. However, by failing to save the component strains, it then becomes impossible to go back into them and resample them for future production goals. What remains, and how to rescue and conserve it, are topics for the next articles.

Part III: Rescuing Rare Pineywoods Cattle Strains 2005

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.

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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. Justin Pitts used this technique to provide Griffen Yellow bulls, and these have now spread the Griffen strain's genetic influence 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.

PART IV. Conservation Breeding for Pineywoods Cattle Strains

Conservation breeding is somewhat different than production breeding, but is essential if the various strains of the Pineywoods cattle are to see the next few decades.

Conservation programs are tailored to maximize the genetic survival of a strain by minimizing overall inbreeding. While many of the Pineywoods strains have been very resistant to any ill effects of inbreeding, it is still best to manage populations with an eye towards minimizing inbreeding. By that strategy it is possible to avoid problems should they begin to arise. By ignoring inbreeding it becomes impossible to avoid its ill effect should they ever occur.

The basic conservation breeding program has three bull lines go through a single herd, at annual intervals. The details are in the "Conservation Breeding Handbook" available from the American Livestock Breeds Conservancy. This is a summary of that work.

- Year one, an "A" bull is used over all the cows.
- Year two, A line calves are born, a B line bull is used.
- Year three, B line calves are born, a C line bull is used.
- Year four, C line calves are born, an A line bull is used...and so on.

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PART IV. Conservation Breeding for Pineywoods Cattle Strains (continued from page 5)

This system works well, but only if breeders can see the wisdom of using a bull for only one year. That can be tough, because the bulls are turned over just as they begin to show their full potential. Deciding to not use bulls at this stage can be very difficult. In a conservation sense, though, it is valuable to consider what happens if a single bull is used for several years. In the first year, his daughters and sons are born. In subsequent years, he is likely to be mated to his daughters as well as to the original cows. The result of this is that if the bull is used for much over one year, his genetic influence swamps the entire herd. In order to balance his contributions with those of the cows, it is necessary to limit the use of any one bull. Otherwise his influence is too great in the herd and the entire herd is too closely related to a single bull. For the long term, it is much better to have the herd balanced between three lines that are rotated in their use in the herd.

In a conservation program for a single strains, all three lines (A, B, C) are from the same strain (Conway or Hickman, for example). This allows for slightly different types, colors, or families of the strain to all persist into the future.

Some conservation programs will be more targeted to trying to salvage more than one rare strain. For example, Hickman and Ladnier cattle are similar in type and in origin, but if all the Ladnier cattle are used in a Hickman program, then they will eventually not have any genetic impact as the Ladnier influence is replaced by Hickman genetics generation by generation. What makes more sense is to designate Ladnier as one of the lines (A, for example) and then Hickman as B and C. In this way it is possible to save a predominantly Ladnier bull every third year, and that assures the production of high percentage Ladnier cattle in the herd.

A similar program can be tailored for three rare lines, such as Palmer, Agricola, and Barnes. As the generations proceed, eventually all cattle will be some mixture of these three lines. However, by selecting replacement bulls that are linebred to each of these lines (select replacements from high percentage cows) the resulting calf crop is brought more in that direction than in a general mix. The selection of linebred bulls tugs the population back in the direction of the founding lines at each step.

If conservation is successful and numbers of the various strains stabilize, then it is possible and also wise to use cattle in breeding herds that are tailored as much for production as for conservation. If conservation fails, though, then the components that will be necessary for production will also have not been saved. Conservation really needs to come first, and by doing a good job on conservation most breeders will also discover that they have taken care of production at the same time. If production is put first, and conservation considerations are not taken in to account, then it frequently happens that both production and conservation fail. The Pineywoods cattle breed deserves much better than that!

Composite herds. While strain rescue and conservation are important to the Pineywoods cattle breed, they are by no means the whole story. Successful and important programs will also be built on composites of the different strains. The reason for keeping strains intact is to keep the pieces of the breed intact. Those pieces can then be put together by breeders to see what works for different goals and situations.

Composites can work for a variety of good purposes. One is to mix up the genetics of the various strains to see which combinations are most productive. One of the advantages of strain crosses is the hybrid vigor that is obtained – the resulting cattle are likely to be robust and productive. Such cattle are a delight to own and use. These cattle are important to the breed, because they show what the breed is capable of producing. It is important to remember, though, that unless the component strains are also saved, then the cross producing these wonderful cattle cannot be repeated because the pieces that went into it are now missing!

Composites should be developed and their production characterized. This is important for the entire breed, because the breed has a secure future to the extent that production-minded breeders take it seriously and use it for its many strengths.