The Poll Gene in North American Shetland Sheep

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The gene that causes polling in Shetland sheep had been present in North America as long as North American has had Shetland Sheep. This gene traveled into Canada via the Dailley importation, more than lkiely through one of the ewes, who passed it along to a few of her lambs.

This allele quietly spread as Shetland sheep made their way across the continent, occasionally poking its head up in the form of a polled ram lamb, to be either celebrated as another aspect of the "Shetland Diversity" or to be quietly culled.

In the last several years, I have been using polled and scurred rams for breeding, and am experiencing some success towards my goal of establishing a fully polled flock of purebred Shetland sheep. Although I have a long way to go, I'd like to share my story.

My first experience with polled Shetland rams occurred during a visit with Tami Mulder of Justalit'l Farm in Illinois, back in November 2002. I was brand new to Shetland sheep, having just started purchasing a few sheep that summer. Tami had, as a breed sire, a black ram with no evidence of horns. I recall asking Tami why this particular ram had been disbudded, and to my surprise, Tami replied that he had been born that way. This ram, Bramble Dixon, immediately piqued my interest in polled genetics. I couldn't help but wonder if there were other polled rams around, and if this trait could be bred into Shetland sheep where it would breed true. Tami expressed no interest in parting with Dixen, so I put my thoughts of polled rams on the back burner and bided my time until I could get my hands on a polled ram of my own.

During this time, I also raised Babydoll Southdowns in addition to the Shetlands. I had visitors come out to my farm that were attracted to the Babydolls and wanted to see the sheep. While looking at the two breeds side by side, several people commented how much better they like the Shetlands, with their soft fleece, smaller size and myriad of interesting colors and patterns. But some were intimidated by the horned rams, or apprehensive of managing horned livestock. This got me thinking.

If a polled strain of Shetlands could be developed, would these people invest in our breed instead of other polled breeds of sheep? The Shetland has so much to offer it seemed a shame not to try.

In 2004, Tami had something for me – two moorit ram lambs that were not showing any evidence of horn growth. After verifying that both lambs had the potential to be breeding quality, I made arrangements to buy them both. I was slightly apprehensive about using polled rams, as others had implied that a polled Shetland ram would be a hermaphrodite, would be infertile, or would be reluctant to cover ewes due to low testosterone. In addition, it seemed that there was a sentiment among some Shetland breeders that there was something wrong with using a polled Shetland ram, and that these animals should not be used for breeding. I shrugged these opinions off, held my breath and forged ahead.

Our first test breeding season laid these fears to rest when I saw that polled rams performed jast as well as horned rams when it came to breeding time. I actually got a polled ram that first year; now I was really excited!

I began to read everything I could find online and in livestock textbooks about the poll gene and horn inheritance. With the help of Shetland friends Stephen Rouse and Gail Former, I began seeking out stock that was related to Bramble Dixon and two other polled rams that we were aware of in the Midwest, Walnut Rise Malcolm and Walnut Rise Shakespeare. At this time I had no idea of the heritablility of this poll gene, so I thought that obtaining related sheep would be a good place to

Between the impressive rack of a pp (horned) Shetland ram, above, and the smooth head of a PP (polled) Shetland ram, below, Pp or Pp' rams may exhibit widely varying amounts of horn material as seen on the next page.

p'p' ewes, such as the katmoget above, exhibit horns that are finer than rams' horns.

start. I purchased a scurred Dixen son, several Dixen daughters and a Shakespeare daughter. We were on our way to a polled flock!

In May 2004, at the suggestion of supportive breeder Alan Bias, I started a Yahoo group for discussing polled horn genetics. The prejudice and misinformation against polled rams began to disappear as people saw that it was okay to use these rams for breeding, the polling trait can be inherited, and that these sheep are not disqualified for registration or show. I discovered there were several other breeders in North America that had either happened upon polled rams in the past and were using them for breeding or had the occasional scurred ram and were wondering why this was happening. Others decided that polled Shetlands would better fit their management style and became fellow polled Shetland breeders as well. When the NASSA database became available, fellow breeder Carol Bator traced the poll gene back into the pedigrees and created a database of poll-carrying Shetlands to help breeders make knowledgeable breeding choices.

I found a world of support and knowledge on the internet and owe list members a big thank-you. I also found an excellent theory of horn inheritance in the book "Breeding Merinos" by Scott Dolling. Dollings' model is as follows:

There are three alleles at the horn locus (HO) listed here in order of dominance:

P is the poll allele and is incompletely dominant.

p is the allele for sex-limited expression of horns. Many Shetland sheep, both male and female, are pp. This genotype expresses in Shetlands as substantial horn growth in rams and no visible horn growth in ewes, although small bone knobs can commonly be felt underneath the skin on the poll of ewes.

p' is the allele for horns in both sexes, also known as the "horned ewe gene." Shetland rams will have normal horn growth and ewes will have goat-like horns. Rams carrying p' can pass horns to their ewe lamb offspring. Each parent randomly passes down one of its horn alleles to their lambs. A heterozygous ram (Pp) is called a half-poll, there is no "half-horned."

It should be noted that scurring is not uncommon in half-polled rams. Breeding to eliminate the horn gene in a flock will eventually cut down on the amount of scurring. Dolling has emphasized in his writings that it is okay to use scurred rams when breeding for a polled flock in order to obtain the polled gene that they carry. Although "Breeding Merinos" is almost 40 years old, Dollings' poll inheritance theory continues to hold water when applied to Shetlands as well as Merinos.

Other loci controlling scur size, length and degree of depressions around the horn base are also thought to exist and would explain the variety of scur types ones sees.

Over the past few years I have concentrated polled and scurred rams and ewes that I suspected of carrying the polled gene and have been lambing out a higher percentage of smooth polled ram lambs. The addition of several QI rams carrying the gene for polled introduced fresh bloodlines, so there is little concern regarding inbreeding depression. Hornless or horned ewes can also be brought into the polled flock at anytime to be bred to polled rams, so not only is a large gene pool available, desirable traits carried by the ewe can be bred into any polled flock with a little patience.

We Shetland breeders are fortunate that we have such a versatile breed and are blessed with its many genetic traits just waiting to be discovered and experimented with. I hope that the polled Shetland will find its place in North America alongside the horned Shetland.

I welcome questions about polled/scurred Shetlands via email at littlecountryacres@yahoo.com. I also have information on my website about the poll gene in Shetlands at www.illinoissheep.com/polled_page-intro.html. Further information may be found at: www.shetlandsheepinfo.com/conformation/polled.html.