

# Conservation Breeding: Dr. Sponenberg Interview



Dr. D Philip Sponenberg, DMV, Ph.D., serves as the technical advisor to the San Clemente Island Goat Breeders Association. He is a professor of pathology and genetics at Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech . In additon he serves as technical advisor for The Livestock Conservancy working to conserve genetic resources of livestock species on North America. Part of this includes the development of conservation strategies for livestock breeds such as San Clementes.

Studies have shown San Clemente Island Goats to be genetically unique compared to other goat breeds.

**In the big picture, why is it important to conserve their genetics?**

---

San Clemente goats are unique for a host of reasons. Their “unique genetics” need to be put into context. Seafaring explorers, and others, had a habit of dropping a few goats off on islands from time to time. The basic trajectory on this would be a ship captain getting a few goats on board, which is basically a smallish sample of whatever was present locally. Then, if only a few were dropped off on an island, that is a further subsample.

**Cont....**

**In the big picture, why is it important to conserve their genetics?**

**Cont...**

In the case of the San Clemente goats, the first “subsample” was Santa Catalina, then at some point another smaller subsample was used to start the San Clemente population. Natural selection then worked on this for nearly a century. The low genetic variation coupled with the long history of adaptation provide for a genetically interesting population. The whole process molds the genetics to be fairly distinct in the sense that it has gene frequencies different from other populations. That is different from saying “different genes” because that is generally not true. But, the frequency of the genes is distinctive. **Cont....**

**In the big picture, why is it important to conserve their genetics?**

**Cont...**

In addition to the “genetic conservation” answer, I think that the “cultural history” connection is as compelling. The San Clemente goats are a reflection of very deliberate human actions followed by natural selection. They are therefore something like a living monument, and much like we conserve and maintain old buildings, they should likewise be maintained as an expression of human culture and history.

**If funding was not an issue,  
what study would be your first  
choice to conduct on behalf of  
the breed?**

---

It would be good to track back from today's herds to the goats that left the island. This will be impossible for many of the herds, but could be useful. Another interesting study would be a complete DNA profile (likely microsatellites) so that we are sure to not lose any rare variants that might be out there. I would also like to include Santa Catalina goats in this, because effective conservation may eventually require some sort of concerted action between the two.

**Until recently, the community has mainly focused on building numbers. What would your advice be on the following topics as we look to the future of San Clementes?**

---

Building numbers is important, but also managing the population structure of the breed. The thing to avoid is every goat becoming related to all other goats. This is not intuitive. All breeders need to contribute to breeding stock. In many breeds that has proven to be an elusive goal, with only a few “elite” breeders contributing and then swamping the breed with the genetics from their goats.

# Evaluation of Breeding Stock



**What traits would you recommend stewards utilize when evaluating goats currently? Are there certain traits or issues that are a definite “no “?**

I can come up with a reason to use almost anything on occasion, so I am not one that has a “definite no” very often. I do like variation, especially for breeds with a feral background. That means not eliminating the occasional odd color that might show up. It also means not going too far in the direction of rarity for its own sake.

---

Some traits are especially worrisome to some breeders, such as scrotal splits or extra teats. These likely need at least some negative selection. But this is not a blanket “must cull,” because if the goat has other characteristics of value, then it should be used as long as that use is careful and thoughtful.

## **When should a breeder consider retiring or moving a buck along? A doe?**

---

This has no easy answer. My own goat herd is Myotonic goats, and I focus on conserving a mix of a few old lines. In order to do that I keep the does fairly long periods, but only use bucks once at 18 months and then move them along. This is drastic, but avoids too much close breeding. It also works for me because the older bucks can become aggressive or destructive, and I don't need that!

For a while I kept does "forever." The oldest one to kid was 17. However, at some age (depending on the goat) the does do start to decline and kid production and vigor tails off. My current strategy is to try to get what I need out of a doe by the time she is 6 years old or so, and then pass her along to another breeder. That works for me, and allows other breeders to buy proven does that still have some good years left in them.

**At what point would you recommend stewards implement more stringent evaluation processes when choosing breeding stock? (For example, parasite resistance, performance testing) Is there a magic population number or some other gauge?**

---

There is no magic population number for this. I am not a huge fan of performance testing in most situations, but it does have its place. Things like parasite resistance do need to be taken into account. Probably not drastically, but certainly traits like that should not be ignored. The important issue is to select for balance and adaptability. My own bias is towards the female end of the production equation, so I like the does to have multiples and raise them well. This influences how I look at bucks. Basically... I don't!

That's not entirely true, but I first look at the dam's performance, and only bucks with decent dams are considered for retention as breeding stock. This is ignored in many breeds, but is essential for long-term productivity.

# Breed Description Narrowing

**SCI Goats have a breed description. Any goat which traces back to the island 100% is considered a SCI. The community is starting to see how herd management and breeding choices can affect the overall “look” of a herd and result in an increase in outliers outside the historical ranges described in the current breed description. Should we be taking note of these types of influences?**

---

Yes, always good to note everything possible. Some of these environmental effects are important, and can indeed change the type of the goat. The underlying question then becomes whether the breeders are concerned with a genetic pool, or with a specific narrow type of goat, or both.

Is there a point in time at which we would consider only registering goats that fit within the ranges set by the breed description?

I would be reluctant to do this. I like variation, but with the caution that selection for extremes rarely leads anywhere useful. Ditto for enhanced popularity of rare traits simply because they are rare. My own opinion is that if it is a purebred San Clemente goat, it should be registerable. The demand side of the equation will sort out some of the selection that goes into what is produced, and this is likely a good thing.

---

One possible way to take advantage of the breed description would be some sort of evaluation or score as to how closely an individual goat fits it. This would not exclude a goat that deviated, but would recognize those that do indeed fit. Deviations need to be noted, but not necessarily culled out stringently. An “off type” goat should be mated to a more typical one, as a strategy to avoid enhancing extremes over time.



## **What are the two pieces of advice you would give to our stewards?**

---

The first piece is to have a fixed goal or philosophy in mind. Otherwise, you can drift from fad to fad, which gets you (and the goats) nowhere.

The second is to value the goats for what they are, and not for what they could or should be! This is currently not much of a risk in San Clemente goats, but many breeders of many breeds shoot for a target that is not really in the original breed. Each breed should be valued for what it is, and should be expected to reproduce that in the next generation.



As stewards, we should strive to further our knowledge of San Clementes and management practices. What follow-up questions do you have for Dr. Sponenberg?

- With the SCI herds scattered throughout the US and Canada, do you have suggestions on ensuring the genetics of smaller breeders are represented within the population? Do those with the ability need to make an effort of acquiring goats from lesser-known breeders?
- Should there be particular health traits like severe cow-hocking, detached udders, poor mothering skills, that should be taken into consideration?
- Would establishing health criteria as part of the evaluation process be useful?
- How do we deal with those only breeding for the outlying traits?
- The current breed description deals with physical traits only. Would you recommend adding behavioral &/or health traits?