from the Health Committee....

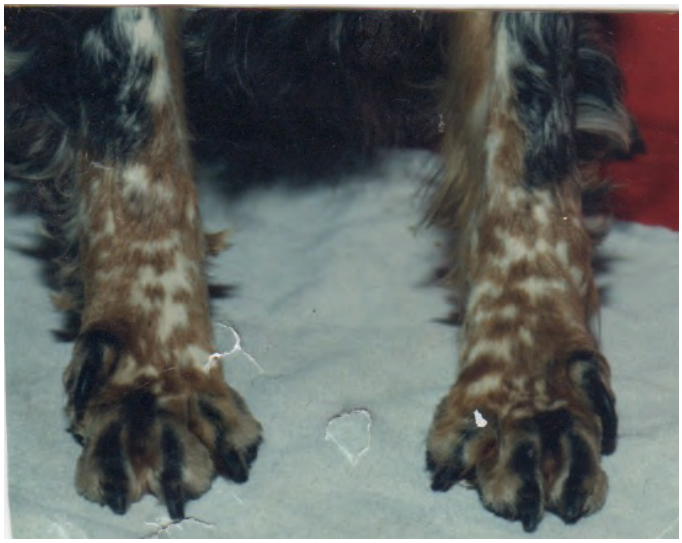
SHORT TOE REVISITED

by Addi Pittman

Short-toe has been documented in this breed for close to fifty years. That should be an indication that it has been seen for many more years that predate documented cases. Documentation includes litters that produced affected offspring and individuals affected with the trait. I made the documentations. The purpose of this **unscientific** article is to give the gathered information to those that have an interest.

During the past year and a half we've received many requests for information on this trait from the 'Field' community. Apparently, it has become a very widespread issue. This information is aimed to share what we know and what we don't know about the trait as it occurs in Bench bred cockers. In most instances there is no close familiar relationship between current field bred cockers and bench bred cockers. That said, our beginning is obviously the same. Our common ancestors date to 1866, but 'cocker' pedigrees are traceable to about 1850. Essentially all modern day cockers date back to 'Farrow's Obo' who was bred by James Farrow, Ipswich, England (1879). Of interest, Obo was a black Field Spaniel. Obo offspring implemented the split between English Cockers and American Cockers. The larger dogs became Field Spaniels and the smaller ones were Cockers. Field enthusiasts were part of the larger cockers split. If one continues to look at pedigrees it really is obvious, despite our initial roots, field devotees stayed within established hunting lines. One also finds the prefix 'Bullock's' which was the Sussex infusion (1866). That prefix also bred English Water Spaniels, a breed that is extinct dating to the early 20th Century and last seen in the 1930s. This, in a nutshell is our beginning, bench and field. We're blended Field Spaniels, Clumber Spaniels, and English Water Spaniels.

Today, each sector can probably view a pedigree from the other and not recognize any of the named dogs or know their qualities unless they are involved in that area. When inherited health issues find their way into a breed we all instinctively dig out a pedigree and start going backwards in time and



counting how many times certain dogs appear. Fortunately, today we have programs that calculate COI-coefficient of inbreeding. Some feel a low COI is desirable to avoid doubling on health concerns. Often a low COI isn't a safety net. If a trait is in the gene pool it can date back to the founders and appear regardless of a low COI. Most created breeds are pre-packaged with certain traits, characteristics, and abnormal/undesirable mutations dating to

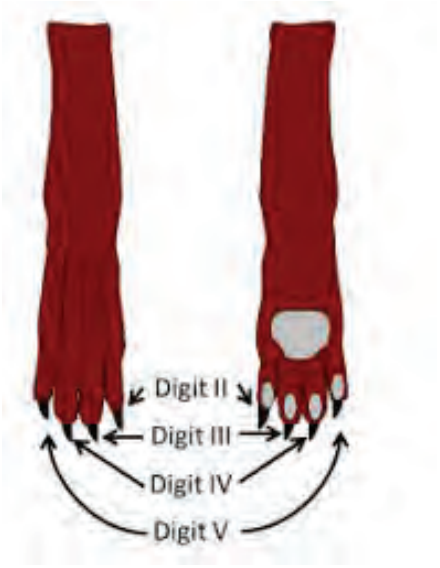
continued on following page....

their founders can become part of the recipe. More often than not, without DNA records or written documentation, going backwards in time will not reveal factual information. The developmental relationship between bench bred dogs and field bred dogs exits and over time breeders have in many ways recreated what the original versions were, but there are pre-packaged traits that seem to stick around forever. Is short-toe one of them?

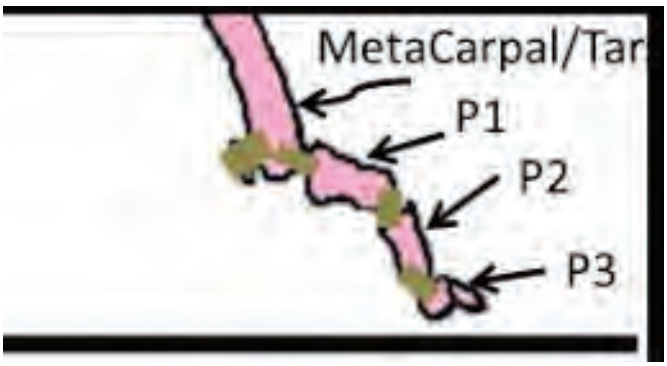
So, how does all of this relate to the short-toe conundrum? Let's start with what we know about this trait in 'bench' bred dogs.

I'll begin by saying virtually every major kennel line during the early 1970s had a history in their family line in some way that produced the trait from phenotypically normal dogs, or produced the trait through the use of affected dogs. Yes, information does include many all time greats. This isn't a finger-pointing session. It's history, where we were, and where we are now. Affected dogs were bred simply because many felt there were many other serious inherited anomalies and trying to balance everything without the era of molecular genetics was impossible. We learned by trial and error. Some breeders obviously felt it wasn't a mistake to breed an affected dog with one or more short toes. Perhaps it was regarded as a learning lesson. Over time we did learn if you breed an affected dog, you will see it again. We also learned this trait did not cause pain and suffering to the dog despite being an obviously inherited deformity. The main complaint was the growth of the nail on the affected toe/s growing like a 'talon' and getting caught and being torn out, or not being clipped often enough and growing into the pad. Like any abnormal inherited trait, obviously undesirable, responsible breeders had to make choices, some made the decision to remove these dogs from breeding programs. Others marched on.

Let's fast-forward to the late 1980s. At this point in time we had many reports and complaints about affected dogs being bred, affected dogs in the show ring winning, and many mixed and often angry human emotions. A small study that consisted of five affected English Cockers was done at the Michigan State University School of Veterinary Medicine. These dogs were examined and x-rayed. Films were evaluated by radiologist. This was the first time several dogs were evaluated at that level with a review by a radiologist. It was at that time the defect was called, '**Brachydactyly**.' This is a general term used to indicate the shortening of the digits due to an abnormal development of phalanges, matacarpals, or metatarsals(rear toe/s). All five of these dogs had the same digit affected, but in varying degrees. The outside toe which is the 5th metacarpophalangeal digit was affected. Metacarpol bones form the front toes. A dog has five metacarpal bones on each front foot counting the dew claw. The dew claw has no real function and it is often removed to avoid injury to the digit. The toe bones are then called phalanges. The two middle toes transfer weight distribution to the carpal pad during ambulation and are probably the most important toes (3&4). Short toe can affect any of the four phalanges (toes). The most common toe is the outside toe, the 5th digit, next is the 2nd digit, the inside toe. Then we have combinations of two affected toes being 5 and 4 or 2 and 3. Toes 3 and 4 are corresponding toes to 5 and 2. Whew…

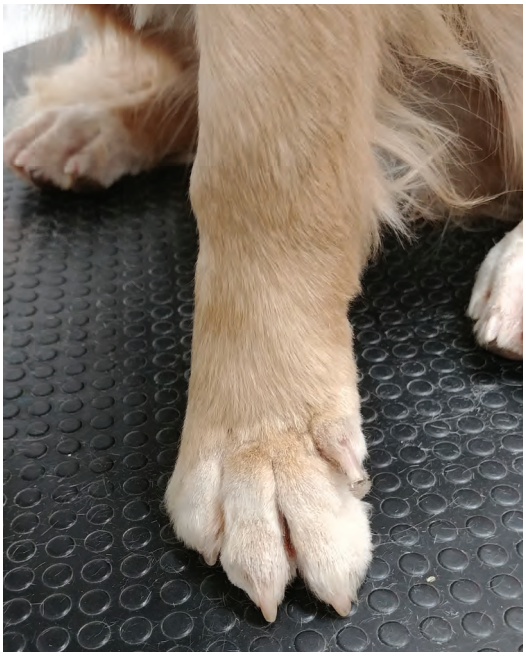


Affected dogs can have one or more toes affected on one foot, or both feet. The defect is not always bilateral. The Michigan study also found the tendons and ligaments on corresponding toes (3 and 4) which appeared normal phenotypically, were indeed affected. Is this finding on all short toed dogs? We don't know. Not enough people X-ray and/or share information despite asking for xrays for more than twenty years. Now, lets move away from the affected digits by number and talk a little bit about the bones inside the toes (phalanges).



Based on the few recent xrays submitted, P1 showed degenerative changes in one study. Another

film showed shortening of P1 and P2 also on the 5th digit. One field bred X-ray study showed a different trait, not the same defect. The toes were more contracted and affected digits 2 and 3. The dew claws weren't removed and they showed the same contracted bones. We don't know why P1 or P2 bones shorten. Apparently growth stops as a puppy grows. The failure of the toe bone/s to grow as the puppy bones grow varies from severely affected to only slightly affected. This is called 'dysostoses' which is the abnormal growth of individual bones or parts of the bones. We don't know how often the same bones are affected or if the Metacarpal bone above P1 is also affected. Since it is a development trait, you can not see it in newborn/neonatal puppies. Once a pup is up and going an experienced breeder might be able to see very early shortening around six-eight weeks of age. The foot hair must be trimmed and the toenails must be clipped. Generally, by the time the growing puppy is three-four months old an owner should be able to see the difference in toe length. As the puppy grows the toe fails to grow with the puppy and will raise off the ground surface. As the pup reaches adult height the shortening should stop. Adult dogs don't develop this trait. Regularly trimming of excess hair from the foot is a must so you can SEE the toes as the puppy grows. Standing a puppy firmly on a flat smooth surface and passing an index card under the outside/inside pads can be used to evaluate a suspect puppy. The index card should not pass under the toe. Obviously this is a rather simplistic manner to evaluate the early shortening of the puppy toe, but it does work. Nothing is a 100%, but it is easy enough to do.

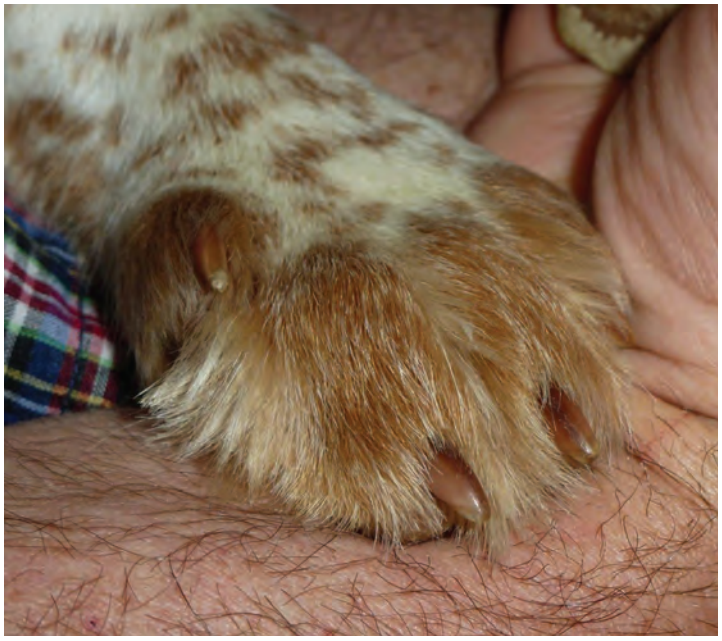


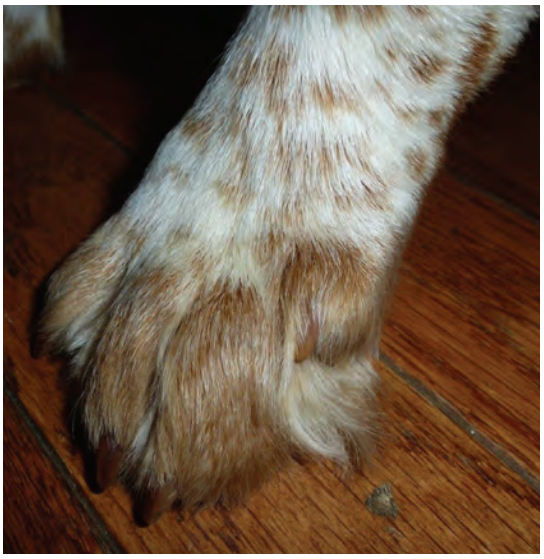
There hasn't been enough concern over many years to X-ray affected feet to show why the toe/s bone/s are short. Xrays would only show the end effect and would not give a why. The variation in toe shortness is great. Some toes may have multiple bone shortening. We don't know. This trait is poorly documented in dogs and there is no specific reference about genetic influence. In people it is an autosomal dominant with variable expression and penetrance. A phenotypically normal individual would only need one copy of the mutation to produce affected offspring. This type of inheritance would certainly allow all the variations we see in this trait. Recessive inheritance doesn't typically have multiple expressions, variations, combinations. It could be polygenic, but again so many different expressions/variations/ combinations. **The trait may not be caused by the same genetic variant.**

There isn't any research on this trait in dogdom. Since this defect can be seen in a puppy fairly early in life, removing affected dogs from the breeding population will reduce incidence over time. Spending research dollars on something that can be SEEN early in life, that does not cause pain or suffering for the affected dog, is unwarranted. We have far more serious health issues that are lethal and cause tremendous pain/suffering for the dog. This is probably why there is no specific reference for this trait in dogs.

After that Michigan study in the late 1980s and a tremendous amount of discussion, the ECSCA Board decided to send an informative letter to all AKC Licensed English Cocker judges alerting them about this defect. Clever grooming could easily hide the trait. It was felt that a judge should know about this 'hidden' defect and make an informed decision as to the overall merit of the affected dog. Unfortunately, most judges didn't have an understanding at all. Examinations became toe counting sessions, feet being lifted, dogs off balance trying to stand on three legs, and then a judge trying to figure out if the dog had a funny toe. In retrospect, the decision to send that directive out had a positive impact. Those that showed affected dogs avoided showing such a dog due to the intense scrutiny that might occur when a dog was being examined. Ringside spectators stood and watched wondering what the judge was looking

at so intently! Fewer and fewer of these dogs made it to the show ring and many were placed in pet homes. That did indeed remove some of these dogs from breeding programs thereby reducing frequency of the trait. Today, we still have the trait, not in alarming numbers, people do show affected dogs, and people do breed affected dogs. Today, many judges don't typically check individual toes looking for short deformed toes. Many, however, do look for arched and tight toes, rounded feet, and a proper cat-like foot. Feet are an important foundation of support for a dogs body! These dogs must be sound in foot structure to enable them to do the tasks for which they were bred.





What we know, or what we think we know…Field bred cockers have the same short toe defect that we've documented over all these years. That assumption is based on collected photos of the defect as it occurs in that population and comparing them to bench-bred photos. All the feet look the same. It is also highly possible that a different form of the defect is also found in Field bred dogs, the contracted toes that cause some problems in field work and every day life. A dog can't be expected to hunt effectively on two or three toes or go for a morning jog with their owner, especially if the center two toes are affected.

Today we have the ability to know the genetic status on our dogs in several areas. We have been able to eliminate Affected individuals for several recessive traits. We have also reduced the incidence dramatically in several polygenic traits by continual evaluation of successive generations for Hip Dysplasia, Patella laxations, and congenital deafness. We don't have to balance all those traits with short toes like we did years ago! There is no logical reason to continue to breed affected dogs with short toe/s. Why trade trait soundness for a toe-deformity? You CAN SEE it early in a pups life and why move forward with an inherited deformity? How many generations and how many puppies will you produce trying to eliminate this from your breeding program? Is the decision to move forward with a deformed foot really worth the years and generations you will spend trying to get rid of it? What about the dogs? You reap what you sow…

This trait does occur in other breeds of dogs. We've had worldwide inquiries over the years not only from English Cocker owners, but from owners of English Setters, English Springer Spaniels, Beagles, Belgium Tervuren, Poodle, and a Mixed breed. We want to continue collecting photos and xrays from affected dogs.

Addi Pittman, Chairman
ECSCA Health Education

Genelle Joseph
Elizabeth Neff
Joyce Winkels
Bruce Barrett, DVM