



Snowflake and Deafness

Ten years ago (1994), the JRT world was oblivious about Jack Russell Terriers having deafness. In early 1994, Genie and I found out through Farmcliff Snowflake that deafness does exist in Jack Russell Terriers. Below is a re-run of an article we submitted to the JRTCA's "True Grit" publication in August, 1994 describing our discovery.

Deafness in Jack Russell Terriers (August, 1994 "True Grit" – page 37)

by Genie Franklin

Snowflake is our all around terrier who does everything – hunting, racing, obedience, agility, G-T-G and trailing and locating. At three years of age, we bred Snof and produced a fine litter, but as early as four weeks of age, we began to notice that a couple of Snowflake's pups did not react to loud noises and seemed to be sound sleepers. We also do puppy temperament testing at seven weeks and during these tests we really began to suspect that two of these pups did not hear normally.

Consultation with our Vet, who happens to breed Bull Terriers – a breed that has a definite deafness problem – revealed that Tufts University Veterinarian School in Massachusetts has capability of testing for deafness in young puppies as well as older dogs. Subsequently, we tested Snowflake's four pups, Snowflake, Kermit (the father of Snowflake's pups), two other pups from another litter (one of which was a sound sleeper) and Chip (the father of the latter two pups).

The two suspect puppies from Snowflake's litter turned out to be TOTALLY DEAF! They were normal in visual examination of ear canal, but nerve deficiencies rendered them totally deaf in the normal hearing range for canines. We then found that the *sound sleeper* from the other litter was also totally deaf. What this told us is - if we suspect a puppy is deaf, it is deaf.

We then were totally shocked to learn that one of the other puppies from Snowflake's litter was unilaterally deaf – that is, deaf in one ear only. This pup was seemingly normal in all respects. Both Kermit and Chip, the sires of these puppies, had normal bilateral hearing as did the other two puppies. But, the real kicker came when Snowflake tested unilaterally deaf! She could hear only from her right ear and we never had a glimmer of suspicion. Even her obedience/agility instructor, who had worked with Genie and Snof for two years, could not believe that Snof was unilaterally deaf.

Subsequently, we arranged for a hearing clinic by having the Tufts Veterinarian bring her testing equipment to our house. In this clinic, we tested another 49 Jack Russells that either result directly from Farmcliff Kennel's breeding or are directly related to our dogs having

sired litters for one of our bitches or whelped puppies from our studs. All these dogs and puppies appeared normal in all respects except for one that had a blue eye and seemed to be especially high strung. Among these 49 Jack Russells, we found five with unilateral deafness – including the suspect blue-eyed dog. One of these unilaterally deaf dogs was our Peewee, Snowflake's half brother, who is a fine JR in all respects. We had no idea Peewee had a problem. Further, the blue-eyed dog testing unilateral was Peewee's get.

During our battery of testing, we tested Gretel (Snowflake, Peewee and Chip's dam) and their maternal grandmother and maternal great-grand mother as well as Chip and Peewee's sire as they were littermates. We also tested Kermit's parents and his maternal grandmother and great-grandmother plus two of Kermit's siblings. ALL OF THESE RELATIVES OF SNOWFLAKE, PEEWEE, CHIP AND KERMIT TESTED NORMAL BILATERAL HEARING.

The testing procedure used by Tufts is the same hearing testing often done on humans. The procedure is called BAER Testing. BAER means Brainstem Auditory Evoked Response and involves measuring brain activity with electrodes attached to the skin on a dog's skull. These electrodes are connected to a computer to measure the brain's electrical response to sound stimulants played through earplugs inserted into a dog's ears. Subsequent computer screen imprints and computer print-outs record hearing response of each dog. BAER testing is totally harmless to the dog and is available at some state vet. Schools and a few local veterinary neurologists are now purchasing the \$30,000 equipment.

Each BAER test takes about 10 minutes unless the dog has to be sedated. Only two of the 49 JRs tested at our clinic had to be sedated. Cost of testing at our clinic was \$35 for each adult and \$25 for puppies. Individual testing at Tufts is slightly higher.

I have been in contact with two canine hearing specialists – George M. Strain, PhD, LSU Vet. School, Baton Rouge, LA; and Kim Knowles, DVM, Tufts Vet. School, N. Grafton, MA. Dr. Strain, a recognized authority on BAER testing of canines, has published several papers on canine deafness. Dr. Strain is willing to travel just about anywhere in the USA with his equipment to conduct BAER clinics for travel expenses plus a modest charge for each test conducted.

With rare exception, it is impossible to determine unilaterally deaf dogs without testing. Dr. Strain's articles indicate that in Dalmatians and several other breeds, unilaterally deaf dogs exists at a rate of almost three times higher than do totally deaf dogs. Question we are asking ourselves is how many unilaterally deaf dogs are out in our Jack Russell world right now being bred? We unknowingly bred unilaterally deaf dogs and we produced a high incidence of afflicted puppies.

Over the past 10 years or so, Farmcliff dogs have been involved in producing around 400 puppies – about one-third of which we whelped ourselves with the other two-thirds coming from breedings by our studs. We are aware of eight totally deaf puppies from this number, three of which came from this last round of litters – a situation that shocked us out of complacency about deafness. Since we began BAER testing, we are now aware of seven unilaterally deaf individuals, but there are undoubtedly more unilaterally deaf individuals we do not know about. Snowflake, a unilaterally deaf bitch, produced 20% of our known deafness in just one litter.

We encourage the JRTCA and/or individuals to sponsor hearing clinics, such as the one we had, on a regional basis. Farmcliff Kennel plans to test every puppy we whelp from now on. Only BAER normal puppies will be provided with pedigrees (assuming, of course, all other aspects of any individual are judged to be normal). Snowflake and Peewee will no longer be shown in conformation and will never again be bred. However, both will continue to hunt, compete in other aspects of the JR world and be great pets.

We are continuing to research canine deafness and will pass anything we learn through future articles in "True Grit". We encourage the JRTCA Breeders Committee to study this issue and develop recommendations of how JR breeders should proceed to keep deafness from becoming a major problem for Jack Russell Terriers.

Epilogue about Snowflake

Snowflake is now 13 years old and is alive and well. She holds a JRTCA Natural Below Ground Hunting Certificate to Ground Hog. She is a very noisy and enthusiastic racer and GTG participant at JRT trials. Snowflake was JRTCA National Trailing and Locating Champion in 1995, National Open Obedience winner on several occasions including 2003, twice Reserve National Over Agility High Point winner (1997 and 1999) and was National Over Veteran Agility High Point Champion in 2001. At local JRT trials she has been Agility High Point winner many times. Snowflake finally achieved her ADCH (Agility Dog Champion) title through the United States Agility Dog Assn. just last year. She also has placed in the top ten in her class at three different National USDAA trials – once as high as third place. These are accomplishments not many JRTs can equal.

Snowflake's one and only litter of puppies, was a disaster in some respects. However, at age 10, all four of the pups from this litter are doing well. The two totally deaf pups are happy in separate pet homes. Sugar, the only BAER Normal in the litter, has had a successful career in agility and racing and was JRTCA National Under Veteran Agility High Point Champion in 2003. Griffin, the unilaterally deaf pup in the litter, is now accomplished in agility, obedience (Utility level), herding, GTG and is presently learning tracking.

But, in many ways, this Snowflake litter was a very fortuitous event for the JRT world. In just 10 years since this litter was made public by Farmcliff, BAER testing is well known and many JRT trials have BAER clinics regularly. Most major JRT breeders BAER test every puppy they produce and no knowledgeable buyer of JRTs would consider purchasing a puppy that has not been BAER tested. Exact statistics are not known, but we believe JRT deafness is around 8% – 2% total and 6% unilateral. Most likely there are very few – if any – JRTs that are not carriers of deafness. But, by never breeding totally deaf or uni individuals, never repeating any particular breeding that produced deafness and not breeding individuals that consistently produce deafness, we should see gradual improvement and reduction of deafness in JRTs.

Very little is known about the exact genetics of Canine Deafness, but studies are currently underway to try to determine DNA markers for deaf and carrier individuals. The Jack Russell Terrier Research Foundation is now funding a study by Dr. Strain to specifically study deafness in JRTs. Several of Dr. Strain's LSU web sites containing excellent articles on deafness are listed and links have been provided in the same place as the link to this article. Dr. Strain's web site also lists all available BAER testing facilities in the USA.