

AKC Bearded Collie Stud Book & Genetic Diversity Analysis

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Dr. Bell has used the Bearded Collie AKC studbook pedigree data on 4911 dogs to perform a genetic diversity analysis of the breed in the US. He used that data to determine who the UK breed founders (pedigree unknown) and earliest ancestors were, who their descendants were and what impact they have had on the breed in the United States since AKC recognition in 1977. The founders and earliest ancestors represent the original genetic potential in the population. Breeder selection over time, both in the UK and the US, has favored lines of descent from some founders over those of others. A few founders have no living descendants and thus their contribution has been lost.

This is not necessarily a negative. The failure of those lines to persist probably arises from generations of breeders who found those descendants either had undesirable traits that they did not wish to perpetuate or those dogs were less desirable than other lines present at the time. (See Tables 1 and 2) However, the **breed's current decline in population size may lead to a significant loss of genetic diversity should it continue** (See Fig 2).

The breed today has a slightly higher average coefficient of inbreeding (measure of relatedness of the sire and dam) than do other breeds. This is not unusual for small-population breeds with a relatively complete database of dogs from the founders on down and that are comparatively new to registration. Bell's analysis indicates that **the Bearded Collie presently has sufficient genetic diversity to remain viable IF the population recovers in size** – something that requires the recruitment of new generations of breeders as well as continued effort by established breeders.

Maintaining the health of the Beardie (or any breed) is also necessary to make sure all surviving lines are utilized to prevent further loss of genetic potential passed down from the founders and earliest ancestors. Finally, the collection of health data through surveys and other means and the utilization of DNA health testing, when available, will provide breeders with important tools to make informed breeding decisions aimed at keeping the breed healthy and viable for generations to come.