

# Barkless Basenji:

## A new hypothesis

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New Guinea Singing dog with puppies.

Basenjis are noted for rarely barking and three reasons have been put forward why this is so; I would like to propose a new one. But first, I would like to review the three previously suggested reasons.

Scott and Fuller (1965) suggested it was caused by predation from Leopards. Those dogs that did not bark would not attract a Leopard. The historical range of the Leopard stretches from Africa eastward to Southeast Asia. Within that range there are dogs that bark, such as the Azawakh in Africa, and the Saluki in the Arabian Peninsula.

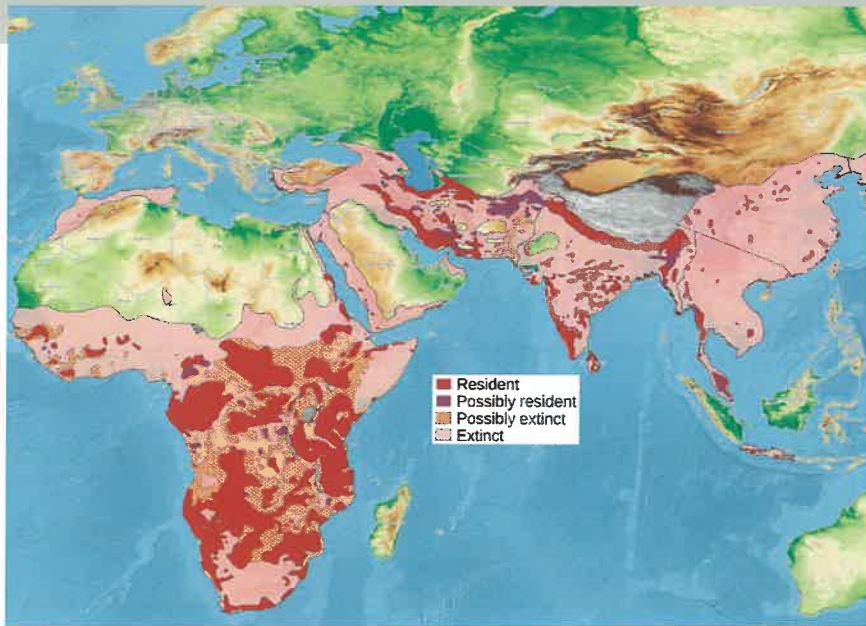
A second reason centers on the Basenji's voice box. Four Basenji's after death had their larynx examined (Ashdown RR & Lea, T., 1979; Johnson, F.B. 1971); it was found the laryngeal ventricle is shallow compared to other domestic dogs. In the 1950s, Scott and Fuller crossed Cocker Spaniels with Basenjis, crossed the resulting progeny with each other, and back-crossed the mixed generation back to both Basenjis and Cocker Spaniels. They looked at two traits, threshold of stimulation for barking and maximum number of continuous barking at one time. Analyzing the results showed that each trait seems to be controlled by a single gene (Scott, J.P. & Fuller, J.L., 1965). The Basenjis showed a high threshold of stimulation before they started barking and a low number for continuous barking. Scott and Fuller's experiment seems to indicate that Basenjis lack of barking is controlled by genetics and not from a physical cause (Scott, J.P., 1964).

The last idea is that Basenjis come from an ancient ancestor who never barked because barking was not selected for as a trait (Coe, Jon, 1983). It is now accepted that all dogs came from a wolf ancestor (Freedman AH, et al. 2014). While wolves do not bark much, they do bark. Their puppies bark even more than the adults (ed. Mech, L. D. & Boitani, L., 2003). Charles Darwin (1868) noticed that certain aspects of domestic animals seem to show retention of juvenile features into adulthood. Further noticed, was that domestic animals have similar features between them that are

different from their wild progenitors they originated from. It was assumed this was selected intentionally during domestication. In 1959, Dmitry Belyayev started a breeding program selecting for the tamest silver foxes. Each generation was tested only for how tame or less aggressive toward humans they were and those showing the least aggression in that generation were bred. Changing one aspect of the fox's behavior, its aggressiveness toward humans, caused a cascade of other changes, such as coat color, floppy ears, upturned tails, vocalization, shift in developmental timing, and estrus timing (Trut, L.N., et al. 2004). The tame foxes had a change in vocalization (Gogoleva, S.S., et al., 2008) and their estrus cycle changed from normal foxes.

It is possible that the dog's ancient ancestor had the same changes occur in barking and loss of seasonality in the estrus cycle. Increased barking was a trait that humans probably did not breed into dogs but came about through the domestication process.

I would like to suggest that the Basenji rarely barks due to the same past environmental pressure that impacted the annual estrus cycle. In a previous article (Johannes, 2003), I argued that the Basenji's annual estrus cycle in the fall was tied to the availability of human's food supply. Puppies were born during or just after harvest time when food for humans was plentiful. It is possible, due to variation in the food supply, the Basenji redeveloped the annual estrus to coincide with the time when the most food is available. This possibly occurred when the Basenji's ancestor moved into the rainforest environment. Most dogs have a 5 to 13 months estrus cycle with an average of 7 months, in most breeds, that is non-seasonal (Concannon, P.W., et al., 2009), in comparison to the seasonal/annual (fall) Basenji. The Basenji's original ancestor had the seasonal estrus with the biannual cycle is being suppressed. However, sometimes the Basenji has a spring cycle with summer puppies. I propose that this occurs because this suppression is apparently not perfect and a spring estrus can occur. There are



Map of the distribution range for the Leopard.



Basenji, Cocker Spaniel crosses.

other dogs who moved into a rainforest who also have an annual estrus which occurs in the fall. This would be the Thai dog, New Guinea and New Guinea Singing dog (NGSD), and the Dingo which came to Australia from Sulawesi or nearby Borneo (Dayton, 2016). It is possible that environmental pressure from variation of available food in the rainforest caused them to reacquire the annual estrus cycle as well. A recent study (Zhang, S., et al., 2018) sequenced the genomes of 10 dingoes and 2 NGSD and found an impact on genes related to neurodevelopment, metabolism, and reproduction possibly related to the transition to the feral state. It is possible this impact on the genes also impacted vocalization. The NGSD bark is of lower intensity than domestic dog and single pulse and some individuals bark rarely (Koler-Matznick, 2005).

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