

Predicting Adult Size-- A New Charting Method

by Carol Foster Nobel, M.D.

Sheltie Review -
March/April 1989

Size is a perennial problem for the Sheltie breeder. The *Standard* specifies that adult size must fall between 13 and 16 inches. In actual practice, few dogs under 14 inches are considered to be competitive in the Breed ring, which narrows the acceptable size range to a mere two inches. With such a small range of desirable sizes, and with a known genetic heritage from larger dogs (the Collie), it is not surprising that this breed is so prone to size problems. The problem of oversize is a foremost concern, but undersized dogs do occur with depressing regularity.

Naturally, methods that predict adult size have proved very popular with the fancy. The goal of most breeders is to cull puppies in the undesirable size ranges as early as possible, while they are still marketable as pets. To this end, various forms of size charts have been created.

Over the past 20 years, articles have been written regularly giving anecdotal experience with size charting. Most of these articles consist of lists of weekly measurements through the first few months of life. The 1981-82 *ASSA Handbook* summarized the charting experience of many of the major kennels, giving varying measurements for ideal and maximum sizes. Other articles have promoted simple one-time measurements, "10 inches at 10 weeks" being the most common of these.

The gold standard of the charting world, however, is the chart developed by Phyllis Holst and printed in *Sheltie Talk*. Often referred to as the Sea Isle chart, it is a graphic depiction of puppy growth, with a line to separate oversize puppies from those expected to mature insize. This chart has proven itself to be generally useful as a predictive aid over the last several years; however, it does have its deficiencies.

First, the *Sheltie Talk* chart deals only with oversize. While breeders often suspect that it is dangerous for a pup to measure too far "under the line," there is no clear guideline for predicting undersize.

More importantly, it is not exactly clear what "THE LINE" stands for. Some breeders interpret it as a sheer cliff, above which every puppy falls inevitably into oversize. Others feel it is a general guideline applying only to pure Sea Isle lines. This leads to the common belief that "it's OK to run a little over the chart in MY line," which has been said about virtually every line in the country. In addition, there is a rather confusing split in the line at 5½ months, which makes charting somewhat arbitrary.

In a landmark article by Lynn Broussard ("Pacesetter," March/April 1985), a new type of charting was proposed. She divided the chart into three lines: maximum dog, maximum bitch, and minimum bitch. This allowed breeders

to identify undersize risks for the first time. It also gave more leeway than the previous size chart, allowing somewhat larger puppies to remain "under the line" in the early months.

The problem with any type of line chart, however, is that animal growth can never be perfectly defined by a sharp line. All dogs destined to mature at 16 inches do not follow the same growth line; instead, they exhibit a *range* of sizes. This "oversize range" can overlap with the range of sizes for insize dogs; for example, two dogs can share identical measurements at four months of age, yet one may mature at 16½, the other at 15½. With a single measurement, it is only possible to state the *probability* that a dog will remain in, go over, or under. If a measurement is said to have a 95 percent probability of oversize, this means that out of 100 dogs with an identical measurement, 95 will end up over, while 5 will not go over.

When the *Sheltie Talk* graph is analyzed as a probability chart, it becomes obvious why so many breeders feel that their dogs are able to measure over, yet still mature insize. This chart follows a probability line that wavers from less than a 5 percent risk of oversize, to more than a 95 percent risk, depending on the age at which the measurements are taken. It is least consistent after 12 weeks of age. It was this inconsistency, and the other shortcomings of the chart, which prompted the author's research on growth patterns in Sheltie puppies.

The Study Technique

Size charts were obtained from different breeders working with descendants of many of the best-known studs and lines in the country. In order to be included in the study, each chart required at least one measurement after 18 months of age, which was assumed to be the full-adult size of the animal.

A total of 85 Shelties were included in the study, from which 717 weekly and monthly measurements have been obtained. An additional 936 weekly measurements were calculated from graphed charts, for a total of 1653 weekly measurements. Of the Shelties studied, 56 percent were female and 44 percent were male.

The adult sizes of the Shelties studied ranged from 12¾ inches to 18¾ inches. The average (mean) size of all animals in the study was 15¼ inches. The average (mean and median) size for females was 15 inches. The median size for males was 15 3/8 inches. Measurements were obtained at several weekly or monthly intervals from age six weeks through age 12 months, with a final measurement of adult size after 18 months.