

BUCK FACTOR

By: Dr. Frank Ondrovik

In the last issue, I discussed “The Doe Factor;” how the female contributes exactly 50% of the genetic material inside the nucleus of each cell, but she contributes 100% of the cellular “machinery” outside the nucleus, in the cytoplasm of each cell. These cellular “machines” are responsible for the processing and utilization of energy, so this is how the female actually contributes

more than 50% to the antler development of the offspring. In this issue I am going to discuss “The Buck Factor.” What exactly can we expect the buck to contribute to the antler development of his offspring?

There is absolutely no doubt that antler development in whitetail deer can be quickly and profoundly influenced by selection. Pen-raised deer breeders have proven that. In just 5 years since I have been breeding deer, I have seen the incidence of 200 inch bucks go from rare to commonplace. The bell-shaped curve of average antler development has definitely been moved to the right and continues to march in that direction every year! In the flurry of activity to breed the biggest and best, many breeders choose their sire bucks based solely on inches of antler. Is that a sound practice? Not necessarily and here’s why.

Geneticists have long known that there are characteristics that are highly “heritable” and others that are not. The characteristics of antler development are genetically influenced and therefore, there are antler traits that are highly heritable and others that are not. It does a breeder very little good to choose a buck on the basis of antler characteristics of low heritability! In many species, such as cattle, there are statistical parameters calculated mathematically such as “expected progeny difference,” etc. So far, I am not aware of any of these parameters being available to whitetail deer breeders, but there have been heritability studies done in whitetail deer.

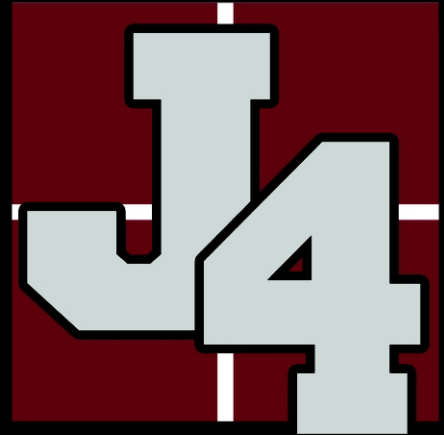
Templeton et al (1982), Williams and Harmel (1984), Scribner et al (1984), Smith et al (1987), Breshears et al (1988), and Harmel et al (1989), have all published research results on the heritability of antler characteristics and body weight in whitetail deer. Most of these results were based on small numbers of sires and male offspring. The most comprehensive and statistically accurate project was done by John D. Williams, W F Krueger, and Donnie H. Harmel at The Kerr Wildlife Management area published in 1994. “Single male breeding pens with 10-14 female deer were used for five consecutive generations. To minimize selection and maintain a broad genetic base, different sets of sires and as many different dams as possible were randomly assigned as breeders each generation.” The summary of the heritability averages is as follows:

- 1) Birth weight - .085
- 2) Body weight - .61
- 3) Antler points - .39
- 4) Main beam length-- .585
- 5) Antler spread - .23
- 6) Basal circumference - .845
- 7) Antler weight - .785

Geneticists normally consider any heritability less than .40 to be of marginal benefit for selection. Heritability factors less than .20 are of little or no selection value. Heritability factors of .6 or above are highly influenced by selection.

Using these criteria, body weight, antler weight, and basal circumference are highly influenced by selection. Antler spread and antler points are only marginally influenced by selection, main beam length is marginally to highly heritable. Fawn birth weight has almost no genetic heritability. So we should probably choose a breeder buck more for his beam length than for his spread. We should choose him more for his mass than his number of points, although the number of points is marginally heritable and as such should enter into the selection process. In closing, I would like to suggest that we breeders never get away from the fact that the majority of hunters prefer to harvest a mainframe buck, not necessarily one that has only massive amounts of atypical inches. Let’s not get caught up in the “inches of antler” frenzy and lose sight of who is our ultimate market. Good luck, and I hope some of this information might help your program.

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