- sexual aggressiveness in bulls of different breeds. *J Anim Sci* 1978; 46:1054–1062.
7. Moser DW, Bertrand JK, Benyshek LL, McCann MA, Kiser TE. Effects of selection for scrotal circumference in Limousin bulls on reproductive and growth traits of progeny. *J Anim Sci* 1996;74:2052–2057.
 8. Brinks JS, McNerney MJ, Chenoweth PJ. Relationship of age of puberty in heifers to reproductive traits in young bulls. *Proc West Sect Am Soc Anim Sci* 1978;29:28–30.
 9. Willett EL, Ohms JL. Measurement of testicular size and its relation to production of spermatozoa by bulls. *J Dairy Sci* 1957;40:1559–1569.
 10. Bailey TL, Hudson RS, Powe TA, Riddell MG, Wolfe DF, Carson RL. Caliper and ultrasonographic measurements of bovine testicles and a mathematical formula for determining testicular volume and weight in vivo. *Theriogenology* 1998;49:581–594.
 11. Coulter GH. Implications of testicular size on breeding soundness evaluation of young bulls. *Proc Annu Mtg Soc Theriogenology* 1978:88–97.
 12. Coulter GH. Puberty and postpuberal development of beef bulls. In: Morrow DA, ed. *Current Therapy in Large Animal Theriogenology*. Philadelphia, Pennsylvania: Saunders 1986:142–148.
 13. Cates WF, Nicholson HH, Crow GH, Janzen ED. Testicular development in record of performance bulls. *Proc Annu Mtg Soc Theriogenology* 1981:16–30.
 14. Barth AD, Ominski KH. The relationship between scrotal circumference at weaning and at one year of age in beef bulls. *Can Vet J* 2000;41: 541–546.
 15. Coulter GH, Mapletoft RJ, Kozub GC, Cates WF. Scrotal circumference of two-year-old bulls of several breeds. *Theriogenology* 1987;27: 485–491.
 16. Coulter GH, Keller DG. Scrotal circumference of young beef bulls: Relationship to paired testis weight, effect of breed, and predictability. *Can J Anim Sci* 1982;67:2881–2885.
 17. Smith BA, Brinks JS, Richardson G. Relationships of sire scrotal circumference to offspring reproduction and growth. *J Anim Sci* 1989;67: 2881–2885.
 18. Bourdon RM, Brinks JS. Scrotal circumference in yearling Hereford bulls: Adjustment factors, heritabilities and genetic, environmental and phenotypic relationships with growth traits. *J Anim Sci*, 1986;62: 958–967.
 19. Mateos ER, Chenoweth PJ, Pexton JE, Farin PW. Relationship of breeding soundness values with pregnancy rates of bulls breeding synchronized heifers. *Proc Annu Mtg Am Soc Anim Sci* 1978:377.

Book Review

Compte rendu de livre

Farm Animal Behaviour – Characteristics for Assessment of Health and Welfare

Ekesbo I. CAB International, Cambridge University Press, Cambridge, UK. 2011. 248 pp. ISBN 9781-8459-3770-6. \$72.50.

The author of this comprehensive, but not exhaustive, undergraduate level text demonstrates thorough knowledge of his subject and current world literature, with the inclusion of over 670 references in this work, many authors known to us in Canada for their studies in animal welfare over the preceding 3 to 4 decades.

The book is well-organized in 3 sections, covering horses, cattle, swine, sheep, and goats in part I, poultry and farmed birds in part II, and non-domesticated deer to include only fallow and red deer in part III. Quality illustrations in black and white clearly complement points discussed in the text. Not covered are other deer species currently farmed on the NA continent, bison or alpaca, although much is known of their natural behavior, and as farming enterprises. Consideration might be given to the inclusion of these animals in a future edition.

Each chapter follows a consistent pattern describing the behavioral characteristics of the species featured. Reference is made to the natural state before domestication, leading us through the various changes to the present, demonstrating along

the way recognized behavioral needs of animals subject to modern management systems. Innate, learned, and social behaviors, activity patterns, senses, behavior in the young animal, vision and hearing, mating, pregnancy, birthing, and mothering are chronicled for each animal species within natural and artificial settings.

Clearly, the pendulum has swung far in favor of production oriented systems of animal management considering the behavioral needs of animals, and often at odds with them and optimal welfare. By example, the author demonstrates problems currently encountered due this emphasis, leading us to look at the normal, enabling recognition of the abnormal. Ekesbo has a great ability to encourage the reader to think about what is written, coming to one's own conclusions. Many influences affect our judgement, reasonable and unreasonable, today.

This is a book of observation and truth, of great worth to anyone in a caring or advisory role. Those who have managed the animals and birds covered over a period of several decades will acknowledge what they have learned in the field is now documented in print; for those now entering the world of animal agriculture, author Ekesbo has done them a great favor with the publication of this text!

Reviewed by B.W.R. (Byrre) Rothwell, DVM, Woodwedge Consulting, P.O. Box 1175, Shellbrook, Saskatchewan S0J 2E0.