

Late-born Elk, *Cervus elaphus*, Calf Observed Near Bancroft, Ontario

RICK C. ROSATTE^{1,3} AND JOE NEUHOLD²

¹Ontario Ministry of Natural Resources, Wildlife Research and Development Section, Trent University, DNA Complex, 2140 East Bank Drive, Peterborough, Ontario K9J 7B8 Canada

²825 Wentworth St., Peterborough, Ontario K9J 8R7 Canada

³Corresponding author: e-mail: rick.rosatte@ontario.ca

Rosatte, Rick, and Joe Neuhold. 2006. Late-born Elk, *Cervus elaphus*, calf observed near Bancroft, Ontario. *Canadian Field-Naturalist* 120(2): 188–191.

A recently born male Elk (*Cervus elaphus*) calf was observed and photographed approximately 30 km east of Bancroft, Ontario, on 5 October 2004. Based on the gestation period for Elk, the estimated conception date was between late December 2003 and early January 2004. This is unusual as the majority of calves are born between late May and early June with conception having occurred in September/October. This reproductive strategy allows for an optimum growth period for calves to occur before the onset of winter which increases the probability of survival. An eleven-year-old cow Elk was identified as the mother of the late born calf. The age of the cow, and her inability to meet the annual energy requirements necessary for normal reproduction, may have contributed to the late conception and parturition dates.

Key Words: Elk, *Cervus elaphus*, Elk calf, restoration, late-born, Ontario.

In 1998, the Ontario Ministry of Natural Resources (OMNR) and partner organizations implemented a plan to restore Elk (*Cervus elaphus*) to Ontario, Canada (Bellhouse and Broadfoot 1996). Between 1998 and 2001, 443 elk acquired from Elk Island National Park (EINP), Alberta, were released in four different areas of Ontario; Lake of the Woods, Lake Huron/North Shore (near Blind River), French River/Burwash, and Bancroft/North Hastings (Rosatte et al. 2002). In total, 120 Elk were released during 2000/2001 in the Bancroft/North Hastings area at a location near Gin Lake (UTMC = 304000E 499000N). Each summer, Elk calves have been observed and each winter, Elk calf surveys were conducted using OMNR helicopters to determine Elk calf survival and estimate the size of the herd.

On 5 October 2004, a male Elk calf with spots, estimated to be about three weeks of age, was observed and video taped near Hartsmere, Ontario (UTMC= 300000E 4995000N), approximately 25 km east of Bancroft, Ontario (Figure 1). The calf weighed about 25-30 kg based on body size; average birth weights for Elk calves are 15-22 kg (Hudson et al. 2002). On 1 November 2004, the calf was again observed nursing from a 11-year-old cow Elk which had been ear-tagged (All-Flex ear-tag # 347), weighed (238 kg), and radio-collared (Lotek GPS Collar- 148.115 Mhz) at EINP, Alberta, and released in the Bancroft/North Hastings, Ontario, area during April 2001. The calf was observed nursing from the cow during December 2004 and January 2005. The calf, still with spots, was photographed again on 1 February 2005, near Hartsmere, Ontario (Figure 2). It was with a group of 38 Elk comprised of 13 bulls {4 mature (>5yr), 4 yearlings, 5 immature (2-4 yrs), 8 calves, and 17 cows (which included the calf's mother – Figure 3)}. Based on observation

during January/February 2005 the late-born calf with spots was estimated to be 25%-35% smaller than the other calves (Figure 2). Those calves were of a size comparable to Elk calves handled at EINP, Alberta, where calf weights averaged 120 kg (264 lb) (n=16) during January 2001. These weights are comparable to 8-9 mo old Elk calves in other studies that were born during early spring and summer (Cook 2002; Peek 2003). Unfortunately, the spotted calf was killed on 25 February 2005. Based on tracks in the fresh snow, injuries to the calf, and blood on the antlers of a mature bull Elk, the calf was likely gored to death.

Gestation periods for Elk range between 247-262 days with a mean of about 255 days (Bubenik 1982; Hudson et al. 2002). As this calf was first observed on 5 October 2004, conception must have occurred during late December 2003 or early January 2004. Wishart (1981) reported a cow Elk in Alberta that was shot in September 1979 and had a fully developed fetus. In this case, the conception date was estimated to be January 1979 and the cow was estimated to be 10 years of age. In Elk, reproductive success generally declines after 7 years of age (Raedeke et al. 2002).

One adaptive strategy of Elk is the production of highly developed, rapid growing, large young, so that calves quickly reach a size that maximizes survival during winter (Geist 2002). The high energy requirements for rapid growth of Elk calves is met through the energy acquired from maternal milk. Elk calves acquire most of their nutritional requirements during their first month of life from milk; however, after this neonatal period, requirements are greater and the ingestion of solid forage is required. That is why parturition throughout most of Elk range is early spring and summer (late May/early June) when forage is high in protein and nutritious (Hudson et al. 2002). The timing



FIGURE 1. Late born elk calf with spots photographed by J. Neuhold near Hartsmere, Ontario, on October 5, 2004.

of calving for Elk is such that inclement winter/spring weather is avoided but is early enough (e.g. June) so that calves can attain sufficient weight and size to survive the winter (Hudson et al. 2002). Juvenile Elk have evolved to reduce or cease growth during fall and winter, when the nutritive value of forage declines. Cook et al. (1996) reported that calf growth in mid-November was 50% of that found in September and hypothesized that the nutritional strategy of Elk calves during the late fall/early winter was primarily to maintain condition rather than maximizing growth. Inevitably, energy acquisition for rapid growth becomes a problem for late-born calves, as not only is forage less nutritious during the fall and winter, but milk production in lactating cow Elk also declines during that period due to poor quality forage (Cook et al. 1996; Cook 2002). In addition, survival was found to be lower for late-born Elk calves in Yellowstone National Park than for earlier-born calves (Singer et al. 1997), and calf mortality during winter was primarily due to malnutrition. The calf in this study was observed nursing in mid-January 2005 and supplemental feeding by people in the area may have provided sufficient energy for the cow to continue milk production during the winter period.

Nutrition and lactation can affect the timing of estrous in Elk and subsequently the parturition date (Cook

2002). Generally, cows that are suckling a calf during the rut come into estrous later than cows that do not have a calf (Hudson et al. 2002). During the early part of rut, estrous approximates 21 days but is variable (19-25 days) (Bubenik 1982) and estrous length increases and becomes irregular during the later stages of the breeding period (Hudson et al. 2002). Three to four estrous periods during one breeding season are possible with a refractory period of 62 days between sequential estrous cycles (Bubenik 1982) and Elk can be in heat as late as February. Older aged ungulates often cannot support production or reproduce (Cameron 1994; Cook 2002). Generally, reproductive success for elk 11 years of age is low (Raedeke et al. 2002). The age of the cow in this study, and her inability to meet the annual energy requirements necessary for normal reproduction, may have contributed to the late conception and parturition dates.

Acknowledgments

The authors wish to thank the numerous partners of the Ontario Elk Restoration and Research Program: the Provincial Elk Technical Team, the Local Implementation Committees, Cambrian College, the Rocky Mountain Elk Foundation, Elk Island National Park, the Ontario Federation of Anglers and Hunters, Trent University, Lakehead University, Laurentian University,



FIGURE 2. Late born elk calf with spots was about 25% smaller than other calves when photographed by R. Rosatte near Hartsmere, Ontario, 1 February 2005.



FIGURE 3. Elk calf with spots with 11-year old mother (on right) (photo by R. Rosatte near Hartsmere on 1 February 2005).

University of Guelph, Sault College, Safari Club International (Ontario Chapter), Northern Ontario Tourist Outfitters, French River Resorts Association, Parks Canada, Northern Ontario Heritage Foundation, Ontario Fur Managers Federation, and the Ontario Ministry of Natural Resources. C. Davies, manager, OMNR, Wildlife Research & Development Section, reviewed the manuscript and provided useful comments.

Literature Cited

- Bellhouse, T.**, and **J. Broadfoot**. 1996. Plan for the restoration of elk in Ontario. Ontario Ministry of Natural Resources internal report, Ontario, Canada, 55 pages.
- Bubenik, A.** 1982. Physiology. Pages 125-179 in *Elk of North America: ecology and management*. Edited by J. W. Thomas and D. Toweill. Stackpole Books, Harrisburg, Pennsylvania.
- Cameron, R.** 1994. Reproductive pauses by female caribou. *Journal of Mammalogy* 75: 10-13.
- Cook, J.** 2002. Nutrition and food. Pages 259-349 in *North American elk: ecology and management*. Edited by D. Toweill and J. W. Thomas. Smithsonian Institution Press, Washington, D.C.
- Cook, J., L. Quinlan, L. Irwin, L. Bryant, R. Riggs, and J. Thomas.** 1996. Nutrition-growth relations of elk calves during late summer and fall. *Journal of Wildlife Management* 60: 528-541.
- Geist, V.** 2002. Adaptive behavioral strategies. Pages 389-433 in *North American elk: ecology and management*. Edited by D. Toweill and J. W. Thomas. Smithsonian Institution Press, Washington, D.C.
- Hudson, R., J. Haigh, and A. Bubenik.** 2002. Physical and physiological adaptations. Pages 199-257 in *North American elk: ecology and management*. Edited by D. Toweill and J. W. Thomas. Smithsonian Institution Press, Washington, D.C.
- Peek, J.** 2003. Wapiti. Pages 877-888 in *Wild Mammals of North America: Biology, Management and Conservation*. Edited by G. Feldhamer, B. Thompson and J. Chapman. The Johns Hopkins University Press, Baltimore, Maryland.
- Raedeke, K., J. Millsbaugh, and P. Clark.** 2002. Population characteristics. Pages 449-491 in *North American elk: ecology and management*. Edited by D. Toweill and J. W. Thomas. Smithsonian Institution Press, Washington, D.C.
- Rosatte, R., J. Hamr, B. Ranta, J. Young, and N. Cool.** 2002. Elk restoration in Ontario, Canada: Infectious disease management strategy, 1998-2001. *Annals of the New York Academy of Sciences* 969: 358-363.
- Singer, F., A. Harting, K. Symonds, and M. Coughenour.** 1997. Density dependence, compensation, and environmental effects on elk calf mortality in Yellowstone National Park. *Journal of Wildlife Management* 61: 12-25.
- Wishart, W.** 1981. January conception in an elk in Alberta. *Journal of Wildlife Management* 45: 544.

Received 17 February 2005

Accepted 7 October 2005