

## THE CASE AGAINST CALLING AND HUNTING DOMINANT MOOSE DURING THE MAIN RUT PERIOD - A VIEWPOINT

Mike L. Wilton

Ontario Ministry of Natural Resources, Whitney, Ontario, Canada, K0J 2M0

ABSTRACT: Many moose hunts across North America coincide with the main rut period. Vulnerability to calling and hunting, in addition to loss of natural fear of humans during such hunts, may be compromising gene pools by removal of dominant (trophy) adults, and contravening the concept of fair chase. Alternative hunt options are proposed.

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The practice of calling moose (*Alces alces*) has long been a tradition among North American moose hunters. Large antlered (trophy) bulls which may be dominant (Barrette and Vandal 1985) are most susceptible to calling during the early rut period (Bubenik *et al.* 1978, Bubenik and Timmermann 1982, Timmerman and Gollat 1982, Timmermann 1992) and may be removed before they breed and have had a chance to pass on their genetically dominant characteristics, if seasons are improperly set.

### DISCUSSION

Moose managers generally agree that the main rut activity is consistent and falls between mid-September and mid-October; the period which coincides with 73.4% of fire-arm hunting seasons in North America (Wilton 1992).

Pre-rut and rut behaviour encompass a longer period, which has been partitioned as follows (Lent 1974, Killaby *et al.*, 1990, Miquelle 1991, Claveau and Courtois 1992, Crichton 1992, Schwartz and Hundertmark 1993):

- Period 1 (pre-rut) - August 25 - September 10; velvet shed, bulls aggregate.
- Period 2 - September 11 - 25; bulls court and defend cows.
- Period 3 - September 26 - October 10; copulation occurs.

Dussault and Huot (1986) found that vocalization activities in Quebec peaked in late September and early October, and hunting success for bulls was greatest during the last week of September. Claveau and Courtois (1992) found 2 peaks of adult hunting vulnerability (co-incident for both sexes), one around September 25 (shortly prior to breeding), the other around October 13; both of which coincide with mate seeking prior to 1st and 2nd overt estrus. Gollat *et al.* (1981) suggest an adult male vulnerability period which extends from prior to September 22 until approximately October 15 or 20, and conclude that it would be necessary to move season opening dates beyond that period to completely eliminate the rut induced effects which result in increased vulnerability to breeding bulls. Sigouin *et al.* (1995) identified the "pre-copulation period" in Quebec, during which animals actively search for a mate, as occurring "for a few days" between September 20 and 30, but recommend that if the management objective is to minimize the impact of hunting on moose populations, hunting activities should be avoided until the second week of October.

Juveniles (1.5 - 2.5 years old) are more vulnerable to hunting than calves at heel and mid-aged adults during the entire fall period (Simkin 1965, Crête *et al.* 1981, Paloheimo and Fraser 1981, Boer 1988, Timmermann 1992) owing to their greater tendency to

wander erratically (Altmann 1960). Dominant adults are most vulnerable to calling during the early part of the rut since they are the first to breed (Markgren 1969, Bubenik and Timmermann 1982, Bubenik 1987, Claveau and Courtois 1992, Timmermann 1992), and in addition to being the most desirable as trophy animals, are more likely to be removed prior to breeding if seasons are set too early or do not make provision for their protection (Child and Aitkin 1989). Timmermann and Gollat (1982) found that the vulnerability of prime bulls and cows decreased as successive season openings advanced from September 22 to October 18.

While Altmann (1959) found that bulls in Wyoming may remain with one cow for up to 12 days during the peak of the rut, Markgren (1969) and Bubenik (1987) estimated a more appropriate period to be 5 or 7 days, respectively. During this time bulls will not be as responsive to calling since they are attentive to a single cow, but will have less fear of humans (thus remaining vulnerable to hunting) owing to their preoccupation with the sexual drive (Fig. 1).

The removal of excessive numbers of prime males (6.5 - 9.5 yr.) (Timmermann 1992), or prime females (3.5 - 9.5 yr.) (Claveau and Courtois 1992, Bubenik *et al.* 1978, Bubenik 1987) from moose populations will lead to later breeding of older ( $\geq 10.5$  yr.) or younger (1.5 - 2.5 yr.) cows by younger bulls with consequent later calving, putting calves entering fall at a distinct weight gain disadvantage (Schwartz *et al.* 1994).

Ginsberg and Milner-Gulland (1994) have summarized the effects of prime-removal on some other ungulate species as follows:

- In species that are seasonal breeders, hunting during the breeding season may lead to disruption of territorial structure, increased male-male conflict, and, as a result, reduced rates of conception.
- Females not inseminated on their first

cycle will either not conceive that year or will continue cycling leading to decreased synchrony of birth, ultimately resulting in increased juvenile predation losses owing to a decrease in predator "swamping" (Bannikov *et al.* 1961, Smithers 1983, Skjenneberg 1989, Cummings 1989, Gill 1990, Fergusson 1990).

- Using a simulation model, Gruver *et al.* (1984) demonstrated that for white-tailed deer (*Odocoileus virginianus*), a delay in the hunting season for bucks results in increased fecundity and an increased proportion of does fertilized on their first estrous cycle.
- In red deer (*Cervus elaphus*), late calving has two negative effects; calf mortality increases by 1% for each day the calf is born following the median calving date (Clutton-Brock *et al.* 1987), and in the following breeding season females suffer a reduction in fertility of 1% for every day past the date of median conception in the previous year (Clutton-Brock *et al.* 1983). Delay in breeding for a single cycle (18 days) can result in a 36% decline in a female's reproductive success.

Cronin (1992) found no intraspecific mitochondrial DNA variation among moose populations and subspecies across North America, but suggested (Cronin 1993) that conservation efforts may focus below the species level because of concerns about the fitness, evolutionary potentials, and locally adapted gene pools of natural populations. In situations with increasing urbanization, transportation corridors and agricultural development, more isolation of previously interactive sub-populations will occur. Loss of genetic diversity is a major concern in insular populations, for example, grizzly bear (*Ursus arctos*) (Harris 1986), and adds another dimension to the question of the role of hunting in population dynamics, particularly in species with increasingly fragmented habitat (Boer 1991).



Fig. 1. Cow, calf and attendant bull pass within 5m of the author, illustrating vulnerability, during the peak of rut activity Algonquin Park, Ontario - September 23, 1989.

Dominant characteristics such as antler size, metabolic efficiency and adult body size are positively associated with maximized genetic diversity (heterozygosity) in moose populations (Wilton 1992). Consequently, the uncontrolled removal of dominant animals, could lead to degradation of gene pools (Scribner *et al.* 1989, Bubenik 1991).

Newton (1979 - in Knight and Temple 1995) hypothesized that intraspecific differences in nest defence behaviour of Falconiformes were due to past levels of human persecution. If shooting disproportionately eliminated aggressive birds, then nest-defence aggressiveness would vary with the persecution history of an area.

Another consideration is the concept of "Fair Chase". Reneau and Reneau (1993) define "Fair Chase" as "the ethical, sportsmanlike and lawful pursuit and taking of any free-ranging wild game animal in a manner that does not give the hunter an improper or unfair advantage over such game animals". "Ethic" is defined by Caine and Lechner (1988) as "relating to morality of behaviour / conforming with an accepted standard of good behaviour". Ethical rules are emotionally based, subjective in nature, and may change through time as society dictates. Biological rules are objective in nature, and only change as new science adds to the knowledge base. The method used in removing individuals from a population is scientifically unimportant, provided that such removal benefits (or at least does not harm) the population biologically. It is unrealistic however to ignore society's wishes if certain methods of removal are felt by a majority to be unethical. Causey (1992:51) discussing the morality of hunting stated "Prudence consists of acting with one's overall best interests in mind, whereas morality sometimes requires that we sacrifice self-interest in the service of a greater good. While thorough knowledge is all that is required to make prudent decisions, the making of a

moral decision involves something more: conscience. Obligations have no moral meaning without conscience. Moral hunters do not mindlessly follow rules and lobby for regulations which serve their interests; rather, they follow their consciences, sometimes setting their own interests aside. In short, ethics is guided by conscience and gives us something to aim for beyond self-gratification".

It is estimated that by 1991, 7.4% of Americans over the age of 16 years hunted; down from an estimated 10.3% in 1980 (Brown *et al.* 1995). Canadian hunting participation data are remarkably similar. This means that more than 92.6% of North Americans are now non-hunters, an unknown (and probably rising) percentage of whom may further be classed as anti-hunters.

It becomes increasingly apparent that aside from personal desires to become more ethically responsible, hunters must improve their ethical image if they wish to maintain a hunting tradition well into the 21st century.

Regulations which will be viewed by the public as ensuring that hunters do not have an unfair advantage - such as the prohibition of hunting waterfowl over bait - should serve as a basis from which to build a better image.

Bubenik (1987) outlined much of the reproductive behaviour characteristic to North American moose. Many actions, which are visually, vocally, or chemically cued, form part of the annual reproductive cycle, and are thus "locked in" to normal moose behaviour. If man, with his ability to mimic (i.e. "call") can successfully become part of the reproductive cycle of moose, does this give him the right to use that ability for his personal "self-gratification" at a time when his quarry has lost much of its innate fear of humans owing to preoccupation with the sexual drive (Fig. 1), or does this overstep the bounds of ethical behaviour? With the advent of commercially synthetic moose pheromones, will scent marking near tree stands be considered

ethically acceptable? These are questions that hunters and managers will have to address in the context of Fair Chase, if they wish to stem the tide of growing anti-hunting sentiment in today's society. Managers must strive to base their decisions on science, while at the same time remaining cognizant of society's wishes.

Prior to setting seasons, moose managers should answer the following questions:

- Whether or not to harvest dominant animals, and if so, how many?
- Whether or not to allow calling, and if so, during all, or just part of the season?

Once these questions have been answered, a variety of season options becomes available, such as the following:

- Season opens after October 15; calling allowed. This option protects dominant animals which mate first, but allows for their post-rut harvest, in addition to calling for later breeders such as teens and sub-primers.
- Season opens prior to October 15; calling only allowed after October 15. This option protects dominants from calling during the main rut, but will increase kill during their peaks of hunting vulnerability (late September and mid October), and be difficult to enforce.
- In areas of traditional early freeze-up, sex-age specific (eg. spike-fork only) seasons prior to peak rut activity would allow an early hunt, but still afford protection to dominants.
- In areas where managers feel that the calling and harvesting of prime animals during the main rut period is ethically acceptable and will definitely not jeopardize population health, they may wish to utilize low yield harvests such as archery hunts.

A number of options exist, offering a variety of season combinations which will provide varying degrees of protection to dominant animals during the rut, and may or may

not consider the ethics of calling as part of the final formula. The future of hunting in North America however, may well depend upon the types of biologically and ethically motivated choices that managers make today.

### DEDICATION

This paper is respectfully dedicated to the memory of the late Dr. Anthony Bubenik who led us toward a better understanding of the complex field of moose behavioural physiology.

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