MOOSE HUNTER SHOOTING PROFICIENCY IN ONTARIO

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ABSTRACT: The shooting proficiency of moose hunters was assessed annually (1976-1988) at several Ontario locations. Life-size moose silhouettes were used and no "vital" or "target area" was visible to the shooter from the firing line. Both stationary and moving targets were employed. Shot placement locations were recorded and the presumed effect of hits interpreted to the shooter. Results indicate that as many as 30% of shots taken could result in a wound to the moose with subsequent retrieval of the moose questionable. The relationship of sight types, shooting habits, age of shooter, distance, target movement and hunter experience were evaluated in respect to observed shooting proficiency. A suggested target and shooting procedure are provided.

ALCES VOL. 25 (1989) pp. 98-103

Shooting at life-size moose silhouettes was introduced in Ontario in 1976 as an integral component of voluntary moose hunter education seminars (Timmermann, 1977). These seminars are not part of the mandatory hunter education programme for first-time hunters which began in 1960. The moose hunter seminars are designed specifically to improve moose hunters' knowledge and proficiency including all skills related to moose hunting.

The seminars were initiated to a large degree, by Dr. Tony Bubenik and based on his experiences with hunter education in Germany, Austria and Czechoslovakia. The first Ontario seminars were held in Thunder Bay and have been conducted there almost continually since 1976. During this period 5,500 hunters have participated on a voluntary basis at 45 separate events conducted at 11 different locations within Ontario. However, Ontario has an average 100,000+ residents participating in moose hunting each year.

The objectives of the shooting component of the seminars are:

1. To provide an opportunity to interpret vital areas on moose and promote humane killing.
2. To promote practice and proficiency.
3. To allow for shooter self-evaluation.

No attempt is made to "qualify" or judge the shooters' ability based on his or her performance. Additional objectives or messages were identified as we gained experience with the seminars and shooting events:

4. To impart a message that there is a maximum effective range for each individual shooter depending on ability, sights and calibre.
5. To impress on shooters that shots at moving moose do not usually result in recoverable kills for most hunters.

METHODS

Both the target and shooting procedures have gone through an evolutionary process. We describe here the basic procedure employed and have combined the results of these data where their method of collection are comparable and separately where the sample size is large enough to provide instructive evaluation of proficiency. The shooting events, whose results are reported here, were not designed for the purpose of statistically analyzing shooter proficiency. However, because records were maintained it was felt that a compilation and analysis should be made post-hoc. Hunters provided information under the following categories:

- Age of shooter
- Years of big game hunting experience
- Firearm used - calibre, etc.
- Type of firearm; single shot or repeating
- Type of action; bolt, pump, level, etc.

- Type of sight: aperture (peep sight), open, telescopic
- Did you sight-in your firearm before hunting last season?
- Did you sight-in your firearm before this session?

Shooting at moving moose silhouettes and silhouettes at distances greater than 100 metres was not possible at all locations. Therefore, to compare the total number of shots taken (3,926 from 1,378 shooters) numerous combinations were required in order to assure similarity and consistency of data collection. In all cases the sample size is indicated. For general comparison only shots taken from the standing position at stationary silhouettes at distances of from 80 metres to 100 metres are used except where otherwise noted.

The vital area of the animal was not visible to the shooter from the firing line. The shooter was instructed to select a point of aim based on his or her knowledge of the vital area of moose. After each shot, the hit was located relative to the vital area outlined on the target and recorded on a diagram. An assessment was made by at least 2 experienced hunters concerning the potential effect each shot may have had on a live animal. A mortal shot constituted a hit into the heart, lung or liver area whereas a hit into other non vital areas, including the stomach, legs, neck, etc. was recorded as a wound. Black tape was placed over each recorded shot before proceeding. Upon completion of all shots the results of shooting performance was retained for analysis.

Relationship between sight type, practice, shooter age, target movement, hunting experience and target distance on shooting proficiency was (generally at $P<0.01$) using a 2x2 and 3x3 contingency table analysis.

RESULTS

Participants who attended the shooting events averaged 35 years old and had an average 14 years big game hunting experience.

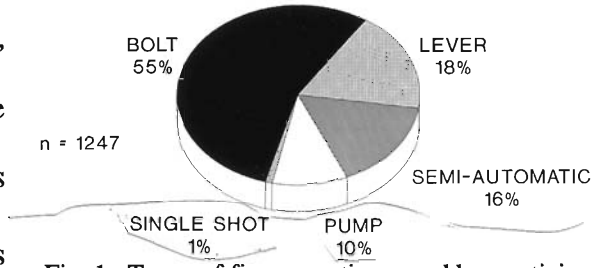

Fig. 1. Types of firearm actions used by participants in moose hunter shooting proficiency test in Ontario, 1976-1988.

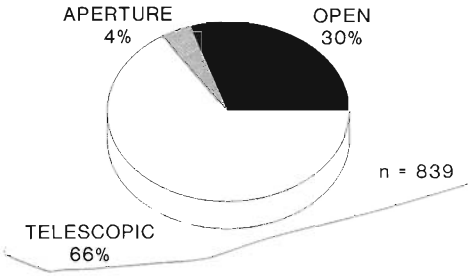

Fig. 2. Sight types used by participant moose hunter shooting proficiency tests in Ontario, 1976-1988.

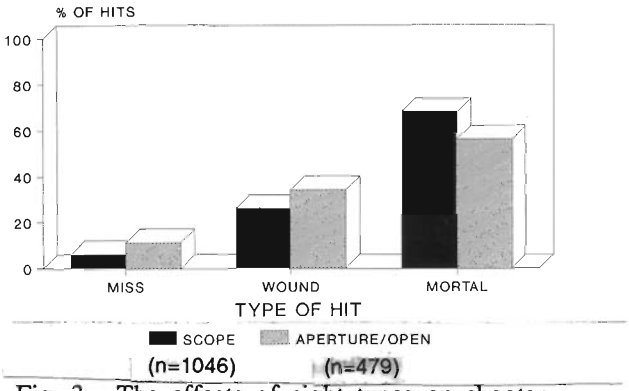

Fig. 3. The effects of sight types on shooter proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

Thirty-nine different calibres of rifles were used by participants and ranged from .58 cal muzzle-loading rifle to .243 Winchester. The most commonly used calibres were the .30-06 Springfield (32%) followed by .308 Winchester (23%), .303 British (16%), .300 Winchester Magnum (9%), and 30-30 Winchester (5%). The most common type of firearm action used were bolt action rifles (Fig. 1). By far the most common type of sight used (66% of participants) was the tele-

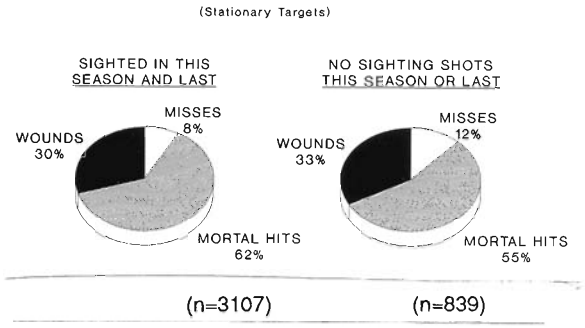

Fig. 4. The effect of practice on shooting proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

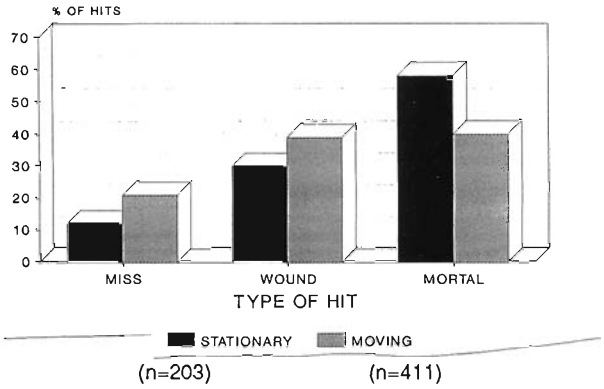

Fig. 6. The effect of target movement on shooter proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

scopic sight (Fig. 2). Examination of the effect of sight type on shooter proficiency (Fig. 3) revealed that shooters who used scoped firearms out- performed those who used open and aperture sights ($P<0.01$).

Figure 4 presents the effect of the shooters' practice habits on proficiency. Those participants who indicated that they shoot prior to each hunting season and before the event under consideration here, made killing or mortal shots (hits to the heart-lung area) with 62% of their shots while those who did not sight their firearm in each year made mortal shots with 55% of their shots. Overall results indicate shooters who presighted their firearms demonstrated a lower ($P<0.01$) level of wounding than those who did not.

The relationship of shooters' age to their shooting proficiency is depicted in Figure 5. Proficiency appears to improve until age 45 where due to factors not investigated, proficiency drops off. Up to age 45 older shooters demonstrated a higher mortal and lower wounding hit frequency ($P<0.01$) than younger hunters.

The effect of target movement showed a considerable difference with shots at stationary targets being most efficient (Fig. 6). Each shooter in this comparison took three shots at the silhouette; one stationary and one with the target moving to the left, and one with the target moving to the right. Mortal shots accounted for 58% with a stationary target and only 40% when the target was moving

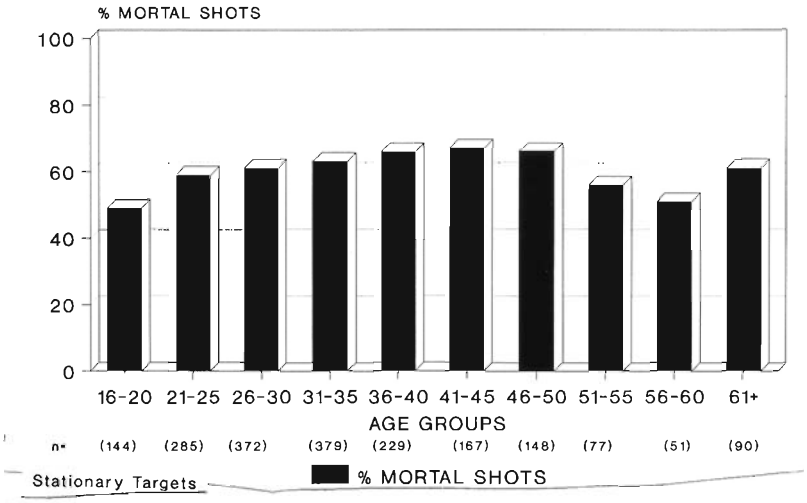

Fig. 5. The effect of shooter age on proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

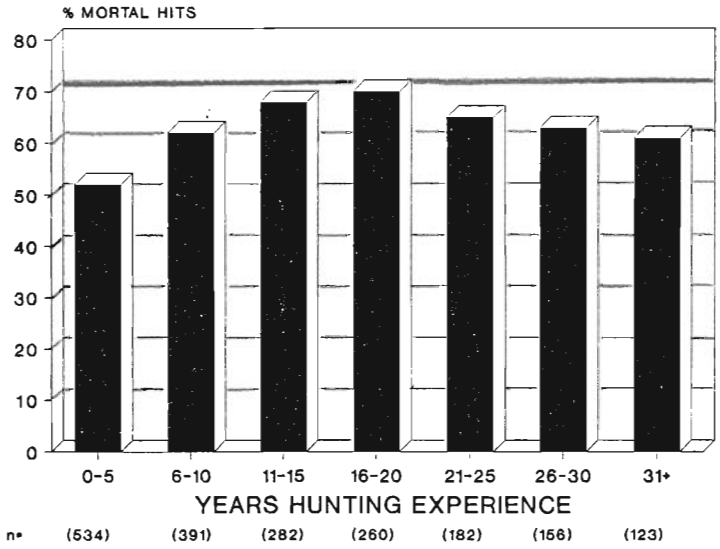

Fig. 7. The effect of hunting experience on shooter proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

($P<0.01$). Shooters also demonstrated a higher ($P<0.01$) level of misses and wounds in moving versus stationary targets.

The years of hunting experience relates to an improvement ($P<0.01$) in the percent of mortal shots up to 16 to 20 years experience (Fig. 7). Target distance affected proficiency, with the highest percent of mortal shots and lowest percent misses being made at 100 yards. Predictably, the poorest ($P<0.01$) percentage shots were made at 300 yards (Fig. 8).

DISCUSSION

The results indicate that choice of sight, shooter practice, shooter age, target movement, hunter experience and target distance all have a measurable and significant effect

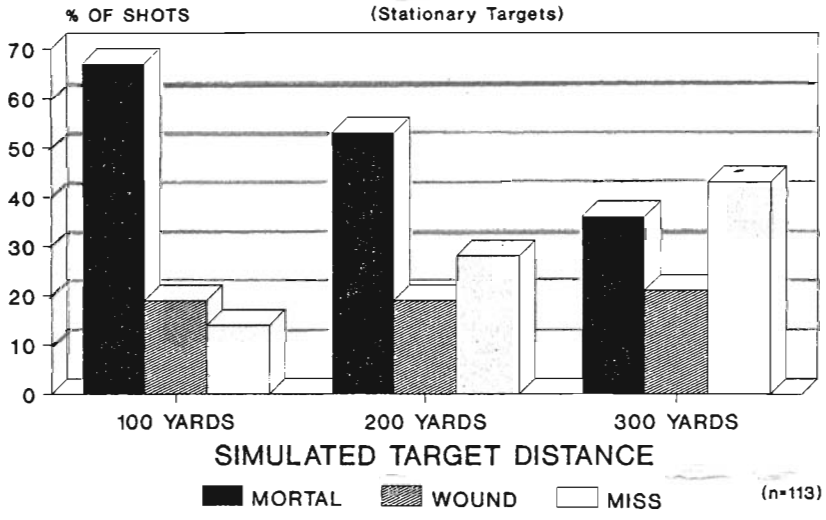

Fig. 8. The effect of target distance on shooter proficiency in moose hunter shooting proficiency tests in Ontario, 1976-1988.

on shooter proficiency. Although not unexpected these results quantify what many hunters and shooting instructors might have told us intuitively. They do however, provide the basis for convincing perspective hunters of the value of practice, sight choice and self restraint. Managers should also be cognizant of the possible wounding loss of moose as indicated by these proficiency data. Fully 30% of the shots taken could have resulted in the death of a moose which may not have been retrieved.

Losses due to wounding are not well documented in Ontario or considered only superficially in calculating allowable harvest. The provincial mail survey, which samples approximately 10% of the licenced moose hunters each year, indicates a reported wounding loss of only 4% (O.M.N.R. 1989). This is considerably lower than what might be expected on the basis of our analysis. It appears that effort spent on interpreting these results to hunters and hunter educators could stimulate and promote practice which would result in greater proficiency and more humane harvesting of moose.

A number of moose silhouettes have been used as well as interpretations of vital areas. Currently we have adopted a design modified from a target prepared by Dr. A.B. Bubenik (Fig. 9). The standard shooting procedure and scoring criteria are also presented here as a suggestion to those interested in providing training and compiling comparable data at other locations:

- life-size bull moose silhouette target
- stationary target
- 3 shot groups from a standing unsupported position
- no vital areas visible from firing line
- 80 metres minimum range, 100 metres maximum
- scoring on basis of mortal shot, wound with possible loss of moose, miss

Ontario, unlike Newfoundland and New Brunswick, does not have legislation which requires shooter proficiency testing of big game hunters (Timmermann, 1977, 1987). Nor does Ontario have sufficient access to shooting ranges which could conveniently serve our widespread hunting public. In Sweden for example there are reportedly 800 shooting ranges where moose hunters can practice and are required to qualify each year prior to hunting (Nilsson, pers. comm. 1984.). If shooter testing becomes mandatory, it will be necessary to provide sufficient range facilities. Improving shooters' proficiency can only improve the ability to manage the harvest of moose and reduce the possibility of inhumane killing or loss of wounded animals.

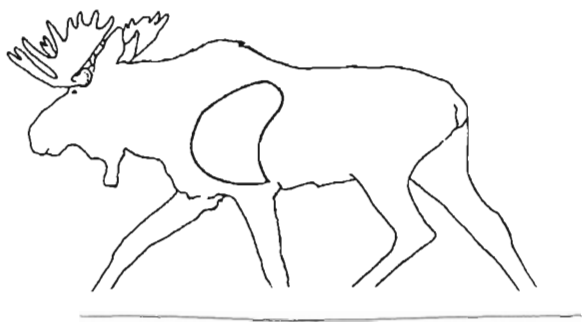

Fig. 9. Standard moose silhouette target used in Ontario for shooter proficiency evaluation (adapted from A. B. Bubenik, Moose Anatomy for the Hunter, 1988,)

ACKNOWLEDGEMENTS

We are indebted to Dr. Tony Bubenik for promoting and encouraging the seminars and events which provide the data for this report and analysis.

We also wish to express our appreciation to the Thunder Bay Fish and Game Association, the Ontario Federation of Anglers and Hunters, the Pembroke Outdoor Sportsmen Club, South Central Ontario Big Game Association, Canadian Pacific Athletic Association Conservation Club, and the Circle A Moose Club for their co- operation and assis-

tance in gathering the data.

We also want to acknowledge the assistance of Celia Cressmen for the compilation and Midge Strickland for statistical analysis of this material.

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