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BIG GAME

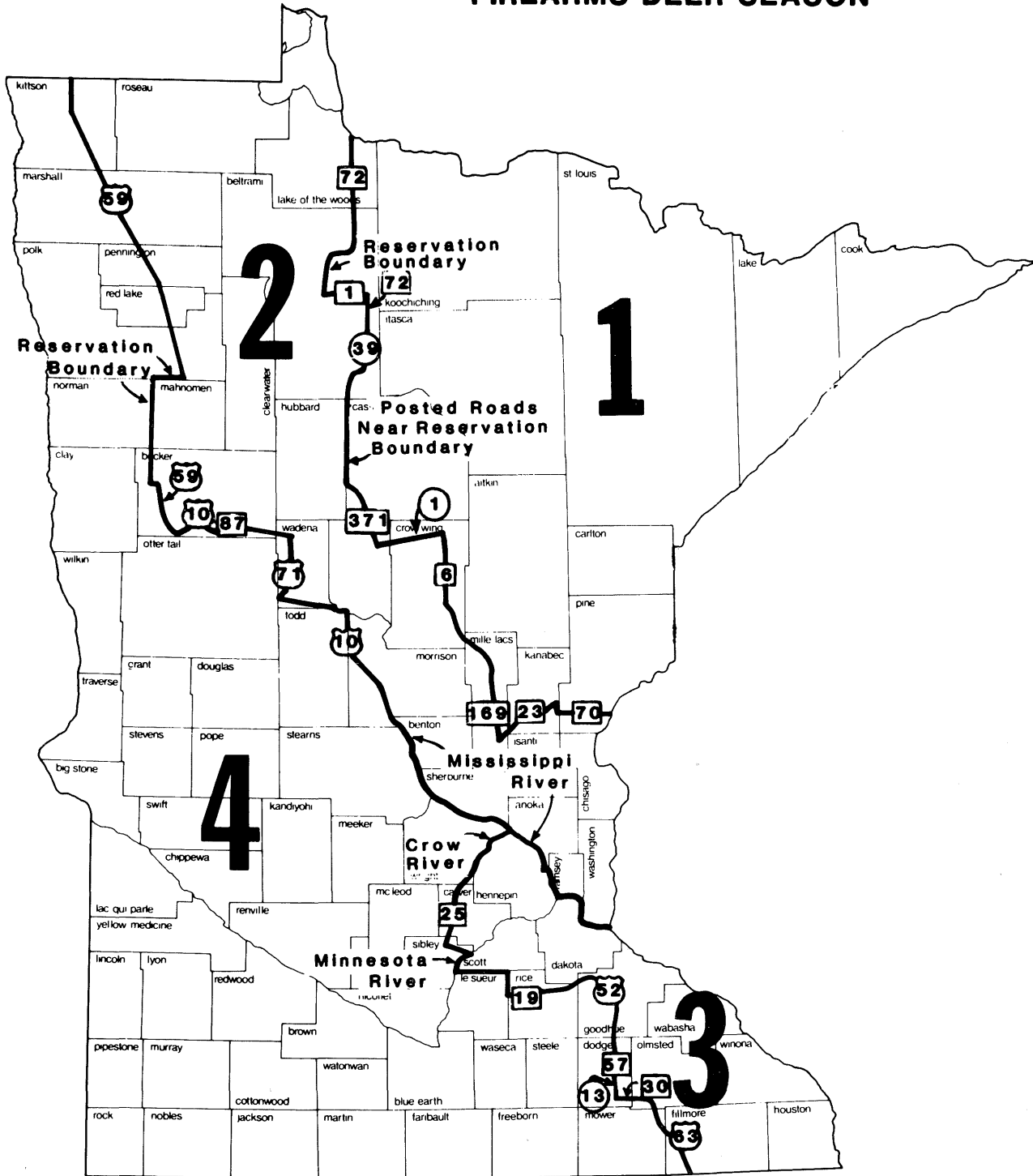
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**Advanced Hunter Education Program
Minnesota Department of Natural Resources**

ZONES AND DATES OF 1984 FIREARMS DEER SEASON



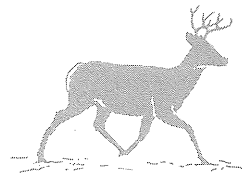


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FOREWORD

The big game booklet was designed to provide you with the most essential and important topics concerning hunting techniques, management, biology and history of white-tailed deer, bear and moose.

The appendix includes a test on deer, tracking and care of game in the woods, field dressing tips for deer and bear, and pointers on handling your black bear trophy.

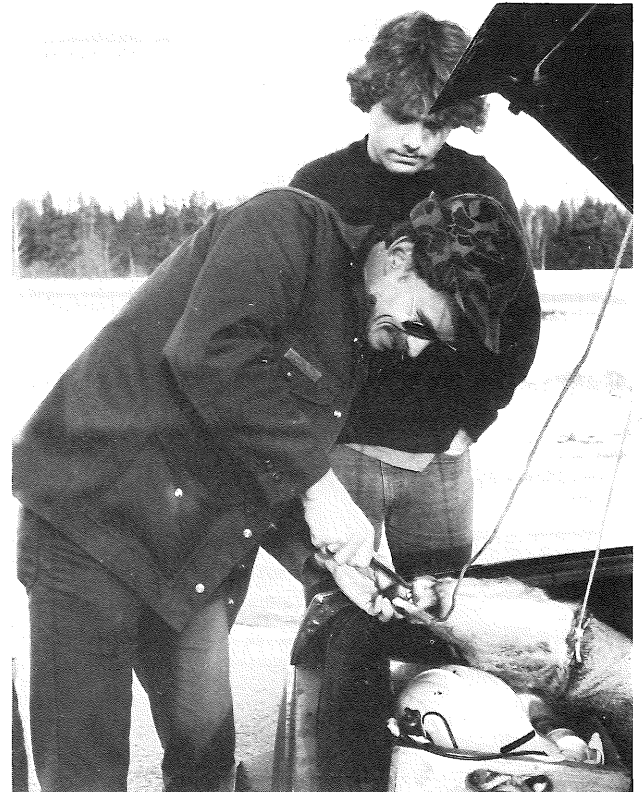
In addition, a bibliography has been included for those of you who want to dig deeper and learn more about your favorite hunting species.

WHITE-TAILED DEER IN MINNESOTA

Generally, deer are not as large as the hunter believes. The back of an adult whitetail is seldom more than waist high to the average man.

Average live weights for Minnesota deer in fall are: bucks — 170 pounds; does — 145 pounds; and fawns about 80 pounds. A deer's weight will vary greatly during the various seasons of a year. Weights decrease during winter and increase in summer. Old deer are generally heavier than younger deer. Questions regarding record weights of deer are not easily answered because there has been no state-wide system of weighing deer and maintaining records. A deer's live weight can be estimated by increasing the field dressed weight by 25 percent.

A thin reddish summer coat is worn by whitetails for about three months. It is replaced by a gray winter coat



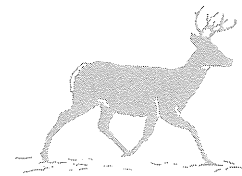
**There are some who can live
without wild things, and some who
cannot.**

**A Sand County Almanac
1949**

in September. The winter hair is longer and stiffer and the individual hairs have enlarged cavities filled with light pitch. The heavy coat provides insulation against snow and cold.

Deer have incisor teeth on the lower jaw only, while the upper jaw has only a tough leathery pad. Molars are specialized for grinding woody stems and grasses. For 20 years, until about 1970, tooth replacement and relative wear of the teeth was the best means of determining a deer's age.

A more reliable method is to take a cross section of the root of an incisor tooth, prepare it by laboratory process, and count the annual rings of cementum. Fawns can be separated from older deer in the fall by



checking the number of cheek teeth. Fawns will have only four cheek teeth (you must check carefully because of the many ridges) whereas adults have six.

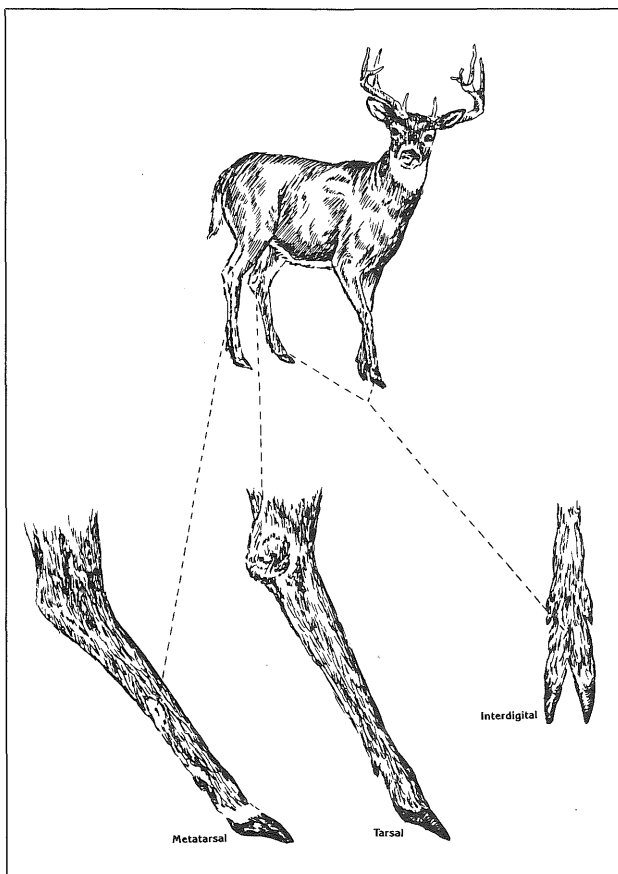
In the fall male fawns can be identified by the small knobs found in the dense hair of the forehead. Occasionally, these knobs will develop enough to project a short distance above the hair. The knobs are the pedicles or bony supports upon which antlers will grow the following spring.

The new growth of the adult antlers begins in late March and continues until late August. As they grow, the antlers are covered with a thin, fuzzy layer of skin full of blood vessels. In September this "velvet" covering dries, peels and falls off.

Most bucks retain their antlers only until the breeding season wanes in December, though some hold them as late as March. The process whereby an antler dies and is shed is somewhat similar to a leaf separating from the twig in autumn.

The glands found on the legs and between the toes of deer are apparently used to communicate a deer's location to other deer by scent for either sexual or territorial purposes.

Deer have been known to make a variety of sounds. Perhaps the best known is the snort or whistle of the adult when alarmed. Bucks often emit grunting sounds when chasing does. The doe employs a soft murmur to



call her young. Both sexes can bellow or bawl in fear or pain. Fawns may emit a shrill bleat when frightened or injured.

The white-tailed buck is polygamous, and is attentive to a particular doe for 32 hours or less before moving on to another receptive female. A few does come into heat as early as late-September, but most are bred in November. The period during which the doe is receptive to the buck is quite short, probably not more than 32 hours. If mating is not successful during the first period of heat, the doe may come in heat again 28 days later. A doe may have as many as five heat cycles if fertilization is not accomplished.

The fawns are born in late May and early June after a gestation period of about 210 days. At birth, fawns average six-to-seven pounds.

Fawn production tends to be higher in agricultural areas of Minnesota because of a supply of more nutritious foods and less severe winters. These factors result in a greater incidence of twins and triplets among older does, and in a 50 percent pregnancy rate among fawns. In forested areas single births and very few pregnant fawns are the rule.

In captivity deer may live longer than 20 years. In the wild, less than 1 percent reach the age of 10. The average life expectancy of a Minnesota white tail is about three years.

THE CASES OF DEER STARVATION

by
Pat Karnes
Group Leader, Big Game Research,
Grand Rapids, Minn. 1978

An understanding of the deer's seasonal metabolic requirements gives us an insight on why deer die of malnutrition. The deer's metabolism is highest in the summer when the quantity and quality of the available food is high. During this period deer may gain weight, but more importantly are lactating, growing antlers and putting themselves into shape for the oncoming breeding season.

During late summer and fall, deer gain weight and store vital nutrients for use in the winter months. Although we normally think only of fat storage in the body, just about anything a deer needs in winter is stored during this period. This includes proteins and minerals as well as energy in the fats. Storage occurs throughout the animal, including fat deposits, muscle and bone.

During January and February, nutritional requirements of deer are minimal. In fact, we have kept all food from penned deer for three weeks in January with little effect upon their metabolism. A further example is seen in deer given free access to food: in mid-winter an adult deer may eat one kilogram or less of food per day compared to, in some cases, five kilograms per day during fall.



The conclusion is that losses to malnutrition generally have very little to do with the weather occurring in the mid-winter months. The more important periods are early winter, when metabolic demands are still relatively high, or early in spring when already depleted deer may be further drained of nutrient stores by increasing metabolic demands before nutritious early plant growth is available. The exact timing of these changes is not precisely known and requires additional research, but the general principles can be applied to over-winter survival.

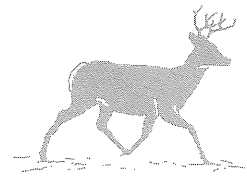
Figure 1. Depicts a graphic representation of the annual cycle of the northern white-tailed deer. It has been likened to a sled ride on a bushy hillside. At the bottom of the hill is death in the form of starvation or malnutrition. The animal reaches this point when all fat reserves have been burned and the subsequent catabolism of protein has reached a level which results in death. Each deer gets just one sled ride each winter. In this analogy, the height at which an animal is able to begin its ride is dependent upon the quantity of body fat it has accumulated in the preceding months.

The accumulation of body fat might be likened to each animal pulling its sled up the hill during the summer and fall months. As will be noted, some deer have heavier sleds (higher energy demands) to pull up the hill than others, and subsequently have a more difficult time accumulating fat deposits throughout this period than do animals with lesser energy requirements. Does with twin fawns, for example, have a higher energy demand upon their bodies than with single or no fawns. Male deer, while not having the demand of lactation during the summer months, do have a load on their fat accumulation sled in the fall of the year when rutting activities result in reduced energy intake, increased activity and energy expenditure, and thus reduced fat-accumulation rate. Fawns have a high energy demand in the form of a rapid growth rate during their first summer and fall. The differential energy demands, fat accumulation rates and subsequent winter survival all vary with sex and age within a population.

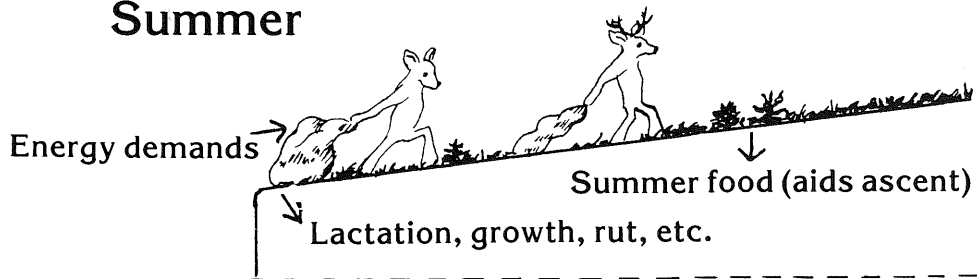
The higher each deer is able to climb up the hillside, prior to the onset of winter, the longer it will be able to ride its sled down, and thus the better its chances of spring arriving before it reaches the bottom of the hill (death). Winter food, in the form of browse, fits into this graphic scheme as brush on the hillside. Food is not able to completely stop the downhill ride (weight loss) but it does serve to slow the sled ride. The greater the quantity of browse, the greater its influence in slowing down weight loss.

For example, the winter of 1977-78 started in northwestern Minnesota with two blizzards in November and a freezing rain in December. This restricted deer movements but, more importantly, caused the deer to literally run out of fuel early due to the unavailability of nutritious grasses and forbs.

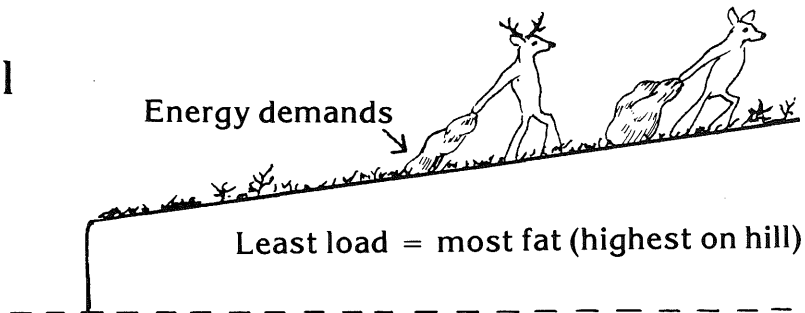
Not all deer die in a severe winter. Some may have greater storage capacity, find better food or cover, or just get the right breaks. An example is that fawns have the smallest reserves and are among the first to succumb. They are followed by older deer. Pregnant does of prime



Summer



Fall



Winter



Spring

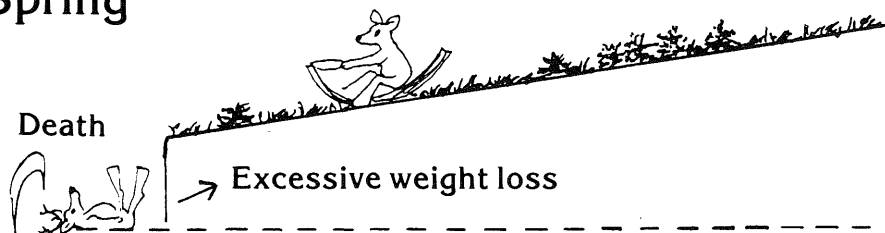


FIGURE 1. An analogy of the yearly body fat cycle with deer (uphill climb represents fat accumulation; downhill slide represents fat catabolism or weight loss).

age are least susceptible, although fetus development may be retarded with fawns born dead or too small to survive.

There also are individual differences among deer in metabolic rate, perhaps due to genetic differences. The control of metabolic rate is through the thyroid gland. The greater the amount of the hormone thyroxine secreted by the thyroid gland, the higher the metabolic rate and the faster nutrient stores are utilized. The thyroxine level varies considerably by season, being highest in summer and lowest in winter. Individual variation in thyroxine levels can be large with some animals from the same area having levels four to five times as high as others. Measurements of the amount of thyroxine in the bloodstream have been made on both penned and wild animals. While the mechanism of thyroid control is complex, the results are very apparent, and higher thyroxine levels correlate well with more rapid weight loss in penned deer.

Severe weather during the early winter and an early-spring period of higher metabolic rates cannot be controlled, but nutritional levels do have implications for management when deer feeding is done. Furnishing browse during a severe winter by bulldozing and hand cutting or similar operations is generally not effective for that winter. The reason is that the deer are in greater need of nutrients than can be provided by most browse.

Bulldozing and cutting will provide good food for the future, however, and are viable management tools. These measures have limited application in emergencies, and should be done on a regular basis to maintain deer habitat. The exception would be when and where the browse provided is of high enough quality to meet the nutrient demands of the emergency situation. Bulldozed trails can provide deer with access to feeding sites, however.

A second form of feeding could be providing farm crops. Although intentions may be good, the quality of feed is highly variable. Hay stored outside has been leached of many nutrients by the time it is fed to deer. In addition to the deer's generally getting an inadequate nutrient level (they generally require a higher level than livestock), other problems can occur when feeding farm crops. For example, feeding grains can cause rumenitis which can kill the deer.

A third form of feeding could be providing pelletized deer ration which is complete in protein, energy, minerals and vitamins. Deer suffering from malnutrition have fully recovered when fed pelletized deer ration. The only problem seems to be the development of diarrhea which clears up in a few days. The balance of nutrients in the pellets assures that the minerals and vitamins are provided which are essential to full utilization of the other nutrients in the food.

Ammonia toxicity may develop in deer on artificial feeds when the nutrient content is too low to permit full conversion of the nitrogenous products to amino acids and proteins. Thus, one of the big dangers in providing artificial foods of unknown quality is the fact that we may actually kill deer with our good intentions.

Another broad implication to management of nutritional knowledge is that starvation losses are

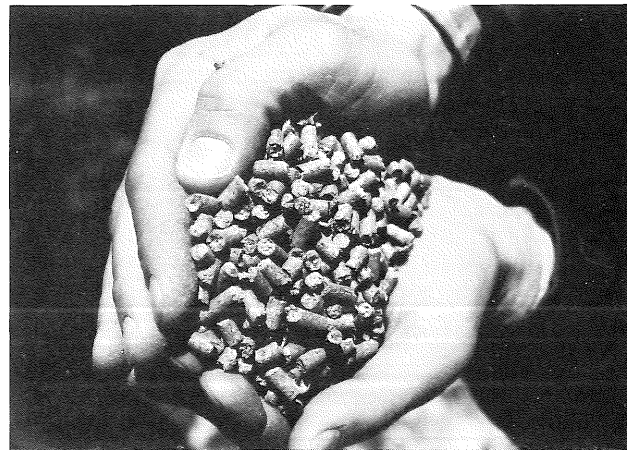


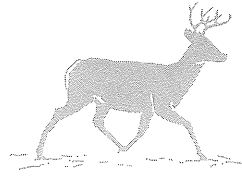
commonly not density dependent. The number of animals lost depends upon the proportion which, through age, sex, or genetic differences, has low storage reserves and high metabolic rates. Thus, if you go into winter with higher deer populations, you are not going to lose a higher percentage of deer; you would lose the same percentage as with a low population. This is contrary to much of the past thinking in deer management, but is being demonstrated across the northern part of the continent every year.

Verme, a Michigan deer biologist, developed a rating scheme for winters taking into account snow depth, snow support, and the cooling power of the environment. The cumulative index for the winter indicates winter severity as it relates to deer and fetal development.

Minnesota biologists use the Winter Severity Index to help determine the necessity of artificially feeding deer. We now understand that deer die because of overly long winters or snow depth, either of which may extend beyond the deer's physiological limits.

The winter of 1983-84 was a year where limited feeding not only took place in northeastern Minnesota, but also in the southern part of the state. Nutritional problems are compounded by the lack of coniferous cover. It has been observed that in open areas such as southern and northwestern Minnesota even healthy deer can die of over-exposure or hypothermia.





FARMLAND DEER MANAGEMENT

by
Larry R. Nelson
Region IV Wildlife Supervisor

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"White Tail," official publication
of Minnesota Deer Hunters Association.

White-tailed deer are adapting very well to life in the farmed portions of Minnesota. Not too many decades ago, deer sightings in most farmland areas were rare. By 1981, however, the farmland areas produced almost half of the statewide deer harvest, accommodated 40 percent of the hunters, and 30 percent of the deer-hunter days.

If farmland areas are to sustain present deer population levels, there are several management problems to address. Although farmland-deer populations experience little starvation during even the most severe winters (except for fawns in isolated instances), depredation on standing corn, open corn cribs, hay stacks, fruit trees, etc., is commonplace. While deer numbers are now higher in farmland areas than in the past, the traditional wintering areas and woodlots (woody cover along streams and isolated woodlots) continue to be converted to other uses. Also, sprouting agricultural crops and fruit trees are now being damaged by deer in the spring.

Future management efforts must include preservation of major deer wintering areas, and provision for



accompanying food plots on state-owned crop land or adjacent private land. Severe winter weather (deep snow) may require emergency feeding (hauling corn or pelletized deer food to a specific problem site), usually to relieve depredation problems but occasionally to eliminate starvation problems.

A plan for addressing farmland deer management problems should include the following:

1. Inventory major traditional deer wintering areas. Locate the areas on a map of Minnesota's farmland area. (A partial inventory for southwestern Minnesota was started a few years ago and could be completed from data collected on annual aerial deer censuses).
2. Identify major deer wintering areas already under public control, such as State parks and Wildlife Management Areas.
3. Determine the number and distribution of major deer wintering areas not presently under public control that is necessary to sustain present deer population levels.



4. Permanently protect the necessary deer wintering areas through fee acquisition, easements, zoning or other methods to allow a better distribution of deer numbers during the winter (Lake Shetek State Park was over-wintered by almost 500 deer during 1981-82). Permanently protecting the wintering areas would allow a substantial reduction in deer numbers at Lake Shetek without reducing the total number of deer.

5. Provide annual food plots on private lands to take care of deer and deer problems in wintering areas where no publicly owned crop land is available. In most cases, private landowners would be paid to establish a standing corn food plot.

6. Haul corn and/or pelletized deer food to specific sites in emergency situations where deer need to be short-stopped to relieve a depredation problem, or where deer are known to be starving. Use corn produced on Wildlife Management Areas until it runs out, then purchase food at the market rate.

7. Call on sportsmen's groups to assist in handling deer problems during severe winters.

8. Design the deer season to keep deer at the desired population goals thus avoiding excessive depredation complaints, but providing hunting opportunity.

NORTHERN MINNESOTA DEER MANAGEMENT

by
Steve Caron
DNR Wildlife Habitat Specialist
Virginia, Minnesota

Goal: More Deer in Northern Minnesota
Understanding the physiology of white-tailed deer enables wildlife managers to improve essential habitat in our forests.

Reprinted with permission of the
"Minnesota Volunteer, Sept./Oct. 1983.

One out of 10 Minnesotans hunt deer. But even those who do not hunt them might agree that deer symbolize freedom and wildness. Simply seeing deer is an enriching experience.

My own interest in deer began as a hunter. As a 14-year-old nimrod, I was totally captivated by my first deer hunt — posting at dawn on the "highline," listening to the hoots and bangs of the deer drive, glimpsing fleeing deer. That hunt is etched in memory. At the time, however, I had little understanding of deer habitat. Deer simply lived in the woods.

In much of Minnesota, woodlands are the plant communities that make up deer habitat. Ecologically, habitat is defined as where an organism lives. Broken down into its basic parts, habitat consists of food, shelter, and water.

Like all wild animals, white-tailed deer exist in an ever-changing environment. Therefore, understanding deer habitat requires insight into deer ecology — how deer function and interact in the ecological community in which they live. Tracing the history of white-tailed deer in north-central and northeastern Minnesota illustrates an essential point: Deer abundance — the number of deer in an area — is directly related to habitat quality.

After the Glacier. The fossil record tells us that, when the last glacier left what is now Minnesota about 10,000 years ago, most of the state was coniferous forest. Slowly, as the climate warmed, this forest retreated northeastward before the advancing prairie from the south and west.

Perhaps 6,000 years ago, our modern white-tailed

deer settled along a band of hardwood forest between the prairie and coniferous forest. This prairie-forest transition zone extended along a line from Roseau County, southeast through Ottertail, Morrison, and Mille Lacs counties, to Chisago County on the Wisconsin border.

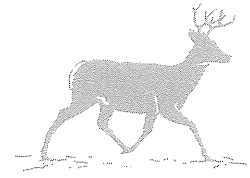
As European immigrants settled in Minnesota in the late 19th century, however, a dramatic change in the forest took place. The northern forests "opened up" — by logging (primarily for red and white pine), by clearing land for farming, and by frequent fires. These activities created a new, second-growth hardwood forest.

This young hardwood forest, together with many, widely-distributed cedar swamps, became ideal habitat for white-tailed deer. As a result, deer populations exploded in northern Minnesota from 1890 to 1930.

Dominant in this new forest was the aspen or popple tree. The importance of aspen to white-tailed deer cannot be overemphasized. Young aspen stands, especially those under 25 years old, are important to deer. They provide abundant, nutritious food. Even though deer feed on aspen, they prefer to feed on other sun-loving shrubs and herbs that grow among young aspen.

Deer seek out and eat new growth, like grass and the leaves, buds, and blossoms of a variety of herbs and shrubs. These plants are rich in protein, carbohydrates, vitamins, and minerals. Some examples of herbs eaten by whitetails are large-leaved aster, goldenrod, wild sarsaparilla, bracken fern, and clover. Important shrubs include bush honeysuckle, mountain maple, and redosier dogwood.

Because white-tailed deer seek out and feed on grass, herbs, and new growth for much of the year, we now view them as grazers rather than browsers. Even though



northern whitetails browse or nip woody vegetation in winter, for much of the year they seek out green vegetation. The axiom, "If it's green, it's eaten," is appropriate for white-tailed deer.

Seasonal Changes. Experiments on penned white-tailed deer in New Hampshire, Michigan, and Minnesota have shown that deer undergo seasonal physiological adjustments in their food habits. These changes are adaptations to plant phenology — different plants and plant parts become available to deer as the seasons change.

In spring, green nutritious plants, such as grass, help deer recover from the rigors of winter. In summer, deer feed heartily during the season of plenty. During fall, green vegetation slowly disappears so that, by winter, deer are left with a diet of woody browse which is lower in nutritional value. By gradually lowering their energy demands, whitetails adjust their metabolism: thus their rate of food intake lessens. In effect, northern whitetails fast in winter.

Because of our knowledge of deer physiology and seasonal food habits, wildlife managers recognize forest or wildlife openings as critical food sources to deer in spring and fall. These one-half to 10-acre grassy "fields" provide nutritious, easily digestible "greens" in spring and a last source of the game food in fall.

High quality deer habitat in northern Minnesota, then, includes thermal cover and associated shrubs (browse) for use in winter, and green vegetation (especially herbs and grasses) for use in spring, summer, and fall. The best producer of deer foods in northern Minnesota? A combination of young aspen forests and forest openings.

Proper Proportions. The goal of deer habitat management is to ensure that these crucial components exist in the proper proportions. When nutritious green

vegetation is available, whitetails go into winter in top shape. Fawns have a better chance of surviving a severe winter, and pregnant does that are fattened up in fall are able to produce more healthy fawns in spring.

In 1980, the Department of Natural Resources Section of Wildlife adapted a method to evaluate the quality of white-tailed deer habitat in our northern forests. By using a computer-summarized forest inventory from DNR Forestry, wildlife specialists are determining the condition to existing habitat within four-square-mile Forest Habitat Compartments and making recommendations for improvements where needed.

The goal for each unit is a composite of vegetation — 45-65 percent shade-intolerant (sun-loving) hardwoods, 10-20 percent conifer to provide winter cover for deer, and five percent forest openings located on upland sites. The aspen component of the hardwood should comprise at least 35 percent of the total forest cover. One fourth of the aspen should be in the sapling stage (not more than 10 years old).

By analyzing each FHC throughout the northern deer range, Area Wildlife Managers can pinpoint habitat deficiencies and then initiate improvements. Habitat improvements can take place through special deer projects that improve forage for deer. Examples: locating and maintaining wildlife openings; using mechanical techniques to knock down or "shear" low quality aspen, and bulldozing or discing to create wildlife openings; and using prescribed burns to improve timber stands and openings.

However, the most effective way to improve deer habitat is the timber sale. With habitat evaluation information on hand, wildlife managers can work with foresters to dove-tail silvicultural goals with habitat improvements. They do this by modifying aspen sales or planning a long-range "checkerboard" pattern of timber harvesting. In this way, the proper mosaic of young and mature aspen is interspersed throughout the northern deer range.

This pattern of timber harvesting is important for several reasons. The primary reason is that white-tailed deer require escape cover (mature timber) within 300 feet. Because of this, deer do not generally use the center of cutovers larger than 20 acres as a food source. By cutting aspen in several parcels rather than in one large cutover, foresters disperse habitat improvement over a large area which benefits more deer. Ruffed grouse and songbirds also benefit more from small block timber sales.

Our new deer habitat program is shifting into high gear. Will it help to build high deer populations — 25 to 30 deer per square mile — in the near future? Frankly, the answer is conditional.

The most important condition is demand for aspen products; they must remain high. We also need cooperation from nature. Deer numbers can't keep building if severe winters beset our northern forests year after year. However, once our habitat program becomes effective over a significant portion of deer range, the effects of a severe winter will be reduced.

Will our deer habitat program succeed? I, for one, am optimistic.

MINNESOTA'S RICH DEER AND DEER HUNTING HISTORY

By
John Ludwig
DNR Research Biologist
and Tom Isley,
Asst. Chief, DNR Wildlife Div.

White-tailed deer were native to Minnesota in pre-settlement times, but their numbers and distribution have increased dramatically since the mid-1800's.

Reprinted with permission of the Minnesota
Deer Classic Record Book 1983

Prior to settlement, deer were present but not common in the prairie areas of Minnesota, somewhat more common in the hardwood forest transition zone running from southeast to northwest through the central part of the state, and were seldom found in the evergreen forests of northern and eastern Minnesota (Figures 1 and 2). Deer invaded the northern part of the state as the mature forests were logged and subsequently burned, and as settlement created openings in the previously dense forest. Secondary successional growth that followed this original logging created excellent deer habitat, and by 1920 deer were fairly common in northern Minnesota.

In the southern part of the state, where deer were originally more abundant, things were somewhat different after settlement. In this part of the state land clearing for farming, and almost continuous hunting for subsistence and markets, reduced deer numbers so that by 1880 they had nearly disappeared. As a result, deer hunting in southern Minnesota was closed in 1924 and remained closed for the next 22 years.

There was no limit on how many deer hunters could take until 1895, although the first constraints were put on the season in 1858 when it was limited to five months (Table 1). It was not until 1911 that hunters were restricted to one deer per licence.

The earliest estimates of the deer population in the state were made in the mid-1930s. Table 2 shows deer population estimates for four different years from 1936 to 1983 for the forest zone and the transition and agricultural zones of the state. These estimates were a result of deer drives, aerial counts and hunting kill figures. The overall deer population declined from 1936 to 1960, due to a 35 percent decline of deer in the northern forest zone. These declines were due primarily to the forests again becoming too mature to provide the

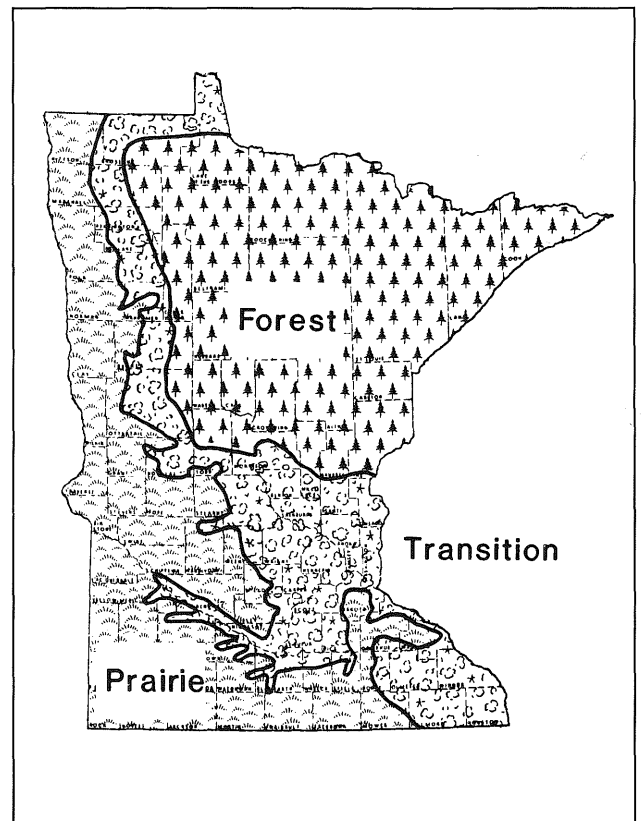


Figure 1 — Original Minnesota Vegetation Zones.

best habitat. As well, hardwood species were being replaced by species such as spruce and balsam. Several severe winters during this period, particularly in 1939, caused severe deer losses.

In the transition and agricultural zones, on the other hand, deer populations showed a steady increase during the 1936-50 period, so that from comprising less than 10 percent of the state herd in 1936, almost 20 percent in 1960 was found in these zones. Now 33 percent of the deer population is in the transition and agricultural zones. These increases were fostered by an abundance of food, including farm crops, generally milder winters, higher productivity and the absence of hunting in much of the agricultural zone from 1922 to 1946.

The first license for big game was required in 1897, for a cost of 25 cents. Reliable records of license sales (Figure 3) and deer harvest (Figure 4) are available only since 1920. Both license sales and deer harvest steadily increased from 1920 through the mid-1960s.

In the early 1920s many sportsmen were in favor of a buck law, prohibiting the killing of does and fawns, in order to increase the deer population. It was probably not necessary then, given the number of hunters (Figure 3). A number of states that used this method to build deer populations, such as Wisconsin, Michigan and Pennsylvania, later ran into problems of overpopulation, overbrowsing and considerable deer losses in severe

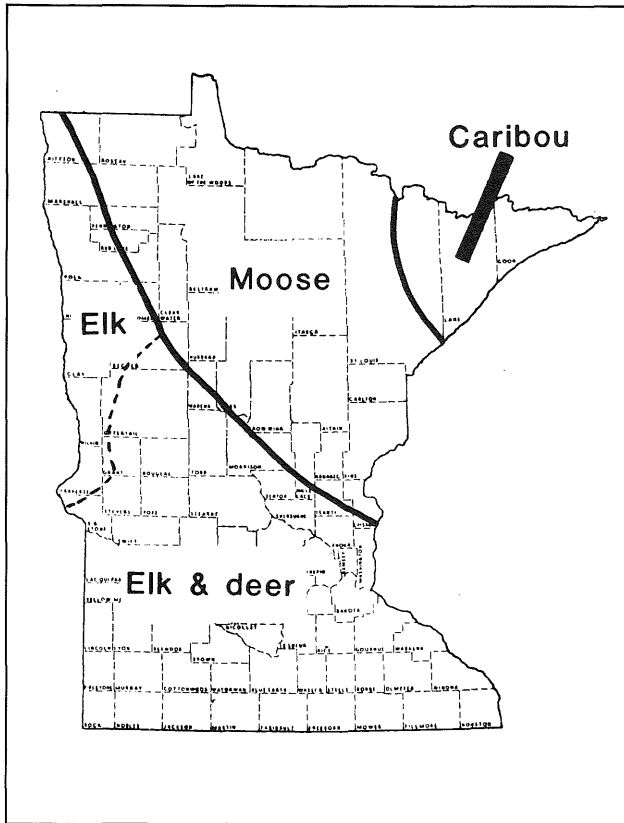
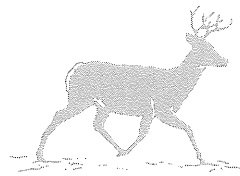


Figure 2 — Diagrammatic distribution of ungulate species in Minnesota prior to 1860.

winters, because they failed to harvest an adequate number of females after they had successfully increased their deer populations.

Instead of a buck law, the Minnesota legislature in 1923 enacted a law that provided for open seasons in even numbered years and closed seasons in odd-numbered years. This may have provided too much protection because in the 1930s and 1940s, there were areas in the north where deer were out of balance with their habitat, overbrowsing was evident, and winter deer losses occurred. The question is whether more deer should have been killed to keep in line with the lack of habitat management (too little cutting and too much fire protection), or whether habitat management should have been practiced to keep up with the deer herd (in an area where they were not native).

At any rate, deer hunters thought everything was just fine during the period of the 1920s through the early 1940s. The harvest showed a gradual increase each year the season was open, and generally 50 percent or more of the hunters were successful. In 1943, the legislature repealed the law authorizing seasons only in even numbered years, but limited the season length to 11 days. In 1945, the season was shortened to nine days.

After World War II a dramatic increase occurred in the number of deer hunters and harvest, except for a closed season in 1950, through the mid-1960s (Figure 3 and 4).

We were heading for trouble, but didn't realize it at the time.

Through the 1950s an increasing number of hunters harvested an increasing number of deer from a declining overall population (Table 2). These were years of generally mild winters. During the 1960s a series of high harvests occurred, but, coupled with some severe winters, this was an overharvest from which the deer population could not recover. The 1960s demonstrated that, while an any-deer season was fine in the 1920s and 1930s with about 50,000 deer hunters in Minnesota, it was no longer satisfactory when the number of hunters was approaching 300,000. This was especially true when the majority of deer lived in an area of declining habitat quality where severe winters were also a problem. After the record 1965 harvest of 127,000 deer, the population and harvest declined rapidly, until the season was closed in 1971.

During 1971, with no deer season, much thought was given to how to control the deer harvest so as to maintain or increase the population. Legislation was sought and obtained to expand the allowable framework. When the innovative 1972 season opened, a hunter in northern and southeastern Minnesota had the choice of any three days in the first half of November or any five days in the last half of the month. The objective was to distribute hunting pressure and reduce the harvest. This type season also allowed hunters to choose their own season; they could hunt early during better weather, or later with a good chance of a "tracking snow".

It soon became obvious that merely spreading out the hunting pressure did not adequately control the harvest, so long as either-sex hunting was still the common practice. The primary problem was an overharvest of does. The first bucks-only zone appeared in part of the north in 1973, and part or all of the northern forest zone was in a bucks-only framework through 1976.

There were problems in the farmland zone of the state as well. After being closed since 1922, the deer population recovered sufficiently so that a four-day hunt was held in 1946. This resulted in an overharvest and five more years of closed seasons. A three-day hunt in 1951 produced another overkill and five more years of closure. From 1956 to 1974 deer hunting was held on the average of one day or two every other year in a patch-work of open and closed areas that changed every year.

Obviously, one-day either-sex hunting in agricultural Minnesota was not working. It was a boom-or-bust proposition that created numerous problems. Deer numbers would climb in a given area, causing greater than normal crop damage, a situation relieved only by the next hunting season. But the every-year changes in open hunting zones (the entire state was open to deer hunting in only nine of 53 years from 1922 to 1974) caused shifts of hunters into the open hunting zones, leading to trespass and other landowner-related problems. Part of the problem was that up until 1975, deer in the farmland zone were looked upon only as a species that had to be controlled periodically, rather than as a species that could be managed on a

sustained-yield basis for the benefit of all concerned.

This all changed in the mid-seventies when deer population management changed. The need for this became obvious during the early 1970s, and in late 1974 a deer management committee was formed within the DNR Section of Wildlife. The following set of deer management objectives was established:

- A. Manage the deer population by maintaining the breeding population at the highest level that the habitat and landowners will tolerate, by:
 1. Reducing the antlered portion of the overwinter population.
 2. Closely regulating the antlerless harvest.
- B. Allow the maximum recreational opportunities tolerated by the deer population while minimizing landowner/hunter conflicts, by:
 1. Having a statewide deer season every year.
 2. Better distributing hunting pressure through the season and across the state.
 3. Providing the opportunity for a choice of experiences.
- C. Have a standardized consistent season framework, by:
 1. Maintaining consistent zone and any-deer quota area boundaries.
 2. Standardizing season length and opening dates for each zone.

It had become obvious that with over 300,000 deer hunters in Minnesota, we could not continue the any-deer hunting of the past and maintain a viable deer population. A choice had to be made to either limit the number of hunters or limit the targets. A survey showed that hunters wanted the opportunity to hunt every year, so limits were aimed at regulating the kill of female deer (A-2 above) the key point of population management, by setting quotas and issuing a certain number of permits for any-deer hunting.

Note, this is not the same as the old buck-laws of some states in the 1920s and '30s, where it was illegal to kill any does. The idea here was to regulate, not eliminate, the killing of female deer. Why? Because they are the

Table 1. Historic Minnesota Deer Season Restrictions, 1858-1945

| Year | Season length* | Season Dates | Limit |
|--------|----------------|--------------|-------|
| 1858 | 5 Mos. | 09/01-01/31 | None |
| 1887 | 1 Mo. | 11/01-11/30 | None |
| 1895 | 1 Mo. | 11/01-11/30 | 5 |
| 1901 | 1 Mo. | 11/01-11/30 | 3 |
| 1905 | 20 days | 11/10-11/30 | 2 |
| 1911 | 21 Days | 11/10-11/30 | 1 |
| 1918** | 22 Days | 11/09-11/30 | 1 |
| 1921** | 5-11 Days | 11/09-11/30 | 1 |
| 1945 | 5-9 Days | 11/09-11/30 | 1 |

* Open seasons and season lengths typically varied between the north and south portions of the state.

** There were eight statewide closures and no statewide seasons between 1918 and 1945.

Table 2. Estimated Deer Populations in Minnesota, 1936-83

| Zone | 1936 | 1939 | 1946 | 1960 | 1983 |
|-----------------------------|---------|---------|---------|---------|---------|
| Northern Forest | 473,000 | 402,000 | 355,000 | 307,000 | 580,000 |
| Transition and Agricultural | 48,000 | 57,000 | 64,000 | 67,000 | 280,000 |
| State Total | 521,000 | 459,000 | 419,000 | 374,000 | 860,000 |

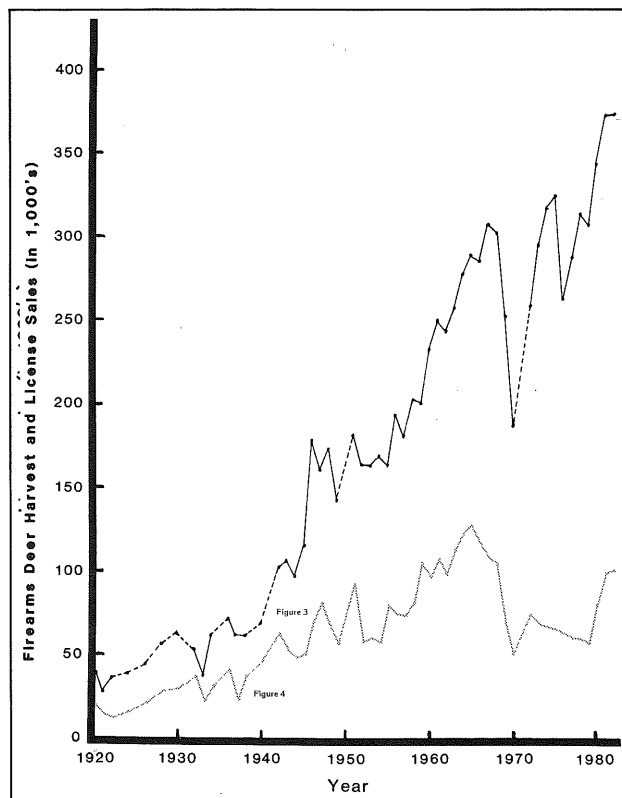
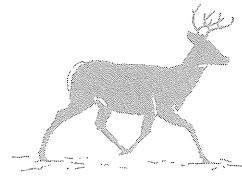


Figure 3 — Minnesota firearms deer license sales, 1920-1982 (no season in 1923, 1925, 1927, 1929, 1931, 1935, 1939, 1941, 1950, 1971).

Figure 4 — Minnesota firearms deer harvest, 1920-1982 (no season in 1923, 1925, 1927, 1929, 1931, 1935, 1939, 1941, 1950, 1971).





important reproductive portion of the population. Just as any cattle farmer can tell you, he does not need a bull for every cow in his pasture to maintain a productive herd, the deer population will be higher in fall the greater the proportion of females in the breeding and following spring population (Figure 5). The old any-sex season had been maintaining a 48 bucks: 52 does sex ratio.

So, in 1976 (after a small trial season in 1975) deer population management changed in Minnesota, with the regulation of the antlerless harvest by quota. Only 5,000 any-deer permits were available that first year. This season format met with some opposition from hunters the first few years, with comments that so many bucks would be killed there would be none left to breed; too many deer would be killed illegally; and hunters did not want to be limited to shooting bucks, etc. A lot of meetings were spent explaining the advantages and expected results of the new season format, and hunters were asked to "bear with us a few years to see the results."

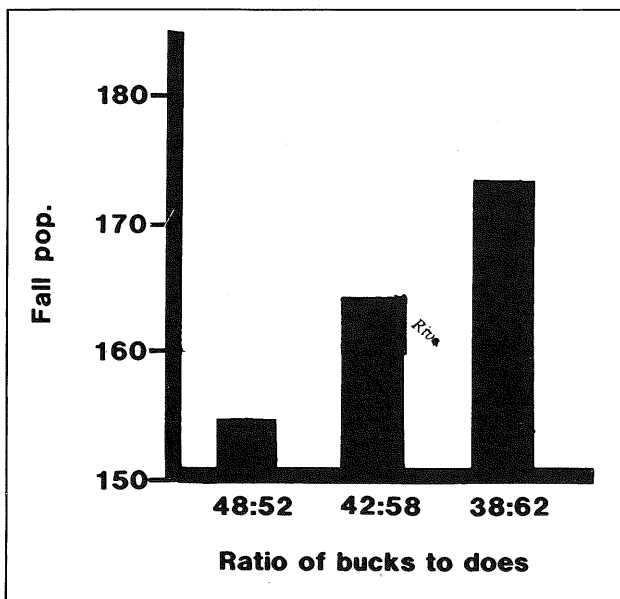
What has happened? Outstanding success, perhaps exceeding even some of our expectations. Since 1976, the deer population in Minnesota has more than doubled while we had an unprecedented eight consecutive open seasons of at least four days of hunting in the agricultural area. This latter point is important because legal hunting mortality for deer was and is the greatest mortality factor in the farmland zone (Table 3). The trend in road-killed deer in the farmland zone (Figure 6) is a good indicator of what is happening to the deer

units (Figure 8) called DMUs. Goals have been established for each of the units and they are shown in relation to the estimated 1983 population in Table 5. Farmland unit populations have reached their goals and the forest units are approaching their goals.

Table 3. Causes and Mortality Rates of Minnesota, Farmland Deer

| Cause | % of total mortality |
|-----------------|----------------------|
| Legal hunting | |
| Firearms | 47 |
| Archery | 4 |
| Crippling loss | 11 |
| Illegal hunting | 20 |
| Car kills | 11 |
| Other | |
| Mowers | 2 |
| Dogs | 2 |
| Miscellaneous | 3 |
| Total | 100 |

The forest DMUs have shown increases over the 12 deer per square mile estimated in most units in the mid-1970s. Deer in the north have higher densities, and a greater proportion of Minnesota's deer are still found there. In the farmland zone deer can be, and are, harvested at a higher rate and this zone contributes a



population. We have been successful in shifting the sex ratio so that populations are comprised of about 41 percent males in the farmland and 42 percent males in the forest areas of the state. Productivity is at least as high as during the old any-sex seasons (Table 4).

The state has been divided into deer management

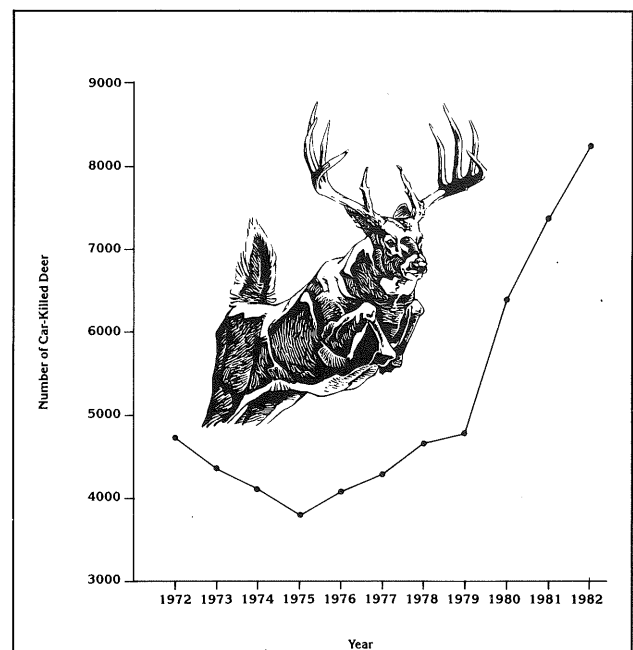


Figure 6 — Number of car-killed deer in farland Minnesota, 1972-1982.

greater proportion of the deer kill in recent years (Figure 7). For example, if more than five percent of all the females are taken from a northern population, no growth in the herd will result, while in the farmland zones 18 percent of the females can be taken and a stable population will result. Deer in the farming areas have a high reproductive rate (Table 6), excellent nutrition and suffer less from severe winters.

In 1983, it is estimated there were 580,000 in the northern forest areas and 280,000 deer in farmland (agricultural and transition zones). A comparison of Table 2 shows a dramatic turnaround in Minnesota deer populations, due primarily to the season framework and population management started in 1976. Compared to the 5,000 any-deer permits available in 1976, there were 156,350 available in 1983, and since early spring of 1983, we expected a record Minnesota harvest of probably 150,000-plus whitetails.

The percent season format emphasis on bucks has caused a few changes in the population in terms of trophy hunting. Shooting enough bucks to alter the sex ratio has created a younger buck population (Table 7). Instead of about 34 percent of the bucks being 3½ years old or older, only about 17 percent are at present. But since populations have essentially doubled, this means

Table 4. Productivity of Minnesota Farmland Deer, 1972-1983

| Parameter | Old Season* | | New Season* | |
|-------------|-------------|---------|-------------|--|
| | 1972-75 | 1977-80 | 1981-83 | |
| % pregnant | | | | |
| Fawns | 41 | 47 | 53 | |
| Yearlings | 92 | 92 | 92 | |
| Adults | 97 | 97 | 98 | |
| Overall | 76 | 77 | 78 | |
| Fetuses/doe | | | | |
| Fawns | 0.43 | 0.54 | 0.60 | |
| Yearlings | 1.48 | 1.50 | 1.62 | |
| Adults | 1.80 | 1.86 | 1.91 | |
| Overall | 1.25 | 1.30 | 1.39 | |

* Seasons from 1972-75 allowed primarily either-sex hunting; since then seasons have allowed taking of legal bucks, or antlerless deer by permit.

| | | | |
|-------------|----|-----------|----|
| Superior | | | |
| West | — | 15 (1982) | 25 |
| Central | — | 16 (1982) | 20 |
| East | — | 1 | 5 |
| Bemidji | — | 20 | 27 |
| Rainy River | | | |
| West | 17 | 14 (1982) | 17 |
| Central | 10 | 11 | 17 |
| East | 12 | 18 | 17 |

* Forest deer densities are calculated to one less significant digit because of higher densities and differences in estimation procedures.

there are just about as many deer that old in terms of numbers, but you only see them half as often in relation to seeing other deer. A look at the trophies listed in this book shows there is no lack of trophies. Just take a look at how many of the top heads have been taken since 1976.

Deer population management and season format seems to be in great shape in Minnesota. We have met our management objectives outlined earlier, have possibly the highest deer population in the history of the state and expect to set a record harvest in 1983, and are still getting an adequate number of trophies. With increased habitat management efforts, the future reveals no dark clouds. Do not look for any drastic changes in terms of seasons ("If it ain't broke, don't fix it!"). We see no reason that Minnesota's 400,000-plus deer hunters cannot enjoy harvests of 150,000-plus white-tails for the foreseeable future.

| | | |
|----------------|------------------------------|---------|
| 1983 Harvest — | Registered | 139,086 |
| | Unregistered estimated . . . | 13,900 |
| | Estimated total | 152,986 |
| 1984 Harvest — | Slightly less than 1983 | |

Table 5. Minnesota Spring Deer Populations, 1977 and 1983, and Density Goals (established in 1980)

| Sub-DMU | Deer Per Square Mile* | | |
|------------|-----------------------|-----------|------|
| | 1977 | 1983 | Goal |
| Red River | 1.1 | 2.1 | 1.6 |
| Agassiz | 3.5 | 5.7 | 6.5 |
| Big Woods | | | |
| North | 3.4 | 4.1 | 4.1 |
| Central | 2.3 | 5.9 | 5.9 |
| Metro | 2.0 | 2.2 | 2.2 |
| SE | 2.9 | 7.5 | 6.8 |
| Prairie | | | |
| North | 1.1 | 2.2 | 1.5 |
| River | 1.0 | 2.6 | 2.2 |
| SW | 0.8 | 1.9 | 1.3 |
| SE | 0.7 | 1.6 | 1.2 |
| Itasca | | | |
| NW | 17 | 22 (1982) | 27 |
| SW | 9 | 21 | 22 |
| NE | 17 | 14 (1982) | 27 |
| SE | 11 | 11 (1982) | 22 |
| Mille Lacs | | | |
| West | 13 | 18 (1982) | 27 |
| Central | 12 | 16 | 27 |
| East | 9 | 16 | 22 |

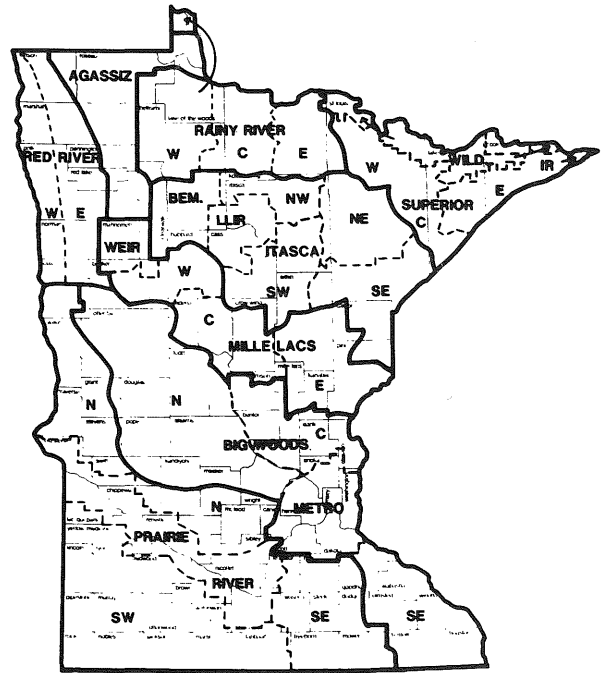
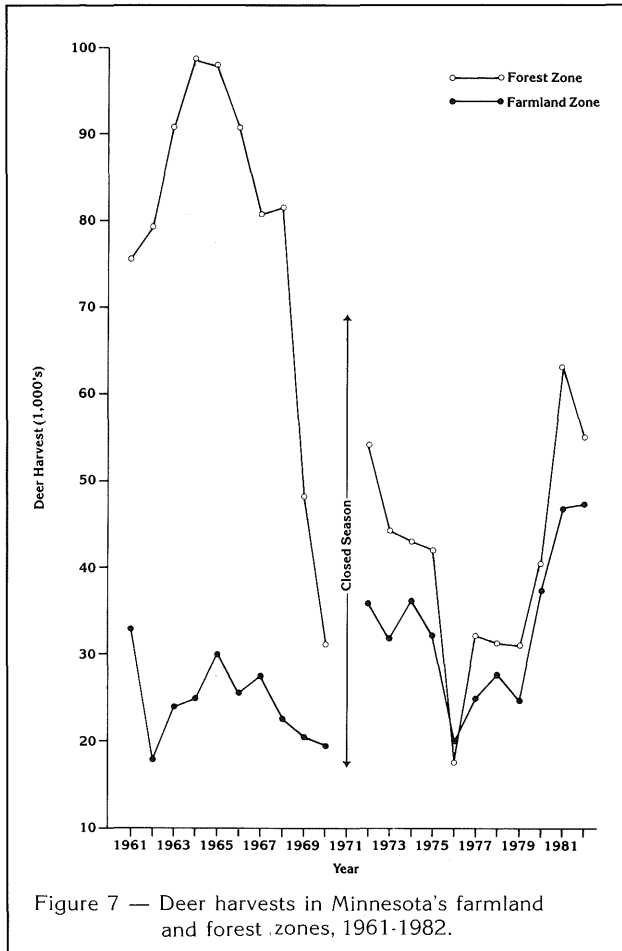
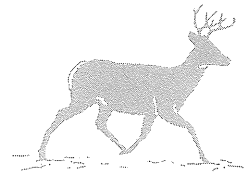


Table 6. Reproductive Rates of Minnesota Deer in the Forest and Farmland Zones

| Age of Doe | Percent pregnant | | Fetuses Per Doe | |
|-------------------|------------------|----------|-----------------|----------|
| | Forest | Farmland | Forest | Farmland |
| Fawn (0.5 yr) | 9 | 47 | 0.09 | 0.54 |
| Yearling (1.5 yr) | 84 | 92 | 1.25 | 1.50 |
| Adult (2.5 yr +) | 93 | 97 | 1.70 | 1.86 |
| Add does | 63 | 77 | 1.07 | 1.30 |
| Net productivity* | | | 0.70 | 1.15 |

* Net productivity = number of fawns which survive until fall/number of does in spring population.

Table 7. Percent of Bucks in Each Age Class Under Various Sex Ratios

| Age Class | Male: Female Ratio | | |
|-----------|--------------------|-------|-------|
| | 18:52 | 40:60 | 38:62 |
| 1 1/2 | 43 | 60 | 65 |
| 2 1/2 | 23 | 23 | 22 |
| 3 1/2 + | 34 | 17 | 13 |
| Total | 100 | 100 | 100 |

“The deer is the ultimate big game in most states, where it is the biggest, wariest, and most prized of wildlife. . . (Deer) embody the essence of quality of freedom within quality environment.”

— John Madson, “Why Hunt Deer?” 1971 Symposium on White-tailed Deer in Minnesota.

MINNESOTA LAWS AND REGULATIONS

Laws Most Frequently Broken by Deer Hunters

A. Hunting Method Restriction

IT IS UNLAWFUL — To take deer or moose from any artificial scaffold, platform or other construction higher than nine feet above the ground. The height restriction does not apply to portable stands that are chained, bolted, clamped or tied with rope. On Wildlife Management Areas only portable stands may be used, and they must not be left overnight.

IT IS UNLAWFUL —

- To take any wild animal with the use of a two-way radio, except they may be used to take unprotected wild animals by permit.
- To carry any firearm while hunting big game with bow and arrow.
- To shoot any wild animal from a motor vehicle except by disabled persons possessing a permit.

B. Regulations for 'Party' Hunting

1. A party is any group of two or more licensed deer hunters all of whom are afield hunting together at the same time all using firearms or all using bow and arrow. Therefore, a mixed weapons group would be two separate parties.
2. Any member of a party may kill a legal buck for any other member of the party who has an unused tag. Any member of a party may tag a legal buck killed by any other member of the party.
3. Antlerless deer may be shot or shot at only by party members licensed to take antlerless deer. Antlerless deer may be tagged only by party members licensed to take antlerless deer.

C. Wanton Waste

Except as expressly permitted, no person shall wantonly waste or destroy any usable part of any protected wild animal.

D. Transporting Arms

Except for a handgun carried in compliance with MS 624.714 and 624.715, it is unlawful — to transport any firearm including muzzleloading firearms in a motor vehicle or airplane or snowmobile unless the firearm is unloaded in both barrels and magazine and contained in a gun case expressly made for that purpose which is fully enclosed by being zipped, snapped, buckled, tied or otherwise fastened, with no portion of the firearm exposed, or the firearm is unloaded and in the trunk of the car with the trunk door closed.

A muzzleloading firearm with a flintlock ignition is fully unloaded if it has no priming powder in any

pan and a muzzleloading firearm with percussion ignition is fully unloaded if it has no percussion cap on any nipple.

IT IS UNLAWFUL — To transport a bow and arrow in a motor vehicle, airplane or snowmobile unless unstrung or completely contained in a case or contained in the trunk of the car with the trunk door closed.

E. Shooting Hours and Casing Law

Shooting hours — one-half hour before sunrise to sunset. Note: All licensed big game hunters who are hunting with bow and arrow shall have their bows unstrung or cased during the time they are licensed to take big game while in the field between 30 minutes after the close of shooting hours and 30 minutes before the start of shooting hours, daily. The 30-minute period before and after shooting hours is not extra hunting time. No licensed bow hunter shall occupy any elevated deer stand between sunset and one hour before sunrise.

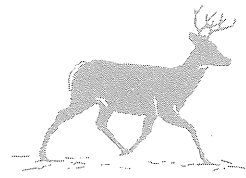
F. Tagging and Transporting Deer

Affixing of Seals: No deer or moose taken in this state shall be transported or possessed unless the locking seal issued with the license and bearing the license number of the owner and the year of its issue has been affixed to its carcass between the tendon and the bone and around the bone of the leg so that such seal cannot be removed without breaking the lock. The seal must be placed and locked at the time the deer or moose is brought into any hunting camp, dwelling, farm yard, or other place of abode of any kind occupied overnight, or before being placed wholly or partially on a motor vehicle of any kind, or upon a conveyance towed by a motor vehicle of any kind. See separate regulations for bear.

Transportation of Deer: A resident may transport, only within the boundaries of the state, during his individual open season and the next following two days, one deer which has been lawfully taken and possessed, and may transport the head or hide of such deer for mounting or tanning purposes to a point within or without the state. When such deer is transported by other than common carrier, the licensee must accompany such deer, except as provided below:

NEW FOR 1984

A big game animal which has been registered by the licensee in accordance with requirements established by the commissioner may be transported by the most direct route from one location to another by a person other than the licensee, provided there is a tag attached to the animal marked in ink containing: 1) the address, license number, and signature of the licensee; and 2) the locations from which and to which the animal is being transported.



Note: All deer must be transported so that inspection by enforcement officers is readily accomplished.

G. Safety Provisions.

1. IT IS UNLAWFUL — to hunt, trap, or assist therein, in any zone open for the taking of deer with the use of firearms during such open seasons, unless the visible portion of the hunters or trappers cap and outer garments, above the waist excluding the sleeves if any and excluding gloves shall be BRIGHT RED OR BLAZE ORANGE or covered therewith. Blaze orange includes a camouflage pattern of at least 50 percent blaze orange within each foot square. The State law that requires all hunters and trappers to wear red or blaze orange during an open firearms deer season is not suspended in those areas where the discharge of a firearm is restricted by local ordinance.
2. IT IS UNLAWFUL —
 - To discharge any firearm or bow and arrow upon, over or across any improved public highway at any big animal, or when within the limits of the right-of-way of any improved public road.
 - To hunt protected wild animals with firearms or bow and arrow while visibly intoxicated, under the influence of narcotics, or if a habitual user of narcotics.
3. Additional Shining Law
SHINING LAW-IN EFFECT ALL YEAR — while in possession of a firearm, bow and arrow, or a crossbow.

MS 100.29 subd. 10 provides that it is unlawful to throw or cast the rays of a spotlight, headlight, or other artificial light on any highway, or in any field, woodland, or forest for the purpose of spotting, locating, or taking any wild animal while having in possession any firearm, bow and arrow, or other implement whereby big game could be killed, unless guns and bows are unloaded and unstrung and encased and contained in the trunk of the car with the trunk door closed. If the vehicle has no trunk, the firearm or bow must be placed in the rearmost location of the vehicle.

NEW ADDITIONAL SHINING LAW — In effect September 1 to December 31 each year, whether or not in possession of a weapon.

MS 100.29, subd. 9a provides that between the hours of 10 p.m. and 6 a.m. from September 1 to December 31, it is unlawful to cast the rays of a spotlight, headlight, or other artificial light in any field, woodland, or forest for the purpose of spotting, locating, or taking any wild animal

except for taking raccoon in accordance with the provisions of MSA 100.29 subd. 10.

It is not violation of this subdivision for any person to carry out any agricultural, occupational or recreational practice, including snowmobiling, which is not related to spotting, locating or taking any wild animal.

TIP

The Problem: In many states, illegal killing of fish and wildlife—poaching—has become a serious problem. The Minnesota Department of Natural Resources estimates, for example, that the accidental and illegal kill of white-tailed deer may be more than one-half of the annual harvest by licensed hunters.

Last year, licensed firearms and bow-and-arrow hunters harvested some 84,000 deer in the state. Let's say the value of each Minnesota whitetail was only \$600 (a Washington study ascribed a \$1,200 value per deer in a recent study), then Minnesota's economic loss to poaching could be projected to \$25 million or more!

This enormous loss does not include moose, waterfowl, fish, pheasants, grouse, and other game birds, nor a significant number of protected species.

Turn In Poachers is a grassroots conservation Movement. TIP, Inc. is a non-profit organization formed by concerned conservationists who are tired of putting up with criminals who persist in stealing from our wild treasury of fish and wildlife.

TIP is patterned after similar efforts in New Mexico and Colorado and to Crime Stoppers' programs in many American cities. Basically, TIP encourages Minnesotans to make anonymous reports of fish and wildlife violations for a reward of hard cash.





How TIP Works: Anyone wishing to report a game and fish law violation may call the toll free number 1-800-652-9039 or, in the seven-county metropolitan area, 297-3999. To protect the caller's anonymity, he or she is assigned a code number to use when communicating with the DNR's Division of Enforcement.

Information provided by the caller is recorded on a numbered form which is sent to the conservation officer nearest the violation. If the tip leads to an arrest, the investigating CO returns the form to TIP, Inc. via the Enforcement Division headquarters in St. Paul.

Each tipster will be told to watch local newspapers for announcement of an arrest. Once he reads of it, he can call the same toll-free number or metro number, identify himself by the code number, and make arrangements for the reward to be paid.

TIP Rewards: Rewards paid to tipsters fall into three categories: \$100 minimum for small game, fish, and non-game species violations; \$250 minimum—for big game and endangered species; and up to \$1,000 maximum—for violations such as large numbers of animals taken illegally or a commercial poaching venture.

Targets of TIP: TIP is aimed at controlling the persistent poacher and the poaching rings that exist in Minnesota. In other words, TIP is out to get the big guys. However, no leads will be turned down. If a call is received of hunters shooting too many ducks, the report will probably be pursued. Remember, a violation is a violation.

Another point to remember is that the poacher is a criminal. We must be careful not to stereotype the



poacher as a poor landowner, forced to harvest wild game to feed his family. The truth is, putting food on the table is rarely the motivation of the poacher.

Many poachers are convicted felons with a blatant disregard for the law. In fact, poachers may be among the cruelest of criminals. They kill wildlife any time or place and by heinous methods, from leg snares to wire nooses that slowly strangle a luckless deer.

The foremost concern of the poacher is to avoid getting caught. If he cripples a deer while spotlighting at night, he will simply leave it to find another animal that he can kill quickly.

You Can Help: TIP will work only if the public supports this innovative program. Support must come in two ways. First, citizens must be willing to make anonymous tips to stop game and fish lawbreakers.

Just as important to the future of TIP is money. TIP is not an enforcement arm of big government. It is a private, non-profit foundation complete with a board of directors made up of citizens throughout Minnesota. And, like any foundation, it survives primarily on donations. Three types of memberships are available.

- Associate — \$10
- Sustaining — \$100
- Sponsoring — \$500

If you want to help TIP handcuff illegal killing of fish and wildlife, send your membership to TIP, Inc., 500 Lafayette Road, St. Paul, MN 55146. TIP numbers are Toll Free: 1-800-652-9093 and Metro Area: 297-3999.



MINNESOTA DEER HUNTING TECHNIQUES

by
Dick Anderson
Statewide Coord., Minnesota
Advanced Hunter Program
and **Chuck Vukonich**,
Biological Technician, U.S.
Fish and Wildlife Service

Outdoor writers across the nation have written an abundance of articles on how to outsmart and bag the wily whitetail. They would usually discuss some sort of trick that was guaranteed to take deer. These gimmicks (as they turned out to be) resulted in many unsuccessful, frustrated hunters.

To bag a whitetail in Minnesota all that is really necessary is to first develop a positive mental attitude, gain knowledge of deer behavior, make plans by preseason scouting, and be persistent. If all these things have been done before opening day, Minnesota hunters can outsmart the whitetail at any game he wants to play. Why? Because we as hunters have the ability to reason and the whitetail does not.

The most common hunting methods employed in Minnesota include:

- Preseason scouting
- Deer stands
- Deer "drives"
- Still hunting
- Tracking

Let's take a closer look at each tactic.

A. Preseason Scouting

First and foremost is scouting your hunting area before the archery or firearm season to familiarize yourself with the area. It is a time to identify travel lanes from feeding to bedding areas. You can learn where and what the deer are feeding on, and recognize "safety zones" — where the deer go when hunting pressure develops.

The wise hunter will also keep in mind the general hunting pressure of the area. Prescouting should give him a good idea where others in the area will be hunting. By scouting he will learn which areas the deer are using, the he may be able to identify which areas the deer will use for cover.

Any cutting of shooting lanes or altering cover should be done several weeks prior to the hunting season. The deer will become wary and avoid the area for awhile. One final thing—keep those scouting trips as short as possible. Spending a lot of time in the woods prior to the season opener will put the whitetail on "alert" by the time hunting season rolls around. Properly planned prescouting will be time well spent and should result in antlered dividends.

B. Stand Selection and Hunting Technique

In Minnesota, stand hunting is without a doubt the most successful method of hunting deer. A well-situated stand will consistently produce deer for the prudent hunter. Perhaps the most important factor in stand construction and placement is comfort to the hunter. A comfortable stand allows the hunter to stay put for long periods of time with the least amount of motion caused by fatigue. A hunter perched in a cozy stand may be able to succeed in overcoming the sharp senses of the whitetail.

Always approach your stand very cautiously. Be as quiet as you can and walk slowly. The objective is to reach your stand undetected by the deer in your area. Never work up a sweat in your trip to the stand. If there is one dead giveaway to the deer as to your presence in the woods, this is it. Deer can filter the human scent from the air very easily. They will pinpoint your stand location and avoid passing in that direction every time.

There is another reason to avoid sweating when hunting deer. Damp clothing acts like a wick and causes valuable body heat to be lost rapidly. If a hunter on stand continues to lose heat because of sweating, he will soon begin to shiver. A shivering hunter will be unable to stay motionless and his movements will alert the deer and draw their attention. More importantly, uncontrolled shivering marks the first stages of hypothermia — rapid loss of body heat. The hunter could be in real danger if these symptoms are not heeded. Those who sweat are usually off their stands by 8:30-9:00 on cold November mornings. It is the dry, comfortable hunter who benefits from their untimely departure. There may be some truth to the old saying that the hunter who sweats is not worth his "salt."

It's also wise to stay on your stand during the key hunting periods. These times include sunrise, sunset and midmorning when many hunters start to move to stay warm or to avoid boredom. Lunchtime is obviously another key time because hungry hunters are heading for sandwiches and hot coffee. You in your comfortable stand with thermos bottle along will be able to stay put as the others chase the deer to you.

Let's now examine each of the deer's four senses to see how they can and will affect your hunting success.



1. Sense of Smell

Deer possess an acute sense of smell. They are able to sift the odors in the woods and separate the safe, familiar ones from those signalling danger. Wind direction and air currents must be taken into consideration when selecting a stand site. It's good to remember that November mornings as a rule are cool and the hunter's scent hugs the ground. As the temperature rises, the warmed air rises carrying scents away from the ground, dissolving them into the atmosphere. Wind, like air currents, will also break up odors and carry them aloft, and away from the deer's fine-tuned nostrils. Often this breakup of odors occurs well within the shooting range of a deer passing your stand. Much has also been written about artificial cover scents or attractant lures. These include skunk scent, sweet apple scent, and the wide array of doe-in-heat and glandular scents. Most artificial lures probably do more to alert deer by attracting attention to your location than they do to draw them within shooting range.

2. Sense of Sight

Deer also have extremely good eyesight to be sure. Generally speaking though, they have a difficult time picking out motionless objects or those with a varied or broken background. Avoid picking a stand near a skyline or one with a light background. If there is one thing that will put fear into a whitetail, it is the human silhouette. Whether or not a deer is colorblind is irrelevant. The worst thing the hunter can do is become a statue in a tree for all the deer to see.

Excessive movement is another thing the stand hunter must avoid. The hunter who can sit motionless for an extended period of time will have the best chance for success. Constant shifting or quick movements will invariably give you away. You won't see the deer but they will have seen you.

3. Sense of Hearing

Deer have good hearing and can pick up sounds from a great distance. Hunters need not be too concerned about some noise. Noise by itself does not scare deer. However, uninterrupted walking or coughing will give you away. When deer hear unfamiliar sounds, they are put on "alert" until they can determine where the sound is coming from and what is causing it.

Hunters who accidentally break a branch or make other unnecessary noise should freeze immediately and wait several minutes before moving or continuing their activities. There are plenty of crackles, rattles, and rustlings that occur naturally in the woods that don't alarm the deer. In fact, deer are very inquisitive and may be attracted to some sounds. The wise hunter is one who blends his walking cadence and accidental noises into those of the natural setting.

4. Sense of Taste and Touch

Generally speaking, these senses will determine where the deer are feeding, and what areas they choose for travel lanes and cover.

C. Deer Drives

The term "deer drive" should be eliminated from the hunter's vocabulary. In the 'good old days' of hunting it was possible to chase deer in a more or less straight line

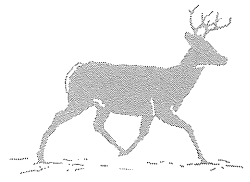


to hunters posted ahead. It's a different story now.

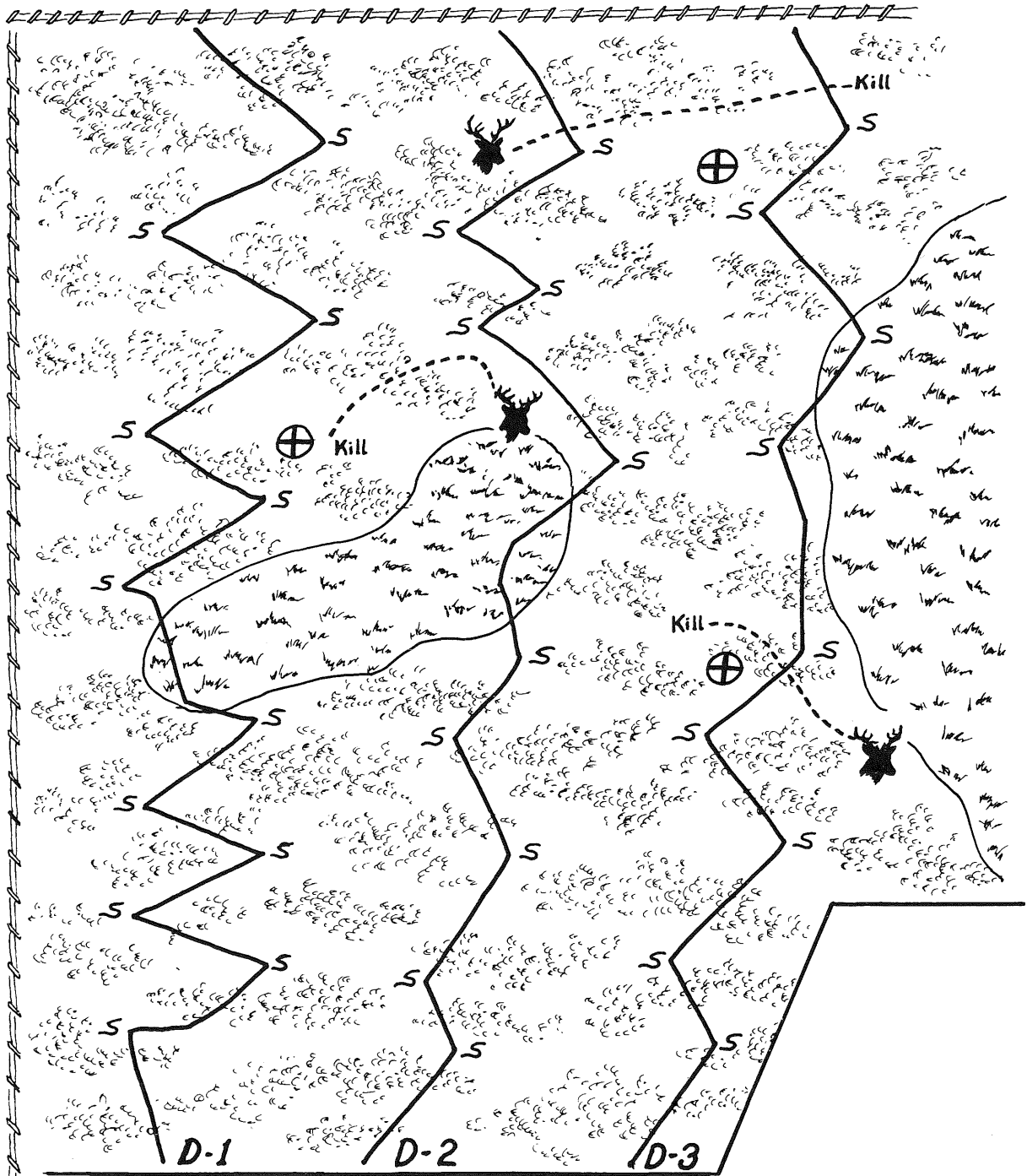
Deer have changed in their learned behavior over the past 40 years. Years ago the whitetail feared man more and had not yet adapted to civilization. The deer learned it was not safe to run in straight lines away from a hunter. Deer that circled back on their tracks, used varied escape patterns, or didn't throw their flags up to warn of danger lived longer. Consequently, the genetic makeup of today's deer make them more difficult to bag and nearly impossible to "drive." Fawns, which usually make up a large portion of a normal harvest, will still make some of these mistakes; but the monarch of the woods knows better.

The whitetail of the 80's will refuse to run. He will act more like a pheasant by hiding and sitting tight while you walk right past him and wonder where all the deer are. Deer hunters of the 80's can still take deer by driving them, but not in the traditional way. By using the deer's nervous system to their own advantage, deer hunters working together can increase their chances of success if they keep a few things in mind.

1. When preparing to hunt a particular area, place the standers in places of good deer escape cover.
2. Drivers should use the start-and-stop method (to be discussed later) when moving along to keep deer off guard and nervous. The idea is not to chase the deer out of the county but to get them on their feet and moving past one of the standers.
3. If deer sign is present, believe it and work the area systematically.
4. Move slowly—the driver who sweats while moving through the woods is moving too fast.



Modern "Deer Drive" Diagram



Symbols: D₁, D₂, 3, = Walking Hunters
 ————— = Path of Walking Hunters

S = points where hunters stop and change direction
 ⊕ = hunters on tree stand



D. Still Hunting

Still hunting can best be described as a lone hunter moving slowly through good deer cover using air currents and knowledge of the area to his or her advantage. Still hunting skills should be integrated into all types of deer hunting, whether heading for your deer stand, moving deer for your companions, or working fresh deer sign. A good still hunter walks slowly and stops for a minute or two every 50 yards or so. He then changes direction to keep the deer off guard, nervous, and more susceptible.

When moving, keep your eyes open and ears bent for any hint of a sneaking whitetail. If you stumble or make unnecessary noise, stop immediately and let things settle down a while before continuing. Generally, a hunter should spend three to four minutes standing, studying the cover for deer, for each minute walking through the cover. When others are hunting the same area, safety must be exercised. Make them aware of your presence and always keep alert to spot them before going through their zone of fire.

E. Tracking

To follow the trail of a whitetail while attempting to read his thoughts from his pattern of tracks written in the snow is to truly have hunted. In tracking the whitetail lies the romance of hunting.

Tracking conditions are often less than perfect and other hunters in the area will make outsmarting a deer a real challenge. A good knowledge of the terrain is a must. Wear good supporting foot gear and dress conservatively so you can move freely without perspiring. Be confident and diligent in your efforts.

When you get on a fresh track, start following it with enthusiasm and don't be concerned about the noise you are making. You want the deer to know you are behind him, and the more he is aware that you are following him the better will be your chances of success. After awhile he will begin to watch his backtrack and will allow you to come within sight of him before he moves on to his next vantage point. In the snow you will see how the deer stomps around, urinates perhaps, and drops pellets. This behavior tells you he is nervous. Usually this routine is repeated and becomes more evident as you continue to follow.

After playing "hide and seek" with him a few times, it's time to get serious. Circle downwind far enough to a position where you will be able to spot the deer watching his backtrack as he has done several times before. With luck, you see him and the shot is yours.

When tracking with companions, keep them up ahead and off to the side of the trail. You the tracker should talk continuously to keep your partners informed as to the deer's direction of travel and behavior. As the deer hears your noisy approach, he will stay well ahead and out of your range. As before, he will again become careless, and in time one of the flanking hunters should get a good shot.

So whether you are sitting on stand, tracking your deer, still hunting, or making a deer drive, don't forget that it may be your own back 40 you are on but it's the deer's living room. He is a master at escape. Invariably,

however, many nimrods and seasoned hunters alike will come away empty-handed. With preseason scouting and a good understanding of a deer's defenses and behavior patterns, you will be able to beat him at his own game.

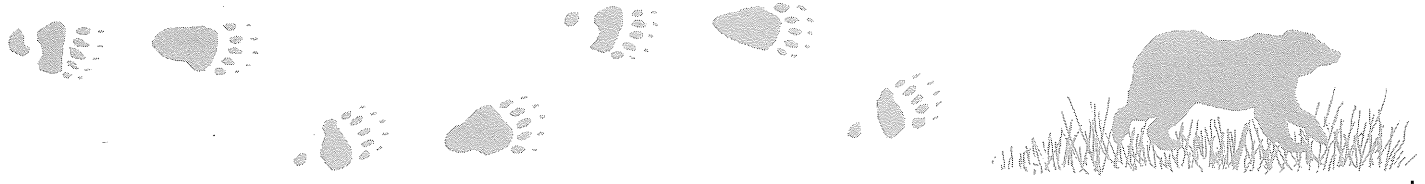
BLACK BEAR IN MINNESOTA

Minnesota's black bears have been among the least understood and most maligned animals to walk the forests of this state. The mention of "bear" brings reactions ranging from a hearty "damning" of the animal as an irresponsible, blood thirsty, sheep-killing predator; to an unwary affection for the beast — witness the people at dumps posing for pictures feeding the bears. It is true that bears occasionally will kill sheep and calves. However, this is most often the work of an individual bear that has taken a fancy to mutton or beef rather than a characteristic of the species, whose diet is primarily vegetarian.

The black bear is the bear most likely to brush with humans because it is numerous, widely distributed, and it likes our food. It is the only species of bear present in Minnesota. Attacks by bears are surprisingly rare considering the amount of contact we have with them. The attacks that do occur usually are made by large males rather than by females with cubs, according to Lynn Rogers, U.S. Forest Service Biologist. The idea that black bear mothers are likely to attack probably stems from the bluffing charges they sometimes make and from a few well publicized attacks. Black bears normally retreat into cover before people are even aware of them.

This history of the black bear's protection in Minnesota is an erratic one, beginning in 1917 when bears were protected between March 1 and October 15. This restriction was lifted in 1919. In 1923 the law was amended to allow an open season only between October 15 and January 1. Once again, all hunting restrictions were lifted two years later. An act in 1929 gave protection to the bear except during an open season from April 15 to May 15 and during open firearms deer season. In 1939, a provision was added which allowed anyone to get a permit from a warden to eliminate a nuisance bear.

In 1943 bears were again placed on the unprotected list, though they could be protected in specific areas by order of the Commissioner of Natural Resources. These areas were open to bear hunting only during the deer season. Legislation authorized bounty for the bear in 1945. These regulations remained in effect until the mid-1960's when the bounty was lifted, but black bears remained essentially unprotected until 1971. That is, no license was required to kill a bear except in those instances when the taking was restricted to the deer season and then a deer license was necessary. There was no limit on the number of bears that could be killed. Non-residents needed only to purchase a small game



license and they, too, could kill as many bears as they wished. Quite a number of enthusiastic hunters from out-of-state discovered that Minnesota was virtually a "hunt-bear-for-free" paradise.

In 1971, with the support of sportsmen across the state, the Legislature granted the black bear protection and elevated it to "big game" status. A special fall bear season was established from September-October during which anyone purchasing a bear license could hunt. Also, up until 1979, bears could be taken by deer hunters during the firearms deer season.

Originally bear license sales were unlimited. However, the growing popularity of bear hunting resulted in ever-increasing harvests, reaching well over 1,000 bears in 1980 and 1981. As a result, since 1982, licenses have been awarded by lottery, with a pre-determined number of permits allotted to each of five management zones in the state.

At least 23 states and Canadian provinces presently have black bear populations. Unlike its imposing relative, the grizzly, the black bear is not considered threatened or endangered by the U.S. Fish and Wildlife Service. Responsibility for its management and conservation therefore rests with the individual states, where bear densities vary widely.

Bears have a lower reproductive potential than most other terrestrial mammals. Their life cycle from birth to reproductive maturity in northern Minnesota averages four to six years. Usually females produce two to three cubs every two years.

Most mortality of adult bears in Minnesota is human related. Bears are shot by hunters, killed as nuisance animals, poached, and a small number are killed by cars. The chief natural factor limiting bear populations is probably food supply. Bears breed in June and early July, but fertilized eggs do not implant in the uterine wall and begin to develop until late November. This is a phenomenon known as "delayed implantation." A female's weight and overall condition at that time probably influences whether or not the fertilized eggs implant and develop. Cubs are born in January.

Contrary to one popular belief, "garbage" bears—those that visit town dumps and campsites—are not a weaker breed. In fact, these enterprising bears often grow faster, mature earlier, and have larger cubs and/or larger litters than those bears that depend solely on natural foods. Large cubs typically have higher growth and survival rates than small cubs. At maturity most female bears weight 150-300 pounds and males 250-500 pounds.

Female bears appear to be territorial. Home ranges of adult females overlap little and range in size from five to 20-square miles. Home ranges of adult males, on the other hand, overlap extensively, and each encompasses the ranges of a number of females. Males are especially mobile; their home ranges encompass 20-to 100-square miles.

Cubs remain with their mothers until late May or early June of their second year. Yearlings usually remain with or adjacent to their mother's home range. By the time they reach sexual maturity, most females have carved out their own home ranges using portions of their mother's and adjacent home ranges. Males, on the other hand, at the age of 1 1/2 to 3 1/2, set out to find their own turf and may travel up to 100 miles to establish a new foraging area.


Honey Burner — canned heat is placed at the bottom of the large can with vent holes, and a smaller can is placed on top of the heat source containing honey.



Burning honey on a log covered bait station attracts bears.



Bear investigates bait station.



Seasonal use of home ranges depends upon when and where favorite foods are available. Spring diet of bears in Minnesota consists of grass, herbs, buds, catkins, young leaves, and insects, especially ants. Once berries ripen in July, fruits become the mainstay of the diet until they are destroyed by autumn frost. Common summer bear foods include wild sarsaparilla, blueberries, raspberries, chokecherries, wild plums, and dogwood berries.

Hunters should be aware of favorite fall foods such as acorns, hazelnuts, apples, and high bush cranberries, as well as unharvested corn and oats. Knowing if and where these are available may increase the chances of bagging a bear. If fruits and nuts are not available in the fall, bears turn to greens. Bears cannot efficiently utilize greens and may lose weight under these circumstances. Bears without adequate fall food may retire to dens weeks earlier than bears that have a good source of food. A killing frost in early September may reduce availability of fall foods, and thus trigger earlier denning.

In preparation for denning, black bear pelts generally become prime in September and stay prime through the first half of May. Coat colors include black, brown and even blond. Black bears grow a new coat each July and the new coat can be a different color from the old. Often a bear that appears black in summer and fall will bleach to dark brown by the following June, but the new coat will grow back black. On very rare occasions a bear's color may change permanently.

Because of the heavy pelt, it is imperative that carcasses be skinned as soon as possible to avoid spoilage of meat. After a skinned carcass has cooled, the fat should be removed to avoid strong flavor in the meat. The fat may be rendered and saved for using in cooking, leather preservation, or lubrication. As with pork, bear meat should be cooked to an internal temperature of at least 142°F. to avoid any chance of trichinosis. Bear meat makes delicious table fare when properly cared for and prepared.

Minnesota's black bears presently are abundant and have a bright future. However, one problem they face, especially as more people move into the forested regions of the state, is the lack of human tolerance towards bears that damage property or crops or kill livestock. As a result, many "nuisance" bears are destroyed each year, both legally and illegally. Thus, an important goal of Minnesota's bear management effort is to reduce the incidence of bear-human conflicts and increase the public's understanding of bears through education.

Using a few simple practices could prevent most nuisance bear problems. Foremost of these is that household garbage should be made inaccessible to bears, i.e. kept in closed containers and inside outbuildings wherever possible. If garbage must be stored outdoors, steel drums with clamp-on lids should be used. Several designs of electric fence have proven to be quite effective in the protection of small areas such as beeyards or barnyards. It is more difficult to control the less common problems of crop and livestock depredation. It is best to harvest corn and oats as early in

the season as possible; bears are most likely to utilize them late in the year as wild foods become less available. The more carefully livestock are watched and the closer they are kept to buildings during calving and lambing, the less likely are incidences of bear depredation. Of course, all carcasses should be properly disposed of or buried so as not to encourage scavenging by bears on domestic stock. Hopefully, small changes in human practices brought about by public education will diminish bear-human conflicts in Minnesota in the future.

MOOSE IN MINNESOTA

Description

The Minnesota moose are the same species as the Canadian moose. They are smaller than the Alaskan variety, yet larger than the Wyoming subspecies. It is unusual for Minnesota moose to exceed 1,200 pounds.

The front shoulder hump and flap of skin hanging below the throat (called a bell) are characteristic of mature moose. Coat color is dark brown to almost black except in the summer when it is lighter and more reddish in color.

A mature bull carries palmated antlers which begin growing in April and are usually shed in December and January. Normally the antler is not palmated until the third year. Antlers reach a maximum size around the sixth year, and then decrease in size after the tenth year. As in deer and bear, tooth sectioning is the only reliable method of determining age.

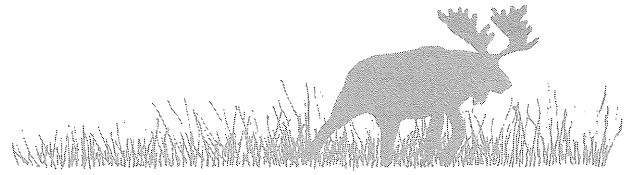
Moose have rather weak eyesight, but acute senses of hearing and smell. They have long legs and splayed hooves which make them well adapted for moving about in marshy areas and along northern rivers where they feed on aquatic vegetation and various types of willows and shrubs growing along shorelines. Moose are also adept swimmers and may dive below the water surface to feed on bottom-growing vegetation.

Behavior

Moose may move about at any time of the day or night, but peak activity occurs at daybreak and sunset. Moose, similar to deer, are creatures of habit and usually feed and bed in the same general areas for several weeks if undisturbed. They prefer not to move about in windy or severe weather.

Moose seldom herd up. At most, they are found in groups of two to five animals, with smaller groups usually comprised of family members.

In summer and early fall, moose are found close to aquatic areas where they feed. As November approaches, they head for browse and cover on higher ground. Moose move into heavy cover as December's snows pile up; snow depths exceeding 30 inches may restrict their movement.



History

Before settlement, moose were the most common big game animal in northern Minnesota, except in the extreme northeast near the Canadian border where woodland caribou were most abundant.

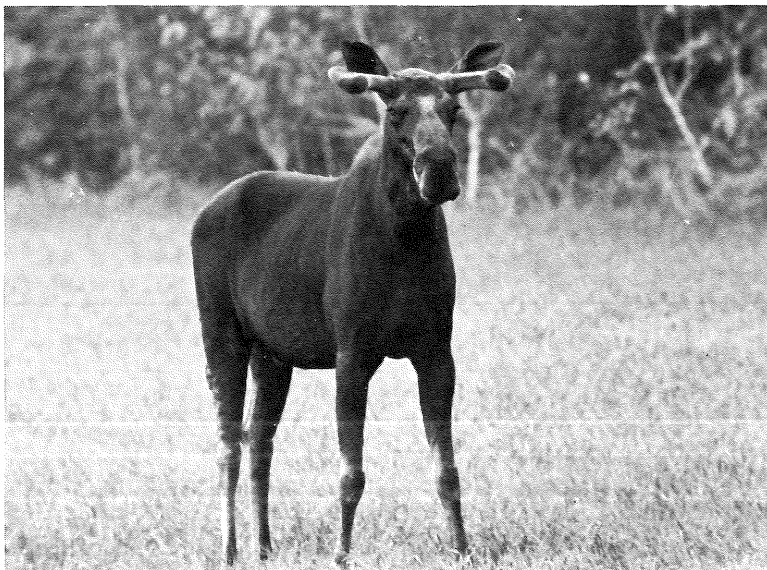
With the advent of lumbering, burning and uncontrolled shooting, moose numbers dwindled steadily until they were afforded protection by Minnesota law beginning 1887. Additional laws were added to regulate hunting until the season was closed in 1922. Moose hunting remained closed for nearly 50 years, but despite complete protection, populations remained low during the first half of this period.

About 1950, moose populations began to increase until they peaked at 5,000 to 8,000 animals in the mid-1960s. That population increase in northeastern Minnesota coincided with extensive pulpwood harvests. Apparently, the removal of large acreages of jack pine created large areas of shrub and second growth aspen forest, characteristic of ideal moose habitat.

Moose are susceptible to several diseases. Moose populations can be reduced by the effects of liver flukes, winter ticks, and moose sickness (caused by a parasitic roundworm). Roundworms may be transmitted by deer, which are seldom affected, but they are fatal to moose, elk and caribou. In this manner, high deer populations can limit moose populations.

Hunting

Hunters must apply for a permit to hunt moose in Minnesota. A prime consideration for successful permit holders is "how to handle a huge moose carcass." This problem may keep hunters close to water, trails or roads. Pulley hoists, backpacking equipment, a hatchet, knife, sharpening stones, and cloths are essential for dressing-out, quartering, and transporting the heavy meat and head.



Hunting late in the season, as in December, usually means there will be snow to enhance visibility and facilitate tracking. However, because the rut is over, bulls are less active.

Be sure to check state laws regulating the use of snowmobiles, boats or canoes for hunting. Use rifles of sufficient caliber and deep-penetrating bullets in order to produce humane kills. And, be prepared for a lot of work! A thousand-pound moose has the combined weight of four or five very large deer.

Moose is an Algonquin Indian word meaning "twig-eater" or "he who eats off," and indeed the moose is a browser by habit. In summer, the moose lives where lakes, rivers, and bogs are abundant. Like deer, moose prefer shrub and second-growth forest, but are more suited to larger areas of cut-over forest than are deer.

Moose hunting seasons have varied from nine days to three weeks, depending on the area, and year. Success is about 90 percent. The season is designed to harvest about 10 percent of the population. Hunting hours are from sunrise to sunset.

When preparing to hunt moose, hunters should consider several things:

- You must be in good physical condition. A full-grown moose weighs as much as four or five very large deer, and cannot, because of its size, be dragged out of the woods.
- Have good maps and a compass and know how to use them. Most moose inhabit wild country.
- Use a rifle of sufficient caliber and be sure to sight it in beforehand.
- Dressing out, quartering, and transporting the heavy meat and head is easier with the right equipment. Pulley hoists, backpacking equipment, hatchet, knife, sharpening stones, wrapping cloths, and bags should be part of a moose hunter's equipment.
- Observe the ethics of a good hunter.

Cooking Big Game

Are you looking for mouthwatering ways to cook big game? "Collins Backroom Cooking Secrets," 253 pages of taste-tested recipes by Tom Collins, is just one of many cookbooks sold by the State Documents Center.

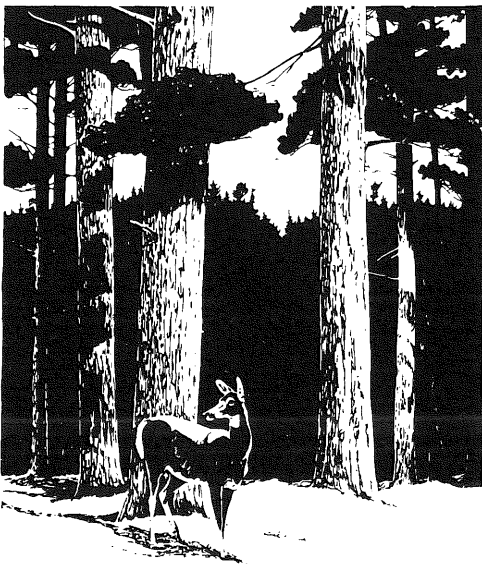
For more information on what is available and how to order, call (612) 297-3000 or toll free in Minnesota 1-800-652-9747.

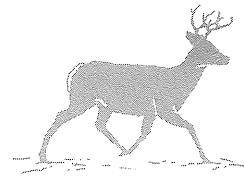
APPENDIX

TEST FOR DEER HUNTERS — 1984

True False

- | | | | | | |
|---|---|--|---|---|---|
| T | F | 1) In August antlers stop growing under the nourishing velvet because of a slight increase in the hormone testosterone. | T | F | 9) A tree stand is better than a ground stand because deer never look up. |
| T | F | 2) Bucks in the agricultural zone grow larger antlers than do the bucks in the forested region of Minnesota because of the available browse (annual growth of woody plants). | T | F | 10) Normally, whitetails will produce a surplus of young each year. |
| T | F | 3) The mature configuration of a buck's rack is determined by age 2½, and it will increase in size for several years. | T | F | 11) Carrying capacity is defined as the number of animals the land can support at the least favorable time of the year. |
| T | F | 4) The start of antler growth is stimulated by length of daylight, called "photoperiod." | T | F | 12) The best way to recruit animals for a certain area is to limit the number of does taken. |
| T | F | 5) A scrape is a small patch of ground cleared of all debris by bucks. | T | F | 13) The "stare" of one whitetail at another is a display of dominance. |
| T | F | 6) The normal home range of a whitetail is usually less than one-square mile. | T | F | 14) Clashes between bucks during the height of the rut are sparring matches. |
| T | F | 7) When scouting an area to hunt one important objective is to locate good cover. | T | F | 15) During the breeding season most does are bred by mature bucks. |
| T | F | 8) An important factor regarding a deer stand is to make it blend with the surroundings. | T | F | 16) In the first autumn after they are born, does are never bred. |
| | | | T | F | 17) The rut is triggered by the first frost. |
| | | | T | F | 18) The peak of the rut in Minnesota occurs about the same time every year. |
| | | | T | F | 19) Bucks have no exact timetable for checking scrapes. |
| | | | T | F | 20) The framework for the new season is based on management of two controlling factors — mortality and reproduction. |
| | | | T | F | 21) Sport hunting is by far the least important cause for deer mortality. |
| | | | T | F | 22) Legal hunting is the most easily controlled form of mortality among deer. |
| | | | T | F | 23) The general movement pattern of deer in the morning is bedding to feeding. |
| | | | T | F | 24) Deer that are alarmed due to a hunter's smoking are often alarmed by movement made by the hunter while smoking. |
| | | | T | F | 25) The average weight of white-tailed deer in Minnesota has declined with a shift to a younger population. |
| | | | T | F | 26) Average weights in any age class have remained constant. |





- T F 27) The whitetail's sense of hearing is no better than a man's sense of hearing.
- T F 28) It is impossible to overcome the whitetail's sense of smell.
- T F 29) Still hunting is another term for tree standing hunting.
- T F 30) When selecting a deer stand in an area of high hunting pressure you should take into account the hunting pressure.
- T F 31) Removing the musk glands on a deer is necessary to prevent tainting the meat.
- T F 32) Bleed your deer by cutting its throat as soon as it is recovered.
- T F 33) The hunter who sees someone else take a deer illegally should report the incident to the proper authorities.
- T F 34) The best way to handle comments from an anti-hunting person is to argue with them.
- T F 35) The dominant animal within a deer group is the doe.
- T F 36) Bucks are usually seen following does.
- T F 37) The buck rub sign found on trees is primarily a means of marking home range.
5. T — A scrape is a small patch of ground cleared of all debris by bucks, although does periodically work on scrapes as well.
6. T — It may be larger depending on habitat needs. Bucks breeding territories generally are much larger.
7. T — Look for an area deer will search out for safety when hunting pressure is high.
8. T — It's important to make your stand blend with the surroundings so you are not silhouetted against sky line or white background such as birch trees. Other factors are important such as **comfort** so you can remain motionless for long periods of time.
9. F — Tree stands offer more comfort and visibility than do ground stands. Because of learned behavior, deer are looking up more today than ever before.
10. T — When good habitat is available.
11. T — Carrying capacity is defined as the maximum population a range can carry on a sustained basis. The population will do no better than what is allowed during the least favorable time of the year which is generally March and April.
12. T — True, but to increase the carrying capacity we **must** improve habitat.
13. T — The stare is a mild form of one deer showing dominance over another. Stand offs between predator and prey also utilize the stare.
14. F — They are fights!
15. T — In Minnesota keep in mind what is the average age of a mature buck. A lot of breeding can be done by 1¹/₂-2¹/₂ year old bucks, if more mature animals are not present.
16. F — Does are sometimes bred in their first autumn. With good nutrition southern Minnesota fawns will breed. In the northern forest, however, very few fawns breed.
17. F — The rut is triggered by photoperiodism.
18. T — Usually around the week of November 12.
19. T — If a buck is not tending a doe he will check scrapes at his own discretion. (Watch daytime temperatures.)
20. T — The framework of the new season is based on reproduction and mortality.
21. F — Sport hunting is the highest cause of deer mortality in Minnesota.
22. T — Legal hunting is the easiest to control.

ANSWERS TO DEER TEST — 1984

1. T — The hormone testosterone shuts off the blood flow to the antlers and at that time the velvet starts to dry up and fall off.
2. F — Browse is not that **nutritious** nor is it available in large quantity in the agricultural zone. What is important is the availability of other highly nutritious food in the agricultural zone.
3. T — The pattern remains similar and the racks increase in size with age.
4. T — Photoperiodism is the number of hours of daylight to darkness in a given 24-hour period. The amount of light triggers antler growth and rut.
5. T — A scrape is a small patch of ground cleared of all debris by bucks, although does periodically work on scrapes as well.
6. T — It may be larger depending on habitat needs. Bucks breeding territories generally are much larger.
7. T — Look for an area deer will search out for safety when hunting pressure is high.
8. T — It's important to make your stand blend with the surroundings so you are not silhouetted against sky line or white background such as birch trees. Other factors are important such as **comfort** so you can remain motionless for long periods of time.
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13. T — The stare is a mild form of one deer showing dominance over another. Stand offs between predator and prey also utilize the stare.
14. F — They are fights!
15. T — In Minnesota keep in mind what is the average age of a mature buck. A lot of breeding can be done by 1¹/₂-2¹/₂ year old bucks, if more mature animals are not present.
16. F — Does are sometimes bred in their first autumn. With good nutrition southern Minnesota fawns will breed. In the northern forest, however, very few fawns breed.
17. F — The rut is triggered by photoperiodism.
18. T — Usually around the week of November 12.
19. T — If a buck is not tending a doe he will check scrapes at his own discretion. (Watch daytime temperatures.)
20. T — The framework of the new season is based on reproduction and mortality.
21. F — Sport hunting is the highest cause of deer mortality in Minnesota.
22. T — Legal hunting is the easiest to control.

23. F — Feeding to bedding.
24. T — A true statement — just watch a smoker once from light-up to snuff-out. You'll be amazed!
25. T — Because a larger number of younger deer in the population brings the overall average down.
26. T — Average weight in the various age classes has remained consistent. Deer at 1½-2½-3½ years weigh the same now as when records were first kept. In some areas they show a slight increase.
27. F — The shape of the ears allows the deer to pick up noises at a greater distance and focus its hearing in any direction.
28. F — You can use wind direction to your advantage or you can cover scents.
29. F — Still hunting is best defined as moving slowly through the woods in an area suspected of containing deer. Stalking, a part of still hunting, is sneaking up on the deer once it is sighted.
30. T — Minnesota hunters who get to their stands undetected by deer or hunters — and stay there — can take advantage of 400,000 drivers at least three times during the day. The first drive takes place when car doors slam and the hunters enter the woods. Second drive occurs when hunters freeze off their stands and head for their cars. Third drive is at lunchtime.
31. F — Not necessary — be more concerned about keeping your hands clean!!
32. F — The vital organs will be removed while field dressing — this will bleed the deer out. Cutting the deer's throat can ruin a trophy cape.
33. T — You have a responsibility to your fellow sportsmen and to the natural resource.
34. F — Keep cool — hear them out and then take the offensive by **calmly** answering their questions **intelligently**.
35. T — Whitetails live in a matriarchal society. The does are dominant. Bucks establish dominance among themselves.
36. T — This behavior works to the advantage of the buck, but no one knows why they do it.
37. F — It also serves to strengthen neck muscles, leave a scent, provide for a visual signal to other deer, helps bucks learn the configuration of their antlers and makes a sound while making the rub to signal other deer (just how they use it is not known).

TRACKING AND CARE OF GAME IN THE WOODS

1. Think positive
2. Go prepared to take care of your game. Compass, knife, rope and toilet paper. In warm weather include a canteen of water, pepper and game bag.
3. You have taken a shot! Note deer behavior after shot. Watch for flinching, wobbling, or stumbling.
4. Mark the spot that the shot was taken from unless on a permanent stand. Proceed to the spot that the deer was last seen and mark the second spot also.) Back track from where the deer was last seen to where the deer was shot at, watching for blood and hair. This may be your first clue on what part of the deer's anatomy was hit — color of blood and hair.
5. Determine at this time how soon to start training. Consider:
 - Weather conditions
 - Time of day
 - Where hit
 - Number of hunters in the woods
6. Orient yourself to the area that lies ahead. Have a good compass and know how to use it.
7. Do not go for help unless you can relocate the exact spot. Better yet, leave a marked trail.
8. If help is located, do not let them blunder ahead looking for game. They may destroy vital signs.
9. Remember, if a deer is badly hurt it will:
 - Head down hill or take the route of least resistance
 - Head for heavy cover
 - Try to double back to its home range
 - Head for water
10. When the deer is recovered, approach it carefully. See if it is breathing, look at its eyes — they will be glazed over and dull if the animal is dead.
11. If the deer is dead, do not cut its throat — many trophies are ruined this way.
12. Check and double check all game that is fired upon. A deer running full bore may not even flinch when hit in the vitals, so always check.





FIELD DRESSING TIPS FOR WHITE-TAILED DEER

By Dick Anderson,
Statewide Coordinator, Minnesota
Advanced Hunter Program

1. Approach a downed deer from the rear as a safety precaution.
2. When certain it is dead, unload gun and set aside and out of the way.
3. Move deer so head is up hill (even if only slightly) and roll it onto its back. If you have a companion he can hold the legs and keep it in proper position otherwise, prop it up with rocks or wood.
4. The first step is to get the rump up in the air. Without a companion, prop the rump up with rock or wood. This gives easy access to the rear area.
5. Grasp testicles, cut off and discard. Grasp penis, cut the skin and tissue beneath and in front of it, and back towards the rear. Where the penis tubes enter the anal cavity there is some cartilage. Cut this very carefully with the knife point. Don't cut off the penis. If the deer is a doe, cut the skin around the bag, then remove and discard it.
6. Keep your blade straight and flat with the circle of bone at the anal cavity and cut the skin completely around the anus. Cut the inside tissue holding the intestinal and urinal track loose, being careful **not to puncture the bladder**.
7. Pull the entire mass of penis and bowels gently rear-ward, making sure all of it is free in the cavity. If it isn't, cut **carefully** around the inside of the cavity circle once more. Leave this area as it is and lower the rump. If you have no helper, bring the front feet far forward. If it's a buck, hook them under the antlers, to stretch the deer out and stabilize it.
8. At the bottom of the abdominal cavity, lift a pinch of skin and slit it. **Don't cut down** — great care is needed to avoid puncturing the intestines or paunch.
9. Insert the tip of the blade into the small opening you made in the abdominal cavity. Make sure the knife point is toward the head of the deer and the cutting edge is up. Insert two fingers of your free hand in the slit on either side of blade. With the back of your hand, hold down the intestines and paunch as you gently slit up the belly.
10. Cut all the way to the bottom of the rib cage. At this point, the knife will meet the sternum.
11. The sternum is a very white bone. Do not cut into it. Instead cut to one side where the ribs attach. The bone is soft here. You may have to straddle the deer and rip upward. Never rip towards you, but towards the deer's neck.

If the deer's head is to be mounted, stop cutting just at top of the brisket. If not, cut up to the neck. If the deer is to be dragged far, don't cut up to the neck — stop at the brisket until you get to camp. This will help keep dirt out.

12. Reach inside and grasp the windpipe — pull it out and cut off as high up as possible. This may mean cutting in close quarters, so be careful not to injure yourself.
13. Now pull out windpipe, lungs and heart. If you intend to save the heart, cut it free and put it in a plastic bag. You should be carrying a bag for this purpose.
14. Cut one side of diaphragm loose from rib cage using caution not to puncture the paunch.
15. Roll the deer on its side, roll out the stomach, then cut the other side of the diaphragm. This frees all the entrails.
16. Grasp the lower intestines inside the body cavity down by the hams and pull carefully but firmly — don't jerk. Pull out the lower gut, bladder, penis, vaginal tract and rectum.
17. Now you should have a cleaned animal. Lift deer by front legs and let cavity drain. Or tip deer over on its stomach keeping the head and shoulders higher than the rest of the animal so it will drain by itself.





HANDLING YOUR BLACK BEAR TROPHY AND MEAT

By Phil Watt,
DNR Wildlife Area Manager

Preparations Preliminary To The Hunt

1. Those who employ guides for their bear hunt should inquire as to whether handling of trophy and meat is included in their package, or how much assistance they can expect from their guide in this respect.
2. You should contact a reputable taxidermist **in advance** of your hunt to obtain detailed instructions as to how he would like to have the animal skinned. At this time you should also inquire about prices and various options available for your finished trophy. If you do not care to preserve the trophy for your own use, you have an ethical responsibility to see that it is not wasted. Minnesota law allows the sale of bearskins if all legal requirements are met, and you may wish to consider this as an alternative to waste.
3. Many small communities in the bear range have one or more custom meat processors who will handle bear meat (i.e. cut, trim, wrap and grind/blend bearburger). Every hunter or party of hunters should make an attempt to locate such a processor **in advance** to determine if his services will be available, and the hours he will receive a carcass (often you won't get there until late at night). Local gas stations, grocery stores or taverns may be good places to inquire about processing. It would also be a good idea to locate the nearest bear registration station at the same time. You might be able to obtain processing information there.

Since many small processors do not particularly care to handle bear meat, it may be helpful to offer to pay a premium for careful handling of your meat. Generally such places are reasonably priced, and even at a premium the price will be moderate.

If you must travel a long distance and have not found a processor, plan to skin the animal immediately, leaving most, if not all, of the fat on the carcass (depending on your skill as a skinner). Every effort should be made to avoid making holes in the skin, though a few minor cuts present no real problem to the taxidermist.

Guidelines To Keeping the Meat Palatable

Hunters experienced in handling big game will probably have developed their own techniques for handling meat and skins, and they will no doubt differ in some respects from the following. The guidelines are

only that, and any alternative you can devise to achieve the same results are satisfactory — perhaps even better.

The principal concern in handling your bear is the same as with all other big game, that is to allow the body heat to escape from the meat, then to further cool the carcass as quickly as possible. Bearskin is an excellent insulator, and it is imperative that it be removed from the carcass as quickly as possible. The temptation to leave a bear unskinned overnight should be resisted. It is not pleasant to skin a bear in lanternlight or under automobile headlights when you are bone tired, but the alternative is the complete waste of good meat and possibly the loss of a fine trophy.

Ideally, the meat should be cooled slowly to a point somewhat above freezing, then held at that temperature for several days (or longer, according to your tastes and facilities available) then cut and wrapped. Unfortunately, due to the remoteness of much of the bear range, this procedure is not possible except under unusual circumstances, and **any** method of cooling is preferable to none in terms of the palatability of the meat.

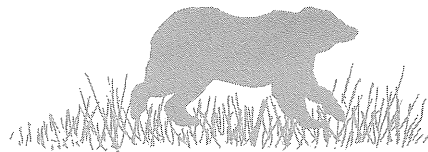
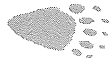
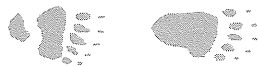
If you are a member of a party of hunters, you can often work together to reduce the time required to properly handle a bear.

Removal of the viscera (entrails) is done in much the same manner as any big game, though perhaps more care should be taken in avoiding contact of large quantities of blood with the hair side of the skin. This is not critical, but it does make further handling, skinning, and final handling by your taxidermist much easier and more pleasant.

Hopefully, one member of a party will be more skilled at skinning than the others, and his services and advice should be utilized. Normally when an animal is skinned in the field, the skull, paws and a section of each lower leg bone should be left attached to the skin so that the taxidermist can skin out these portions to his own satisfaction.

The next step is to remove the fat layer from the carcass. The fat layer on a bear carcass in September will be from one to three inches thick and, depending upon the size of the animal, will nearly fill a 20-gallon garbage can. The removal of the fat can be likened to a "second skinning" process and it can generally be removed in strips. The process is much easier if weather is cool and the fat is solidified, and it is also less urgent under such conditions as spoilage will occur much less slowly. If temperatures are warm, as they often are in September, and the fat is semi-liquid on the surface and translucent, then quick removal is essential to preservation of flavor of the meat. The fat may well be saved as it is useful for cooking, leather preservation, or lubrication purposes.

After removal of the fat, the carcass should be split lengthwise. The use of a gambrel, either one made expressly for the purpose, or one fashioned from a heavy stick, is needed to spread the hind legs and to support the carcass when it is hung from a tree or any other structure available. A carpenter's crosscut handsaw or a coarse-toothed meat saw can be used to split the carcass, by sawing down the midline from the base of the tail to the neck. One person standing at the front and



back of the carcass can saw and steady the carcass and guide the saw to ensure the mid-line is followed closely. If done properly, each vertebra will be separated into right and left halves, and the saw will follow the center of the spinal cord.

After the carcass is split, it can readily be reduced to any number of portions for cooling. If necessary the portions can be adequately cooled by arranging in several ice chests. Contact of meat with water is discouraged by some, but this alternative is far better than spoilage. Portions should **not** be placed in plastic bags before placing on ice, since the plastic will retain heat and insulate the meat from the ice.

If you have friends or acquaintances living in the area in which you plan to hunt, you may be able to prevail upon them to allow use of a home freezer. The quarters or smaller portions should be placed in plastic or cloth bags which are in turn placed in the freezer (without the bags is better, but the lady of the house may object). Again, the plastic bags will help to retain heat, but if quartered, the meat will normally be firm, but not frozen by morning (i.e. overnight). The smaller the portions the quicker they will become frozen. You may allow the meat to freeze through, though the flavor may be affected if it is to be thawed before final cutting and wrapping. Partial freezing (i.e. cooling until firm) is a good alternative if you cannot deliver the quarters to a processor until the next morning. **Any** method or technique for cooling your bear meat is better than none.

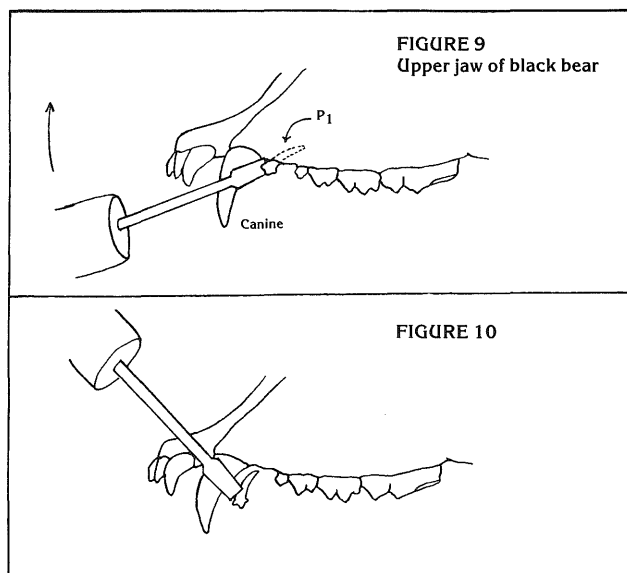
Bear meat, if properly handled, is delicious and may be prepared in almost any way that domestic meats are. Bear meat should **always** be thoroughly cooked (as should pork for the same reason). Bear liver contains an extremely high concentration of certain of the "B" vitamins, and should not be eaten as it may produce toxic effects. Bear meat will not retain its flavor, even if carefully handled, packaged and frozen. Double wrapping will prolong the freezer life somewhat, but even with that precaution, it will begin to lose flavor after several months in the freezer. If you do not plan to consume your bear meat within several months, you should consider giving part of the meat to others to avoid waste. Transfer of bear meat as a gift is lawful, as long as the meat so given is properly marked and identified as provided by law and regulation.

Bear Hide Preparation for Taxidermy Purposes by American Taxidermy Incorporated

1. Ensure field dressing cut is down center.
2. Skin bear as soon as possible (leave paws and head in if necessary).
3. Place hide in cool place until body heat is minimized.
4. Fold hide in half once — **HAIR INSIDE - HIDE OUTSIDE** to allow for faster cooling.

5. Place cooled hide in plastic garbage bag.
6. If freezing is not possible, do not put hide in plastic. Just keep cool and transport to taxidermist as soon as possible.
7. If freezing or a taxidermist not available for more than 24 hours, skin out head and paws, flesh entire hide clean and salt entire hide using uniodized salt.
8. Never wash a hide with water or drag or hang a bear by the neck.

ONE EASY WAY TO REMOVE A TOOTH FROM A BEAR



1. Pull first upper premolar ("P₁" in Figure 9). If first premolar is missing any other small tooth will suffice. Age is determined from the cementum rings in the root, so the whole tooth is needed.
2. Cut gum tissue around tooth at gumline with knife or other sharp object. A small sharpened screwdriver works well.
3. Insert knife or screwdriver under front edge of tooth at gumline as shown in Figure 9. Then holding it against the outside of the large canine tooth for leverage, pry premolar out of socket as shown in Figure 10.
4. Place tooth in tooth envelope. Write sex, confiscation tag number of animal, county, date, and your name on envelope and drop in mail. The Bear Problem Report can be included in the tooth envelope.



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- "The Deer of Northern Minnesota"
- "Cottontail"
- "Sportsman Guide to Game Animals"
- "Pictorial Guide to Mammals of North America"
- "Furbearing Animals of North America"

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