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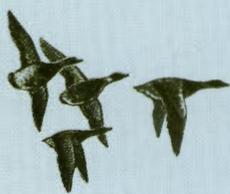
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TRENTON NEW JERSEY

December
1967

Outdoors

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**Merry
Christmas**

*to all of you
from all of us*

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Cover—"Cardinals in Holly"—*W. D. Rodgers, Jr.*

Cardinals, especially the brightly colored males, are among our most welcome and brilliant songbirds. Its distinctive song in the springtime is familiar to most fishermen. The cardinals' head crest and black face, and the brilliant red of the males, is known by most hunters. The holly grows throughout much of the state and is widely planted for its evergreen leaves and persistent red berries, which are eaten by wildlife.

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The Antler Story

From Buttons to Rocking Chairs

By Robert C. Lund

Bureau of Wildlife Management

FOR MANY SPORTSMEN, the possession of an outstanding white-tail rack represents the ultimate substantiation of their hunting prowess. However, the antler is much more than a trophy. To the ancient Mound Builders, it provided a source of tools for the chipping of flint arrowheads and was the central adornment of ceremonial headdresses of great religious significance.

Today, contemporary man is still using the antler, but for much more sophisticated purposes. Medical researchers are studying antler growth in an effort to understand such complex problems as the prevention of cancer and the effects of radiation exposure in the bony tissues of man. Present day wildlife biologists use the antler as an index in gaging the health and productivity of game populations and their environments.

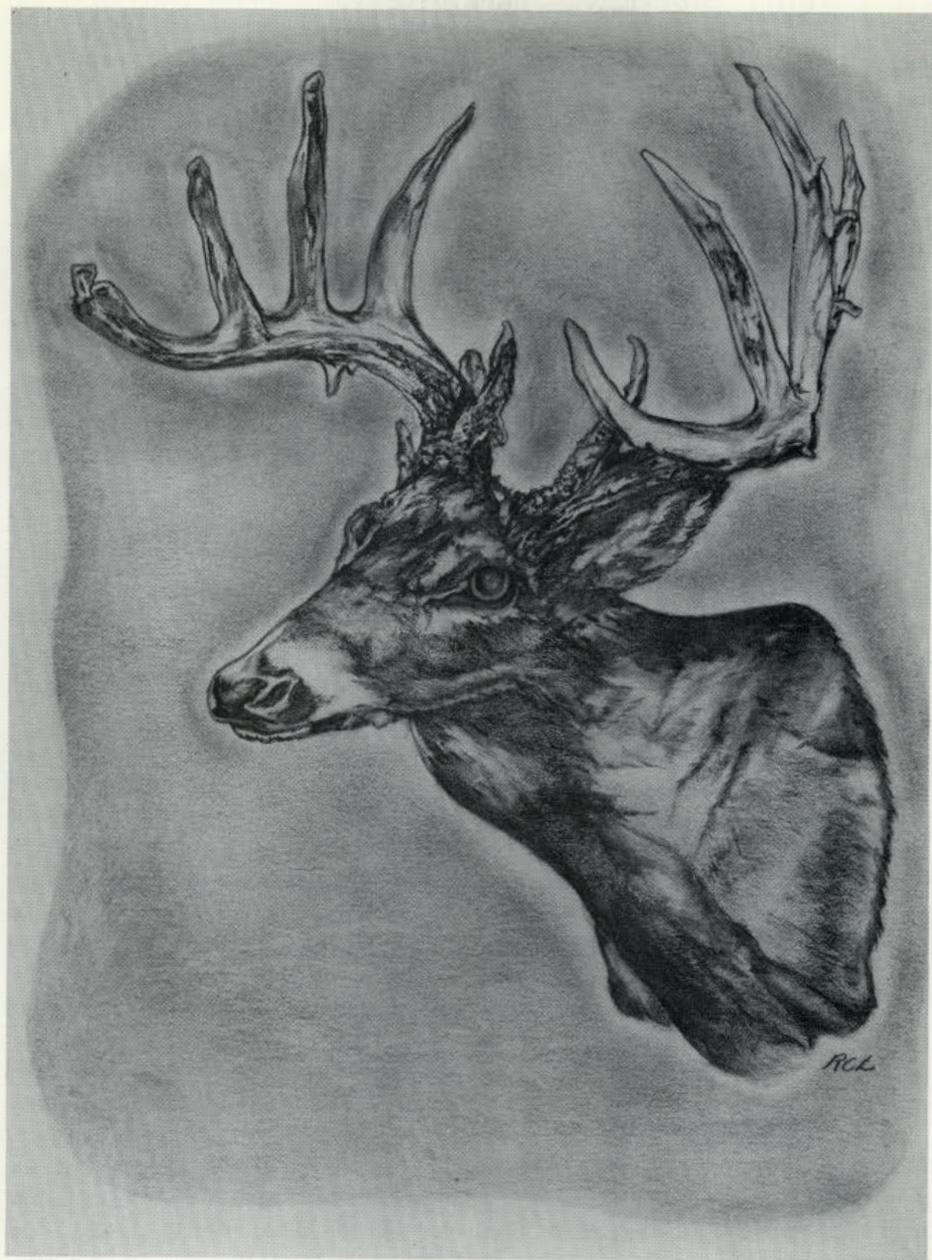
Antlers vs. Horns

It is not uncommon to hear a sportsman use the terms antler and horn interchangeably. However, other than the fact that both of these vastly different structures arise from the frontal bone of the skull, they have little else in common structurally. The true horn is composed of a hollow sheath

of keratin, an extremely tough material secreted by the epidermis (outermost layer of skin). This sheath is supported by a bony core, which is an extension of the frontal bone. Unlike antlers, horns are never shed or branched except in the pronghorn antelope, which annually replaces the sheath and exhibits one short point or branch. True horns are found in sheep, goats, cattle, and antelope. They are possessed by both male and female and continue to grow throughout life.

In contrast, antlers are composed of solid bone and covered by the epidermis (velvet) only until mature. They are usually branched and shed annually. Antlers are possessed, with two exceptions, only by male members of the family Cervidae (deer family), which in North America include the moose, elk, mule deer, white-tailed deer, and caribou. The caribou and reindeer are the only exceptions, with the females exhibiting small antlers. Only two members of the deer family do not grow antlers, the musk deer and Chinese water deer of Asia. Instead, they are fitted with tusks similar to those of the wild boar.

With a few exceptions, the remaining portion of this article refers spe-



World Record White-tailed Deer Head

The above illustration represents the ultimate in antler development. Boone and Crockett Club score—202 points. The deer was bagged in Beltram County, Minnesota, in 1918

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cifically to the white-tailed deer (*Odocoileus virginianus*), that member of the Cervidae with which the New Jersey sportsman is most familiar.

Physiology of Growth

White-tailed deer normally begin antler development at 10 months of age. Some believe that the small round 'buttons' of the fawn buck are developing antlers, but this is incorrect. These circular protuberances are actually the terminal ends of the antler pedicles, the bony extension of the frontal bone from which the antler will be formed. The pedicles can be felt when the animal is about 2-3 months old and seen at 6 months, when they are approximately 1½ inches long. At 10 months of age, the skin covering the pedicles breaks with the onset of antler growth. Florida biologists have reported 6-10 month old fawns with polished antlers 1 to 3 inches in length. This is quite unusual, and is probably the result of the mild climatic conditions typical of southern United States. Mature Florida bucks sport polished antlers by mid-July, a time when the white-tails inhabiting the more northern states are still in the velvet.

The Annual Cycle

The normal cycle of antler development begins in early April, with the increasing periods of daylight. This increased exposure to light stimulates the pituitary, a gland located within the basal area of the skull. The secretions of this gland indirectly stimulate the male sex glands or testes which

produce the hormone testosterone. It is this hormone which actually initiates the process of antler development.

The newly forming antlers first become obvious in May. During this initial period of development, growth is very rapid, as much as ½ inch a day. Usually the first fork will appear before the end of the month.

By June, assuming the animal is in good physical condition, the second fork may appear. During the entire period of development, the antlers are covered by the protective epidermis or velvet. Supplied with nerve endings and blood vessels, the velvet not only protects, but also supplies the antler with the nutrients needed for proper development. Seemingly they sense the fragility of their antlers at this point of development and the bucks become quite solitary, spending much of their time in heavy cover.

Maximum width or spread is attained by July. By now most of the points have been formed, and the calcification process, which will eventually turn the entire structure to bone, begins at the antler base.

The hardening process is almost complete by the end of August. The antlers, which until now were no more than masses of connective tissue produced by the dermis (second skin layer), become impregnated with lime.

The shedding of the velvet in September marks the final stage in the development cycle. The testosterone level in the blood rises markedly, completing the hardening process and causing the blood vessels at the antler base to constrict. Now, with the blood supply cut off, the velvet soon dies and is quickly removed by the animal.

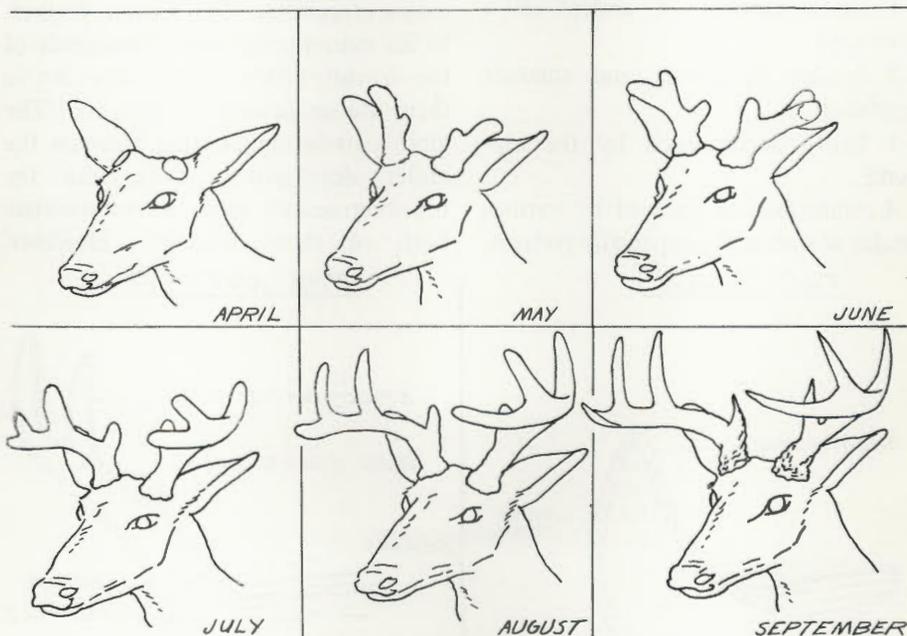
A buck may polish his antlers for weeks following the loss of the velvet, giving the points a bright ivory appearance. It is of interest to note at this point, that the staining of the antlers is caused principally by the bloody residue of the velvet and not by the sap of trees and shrubs upon which they were polished.

January is the principal time of antler loss in the more northern portions

posing the red, socket-shaped terminal end of the pedicle.

Usually, both antlers are dropped within a few hours of each other. There have been reports, however, of days or even weeks elapsing between individual drops.

Though it does not always hold true, it is generally accepted that older bucks will begin antler growth earlier and drop them sooner than younger



The cycle of antler development

of the white-tail's range. Now the blood vessels, which have fed the spongy core of the antler, are constricted by the increase of bony tissue around the base. The antler now dies and granulation tissue is formed within the base of the antler pedicle, as the blood vessels increase in both size and number. The connection between the antler and pedicle is thus broken and the antler is dropped, ex-

posing the red, socket-shaped terminal end of the pedicle. Furthermore, a healthy deer is more likely to drop its antlers before one that is in poor physical condition.

Of interest is the fact that in tropical areas where there is little climatic variation, and subsequently no definite breeding season, antlers are formed and dropped throughout the year.

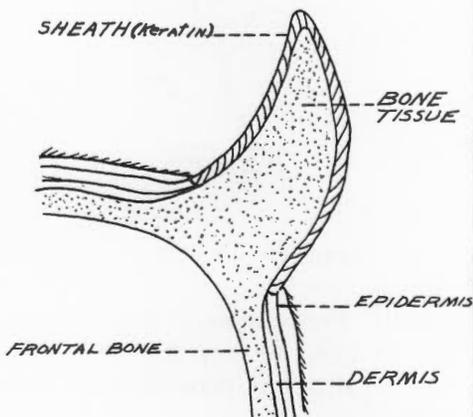
Sportsmen often wonder why,

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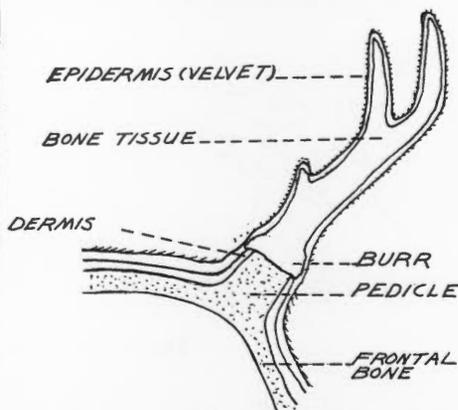
though they may spend many hours in the field, very few shed antlers are found. A recently completed study in Texas may help to answer this question. Data gathered by wildlife biologist Edwin D. Michael at the Welder Wildlife Refuge indicates four possible explanations:

1. small number of antlers in a given area
2. hidden by spring and summer vegetation
3. badly decomposed by the elements
4. consumed or gnawed by various species of mammals, especially rodents.

THE HORN



THE ANTLER



Internal comparison—horn vs. antler

The latter is probably the most important. The study further revealed the fact that the deer themselves often chew on the dropped antlers, and that the older, more weather worn

ones are preferred. (No doubt because they are more easily consumed.) Of the total 155 antlers studied, 15.5 percent had been chewed by deer.

neither takes into account the fact that both the reindeer and caribou have learned to use their antlers as tools to dig lichens from the frozen tundra floor. Perhaps the dependency on li-

Antler Functions

During the early 1800's, Charles Darwin, the father of evolution, concluded that the antlers of the Cervidae had been evolved through selection because of their value to the males in combat. Dr. Ernest Walker, in his monumental work 'Mammals of the World', believes their value lies in their use as sexual adornments. The close correlation existing between the antler development cycle and the breeding season tends to substantiate both of these theories. However,

chens explains the presence of antlered females in these two species.

Even with reservations, the importance of antlers in the fights between rival bucks for receptive females is obvious. Though much publicized in popular literature, these confrontations are more pushing contests than all out rough and tumbles. Usually a 'fight' lasts but a few minutes, but records indicate that they may infrequently last up to two hours. Rarely is either participant severely or fatally injured. However, if the antlers should become locked, both animals are doomed to death via exposure and starvation.

It is generally accepted that the major portion of both the fighting and the breeding is done by the 2½ year old and older bucks. This assumption is based on the fact that few yearling bucks (1½) are found with broken antlers, indicating a minimum participation in combat. This may hold true for many other regions, but in the northern section of New Jersey, where 80-90 percent of the total buck population is composed of yearlings, the younger bucks would obviously perform a much more active role in servicing the available females. The author has examined numerous broken yearling racks from this area, which would tend to indicate that an undetermined degree of conflict takes place. However, I question the validity of this criterion as an accurate measure of the size of the yearling breeding population.

Antler Size

At least three factors control the extent of antler development:

1. age

2. hereditary background

3. quality and quantity of available food plants.

Generally, the older the animal the larger the antlers. Between the ages of 1½ and 3½ years, there is a rapid increase in antler beam diameter. From 4½ to 7½ years, the increases continue, but at a much slower rate. Points generally increase to the age of 4½ years, after which they usually stabilize.

A young buck in excellent physical condition may have more points than an animal many years his senior, but suffering from malnutrition or the infirmities of age. In fact, very old individuals (10 years plus) may have no antlers at all. This can be explained as a function of inadequate supplies of essential hormones. However, few deer in the wild reach such an advanced age before man and nature take their toll.

When considering extensive areas, the effect of natural selection on the genetics of the various races of white-tailed deer is obvious. In general, those races inhabiting the more northern sections of North America exhibit appreciably larger antlers and greater body size than their southern counterparts. The value of this size variation can be explained by 'Bergmann's Rule' which states that in warmblooded species, the larger the animal the less relative surface area is exposed to the environment. This permits minimal heat loss, allowing the northern races to adapt better to the severe winters typical of their range. The weight variations exhibited by the 30-odd subspecies or races of the white-tailed deer range from 50-pound

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adult bucks of the Florida Keys to the 400-pound monarchs of Minnesota and Wisconsin.

When speaking in terms of limited areas, diet is probably the most important factor controlling antler development. To be more specific, it is the quantity and quality of the forage available during the *previous winter* which exerts the major influence. This is especially true for young animals (less than 3 years), where body growth and maintenance take precedence over antler growth. Usually, only those individuals attaining good body growth will develop large antlers.

The effect of range condition on antler development is well illustrated by the data presented in Table 1. Poor soil conditions and the subsequent lack of sufficient calcium, phosphorous, and protein in the available forage plants, has markedly reduced both the number of points and beam diameters of southern New Jersey bucks. In contrast, those individuals inhabiting the fertile mid-section of the state exhibit a much greater degree of development.

Yearling bucks (1½ years) from Region II (Hunterdon, Mercer, Somerset, and southern Morris Counties) commonly sport racks of 6-8 points, with only a small percentage producing spikes. However, in Region IV (Ocean, Burlington, Atlantic, Camden, and Cumberland Counties) spiked yearlings are the rule, and adult bucks (2½ or better) with spikes are not uncommon.

The relationship existing between the animal's nutritional level and antler

development can also be seen illustrated in the kill statistics compiled in other states. On Michigan's northeastern Lower Peninsula, where food shortages are the rule, 70 percent of the yearlings are spikes.

In contrast, the food-rich southern counties produce only 5 percent spikes, the remaining yearlings producing Y's or better.

It is obvious from the data presented that the maintenance of an adequate food supply is of paramount im-

Table 1.—Antler Growth and Development in Relation to Range Condition (after Mangold, 1966).

Age	Region No.	Mean No. of Antler Points	Mean Beam Diameter (½ inch)
1½	1	4.3	18.7
	2	5.0	20.7
	4	3.0	14.3
2½	1	6.9	25.2
	2	7.3	23.7
	4	5.2	19.2
3½	1	7.3	29.0
	2	8.3	29.0
	4	7.0	23.8

portance in both developing and maintaining optimum antler growth. The statistics further illustrate the importance of keeping the deer herd in balance with its food supply. Unlike the pheasant and cottontail, members of the deer family are capable of destroying their own range before any major mortality occurs. This results not only in fewer animals and submarginal antlers, but far more important, a habitat so severely damaged by over-browsing that its capacity to support deer in significant numbers can be destroyed for generations.

Occasionally, nature produces oddities which confound both sportsmen and biologists alike. One of the more interesting examples is the antlered doe. This condition is quite rare, with Michigan reporting a ratio of 1 antlered doe to 20,000-30,000 bucks. However, this condition undoubtedly occurs more frequently than these figures seem to indicate, due to the fact that specimens are not reported to wildlife authorities.

The antlers exhibited by white-tailed does are of two distinctly different types, those which remain in the velvet and those which are polished. The former is much more common, the antlers being small, asymmetrical and never shed. Does displaying this form of antler anomaly are normal in every other respect and capable of bearing young. The only antlered New Jersey doe ever examined by the author was of this type. It was killed during the 1964 bow hunting season in Sussex County. Two 5-month-old fawns were traveling with the animal when it was taken and a post-mortem revealed a normal reproductive system.

Biologists attribute this condition to an abnormal secretion of the male sex hormone, testosterone. This substance suppresses the hormonal products produced by the ovaries, which normally inhibit antler development in the female. Antlered does have been produced experimentally by injecting animals with testosterone propionate.

A much rarer form of the antlered doe is characterized by hard, well developed, polished antlers. These animals are infertile and classed as either true hermaphrodites (possessing both

male and female sex organs) or pseudohermaphrodites. A 6½-year-old Pennsylvania specimen, examined by staff members of the University of Pittsburgh and the Carnegie Museum, weighed 140 pounds dressed and possessed well developed, polished antlers with 4 points on the left and 2 on the right. Necropsy revealed a non-malignant adrenal tumor located in the lower portion of the ureter, composed of the type of cells which are known to produce a masculinizing effect in the human female.

As interesting as a doe with antlers is a buck without them. Perhaps even more so to the sportsman who may have by-passed a shot at an adult buck, because the absence of his regal headgear made it appear an exceptionally large doe. The absence of antlers in the mature male is usually the result of either old age or accident. The latter is the much more common cause, since few reach the advanced age necessary to produce this condition. Bucks, 10 years of age or older, often do not produce antlers due to inefficiency of the sex glands.

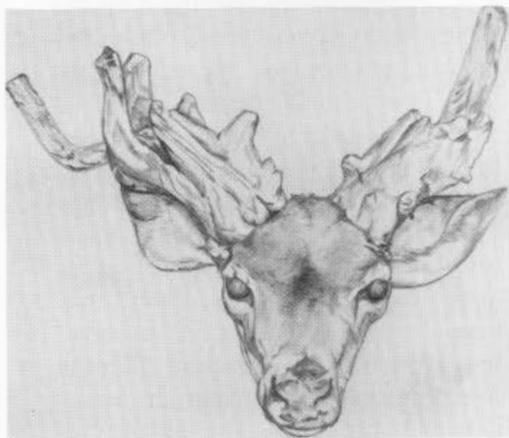
Castration at any time following the loss of velvet will cause the antlers to drop, resulting in abnormal development the following year. Animals with this condition are known commonly as cactus bucks.

Occasionally, a buck will retain the velvet covering on the antlers well beyond the season when it would normally be shed (September). This again is the result of hormonal insufficiency, either through injury or incomplete development of the sex glands.

The occurrence of three or more

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antlers on the same animal has been reported from numerous areas. A Canadian white-tail was found with a third antler originating from the nasal bone just behind the nostrils. Even



Cactus buck, showing malformed antlers

more unusual is the report of a Montana buck which developed an additional antler below the right eye!

As a Tool in Management

The use of the antler as a tool in the management of deer populations is still in its infancy, with considerable research, both in the field and laboratory required before its value can be fully realized. However, at our present level of understanding, a definite correlation between antler growth, age, and habitat condition is known to exist.

The ability to separate individuals of a population into given age classes is of major importance in determining the productivity of the herd so that sound management recommendations can be made. Antlers have been used

as a criterion of age for several years, and though far from being the ultimate answer to a biologist's dream, they have proven to be of some value.

Degree of branching, length, and number of points and beam diameter are rough indicators of age. Generally, the more points the older the deer, but there is no direct correlation. A 6-point buck is not necessarily 6-6½ year old. A yearling inhabiting good range may have 10 points, while a 5½ with poor food may only be a 4-point.

Beam diameter is the most reliable *antler* character yet developed in regard to age determination. This measurement is usually taken in thirty-seconds of an inch or millimeters, one inch above the burr. However, the quality of the forage can cause wide variations between members of the same year class which inhabit different areas. (Refer back to Table 1 and compare the beam diameter measurements of South and North Jersey bucks.) A second problem involving the use of the beam diameter technique is the degree of overlap between dif-

Table 2.—Overlap in Antler Beam Diameters Between Successive Age Classes from the Central Adirondack Region, New York (after Severinghaus, et al., 1950).

Age	No. of Specimens	Percent Overlap Between Age Classes
1½	500	43 percent
2½	718	54 percent

ferent age classes. Often the higher diameters of one age class duplicate or exceed the lower diameter measurements of the next higher class (see Table 2).

In spite of imperfections as an aging technique, beam diameter measure-

ments have a degree of value in measuring the productivity of *deer habitat*. Marginal deer range providing limited, low quality browse produces antlers with smaller basal diameters than areas which are rich in native food plants. Thus, these measurements indicate to the wildlife manager those areas where over-population and/or poor habitat conditions warrant herd reduction or more intensive habitat development (usually both).

Volumes could be written concerning the majestic headdresses of the Cervidae, but here we must be content with but a brief introduction to this complex and interesting subject. For those who wish to pursue the subject further, a selected bibliography is provided. #

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Let's Hunt

By Norman E. Adams

DEER HUNTING is a thrilling sport. It takes you out of yourself, really lifts you from troubles and worries that beset most of us in our everyday life. It gives new perspective that energizes us with pep and zing.

It seems that we are re-living the deer hunting season just closed or are looking forward with keenest anticipation for the start of next year's hunting. I guess our answer is—there is nothing like deer hunting.

Good Fellowship

The day before the start of deer hunting the members of our club check in at our clubhouse. A spirit of good fellowship prevails. Hands are all but shaken off. Everybody seems to be talking at once. The walls of the structure echo the talking and laughing and happy confusion of the gathering deer hunters.

Tall Tales

Old friendships and acquaintances from past hunting associations are renewed. There is the re-telling of funny things that had happened. Many pairs of hands are wildly waved with the tale that's told. A score of racing tongues, out of a fund of treasured memories, pour forth descriptions of thrilling experiences to be enjoyed in the great pinelands.

Now the big moment is almost at hand. Guns, hunting gear, blankets—all are carried into the clubhouse. It quickly is evident which bunks are taken by the heaps of personal belongings piled high on them. Order is soon established and articles of clothing, guns, and other items are hung up or packed away.

So To Bed

The hours of the first evening in the camp fly by. The warmth given off by the burning logs in the huge fireplace is overpowering. Relaxed feelings soon surrender to restful sleepiness. It isn't long before talk ceases and the bunks have their occupants, and the only sounds to be heard are the snapping embers of the fire, an occasional snore in tenor or bass, or the gusting of wind in the pines.

Comes Morning

Long before 7 a.m., the hour at which hunting can begin, the guide is on hand. After enjoying a hearty breakfast with us, he spoke briefly on the necessity of carefully observing all the safety rules of gunning.

The hunters thrill with excitement at the thought of the deer drive. The drive is accomplished by equally dividing the hunters into groups of drivers and watchers.

The drivers are assigned the task of working their way through long stretches of woods. With loud shouts and yells, horns and every conceivable type of noise-maker, their efforts are

move through the Jersey pine forest. A voice yells, "There's a deer! A buck! A buck!" Horns and shouting and the sounds of hunters crashing through brush and dense thickets fill



Deer hunt. Dropping off the drivers

directed toward driving any deer that might be in the woods before them within shooting range of the points where watchers, with guns at the ready, are stationed to shoot deer attempting to escape by them.

Roles are changed in each drive made. Watchers become drivers and drivers become watchers. So doing offers each hunter a fair opportunity to get a deer.

A Buck

Seven o'clock marked the start of the drive. The distant shouting of the drivers is heard. Very shortly it sounds as if bedlam itself is on the

the air. From the direction of the watchers guns blast in rapid succession.

"A deer! A deer! We got one! Get him! We got him!" The owner of the voice is beside himself with excitement.

The Bag

The drive resulted in the bagging of two deer.

The drive also resulted in another development. A number of new members, who had planned to hunt only a day or two, made the immediate decision that they were going to stay at the club and participate in the hunting for the entire hunting period. #

Scatterguns - Buckshot and Deer

By Howard L. Brant, Jr.

THE NEW JERSEY game code allows 10 and 12 gauge shotguns loaded only with buckshot for deer hunting during the New Jersey fire-arm deer season. Therefore it certainly seems that we should endeavor to learn the capabilities and limitations of this weapon and shotshell before we enter our deer forests in search of the white-tailed deer.

Of all scattergun loads I believe none is more widely misunderstood, misinterpreted and under-rated than buckshot fired from a 12 gauge shotgun. And it is extremely surprising what little the majority of shotgun deer hunters know about the pattern, range, and effect of this weapon.

Your scribe in years past was just about as guilty as the next hunter in his thoughts and ideas about buckshot fired from the smooth bore tube. So, for some time we banished ourselves to the test range and the pattern board and came up with some surprising results.

Test Guns

Buckshot has the uncanny knack of shooting differently in almost every individual shotgun, even with identically choked bores. But we have to start somewhere, so in our tests we used a Winchester Model 12 pump

shotgun with 27-inch barrel fitted with a standard Poly Choke; an Ithaca Model 37 with 28-inch barrel and modified choke; a Beretta Silver Snipe with 26-inch barrels bored improved cylinder and modified; and a Browning Automatic-5 with 26-inch barrel fitted with a Ventilated Poly Choke. All were chambered for the 2¾-inch 12 gauge shell.

Test Loads

Using every popular brand of buckshot in all its sizes, we found, halfway through these tests, that you can rule out all of the so-called standard "express" buck loads, in all their sizes, as being far too erratic for effective shooting. By far, our best results were obtained with the relatively new 2¾-inch magnum buckshot loads, fired from either a modified or full choke barrel! This again disproves an old theory that "open" bored scatterguns throw better buckshot patterns than "tight" bored barrels. The theory behind the open bore is that the extremely large pellets in buck loads do not smash out of shape going through the choke of open bored weapons as they would in tight choked tubes, which would cause the pellets to fly erratically. Well, perhaps they do smash out of shape in tight bored

barrels, but you can't prove it by me or the pattern board. However, the new plastic wad columns used in many magnum shells today would tend to eliminate this pellet crushing.

The Results

For our principal tests we used the standard 30-inch pattern circle at 40 yards distance, shooting ten shells

tubes produce the best average pattern percentages.

Barrel Length

Another point worth mentioning too is the fallacy that the longer the barrel, the farther you will be able to shoot. All modern day smokeless powders burn completely out in 18 to 20 inches of barrel length and any-



The test range and pattern board tell the true story

from each shotgun with each shot size and each choke, and taking the average figure we came up with these results, shown on page 16.

Now just what can be gained by these figures? Number one, it shows that on an average, the heavier the pellet (or size), the better pattern average percent. And in the heavier pellet sizes modified or full choke

thing over this length will only make you point better, but certainly will not shoot any greater distance. In pumps and automatics, 28-inch barrel lengths are ideal for all practical hunting, while in the double or over and under, many prefer the shorter 26-inch tubes for better balancing and handling. But if you are an ardent duck hunter a 30-inch tube gun will certainly make

. . . Buckshot

you swing and point better on those high flying pass shots. But for all upland gunning and most deer hunting 26-inch or 28-inch barrels are about tops.

The scattergun is the most deadly weapon in the world within its own range and limitations. The 'white hunters' of Africa amply prove this point when they load a scattergun with buckshot to go into the 'bush' after a wounded lion. At 'charging' ranges buckshot will tumble over almost any game in the world. And, although we know of many whitetails that fell from

chance of only crippling your game and no sportsman in his right mind wants to see any animal die a lingering death.

So, from our own humble experiences plus the pattern board, when hunting Jersey whitetails with a standard 2¾-inch chambered 12 gauge shotgun, use magnum buckshot loads in sizes 1 or 00. Select either modified or full choke barrel and keep your shots under 50 yards and you will stop any white-tailed buck that ambles into your sights.

But, as mentioned previously, all shotguns, even with identical bored tubes, shoot buckshot differently. If

Shell	Choke	Pattern*
12 Gauge 2¾" Magnum, 4 Buck	Improved Cylinder	55.5 percent
12 Gauge 2¾" Magnum, 4 Buck	Modified	64.6 percent
12 Gauge 2¾" Magnum, 4 Buck	Full	77.7 percent
12 Gauge 2¾" Magnum, 1 Buck	Improved Cylinder	59.5 percent
12 Gauge 2¾" Magnum, 1 Buck	Modified	74.1 percent
12 Gauge 2¾" Magnum, 1 Buck	Full	97.0 percent
12 Gauge 2¾" Magnum, 00 Buck	Improved Cylinder	66.7 percent
12 Gauge 2¾" Magnum, 00 Buck	Modified	91.7 percent
12 Gauge 2¾" Magnum, 00 Buck	Full	87.5 percent

*Percent pellets in 30-inch circle at 40 yards.

buckshot at ranges in excess of 100 yards, these were only freak 'accidents.' Many more animals will be wounded at these ranges than are killed.

Fifty Yards

For all practical purposes the 12 gauge shotgun, loaded with 2¾-inch magnum loads is a 50-yard weapon and no more! Up to these ranges it is deadly. Beyond, you are taking a

you are a smart deer hunter, it would be well worth your while to pattern your particular deer hunting scattergun with various buckshot loadings. Just a few hours of your time spent at the pattern board will not only greatly enhance the possibility of your 'bringing home the venison' but also perhaps prevent you from wounding a deer, only to have him escape to die a lingering death days later. #

Remember to tag and report your deer as required by law.

Bucks and Does

An evaluation of the effects of recent controlled harvests of antlerless deer

By Robert E. Mangold
Bureau of Wildlife Management

PRIOR TO 1959, only one season on antlerless deer had been held in the Garden State in recent years. Since 1959, however, there has been an open season of one sort or another on antlerless deer every year except 1960. This, of course, refers to firearm deer hunting. In addition, New Jersey bow and arrow hunters have enjoyed deer of either sex seasons since 1947. During this period of eight seasons of firearm hunting of does and fawns, what has been the effect on the deer herd? Have we eliminated the deer as the opponents of "doe" hunting feared we would?

To find the answers to these questions, we probably should dig up a few facts on the deer kill in earlier years. In Table 1, a brief summary of the deer kill is presented. Of principal interest is the change in the reported buck harvest over the half century spanned. In 1910, no records were kept of harvest by county, but the state-wide reported kill was 127 bucks. This buck harvest increased to a peak of 6,643 in 1957. It is interesting to note the early peaking of the kill in several of the "pines" counties; for

example, the kill in Burlington County was 527 in 1930 and 531 in 1965. It is also interesting to note the much later peaking and subsequent decline in the north central farm counties; for example, the kill in Hunterdon County was 371 in 1951, and peaked at 1,025 bucks in 1957, falling to a low of 756 in 1964.

The state-wide buck harvest has ranged between 5,000 and 6,000 since 1955, with the 1966 figure being 5,938 bucks. During this time we have harvested an additional 12,502 bow and arrow deer (an average of over 1,000 per year) and 18,307 permit deer in seven of the past eight years (an average of nearly 2,300 per year). In other words, while we have harvested 69,390 bucks in 12 years, we have also harvested 30,809 additional deer (bucks, does, and fawns in several different types of seasons).

Some people believe that if we had not harvested those does and fawns, our buck harvest would have continued to increase. Again, let's look at the harvest figures. We use harvest figures because harvest, and specifically buck harvest is the primary aim

Table 1.—Summary of Deer Kill in New Jersey for Selected Years by County

County	1920		1930		1940		1951		1959		1961		1962		1963		1964		1965		1966			
	F	F	F	F	F	Ant	F	Ant	F	Ant	F	H.C.	F	H.C.	F	H.C.	F	H.C.	F	F	B	P	H.C.	
Atlantic	236	149	265	294	—	342	—	363	144	400	545	472	452	525	116	217	—	—	—	—	—	—	—	
Bergen	23	27	64	48	—	45	23	16	39	205*	117*	24*	26*	—	2	—	—	31*	—	—	—	—	—	
Burlington	271	527	629	648	—	560	—	690	327	608	856	625	531	667	172	229	—	—	—	—	—	—	—	
Camden	14	12	69	72	—	70	—	44	16	62	70	50	58	65	20	22	—	—	—	—	—	—	—	
Cape May	19	2	22	58	—	67	—	80	45	87	121	88	95	169	24	53	—	—	—	—	—	—	—	
Cumberland	77	49	64	195	—	185	—	184	100	148	271	250	259	326	57	124	—	—	—	—	—	—	—	
Essex	0	14	18	78	79	27	12	30	33	122*	89*	60*	79*	—	1	—	—	—	—	—	—	—	36*	
Gloucester	1	2	17	25	—	26	—	28	15	34	52	60	41	59	13	18	—	—	—	—	—	—	—	
Hunterdon	1	11	26	371	—	960	1099	964	1861	885	849	756	796	862	272	500	—	—	—	—	—	—	—	
Mercer	6	6	22	152	—	264	346	230	514	213	203	193	173	192	91	97	—	—	—	—	—	—	—	
Middlesex	1	1	10	32	—	61	29	68	26	90*	75*	73*	89*	101	30	25	—	—	—	—	—	—	6*	
Monmouth	1	28	83	129	—	121	—	106	64	105	135	121	137	141	40	18	—	—	—	—	—	—	—	
Morris	16	131	263	678	285	759	656	494	507	545	526	427	482	507	118	228	—	—	—	—	—	—	—	
Ocean	93	279	410	446	—	370	—	330	174	388	524	476	397	482	63	164	—	—	—	—	—	—	—	
Passaic	5	71	131	162	—	215	82	127	142	95*	113	120*	89*	160	15	21	0	—	—	—	—	—	—	
Salem	2	0	2	3	—	21	—	28	2	29	52	58	69	84	21	29	—	—	—	—	—	—	—	
Somerset	0	21	33	318	107	624	582	453	919	391	301	319	299	289	85	192	—	—	—	—	—	—	—	
Sussex	21	108	298	440	—	670	291	441	604	495	507	449	532	634	70	259	—	—	—	—	—	—	—	
Union	0	0	3	19	1	2	0	0	0	0	4*	1*	1*	—	0	—	—	—	—	—	—	—	2*	
Warren	47	46	193	365	—	652	451	579	538	608	651	534	604	675	117	308	—	—	—	—	—	—	—	
Totals	834	1484	2622	4533	472	6041	3571	5255	6070	5158	5836	5057	5091	5938	1327	2504	75	—	—	—	—	—	—	—

F—Firearm Ant—Antlerless H.C.—Hunter's Choice B or Bow—Bow and Arrow P.P.—Party Permit P.—Permit

. . . Bucks and Does

of management. Our goal is to maintain the buck harvest at as high a figure as is compatible with other interests (deer damage and the physical condition of the deer, to mention two).

In Burlington County, which is typical of the southern pines counties, the kill increased from 271 in 1920 to 627 in 1926, 527 in 1930, 712 in 1935, 629 in 1940, 591 in 1945, 539 in 1950, 720 in 1955, and 645 in 1960. Therefore, from 1926 to 1960, there has been no significant increase in the reported buck harvest. During this 34-year period, the buck harvest has fluctuated from a low of 338 in 1932 to a high of 760 in 1956. The first permit season in Burlington County was held on January 31, 1962, when 327 deer were reported; in the fall of 1962 an additional 167 permit deer were harvested; in 1963, 150 more were harvested (during that year the reported buck kill was 856, an all-time record); in 1964, 224 permit deer were harvested; no season was held in 1965; and 229 permit deer were harvested in 1966. The buck harvest in 1966 was 667.

In other words, the five permit seasons held in Burlington County have had no effect on reducing the buck kill, or even in changing the normal annual fluctuations as witnessed for 34 years prior to the permit harvests. As a matter of fact, the record kill of 856 bucks occurred after two permit seasons were held. From the records, more permit deer can be taken from the Burlington herd before an effect is noticed in the subsequent buck harvest.

In contrast, let's look at the Hunterdon County record. As late as 1946, only 111 bucks were reported; in 1951, 371 bucks were killed; in 1955, 747 bucks were reported; and in 1957 the record kill of 1,025 bucks were killed. The peak was passed, and in 1959 before any permit season was held, the buck harvest was 960. After the buck season, a 3-day antlerless season was held, and 1,099 deer were reported harvested. The buck kill in 1960 was 987, and the buck kill in 1961 was 964. On January 31, 1962, the wide-open, one-day Hunter's Choice season was held, when 1,861 Hunterdon County deer were brought into state checking stations. This harvest, principally of does and fawns, did depress the 1962 buck harvest to 885 (a drop of 79). In 1962, another permit season was held, resulting in a harvest of 490. The buck harvest the next year (1963) was 849. The 1963 permit kill was 414. The 1964 buck harvest dropped to 756, and 258 permit deer were harvested. There was no permit harvest in 1965; but 796 bucks were reported.

Last year the buck harvest increased to 862; the permit harvest was 500 deer. The Hunterdon County data appear to indicate that the deer population may have hit a peak about 1957 (such as may have occurred in Burlington County in the mid-1920's). The Hunterdon County data also appear to indicate that a permit harvest approximately equal to the regular buck harvest may be sustained, or may have a slight effect on subsequent harvests, but that a permit harvest of double the buck harvest has a depressing effect from which it

. . . Bucks and Does

takes several years to recover. The data also indicate that a decreased herd can increase with a permit harvest of about half that of the buck harvest.

Complicating the population dynamics picture are the situations in Somerset and Morris Counties. In both counties, the buck kill was the highest on record in 1957, as it was in Hunterdon County. The Morris County buck kill dropped from 920 in 1957 to 494 in 1961, before any permit season was held. In January, 1962, 507 Hunter's Choice deer were harvested. The subsequent buck harvest rose (545 in 1962) and fell (526 in 1963, 427 in 1964), then rose again (482 in 1965 and 507 in 1966). The drop in these counties may be more closely connected with the advance of housing development and new highway construction, but in general, a similar pattern is noted in that the buck harvest began to drop before any permit season was held. Again, when twice as many permit deer were shot as bucks, the subsequent buck harvests declined for two or three years and then began to recover. In Somerset County, there may be a drop in hunting pressure, as the percentage of young bucks in the harvest is decreasing.

From the foregoing discussion, it can be seen that a limited harvest of antlerless deer will not hurt the subsequent buck harvests, but that if the kill of permit deer exceeds the buck harvest, there may be a decrease in the buck harvests. The reproductive potential of our deer, especially in the

areas of better soils and crops, is high enough to rapidly replace deer legally harvested (and most illegal and accidental kills as well).

What about deer populations, not just harvests? Is it possible that hunters are getting better, and thus taking more deer from a smaller herd, and giving the impression of increased deer populations? We have several means of checking on this. One way is an evaluation of age ratios of deer (bucks as well as antlerless deer bagged by successful hunters). Deer can be aged with a fair degree of accuracy by an examination of the wear on the teeth located in the back of the mouth (the pre-molars and molars). While there appear to be some differences in tooth wear between regions in New Jersey, the technique is a relatively easy and efficient means of determining ages. Age ratios thus obtained have been found to vary in different sections of the state, and based on these differences, five regions have been established. No doubt, closer scrutiny of age structure within these regions would provide the basis for further refinement of regional boundaries, but these regions, as presently set up, are sufficient for good management. The regions, with the age ratios for recent years, are presented in Table 2. It will be noted that the southern regions (IV and V) have a much lower percentage of yearling bucks than do the northern regions (I and II) and that Region III is intermediate. There are several reasons for this difference. In the first place is the difference in the quality of the soil, which produces higher quality browse and results in better antler development in Regions I

and II. In 1966 in Region I, 237 yearling bucks averaged 4.4 antler points; in Region II, 234 yearling bucks averaged 5.0 antler points; while in Region IV, 192 yearlings averaged 3.3 antler points.

As the aging teams moved into different sections, even within one region, local differences were very ap-

where yearlings have been found having 6 or 8 points; intermediate is the average pine land where fork horn or spike yearlings are normal and the poorest zone is on the "plains" where a spike buck may be 4½ or 5½ years old. Within the zones and regions, however, there is a definite pattern of age ratios, which is consistent with

Table 2.—Age Ratios of Adult Deer, by Region and Sex, 1962 to 1966.

Region	Sex & Age	1962	1963	1964	1965	1966	Total
I	# Bucks	285	263	292	266	339	1,445
	% 1½	80.4	82.9	79.8	81.6	83.5	81.7
	# Does	85	94	166	0	274	619
	% 1½	28.2	35.1	28.9	—	39.1	34.2
II	# Bucks	436	391	323	152	321	1,623
	% 1½	89.0	86.7	87.3	91.4	85.4	87.1
	# Does	123	79	191	0	402	795
	% 1½	32.5	29.1	33.5	—	34.8	33.6
III	# Bucks	45	33	14	0	24	116
	% 1½	73.3	63.6	42.9	—	66.7	65.5
	# Does	31	3	11	0	18	63
	% 1½	51.6	0	27.3	—	44.4	42.9
IV	# Bucks	457	539	577	384	481	2,438
	% 1½	50.1	47.1	47.8	40.9	49.1	47.3
	# Does	94	43	206	0	242	585
	% 1½	38.3	27.9	38.8	—	37.6	37.4
V	# Bucks	49	53	7	0	11	120
	% 1½	46.9	41.5	28.6	—	81.8	46.7
	# Does	6	5	24	0	44	79
	% 1½	50.0	40.0	29.2	—	38.6	36.7

Region I—Sussex, Warren, Passaic, N. Morris, Bergen Counties

Region II—Hunterdon, Mercer, Somerset, S. Morris Counties

Region III—Monmouth, Middlesex, Essex, Union, Hudson Counties

Region IV—Ocean, Burlington, Atlantic, Camden, Cumberland Counties

Region V—Cape May, Gloucester, Salem Counties

parent in some areas. For example, there is a section in Ocean County where, in a distance of about 10 or 12 miles, three distinct zones of antler development can be observed. The best is along the fringe of coastal marsh, and the edge of the tree line,

food conditions, and has not varied greatly in the past few years, at least. From this information, together with an examination of the weather prevailing during the week of the firearm deer season (which influences the activities of hunters), it is extremely

. . . Bucks and Does

doubtful if any significant change in the ability of hunters in general has occurred in recent years. My conclusion is that the reported deer kill in recent years has been fairly consistent.

Another method of population evaluation is the census. We have used several types in N. J. One (the roadside track count) was explained in *New Jersey Outdoors* in December, 1966, and another (the helicopter census) was explained in *New Jersey Outdoors* in July, 1966. A third type, and one which has some advantages over the other two, as well as some disadvantages, is the "calculated minimum working population" estimate. This type of census was referred to in both the magazine articles mentioned, but it was not described. Basically this census used the successful deer hunters as the "census takers" in that it is based on the annual deer harvests. The total number of adult bucks harvested in each county is determined by using the bow and arrow kill, the regular buck kill and the permit kill.

The percentage of yearling bucks in each of the five regions is determined, usually on an annual basis, by crews of trained Bureau of Wildlife Management personnel. These crews age deer during the buck season (in 1966, a total of 1,017 were aged of the 5,938 reported shot) and during the permit season when all deer shot must be brought to a checking station, so that virtually all permit deer are aged (in 1966, 2,504 permit deer were harvested; of these, 159 adult bucks were aged and 980 adult does were aged).

Table 3.—Calculated Minimum Working Population of Deer in New Jersey, by Region, 1966.

Region	Legal Buck Harvest			Adult Male Min. Pop.	Pre-Season Adult Sex Ratio	Adult Female Min. Pop.	Adult Does		Fawns Produced		Total* Deer Population
	F	B & A	Permit				Total	1½	Older	1½	
I	1,629	84	45	2,106	2.02	4,254	1,663	2,591	366	3,783	10,509
II	1,703	190	19	2,240	2.31	5,175	1,801	3,374	846	6,343	14,604
III	256	22	5	424	1.41	597	265	332	129	655	1,805
IV	2,065	122	108	4,675	1.23	5,750	2,162	3,588	410	5,310	16,145
V	312	19	11	856	0.98	839	324	515	117	813	2,625
Totals	5,965	437	188	10,301	—	16,615	6,215	10,400	1,872	18,772	45,688

* Total deer population is composed of Adult Male Minimum Population plus Adult Female Minimum Population plus total Fawns Produced

In Region I, 1,758 adult bucks were reported killed by hunters (see Table 3); ages collected indicated that these were 83.5 percent yearlings so there were a total present of a working minimum of 2,106 adult bucks as of October 1, 1966 (see Table 2 for counties). Also in Region I, 39.1 percent of the adult does aged were yearlings. It has been found over the years that 51.5 percent of fawns born are bucks (or 106.2 bucks per 100 does). Of the 2,106 adult bucks, 83.5 percent or 1,758 were yearlings; if there were 100 yearling does per 106.2 yearling bucks, then there was a minimum of 1,655 yearling does also present on October 1, 1966. If the adult does were 39.1 percent yearlings, there was a minimum of 4,233 adult does present on October 1, 1966. A short-hand method of calculation is to divide the percentage of yearling bucks (83.5 percent) by the percentage of yearling does (39.1 percent) to obtain a ratio of 2.14; this 2.14 is further divided by 1.062 to account for the sex difference at birth; thus a "pre-season adult sex ratio" of 2.02 for Region I is obtained. The adult buck figure of 2,106 multiplied by the 2.02 equals 4,254. (The difference between 4,254 and 4,233 is the difference in carrying out the decimal places.)

To get the number of fawns produced in Region I in 1966 we split the "adult female minimum population" into yearlings and older does. We found 39.1 percent yearlings, therefore, 39.1 percent of 4,254 equals 1,663 yearling and 2,591 older does. These yearlings were fawns when they were bred, and the rate of reproduction is less than that of adults.

Fawns have been found to produce 0.22 young per dam in Region I, and adults have been found to produce 1.46 young per dam in Region I. Using these figures, there were 4,149 young deer produced in Region I in 1966. Totaling the 2,106 adult bucks, 4,254 adult does and 4,149 fawns equals 10,509 deer as the "calculated minimum working population" for Region I as of October 1, 1966. Similarly, there were 14,604 deer in Region II, 1,805 in Region III, 16,145 in Region IV, and 2,625 in Region V, making a state-wide total of 45,688.

As has been pointed out, the 45,688 deer is a minimum, as no consideration has been given (in these calculations) to deer illegally or accidentally killed before or during the hunting season. If the totals of these deer could be ascertained, or even reasonably estimated, we could use the figures to arrive at a more realistic approximation of actual populations. An effort was made by the Division of Fish and Game a few years ago to evaluate the accidental kill, by sexing, aging, checking reproduction, and pin-pointing all kill locations on a map.

The results provided a distorted picture of populations, but did provide an insight into the selective mortality caused on our highways. For example, during the fall rut, bucks far outnumber the does as road casualties—if we were to use these sex ratios, we would not have a valid opinion of the deer herd, but we could use the age ratios of adult bucks so killed, and probably arrive at a true age structure. Highway kills do not necessarily reflect the size of the local population, either, as in some locations, deer are

. . . *Bucks and Does*

actually lured onto highway shoulders by the better quality food produced there, such as on the shoulders of the Garden State Parkway through the pine lands of Ocean County.

How then, does the calculated population estimate compare with an actual physical count, such as the helicopter

estimated that only two-thirds to three-quarters of the deer otherwise legally killed are actually reported. In general, the calculated estimate is larger than the roadside track count in southern counties, but fluctuates at about the same figure as the helicopter count in the northern counties. It must be remembered that these various methods census deer at different times

Table 4.—Comparison of Several Methods of Estimating Deer Populations in Northern and Southern New Jersey by Year, with Total Legal Harvest Included.

Method	1960	1961	1962	1963	1964	1965	1966
SOUTHERN COUNTIES							
Roadside*	11,518	10,390	9,000	10,295	9,335	11,165	12,945
Calc. #	16,466	16,050	12,798	20,911	16,035	14,143	18,072
Tot. Harv.	2,341	2,769	2,356	3,167	3,149	2,109	3,585
Buck Harv.	2,052	1,719	1,727	2,439	2,021	1,833	2,293
NORTHERN COUNTIES							
Helicop. †	37,305	29,251	21,455	22,890	—	—	24,449
Calc.	26,879	23,529	27,336	20,744	23,704	25,075	24,034
Tot. Harv.	4,386	8,880	5,091	4,979	4,324	3,634	5,496
Buck Harv.	3,482	3,161	3,137	3,037	2,678	2,886	3,159

* Roadside track count totals (counties—Burlington, Ocean, Atlantic, Cumberland, Cape May, Camden, Gloucester)

Calculated minimum working population estimate (same counties)

† Helicopter census totals (counties—Hunterdon, Mercer, Somerset, Warren, Sussex and Morris)
Calculated minimum working population estimate (same counties)

count, or a related count, such as the roadside track count? Table 4 has such a comparison, together with the legal harvest of deer for the counties involved. It will be noticed that there are fluctuations with all the methods—as well as in the reported harvest. Part of these fluctuations reflect true changes in deer population, and part may reflect inadequacies of human systems. For example, it is doubtful if the legal reported kill of bucks during the one-week season is actually the total kill. In other states, it has been

of the year; the track count and helicopter censuses in the winter or spring (after the hunting season) and the calculated minimum estimate in the fall (before the rut and the hunting).

These efforts to enumerate the size of the deer herd, while they may not count every single deer, do result in figures close enough for practical management, and at a practical cost. Results of these methods have indicated that the total deer herd is in good supply. As a matter of fact, it is too plentiful in some localities. Consider-

ation should be given by sportsmen to the acceptance of a smaller herd, but with a larger percentage of total herd being harvested. In other words, for the good of all concerned (deer included) a smaller herd can still provide sport, trophies and venison, but with less problems to agriculturalists, motorists, homeowners, and the deer themselves. As the human population increases, rural areas will be converted to more intensive use such as homes, highways, and industry, leaving less and less space for deer. We must face these facts and adjust our attitudes to-

ward what constitutes acceptable goals in game management.

Generally speaking, our deer herd is in good shape and recent antlerless deer harvests have not resulted in annihilation of the herd, but have proved that wise use of the herd will allow fair numbers of antlerless deer to be harvested. I feel it is far better for the sportsmen to be offered the opportunity to do the harvesting than to allow the herd to suffer problems of restricted habitat with piecemeal herd control. Does and fawns are deer, too, and can provide good sport. #

Where Is a Good Place to Hunt Deer?

Well here is where hunters bagged deer in 1966.

Number of legal deer harvested in each season in New Jersey in 1966, by county.

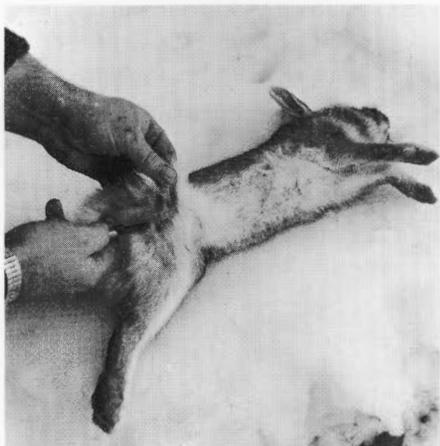
County	6-Day	Hunter's Choice		Bow		Special Permit		Total
	M	M	F	M	F	M	F	
Atlantic	525	—	—	61	55	83	134	858
Bergen	—	16	15	1	1	—	—	33
Burlington	667	—	—	85	87	71	158	1,068
Camden	65	—	—	11	9	6	16	107
Cape May	169	—	—	15	9	13	40	246
Cumberland	326	—	—	29	28	36	88	507
Essex	—	16	20	1	—	—	—	37
Gloucester	59	—	—	7	6	4	14	90
Hudson	—	—	—	—	—	—	—	—
Hunterdon	862	—	—	147	125	144	356	1,634
Mercer	192	—	—	48	43	19	78	380
Middlesex	101	4	2	15	15	6	19	162
Monmouth	141	—	—	15	25	7	11	199
Morris	507	—	—	71	47	79	149	853
Ocean	482	—	—	34	29	69	95	709
Passaic	160	—	—	5	10	8	13	196
Salem	84	—	—	13	8	10	19	134
Somerset	289	—	—	49	36	56	136	566
Sussex	634	—	—	37	33	95	164	963
Union	—	1	1	—	—	—	—	2
Warren	675	—	—	60	57	94	214	1,100
Totals	5,938	37	38	704	623	800	1,704	9,844
GRAND TOTALS	5,938	75		1,327		2,504		9,844



To field dress a rabbit

The rabbit, left, is New Jersey's favorite small game. Here are some easy steps to field dress a rabbit for sweeter meat and good eating

Photographs by Harry Grosch



First, start the cut, above, to open the body cavity

Next, continue the opening, below, all the way to the neck



The cleaned rabbit, above, after the innards have been removed



The dressed rabbit may be left spread open a few minutes to cool and drain

New Jersey Outdoors

How to prepare

The Cottontail Rabbit

The rabbit is the favorite game species of hunters today, as harvest figures of 346,000 for last year ascertain. It is one of the easiest small game animals to clean and can be prepared in many different ways. To enhance the flavor of the meat and at the same time reduce weight carried in the field, it is advised to field dress (remove entrails) the rabbit immediately after being taken. Skinning is accomplished by hanging the rabbit by hind leg and peeling the hide down over the head at which point hide and head are removed. It is also recommended that rabbits also be soaked for a period of time prior to using.

The recipe given below is the easiest and most common method of preparation. This recipe can also be used for other small game species mentioned in this series of articles.

RABBIT FRICASSEE

Ingredients

1 rabbit	flour
pinch of baking soda	margarine or
salt and pepper	vegetable oil

Procedure

One rabbit cleaned and cut into serving pieces. Cover pieces of rabbit with water and add pinch of baking soda. Bring to boil and lower heat immediately and cook 10 minutes. Pour off this water and add fresh water to just cover. Add salt and pepper and cook rabbit pieces until fork tender. Remove rabbit pieces and cool. Place flour, salt, and pepper in paper bag. Place margarine or vegetable oil in frying pan over medium heat. Place rabbit pieces in paper bag and shake until well-coated with flour mixture. Place in frying pan and brown until crispy. Remove to platter and use pan drippings for gravy if desired.

THE MAN • THE GUN THE BULLET • THE BUCK

By Charles Law

Unquestionably some of the statements that are to follow are to some degree debatable. Due, however, to the fact that there are exceptions to every rule, man-made or natural, I proceed, knowing full well that exceptions will be taken to some of them, but offering you my beliefs and observations, all of which are the result of rather successful deer hunting, extending over a period of 30 years in South Jersey. First let me state that I am unfamiliar with deer hunting in any other part of the world. I say this because what follows, so far as I know, is applicable only to the territory to which I refer—South Jersey. I shall deal with each division of a rather lengthy title in its consecutive order and start with THE MAN.

THE MAN

IN ANTEDILUVIAN DAYS our forbears gathered in groups to hunt, pursue, and kill animals for food, and then, in whatever ritual has been theirs, celebrate the kill. Their rituals usually were comprised of exhilarated joyfulness, hilarity, gaiety, and thankfulness, finding expression in dancing and shouting and feasting and the drinking of some kind of fermented juices, and of course, the telling of great stories about their hunting adventures. These customs in varied forms have survived civilization down through the ages until the present day. I offer for example and proof your own deer club after a successful day in the woods. Outside of some change in our physical appearance and in our clothes and weapons, I believe our procedure, so far as celebration is concerned, to be basically the same as that of those hairy-chested nimrods who hunted the saber tooth tiger and the

mammoth. Here however, I think that the comparison ends.

Without team work our ancestors could not have overcome the larger animals of their time. They were forced to hunt in groups. No one member of a hunting party could lay proper claim to the kill. And so it is in our time, hunting deer in the driver and stander fashion. Regard-



less of who kills the deer, each and every man in the party has had a part in it. In most instances, the deer, after having been started by the drivers, will change his direction of flight many times, due to having winded or seen or heard other standers, before he comes to where he is killed, crippled, or escapes entirely. Therefore, I think it reasonable to believe that if a man is unwittingly instrumental in turning the deer or changing his direction so that he is eventually killed by another, he is just as responsible for the kill as the man who shoots the deer.

In the draw of a stand, while you may not be fortunate as to wind and position, you are still essential to the kill. You must, however, take full advantage of your position to increase your possibilities of a kill. To do this there are some things you must do. First, irrespective of what anyone says, it is to your extreme advantage to hide as much as possible. Although it is believed that deer do not see well, they do detect the slightest movement, strange or otherwise. The important thing in hiding is to select a place or position that will break up the outline of your body, and most important, conceal any movement you might make. In order to hide you must step into the woods to some degree. It is impossible to hide in the middle of a road. Make sure, if possible, when selecting a place to hide that you have a little cover in front of you. Make doubly sure that you can swing your gun in all directions. Above all, know the approximate location of the men nearest you. If you are in a comparatively clear place, stand directly in

front of a large tree or group of trees. If it is a bright or sunshiny day, there are many shadows in the woods. These offer excellent concealment.

Now that you are hidden as well as possible there are two very essential things to remember. You must be as nearly absolutely still as possible and you must be completely quiet. I believe a deer's most sensitive perception is through hearing and it has a good nose too. After you have selected a place to hide and put yourself in it, you should carefully appraise the immediate area as to the locations of little clearings that will offer you a clean shot at a deer if he comes to you. The reason that I suggest this is that, if you have determined where these places are, you do not have to move your body or gun until the deer is where he can be killed. So many men have spoiled their chances of killing a deer by putting their gun on it when they first see it and following it along. It is wise to keep perfectly still until the deer is in proper position, then raise your gun and fire instantly. In good, clear, open shooting, few deer are killed at more than 50 yards. In heavy, dense, thick cover I would say 30 yards is about the limit. I know you have heard stories of deer being killed at 90 and 100 yards and even more, but for every deer killed at these ranges, 50 times that number are missed or carry off one or two buckshot, which in time, often not for weeks, kills them.

Again I bring up the subject of team work. If the deer is too far off—don't shoot. Stand still and it will probably go on to someone who will have a better opportunity of cleanly

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killing it. To shoot at a deer out of killing range is to deprive some other member of the hunting party of a good shot. It is creating the possibility of injuring the deer and having it run off and die at a later date, never to be found, but wasted. Incidentally about eight out of every ten wounded deer are never found. It delays the rest of the hunt by taking time out to try and track and find the deer. It is a cruel and very unsportsmanlike act. It is evidence of complete selfishness because it proves that you care neither for the deer nor the man hunting with you. As I said before, team work in any group endeavor is essential to success. A man who allows a deer to pass at extreme range, so that another may kill it, is just as essential to the kill as the one who pulls the trigger. It is my opinion that if shooting at extreme ranges were abolished, the percentage of killed as to the number of deer gotten out on a drive would increase amazingly.

In conclusion on THE MAN let me say that if you hide properly, keep still and stay quiet, observe the rights and safety of others, and above all remember that you hunt as a team and not as individuals, our nights of ritual of the celebration of the hunt will be more frequent and longer, and there will be fewer crippled and festering deer dying in the woods never to be found. Hunting deer is a wonderful sport, shooting at them when the odds are against a kill is a depraved, selfish, lousy pastime, unfair to the hunting party and most certainly unfair to the game.

THE GUN

The fowling piece or shotgun has been in existence for hundreds of years. Since its origin and until the late nineteenth century, the barrels were constructed with the same inside measurements at the breech as at the muzzle. About 1888 a market hunter by the name of Fred Gilbert discovered that a constricting or lessening of the bore at the muzzle of the barrel would cause a denser pattern and so make possible longer killing ranges. This discovery is the only improvement in the efficiency of shotgun barrels that has been made in all the years of their existence. The boring of rifle and pistol barrels has been developed to an almost exact science in which the results of firing can be calculated prior to the shooting of them. As to shotgun barrels, we only know that choked to certain degrees they will throw a denser pattern, but that they have not developed a method of boring a shotgun barrel in which they can predict accurate percentage of the absolute density of a pattern.

As a matter of fact, in the ordering of a custom-made shotgun you may specify a certain percentage density in the boring of the barrels. Often the manufacturer will have to bore a great many barrels to arrive at your desired percentage. These facts and a few which are to follow may help you in the selection of the type and size of buckshot you should use in your gun to exact the best performance from it. One of the most important things to remember is that *no one* knows what makes some shotguns shoot buckshot good and others not good. It is a common belief that all

cylinder or open bored shotguns shoot buckshot better than choke bored guns. This is false. It has been proved many times and can be proved again and again that some choked barrels shoot buckshot better than open and vice versa. A gun barrel either handles buckshot well or it doesn't, regardless of boring. It is in evidence that some nine dollar shotguns shoot buckshot better than the nine hundred dollar ones. You can buy a shotgun that will be guaranteed to give you a certain percentage in fine shot but no maker will even attempt to give you a guarantee on buckshot pattern.

Percentage is determined by the number of pellets contained in a 30-inch circle that has been fired at from a distance of 40 yards. Another fact that should be of interest to you and will amaze you is that all shotgun barrels do not shoot straight; a further point of interest is that the majority do not. They will shoot high or low or to the left or right or in various combinations of these locations. This can be proved by resting the gun on some solid object and firing at a target center at 40 yards. A great many times you will find the density of pattern to be off center. Unlike a rifle this variance cannot be compensated for by sight adjustment but must be compensated for by the shooter. Although a shotgun is not a precision instrument as compared to a rifle, nor is it as powerful as most rifles, it is still a tremendous killing weapon at short ranges when you familiarize yourself with its peculiarities and limitations.

The one and only way to discover which kind of buckshot any gun

handles best is by testing. A gun cannot be tested by firing one or two loads of shot into a tree. To arrive at a proper conclusion it is advisable to fire at least a half dozen rounds of each kind or size of buckshot from each barrel at a given range, preferably 40 yards, and at a target that represents in size and shape the approximate killing area of the game you seek. I emphasize killing area because this is not a particularly large area in the Virginia White-tailed Deer. In test firing, record the number of pellets in the target upon each firing of each kind of buckshot and the barrel from which it was fired. You will find in a great many instances, if you have a double barreled gun, that one barrel will shoot a different size of buckshot better than the other barrel. A gun to be really efficient should put at least 40 percent of the load in the killing area at 40 yards on a still target. Bear in mind that if you are shooting at a fast moving deer your percentage of pellets that arrive in the killing area will be greatly reduced. This is caused by the fact that the shot string or pattern when travelling is strung out or lengthened to a greater distance than it is in width. Therefore the target in moving sideways or across will receive only part of the load whereas a standing target will receive all of it.

In closing on the subject **THE GUN**, I will leave you with these thoughts. It seems ridiculous to me to own a weapon which represents, first of all, a considerable investment, secondly the difference between killing game and not killing it, without knowing all there is to know about it when an investment of about four dol-

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lars worth of shells and a good afternoon's fun will give you all the answers you need to assure greater success.

THE BULLET

A buckshot fired at close range is probably the most devastating, ripping, tearing, killing load in existence, that can be fired from a shoulder arm. There are few creatures on the face of the earth that can survive a full load of buckshot fired at 25 yards or under. However, I doubt if there is a cart-ridge or shell used in the hunting of big game such as deer, that has a poorer set of ballistics or more limitations as to range than buckshot. It is good to realize this when deciding how far off you can really kill a deer.

The maximum powder load in a buckshot shell creates a velocity of about a thousand feet a second. This velocity is maximum only at the muzzle and starts to decrease immediately. When and if a deer is killed at ranges exceeding 50 yards by buckshot, it is more by chance and good fortune than to the efficiency of the shell or shooter. Another rather dim aspect of the buckshot shell is that it is almost an impossibility to find any consistency or pattern in the larger sizes such as O or double O. Unquestionably the smaller the size of buckshot, the better the pattern. Of course, the better the pattern, the greater the killing potential of the load. It is comparatively simple logic—the better the pattern—the more pellets hit the animal—the more pellets hit the animal—the greater possibility of hitting a vital spot or shocking him to a stop—the

greater possibility of hitting a vital spot—the better opportunity for a clean kill.

In shooting in heavy brush or thicket there is a distinct advantage in using number four buckshot; the advantage being that there are enough pellets in the load so that the forward part of the shot string clears a path for the after part. In larger buckshot there is usually a greater width of pattern and so a greater distribution of a fewer number of shot pellets over a greater area which decreases the possibilities of the forward part of the load clearing for the after part. The one advantage the larger shot has is that it will not deflect as readily as the smaller shot.

There will be arguments as to which buckshot load is the best and examples cited and tales will be told as to great kills made with double O buckshot. But with number four buckshot you are bound by percentage, if nothing else, to hit the animal or target with more pellets. Believe me, whether it is shooting buckshot or playing roulette, poker, or bumper, you cannot be arguing or playing against or defeat percentage.

In closing on THE BULLET I would like to bring to your attention one other bad practice regarding shells, indulged in by some people who hunt deer. It seems they are willing and able to take time off from their respective professions or work, which costs money. They are willing also to spend ten or more dollars per day to go hunting. Their equipment, clothes, and gun represent an investment of two or three hundred dollars. Yet they will go into the woods with buckshot shells

10, 15 or 20 years old. A half dozen new ones would cost only a dollar or so. I will grant that a few years does nothing to smokeless powder if it is kept dry and not too hot or cold. What does happen to shells over a period of years is oxidation in the lead pellets. They become partially or wholly oxidized and it is quite possible to crumble the pellets between your fingers. If this kind of shell is shot at deer, believe me, absolutely nothing happens to the deer. The pellets disintegrate on the outside of its hide. It seems ridiculous to me that anyone should even consider using old shells when the cost of new ones as compared to other hunting expenditures is so little.

THE BUCK

The Virginia White-tailed Deer, of all creatures, should have a monument erected to it in the United States. Had it not been for this animal I doubt if the early settlers would have fared as well as they did or perhaps even survived. The deer was in countless instances the only item of meat in their diet. From its hide they made foot coverings and clothes. From its entrails they made thongs with which to sew and bind. From its horns and bones they made handles for their tools and knives. Besides all this, the deer has given countless thousands of people who like to hunt it, enjoyment and pleasure for literally hundreds of years.

In spite of the hunting and killing of deer, it has with some help and protection survived and adapted itself to civilization and restricted areas. Not only has it survived but is

definitely on the increase in a great many areas. Deer have been caught or killed, I suppose, with every conceivable type of small weapon, trap, snood, or snare. They have been hunted in every possible manner, with hounds, by stalking, by still hunting, by driving, and in many other ways by outlaws. They have been hunted by day and by night. Spread this activity over a period of three hundred years and you will conclude that the deer had to become pretty wily and wary to survive.

However, like some apparently clever people, deer become completely stupid at times and so perform stupid acts. Deer are creatures of habit. If unmolested they will travel the same paths at approximately the same time each and every day and night, as long as that which they seek, whether it be food, water, or a mate, remains plentiful in the immediate area. A driven deer presents a little different picture. A buck deer that senses stranger activity around him, before he is actually aware of a drive, will usually be found walking away rather casually but very cautiously from whatever has disturbed him. If a stander observes this deer at a distance, he must be extremely still and quiet because Mr. Buck is examining every nook and cranny, every sound, and every odor to try and determine what is going on. Generally if the wind is favorable to the stander and he is quiet and completely without movement, the deer under these conditions will walk to within a few feet of him. However, if the stander moves and puts his gun to his shoulder in order to follow the deer or makes a movement for any reason, the deer

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will wheel on his hind legs and take off like a bullet.

Deer that are kicked up by the drivers at close quarters present a little different type of activity. These deer start off "hell bent for election." Usually the buck or bucks cut away from the does and go as if the devil himself was after them until they reach some very obviously strange situation. Then they change their direction and put on a little more speed. Deer under these conditions are usually very frightened and so a little careless. A stander can take a few more liberties in his preparation for a shot on this kind of animal. The reason is, that they, the deer, are interested only in getting away from where they were and in a big hurry. In any event, if a deer running directly towards you, stops head on in killing range—don't shoot at him head on. He has stopped because he has sensed you. He will stand still for an instant and then wheel on his hind legs and take off. When the deer wheels or turns, he has started a leap, his front end is up in the air and he stretches out presenting a beautiful full broadside shot. This is the best possible time to shoot. Every vital organ is vulnerable when the deer is in this position. A head on shot presents a very limited, difficult killing chance unless the deer is very close.

A common occurrence with deer is their habit of going back through the drive. This doesn't happen always but a great many times it does. These deer, after turning back through a drive, run a short way and then proceed to do what is commonly known

as skulking. The deer lowers his body until his belly very nearly touches the ground and travels almost as fast as he does upright. He seeks cover and hides from his travelling route and usually presents a rather difficult, hard-to-see target. In order to hit them you must shoot almost into the ground and believe me at any decent range you have to lead them a little to kill them. These deer escape being killed due principally to the standers' mistakes of not staying on their stands and their tendency to move around, make noise, and light a smoke as soon as the drive has passed their particular location. Take my word for it—if every stander stayed on his stand and hunted properly during the entire drive there would be very nearly as many deer killed behind the drive as in front of it. These deer that go back through the drive do not stay in the same piece of woods. They want to and do get out of it and if you stay on your stand you can quite possibly meet one of them trying.

One of the most important things to remember in any hunting is the more you know about what your game will do under a certain set of circumstances, the better chance you have of killing it. It is a good practice to spend as much time as possible observing and remembering the game's habits and peculiarities by doing a little scouting and woods travelling out of season without a gun.

In closing may I say that I offer this article most humbly and with the hope that it may help to make your deer hunting expeditions more fruitful to you and less painful to the deer. #

Council Highlights

September Meeting

The open session of the regular monthly meeting of the Fish and Game Council was held in Trenton on September 19. In addition to the Council members and Division personnel present the following persons attended the session: Charles Webber and Joseph Briel.

Management Areas

The Council considered a proposal that the various tracts of land administered by the Division of Fish and Game for hunting and fishing purposes be known as "Fish and Wildlife Management Areas" instead of "Public Hunting and Fishing Grounds." Director MacNamara stated that the new title is a more modern approach and he referred to the distasteful connotation many people associate with the word "hunting."

Councilman Marron made a motion that lands under control of the Division of Fish and Game be designated as "Fish and Wildlife Management Areas of the New Jersey Division of Fish and Game." The motion was seconded by Councilman Space and passed. The change-over of existing signs, and so forth, is to be gradual, as replacements are needed, and no additional expense is to be incurred in making the transition.

Coastal Patrol

Newman Mathis, Chief of the Coastal Patrol, reported that the Atlantic Ocean and inland coastal waters were patrolled. Fishing vessels and netters were checked for licenses and legal catch. No major problems were encountered during the month. Sixteen pending cases involving three defendants were tried. One defendant was found guilty of possession of seven undersized striped bass and was fined \$140; one was found guilty of possession of 20 undersized striped bass and was fined \$400; and one was found guilty of possession of 40 undersized striped bass and fishing with a hauling seine without a license and was fined \$850.

Councilman Alampi commended Captain Russack and the Coastal Patrol on their success in apprehending and prosecuting these violators.

Reference was made to complaints received of menhaden vessels fishing in Delaware Bay close to Fortesque and purported to be taking food fish. Councilman Alampi stated that, in company with a member of the Coastal Patrol, he had boarded several of these menhaden vessels and personally observed their catches which he found to be legal.

Attention was called to the steady decline in commercial fishing activity.

. . . Council Highlights

As an example, in the Port Monmouth area in 1963 there were 44 boats operating with a crew on each boat. In the succeeding five years the number decreased to 19 boats. The same thing applies to menhaden vessels in that area which have been cut back from about 15 vessels to four.

Wildlife Management

George Alpaugh, Chief of the Bureau of Wildlife Management, presented his report to the Council. He stated that bids had been let and work was to commence on the construction of the boat launching ramp at Mad Horse Creek. It was anticipated that this facility would be completed in time for the opening of the waterfowl season.

Mr. Alpaugh reported on his attendance at the Northeast Rabbit and Hare Meeting held in Virginia. Technicians from 13 states were present and told about the research projects being conducted in their respective states. None of the states represented at the meeting purchase rabbits for stocking, and all have habitat improvement programs of some kind. At the meeting a report was made on work being carried out by the Southern Cooperative Wildlife Study at the University of Georgia on rabbit parasites and their effects on rabbits. A tour was made of the National Beagle Club's grounds on which field trials have been run for the past 79 years.

Pheasant Distribution

Personnel of the Bureau of Wildlife Management had made plans for the liberation of 30,045 pheasants from the Forked River Game Farm and 29,480 pheasants from the Rockport Game Farm. As in the past, liberations would be carried out periodically on the public hunting and fishing grounds and sportsmen would be assured of a good hunting season.

Fisheries Management

Robert Hayford, Chief of the Bureau of Fisheries Management, discussed with the Council the presence of whirling disease in fish at the hatchery. The Council expressed great concern and requested that every step possible be taken to check the spread of this infection. No known cure has been developed for this disease which has existed in Europe since about 1910. Preventive measures will entail the installation of concrete bottoms in pools at the hatchery to facilitate sterilization, and the installation of filters. The Council recommended that immediate action be taken to install the concrete bottoms at the earliest possible date.

Smallmouth Bass Stocking

The Council gave consideration to the disposition of 1,000 smallmouth bass available for distribution from the hatchery. Fisheries personnel had recommended that these be placed in Wanaque Reservoir and Hank's Pond, which

are watershed properties open to fishing under permit only. Chief Hayford advised that, in the past, many thousands of smallmouth bass had been netted from Wanaque Reservoir for rearing purposes, and not all waters are suitable for smallmouth bass.

Smallmouths for Wanaque

It was moved by Councilman Marron that, in view of the many times fish have been netted out of Wanaque Reservoir in the past, a token stocking of 500 smallmouth bass be placed in this reservoir. Motion was seconded by Councilman Space and passed. Distribution of the remaining fish will be left up to the Fisheries Bureau and the fish can be placed in various types of water on an experimental basis.

Public Relations

William E. Peterman, Supervisor of Public Relations, reported that exhibits were installed at four fairs. Increased requests have been received for the presentation of programs at children's camps. Councilman Alampi commended Mr. Peterman on the excellent display at the Trenton State Fair.

Marine Resources

George Spinner appeared before the Council and described the progress that had been made in his capacity as director of the Marine Resources Committee operating under funds from the Baruch Foundation. He explained the value of the work that was done, its application in the future, and its value to the State of New Jersey.

Recommendations

The Council, after carefully reviewing and discussing the program under which Mr. Spinner operates, recommended that the information he has collected be made available to the New Jersey State Planning Board to be incorporated in plans dealing with the future of our wetlands, estuaries, and offshore waters. The Council recommended that he carry on this operation representing the Division of Fish and Game under the direction and cooperation of the Director.

The New Jersey Fish and Game Council and the Division of Fish and Game note with regret the passing of Chief Conservation Officer William P. Coffin on October 11, 1967. Chief Coffin joined the Division as a Fish and Game Warden on June 13, 1939. He was appointed Chief of the law enforcement unit on January 1, 1955. Chief Coffin was a dedicated and conscientious officer who served well the sportsmen and the State of New Jersey.



Violators Roundup

<i>Defendant</i>	<i>Offense</i>	<i>Penalty</i>
James A. Braidwood, R.D. No. 5, Box 402, Flemington	Kill deer closed season	100.
Ronald Ball, R.D. No. 1, Kingston Lane, Monmouth Jct.	Hunt before hours	20.
Owen McGovern, 911 Monroe St., Elizabeth	Poss. doe deer closed season	100.
Irving P. Atkinson, 125 Union St., Mt. Holly	Hunt waterfowl over baited area	50.
Emil Pepnetti, 1601 Union Park, North Bergen	Destroy signs forbidding trespass	50.
Emil Pepnetti, 1601 Union Park, North Bergen	Fail to exhibit license	20.
William Little, 536 Jackson Ave., Westwood	Fail to exhibit license	20.
William Little, 536 Jackson Ave., Westwood	Destroy signs forbidding trespass	50.
Joseph W. Blackwell, 30 Cypress Rd., Toms River	Take brant closed season	20.
Frank Wallace, Jr., 156 Anderson Ave., Wellington	Illegal firearm	20.
Michael S. Evans, 23 Susan Lane, Beach Haven West	Uncased weapon	100.
Thomas Erdwein, 54 Frank Dr., Beach Haven West	Uncased weapon	100.
Herbert W. Lee, Bock Road, Mauricetown	Pursue deer w/auto	100.
Edward F. Nichel, 521 E. Bay Ave., Manawkin	Uncased weapon	100.
Nathan D. Goins, 178 2nd Ave., Toms River	Loaded gun in auto	20.
Roy M. Ference, 30 Gotthart St., Newark	Hunt no license	20.
Roy M. Ference, 30 Gotthart St., Newark	Illegal firearm	20.
Wm. Martin, Walnut Dr. W., R.D. No. 4, Newton	Fish no license	20.
Charles VanBlarcom, Box 144, McAfee	Loaded gun in auto	20.
Charles Bartimus, Box 96, Piniacreas Trailer Ct., Toms River	Take brant closed season	20.
Earl Lashlery, Church St., South Seaville	Pursue deer with auto	100.
Neil Curliss, 901 Vine St., Millville	Fish no license	20.
Robert L. Berger, 118 Garfield Ave., Palmyra	Hunt pheasants closed season	20.
Robert L. Berger, 118 Garfield Ave., Palmyra	Loaded gun in auto	20.
Robert L. Berger, 118 Garfield Ave., Palmyra	Hunt no license	20.
Stephen Sheckleton, Hudson Fish Market, 410 N. Rhode Island Ave., Atlantic City	Poss. "1" undersize lobster	20.
George Zanetti, 155 Valley Rd., Clifton	Fish no license	20.
David Sanderlin, 1 Mellen Ave., Pennsville	Trap no license	20.
George Raymond, 378 Elm St., Kearny	Traps were not tended 24 hrs.	20.

<i>Defendant</i>	<i>Offense</i>	<i>Penalty</i>
Joseph Ginasto, 26 Van-Corrland Pl., Kearny	Traps were not tended 24 hrs.	20.
Isac Hymer, R.D. No. 3, Bridgeton	Fail to display tag	5.
Elwood Brewer, Davis Rd., Franklin	Loaded gun in auto	20.
Nick Myronowsky, Box 59, Cape May Ave., Estell Manor	Hunt w/aid of lights	20.
Robert Schade, Coles Mill Rd., Box 284, Franklinville	Hunt deer w/rifle	100.
Robert Schade, Coles Mill Rd., Box 284, Franklinville	Hunt deer closed season	100.
Mark A. Niemczyk, 82 Lafayette Ave., Passaic	Fish closed waters	20.
Charles J. Barber, North Clinton Ave., Wenonah	Poss. doe deer	100.
Louis Barber, 702 Clinton Ave., Wenonah	Poss. doe deer	100.
Charles Sprenger, 1141 Barbara Dr., Cherry Hill	Uncased weapon	100.
Charles Sprenger, 1141 Barbara Dr., Cherry Hill	Loaded gun in auto	20.
Robert L. Sprenger, 1141 Barbara Dr., Cherry Hill	Hunt deer at night	100.
Clarence A. Brownlee, Jr., Carpy Ave., Vineland	Hunt no license	20.
Clarence A. Brownlee, Jr., Carpy Ave., Vineland	Hunt on Sunday	20.
Robert G. Orr, 12-16 Edwards St., Fairlawn	Tip-ups not marked w/name and address	20.
George Korbelak, 143 Prospect Ave., Bayonne	Loaded gun in auto	20.
Kenneth J. Allen, Brooks Village Rd., Templeton, Mass.	Fish no license	20.
Richard Nevins, 213 Cape May Ave., Bayville	Hunt no license	20.
William Norman, 77 Carlyle Dr., Bayville	Gun on Sunday	20.
Richard T. Nevins, 213 Cape May Ave., Bayville	Poss. duck closed season	20.
Benjamin Chance, Belleplane Rd., Delmont	Deer closed season	100.
Benjamin Chance, Belleplane Rd., Delmont	Hunt while on revoked list	100.
Benjamin Chance, Belleplane Rd., Delmont	Loaded gun in auto	20.
Norman Chance, Belleplane Rd., Delmont	Hunt while on revoked list	100.
Norman Chance, Belleplane Rd., Delmont	Hunt deer closed season	100.
Norman Chance, Belleplane Rd., Delmont	Deter Conservation Officer	100.
Norman Chance, Belleplane Rd., Delmont	Loaded gun in auto	20.
Claude Sneather, Belleplane Rd., Leesburg Rd., Leesburg	Loaded gun in auto	20.
Peter De Rosa, 1116 Almond St., Vineland	Tag not displayed	5.
Richard Smith, So. Orchard Rd., Vineland	Fish no license	20.
Dennis Marshall, R.D., Greenwich	Hunt deer at night	100.
Dennis Marshall, R.D., Greenwich	Hunt deer illegal weapon	100.
William Rossman, Jr., 421 Newton Ave., Morgantown, W. Va.	Fish no license	20.
Robert S. Demasse, 83 Giles St., Bridgeton	Loaded gun in auto	100.
Robert S. Demasse, 83 Giles St., Bridgeton	Hunt no license	20.
Charles J. Roberts, Rt. 206, Lake Rd., Vincentown	Uncased weapon	100.
Dominic Nardone, 355 21st St., Irvington	Carry gun on Sunday	20.
Dominic Nardone, 355 21st St., Irvington	Illegal missile	100.
Martin Foley, 104 Gordon Ave., Tenafly	Fish no license	20.
Paul Richtarcsik, 144 Central Ave., Hackensack	Fish no license	20.
Frank Super, 565 Clifton Ave., Clifton	Use tip-ups closed season	20.
Michael Meany, Jr., 234 North Church St., Moorestown	Fish no license	20.
Crescenzo Gallone, 2041 South Darien St., Philadelphia, Pa.	Fish no license	20.
Frank Woodruff, Jr., Coles Mill Rd., Franklinville	Hunt deer w/rifle	100.
Frank Woodruff, Jr., Coles Mill Rd., Franklinville	Hunt deer closed season	100.
Kenneth Melia, 244 Livingston Ave., New Providence	Hunt no license	20.
Matthew J. Morris, 624 Franklin Rd., Winonah	Dis. firearm w/in 300 ft. of dwelling	20.

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