# THE CONSERVATIONIST

State of New York Conservation Department October-November 1965

### Bonds and Toilets

There are 4,000,000 toilets emptying into the rivers and waterways of the State today. In 55 years there will be 10,000,000.

For this and other daintier reasons, we recommend approval of Proposition One on the voting machines November 2nd. The proposition provides the first step for getting more pure waters. It will permit the State to issue bonds up to one billion dollars (not 1.7 billion). The money would be used to make grants to local governments for improving and building sewage disposal facilities. The grants would pay up to 30 per cent of costs as the State's share, and prepay the anticipated Federal share of 30 per cent. The remaining 40 per cent would be paid by the local government which undertakes the work. Enabling acts provide strict control of planning and of reimbursement for spending, by the State.

The bonds will help meet the emergency need to purify our waters in the next six years. Yet underneath the bond program remains a basic problem—the widespread and erroneous idea that rivers are a naturally efficient way to get rid of industrial waste and sewage, treated or untreated.

This fundamental fallacy must arise from a curious psychological twist in the minds of most men. Otherwise, how explain why people discard old automobile tires by heaving them off bridges into the smallest and shallowest streams.

Perhaps this basic error of thinking about rivers goes back to grandfather's assertion that running water will purify itself in a mile or two. Most rivers cannot purify themselves of modern sewage and waste in a hundred miles.

When less than one part of the pesticide Endrin in a billion parts of tidal water can kill shrimp in 24 hours, our scientists must say again and again, that rivers are inefficient—and dangerous—conduits for carrying away the wastes of modern society.

We must seriously consider the proposal of government scientists, documented by Justice William O. Douglas in his excellent new book *A Wilderness Bill of Rights*, that we investigate disposal processes similar to those used in desalting plants, which will return only entirely pure water from our sewage systems to our rivers, and divert the remainder elsewhere.

Lest such a basic attack seem impractical, let us not forget that merely one public utility is spending 40 million dollars to build a nuclear energy plant at Oswego for the production of electric power for our future population. It may be just as practical to distill pure water from sewage with nuclear energy.

Certainly our rivers cannot, and should not, take the load of sewage much longer.—EDITOR


# THE CONSERVATIONIST

## State of New York Conservation Department

OCTOBER-NOVEMBER, 1965

VOLUME 20 NUMBER 2


## CONTENTS



*First cover (Ausable River and Whiteface Mt.), Robert S. Sleicher; second cover (Shocks of Sudan grass), Nick Drahos; third cover, James D. Greiner; fourth cover, Ruth Smiley*

# Happy Hunting Grounds —4,000 Years Ago

## Indian Life and Death on Cayuga Lake

by Dr. William A. Ritchie, *State Archaeologist, New York State Museum and Science Service*

DURING the long Archaic stage of occupation at Frontenac Island, many burials were made in shallow graves dug into the refuse or through some part of it and the shallow subsoil to reach bedrock. Where wide crevices occurred in the latter, burials were put therein at the deepest level possible. While no explored portion of the island was without graves, there was a notable tendency to concentrate them where the refuse was thickest, or over the eastern and southern sections.

Remains of 159 individuals were uncovered in the major investigations, of four others during the limited excavations of 1953. This constitutes by far the largest skeletal series from an Archaic station in the eastern United States north of Kentucky, and it has provided data of great significance to various problems concerning early human populations in this area.

Some further inferences may now be attempted from these data, directed toward a fuller comprehension of the socio-religious and related aspects of the culture. To begin with there were definite suggestions concerning the relative social significance of the sexes, and some hints on the sexual division of labor. There were also unmistakable indications of social stratification, involving the dominance and importance of males of the invading brachycranial group. Age, as well as sex, was a factor of worth in this society, if we are to base our assumptions on burial offerings, and there were slender, but striking, tokens of parental sentiment. • • •

Over 60 per cent of the adult (but not senile) males were provided with mortuary accompaniments, while only 34 per cent of the adult females were so supplied. With a single exception, an infant (Burial 23), all dog associations were with males, who had also been given all the musical instruments, most of the fishing tackle and hunting gear, including daggers as well as projectile points, and the tools, such as drills, flakers, beaver-incisor gravers, etc.

Burial gifts to women were scanty, with one exception (Burial 94), consisting of a few ornaments (perforated elk incisors, shell and antler pendants, plume holders (?), hawk claws, and a mussel shell full of red paint) and such implements as a bone needle, harpoon, plummet, gorges, celt, awls, bone knives and scrapers, worked beaver incisors, a chopper, spoon, fire-making kit, and a few flint points, perhaps really knives.

Where present among the males, there was a striking differential in the quantity, and to some extent quality, of the grave goods. A small number of individuals, all referable by skull form or burial mode to the brachycranial group, and all interred in the extended position, were extraordinarily well accoutered (for example, Burials 66, 78, 79 and especially 111). These men, some of them as young as around nineteen, were clearly very important personages, or much beloved.

There is a strong suggestion that we have here the roots of a social hierarchy, in this instance evidently founded upon conquest, which were to expand more fully in the succeeding period in our area, and parallel at that or a slightly later time, such a classic example of social order, as seen in the Adena culture.

In scrutinizing the burials of other age groups at Frontenac Island, we observe that of twenty infant graves, only fifteen per cent had even a minimum of offerings, such as a projectile point or awl, a perforated tooth, or simply a sprinkle of red ocher. Outstanding in the small series was Burial 23, with more eloquent testimony of parental grief. This body had been buried in the probably still warm ashes of a hearth, an oyster-shell pendant lay on its chest, and a puppy of about the same size as the baby had been immolated and flexed directly upon it in intimate companionship.

Young children appear to have been held in higher regard, since 50 per cent of the fourteen graves had been furnished with some provision for, we presume, a contemplated personal permanence. Certain of these burials are worth a few remarks; number 19, for example, had the twenty bear teeth sewed on shirt or jacket, along with bone awls, a beaver-incisor tool, a shell pendant, and about half of an antler spoon with effigy handle. The old fracture line showed that the spoon had been defective when placed in the grave. This consignment of old, broken or worn-out articles for the use of the dead will be met with later on as a matter of regular practice in the Early and Middle Woodlands cultures.

A child of around five (Burial 82) with no fewer than six conch-shell neck ornaments, and two plume holders (?), was well endowed for this culture. A nine-year-old (Burial 112) had at his right hand a spheroidal water-shaped pebble nearly two inches in diameter, apparently a toy.

The most provocative interment (number 64A) was of a child approximately three years old, who had placed against his right side the skull of a young woman, obviously decapitated since the articulated cervical vertebrae were still in place (Plate 42). Was this a favored child of the upper social stratum for whom some lesser surrogate mother, perhaps a captive woman, had been immolated?

Among the adolescents, of which only six were found, the percentage of mortuary bestowals rises to 66 per cent, highest of any group at the site, but the amounts were trivial.

At the bottom of the group were the old people (estimated at over sixty years of age from cranial and pubic-bone criteria) with only three men, wholly unprovided for, and one woman who was equipped with a bone awl and a whetstone to keep it sharp for the old-age task of sewing.

Among other general observations should be mentioned what appeared to be family burial plots, suggested by concentrations of graves, contributed to over a long period, since later burials disturbed to varying extent prior ones. Cremations and bone bundles found therein may mean that persons dying far from home and transportable only in one of these conditions were interred among their kinsmen. • • •

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The above excerpt is from the author's book, *The Archaeology of New York State*, published in October of this year for The American Museum of Natural History by the Natural History Press.

# Indian Caves

## State Archaeologists Find and Seek Them

by Robert E. Funk,
*N. Y. S. Museum and Science Service*

BEFORE European colonization, the American Indian in New York State had a long history of occupation, going back 9,000 years or more. Following the last ice age, the first human inhabitants of the State were Paleo-Indian hunters, who lived a nomadic life, constantly seeking large game animals—including perhaps the now extinct mammoth and mastodon.

Characteristic of this period is the fluted projectile point or weapon head, referred to as a Clovis point. The early hunters were followed by people of the Archaic stage, who were less inclined to wander from their home environment. The Archaic Indians had learned to make use of many kinds of plants and animals. Different groups employed different types of projectile points and other tools, in a considerable variety. During this long period the techniques of grinding and polishing stone came into use, enabling the Indians to fell trees and shape them for numerous purposes.

The Archaic period was terminated first by the introduction of stone cooking vessels, then by the appearance of the first pottery wares. The period during which pottery and smoking pipes became fully established is called the Early Woodland. According to radiocarbon dating, this period began about 1000 B.C. At this time we have evidence pointing to a religious cult centered around the disposal of the dead, who received fine offerings of stone, clay and other materials in their graves. This mortuary cult achieved its highest expression in the following Middle Woodland period (c. 500 B.C.-A.D. 900), which is also characterized by new and complex styles in pottery decoration.

The final period of native Indian culture in New York State was the Late Woodland (A.D. 900-1600). In this period occurred the first traces of corn agriculture. For the first time large villages appeared, some of which were equipped with fortifications. This period reached its culmination in the Iroquois, who at the time of white conquest were living in towns containing up to 55 longhouses, located on high, easily defended hills and protected by stockades.

Considerable information about the Iroquois has been obtained from the accounts of early explorers, missionaries and colonials. This is not true, however, of the pre-Iroquoian groups, whose ways of life must be reconstructed from their surviving traces on scientifically excavated villages and camp sites.

Most of our present knowledge of New York prehistory has resulted from the thorough and extensive researches of Dr. William A. Ritchie, State Archaeologist, of the New York State Museum and Science Service. These researches are summarized in his just published major book *The Archaeology of New York State*. (See excerpt in this issue.)

Archaeologists rely heavily on certain types of sites in attempting to sketch the history of past peoples. These sites are carefully selected for the information they yield about individual Indian groups. On most sites, many years of plowing have thoroughly mixed up the remains of human habitation. Generally, the most useful sites are undisturbed and come under two categories: (1) Single-component sites, those occupied for a limited time by one people; (2) multi-component stratified sites, those occupied by more than one group with remains of each occupation preserved in successively deposited soil layers. While both types of sites provide valuable data, the stratified sites tell the archeologist much about the sequence of cultures in a given area. The "layer-cake" effect on most stratified sites may be the result of (1) periodic silting by river floods, (2) erosional wash or actual soil movement from higher ground to lower, or (3) accumulation of trash and refuse.

There is another type of stratified site which, though fairly rare, can richly repay the archeologist's labors—the inhabited cave or rockshelter. Much romantic lore and fascination attaches to these shelters of prehistoric man around the world. There are many famous examples in Europe and Asia, which need not be mentioned here. In the southeastern United States, such sites as Graham Cave, Russell Cave and the Modoc Rockshelter have taught us much about Indian life over the past 9,000 years.

Clay Perry (1948) has written a highly interesting book (*Underground Empire*) about spelunkers' caves and Indian caves of New York State. Many local legends have grown up around locations supposedly inhabited by Indians, becoming increasingly elaborated with time. On numerous occasions the present writer has tracked down these tales of ancient underground shelters, only to find himself at the end of a wild ghost chase.

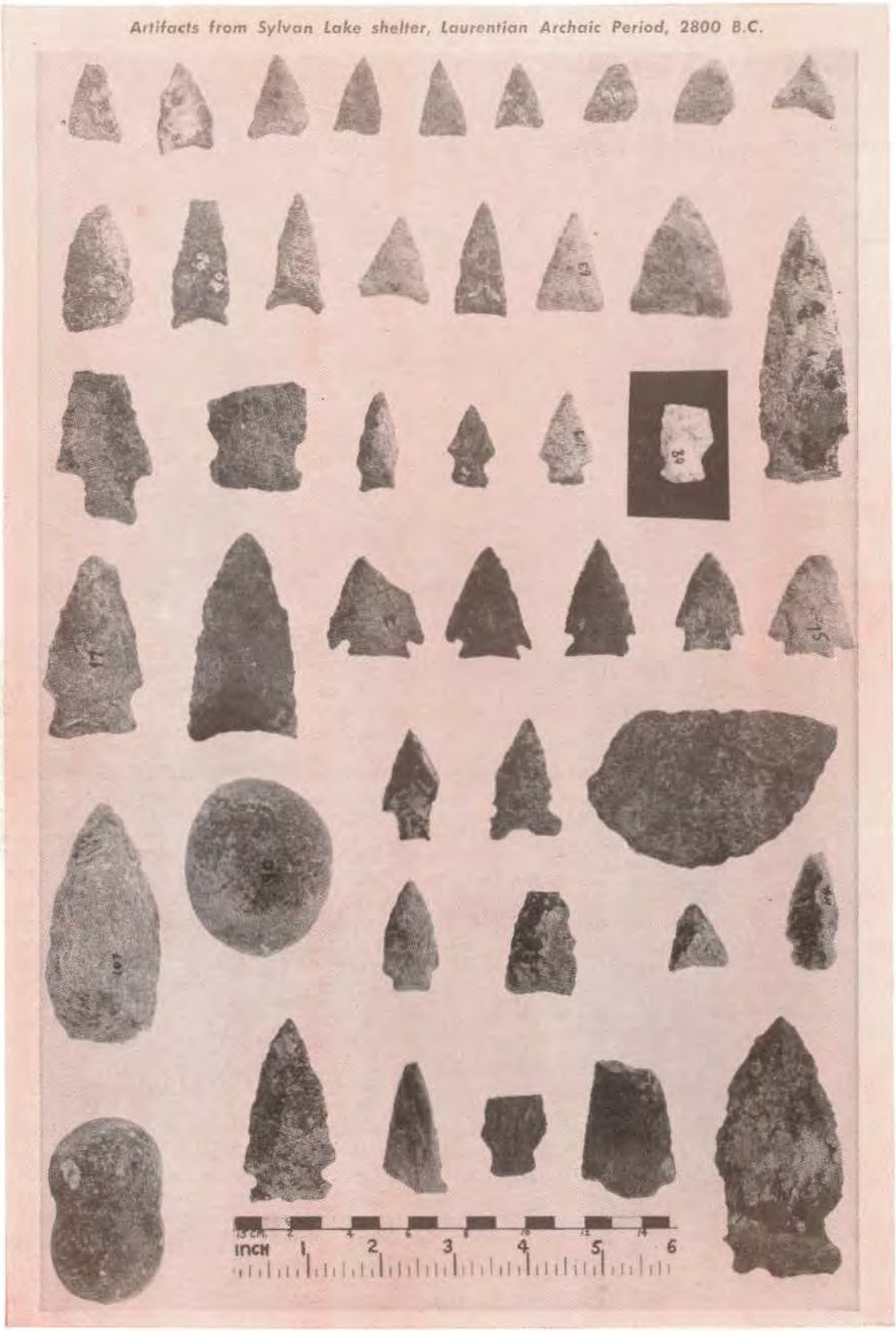
On one occasion, he learned of a shelter rumored to be so spacious that it was possible to set up tables and play cards within it. Unfortunately, it had been completely covered up through years of use as a dump. Only a few slabs of rock protruded here and there. After two hours of labor, removing countless bottles, tin cans and other debris with shovels and rakes, the "shelter" turned out to be a small rock ledge, inhabitable only by rats!

Another time, a reputed "cave," large enough to have housed stolen horses in the 19th Century, was found to be merely a narrow gorge in the side of a mountain.

Throughout this century, sporadic researches have been carried out by various scientific institutions in the rockshelters of southeastern New York. By and large, these investigations have yielded little historical data. An exception which may be cited is the work of M. R. Harrington (1909) in Westchester County.

Within New York State, the lower Hudson Valley, bounded by the Catskill Mountains on the west, the Taconic Mountains on the east, and the Hudson Highlands on the south, seems to be the area most prolific in caves and rockshelters. This situation is largely explained by geological factors—the area lies within the Ridge and Valley Province of the Folded Appalachian region (Fenneman, 1938), which features numerous shale and limestone outcrops. In winter months the Indian hunter frequently found refuge within the numerous overhangs which dot the landscape. Real caves—i.e., subterranean passages formed in limestone by ground water—are rarely exposed in such a way as to

*Artifacts from Sylvan Lake shelter, Laurentian Archaic Period, 2800 B.C.*

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*Sylvan Lake shelter; Malcolm Kinney, N.Y.S. Archaeological Assn. excavating*

be favorable to human habitation.

The ideal Indian cave or rockshelter faces east or south, away from the prevailing winter winds. It can be reached without too much difficulty from above or below. The ceiling is high enough for a man to stand up under it, and the floor is dry. Many inhabited rockshelters, however, fall short of these specifications.

The average "rockhouse" has been occupied only at long intervals, so that little Indian refuse has accumulated. Frequently, the excavator is rewarded with no more than a meager handful of projectile points or potsherds.

However, the investigator is sometimes lucky enough to find a stratified cave or rockshelter, with deep artifact-bearing deposits. Such a site, the Sylvan Lake Rockshelter near Poughkeepsie, shown in the photographs, was recently dug under the writer's direction (Funk, 1965). Here an instructive sequence of occupation was unearthed which, according to radio-carbon dating, *began nearly 5,000 years ago in the Archaic period, and lasted almost without interruption until early Colonial times.* The oldest artifacts were found in the deepest stratum, five feet below the surface. The latest relics occurred just under the cave floor. More than 330 artifacts were found, 226 of which were projectile points (see photo).

The artifacts were preserved just where they had been dropped by the Indians, because through the centuries they were covered by rock fragments falling from the limestone roof. Rain water may have added silt to the deposits.

Because the successive occupations were preserved, level by level, it was possible to identify a previously unknown Archaic Indian culture, which probably existed between 2300 and 1500 B.C.

The writer has been fortunate to carry out investigations at several other caves and shelters in eastern New York, which have provided important archeological data. One cave, recently excavated by amateur archeologists in Orange County, is the first in northeastern North America to yield a fluted point of the Paleo-Indian period.

However, a great deal remains to be learned about the Indian history of our State. Unfortunately, Indian sites are rapidly being destroyed through urban expansion, road-building, and irresponsible digging by relic collectors. It is crucial, then, that potentially informative sites be brought to the attention of scientific archeologists in universities and museums.

In 1961 the writer began a search for unrecorded Indian caves and rockshelters throughout New York State. This search is continuing under an accelerated program, whose purpose is to record, test and, if necessary, excavate such sites. Some Indian shelters may be well-known to persons who reside in given localities. Others will be relatively inaccessible, buried in woods or hidden in valleys, perhaps seen by only a few deer hunters.

***Preparing for excavation of shelter near Sampsonville, R. Arthur Johnson wields shovel***

The writer would appreciate hearing from readers of this article, who may have information on promising caves or overhangs within the borders of New York State. Somewhere, he is convinced, perhaps neglected in a farmer's wood lot, another key site like the Sylvan Lake Rockshelter awaits discovery. Informants should write or call: Robert E. Funk, New York State Museum and Science Service, Albany 1, New York; telephone GR 4-5813.

***Exterior, Sylvan Lake shelter and Mrs John Bowman, N.Y.S. Archaeological Assn.***

# Small Game 1964-65 Season*

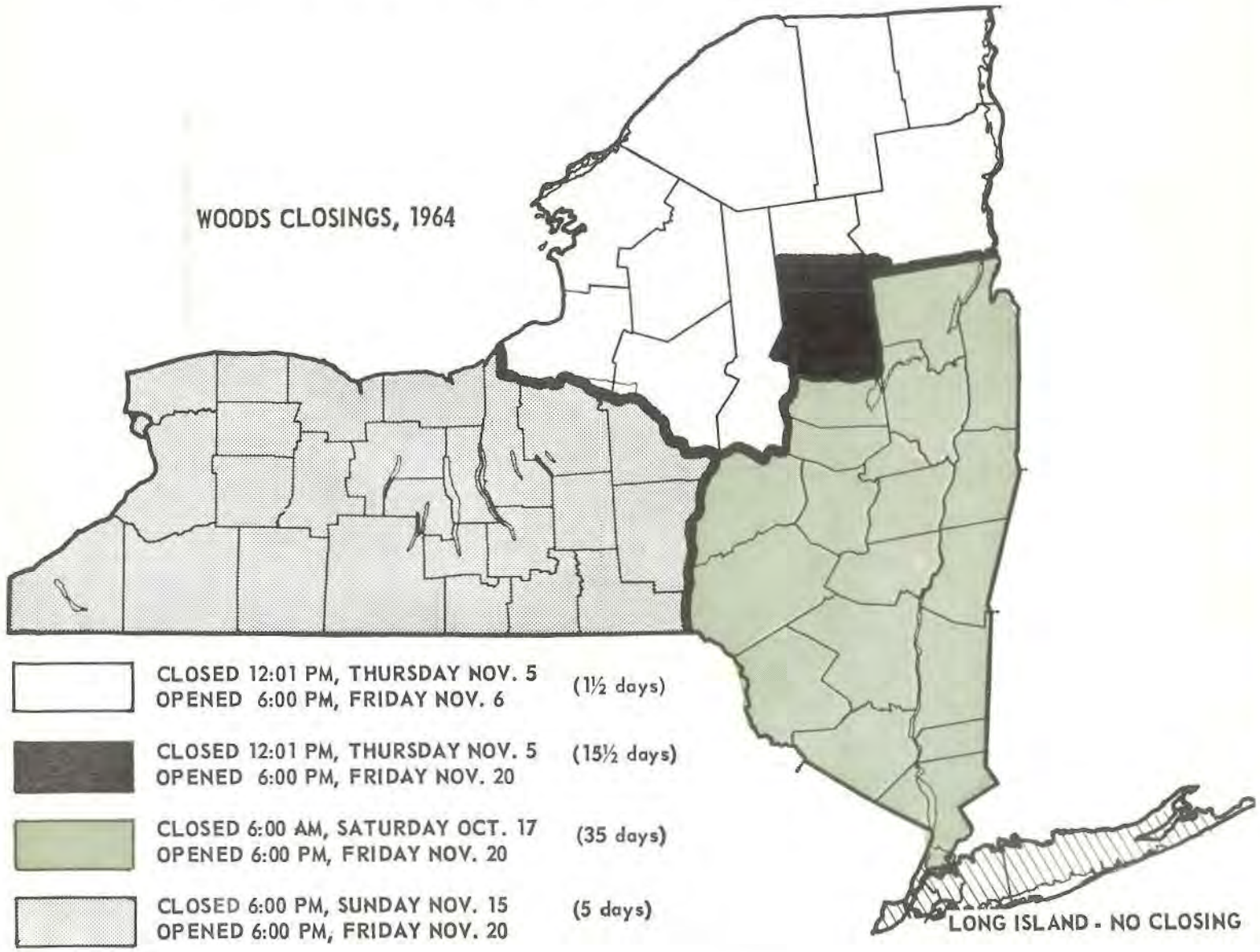
## Survey Shows Woods Closures Cut Hunter Game Take, Spurred Other Recreation

by H. F. Maguire

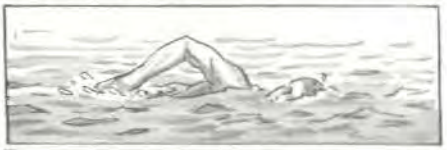
FOR the second successive year woods closures have affected the hunting plans, efforts and probably success of New York State small game hunters as reported to us in the annually-conducted mail survey.

Although license sales and hunters afield show increases over the previous year, both are down from the "normal" season of 1962-63. License sales for the first six months of each license year (this period covers all open seasons on protected game) were 499,526 in 1962-63; 479,601 in 1963-64; and 490,108 in 1964-65. The range in sales is 20,000 and the drop from '62-'63 is approximately 10,000. Hunters afield, however, show a much wider range, 42,000, and a net drop over the same period of 40,000. Sales and hunter activity figures for the past two years are shown in the table.

Increase in take over the previous season were recorded for pheasants, woodcock, squirrels and waterfowl. Decreases were recorded for ruffed grouse (the first decline since 1958-59), cottontail rabbits, varying hare, turkeys, and raccoons. Figures on Hungarian partridge were not tabulated. It was evident that many hunters were making errors in identification



# What Small Game Licensees Do Outdoors

| | | |
|---|---|---|
| FISHING, etc. |  | 275,912 |
| CAMPING, HIKING, etc. |  | 216,667 |
| BOATING, etc. |  | 170,876 |
| LAND SPORTS |  | 105,145 |
| WATER SPORTS (other than boating) |  | 41,645 |
| SHOOTING, ARCHERY |  | 31,269 |
| WINTER SPORTS |  | 19,077 |
| NATURE STUDY, HOBBIES |  | 10,350 |
| "VARMINT" HUNTING |  | 7,902 |
| TRAPPING |  | 7,597 |
| FLYING |  | 2,093 |
| DOG TRAINING |  | 2,009 |

## Small Game Licensees: Other Outdoor Sports

| Type of Sport | Est. Licensees Participating |
|---|---|
| FISHING, etc.<br>(Incl. fishing gen. 264,625, fly 2,918, deep-sea 2,230, sea 1,514, surf 275, pan 1,734, ice 1,404, spearing 633, smelting 193, crabbing 55, clamming 110, frogging 193, eeling 28) | 275,912 |
| CAMPING, HIKING, etc.<br>(Incl. camping 140,735, hiking 73,767, mountain climbing 633, geology & mineralogy 275, spelunking 138, scouting 1,129) | 216,677 |
| BOATING, etc.<br>(Incl. boating 165,453, canoeing 3,331, sailing 1,899, rowing 28, power boating 165) | 170,876 |
| PARTICIPATION DRY LAND SPORTS<br>(Incl. golf 63,610, baseball 14,808, softball 4,899, tennis 7,404, football 6,358, polo 55, track 1,514, horse riding 4,789, volleyball 138, horseshoe pitching 330, handball 138, soccer 716, badminton 138, lacrosse 193, shuffleboard 55) | 105,145 |
| WATER SPORTS (other than boating)<br>(Incl. water-skiing 6,166, surfing 523, skin-diving 5,422, swimming 29,534) | 41,645 |
| SHOOTING, ARCHERY, TARGET PRACTICE<br>(Incl. shooting 7,184, pistol shooting 2,320, rifle 1,596, skeet 4,982, trap 5,615, muzzle-loaders 193, archery 9,551, snipe shooting 28) | 31,269 |
| SNOW & ICE SPORTS<br>(Incl. skiing 15,001, tobogganing 220, ice-skating 1,845, snow-shoeing 606, hockey 551, snowmobiling 743, bob-sledding 83, curling 28) | 19,077 |
| NATURE STUDY, HOBBIES<br>(Incl. bird-watching 6,413, game observations, 853, waterfowl observations 28, photography 2,037, pigeon flying 138, nature study 798, woodchopping 83) | 10,350 |
| "VARMINT" HUNTING<br>(Incl. woodchuck 5,450, fox 138, crow 385, bobcat 28, rat 83, pigeon 55, coyote 28, carp 28) | 7,902 |
| TRAPPING<br>(For muskrat, mink, otter, beaver, etc.) | 7,597 |
| FLYING<br>(Incl. flying aeroplanes 1,652, kites 28, parachuting 248, Frisbee 110, skateboarding 55) | 2,093 |
| DOG TRAINING<br>(Incl. dog training 826, field trials 743, beagling 440) | 2,009 |

## Small Game License Sales and Hunting Activity*

| License Period | License Sales | Licensees Afield Hunting | Per cent Not Using License |
|---|---|---|---|
| October 1964—March 1965 | 490,106 | 352,876 | 28.0 |
| October 1963—March 1964 | 479,691 | 350,654 | 26.9 |
| Change from 1963—1964 | 10,415 | 2,222 | ... |
| Per cent change from 1963-1964 | 2.2 | 0.6 | ... |

* Period October 1 through March 31, the end of seasons on all protected game.

since sizeable takes were reported from areas known to lack "Huns" (Figures on the hunting and take of the above species are shown in the table.)

### Comparison's Sound Index

Comparisons between years of "take per day" generally provided a sound index of availability of species (population) when weather condition, hunting pressure, season durations and season dates are equal, or nearly so. However, the woods closures for the past two years were of unequal duration in different sections of the State, affecting the various species in varying degrees and creating biases that prevented valid comparisons of the changes from 1963-64 to 1964-65.

### Pheasant Season

For example, the pheasant season was not affected in the central and western counties or in four northern Adirondack counties. Catskill and eastern counties lost their entire regular pheasant season whereas Warren County lost the last 8 days. Other Adirondack counties lost 1½ days at the end of the regular season. All lost days were made up by season extensions except in counties where the loss was only 1½ days. The extensions, however, occurred concurrently with the deer season so the hunting opportunity was undoubtedly lessened.

### Rabbit Hunting

Cottontail rabbit hunters probably suffered the most severe losses of hunting opportunity because no extensions of this season were provided. Warren County lost 35 days while the Catskill and eastern counties lost 33 days. Other areas lost from 1½ to 15½ days with the central and western counties losing 5 days. No extensions were provided for cottontail hunting because of the relatively mild winter which provided more days than usual of good hunting conditions and also because rabbit abundance was known to be at a relatively low level in many areas. The fact that the rabbit season runs nearly 5 months was further reason to feel that sufficient hunting opportunity had been provided, despite the lost days.

(Deer and bear seasons were curtailed from 1½ to 27 days in all of the state except the Southern Zone parts of Herkimer, Oneida and Oswego counties. Lost days were made up by the extension of seasons in all areas except Warren County and the Northern Zone portions of Fulton, Saratoga and Washington counties where a net loss of 12 days was

## 1964-1965 Game Take Survey (2-Year Comparative Figures)

| SPECIES | NUMBER TAKEN 1964-65 Season | NUMBER TAKEN 1963-64 Season | NUMBER OF HUNTERS 1964-65 Season | NUMBER OF HUNTERS 1963-64 Season | TAKE PER DAY 1964-65 Season | TAKE PER DAY 1963-64 Season |
|---|---|---|---|---|---|---|
| Pheasants | 427,700 +9.1 | 392,200 | 246,900 +3.5 | 238,600 | .404 −1.5 | .410 |
| Ruffed Grouse | 509,300 −4.6 | 533,800 | 196,500 −0.5 | 197,400 | .420 −10.6 | .470 |
| Cottontail Rabbits | 1,225,300 −8.8 | 1,344,200 | 234,100 −2.7 | 240,500 | .682 −5.9 | .725 |
| Varying Hare | 299,800 −10.1 | 333,400 | 62,200 +15.2 | 54,000 | .772 −10.0 | .858 |
| Fox | 47,600 | ** | 40,700 | ** | .200 | ** |
| Wild Turkey | 1,000 23.1 | 1,300 | 17,200 +20.3 | 14,300 | 0.29 −34.1 | .044 |
| Duck-Coots | 252,900 +26.1 | 200,600 | 46,200 +28.7 | 35,900 | .881 +3.9 | .848 |
| Geese-Brant | 40,159 +95.9 | 20,500 | 23,809 +59.8 | 14,900 | .303 +27.3 | .238 |
| Woodcock | 110,600 +2.7 | 107,700 | 46,300 −4.7 | 48,600 | .557 −0.5 | .560 |
| Squirrels | 780,600 +1.5 | 768,800 | 153,100 −6.2 | 163,200 | .924 +6.9 | .864 |
| Raccoons | 205,600 −1.1 | 207,800 | 37,400 −2.1 | 38,200 | .768 −13.5 | .888 |

** Data not collected.

experienced. It was not deemed advisable to extend the season in these northern areas beyond the middle of December for fear that deer might be concentrated in wintering areas and thus be too vulnerable.)

### Losses Made Up

The seasons for other small game species such as squirrel, ruffed grouse and varying hare suffered lost days of hunting due to the woods closure but as a general rule these losses were made up by season extensions. The waterfowl seasons were not suspended during any of the woods closures but hunting was permitted only from boats on waters reachable directly from a highway. Seasons on migratory game birds such as woodcock and snipe could not be extended because there was not a statewide closure at any time, and Federal regulations do not permit zoning within the State. Extensions on these species would have been meaningless in most areas as these birds have largely migrated south by the end of the season anyway.

### Woods Closure Effect

One guide to the repercussions of the woods closures on hunting was the responses to a question that asked why some licensees bought but did not use their licenses. A summary of replies shows: No time—47.5%; illness—10.9%; fire ban—6.2%; license purchased by a non-resident or alien as part of the requirement for obtaining a big game license—3.8%; will hunt non-protected game later in the year—1.2%; to be afield with gun for target practice—0.5%; death—0.5%; a contribution to the State for conservation purposes—0.3%; all other reasons—14.9%. This question was not answered by 14.2% who indicated they did not hunt. Since questionnaires are sent only to those people who buy licenses there is no indication from this survey how many people did not buy a license because of the influences of the fire ban and woods closure.

### Sampling Procedures

The sampling procedures and sample sizes for our survey of 11 of the 12 species covered this year were identical with that used in previous years. Approximately 24,000 license holders were selected from the 490,106 licensees who had purchased licenses during the first six months of the license year (October 1, 1964 through March 31, 1965). Questionnaires were returned by 77.7 per cent of those reached by mail, compared to 78.5 per cent returns in the 1963-64 survey. Of those who responded, 28.0 per cent did not use their licenses during the first 6 months of the year compared to 26.9 per cent of non-use the previous year.

### Wild Turkeys

Because of the growing importance of the wild turkey as a game bird in the State, a special effort was made in this survey to get a more precise estimate of take and hunter effort than has been possible in the past. In addition to the regular sample of hunters we also included a special sampling of licensees resident in the six western counties which are known to provide the great majority of wild turkey hunters.

### Other Sports

A question included in this survey for the first time, shows conclusively the multiple interests of small game hunters in other forms of outdoor recreation. Nearly 100 different sports were listed which we have summarized in the table. A few items such as "girl watching" (this one had a lot of advocates) defied placing in a category and were omitted. Although it must be borne in mind that this sample is not truly representative of all residents of the State (because its base is the small game licensee), it is indicative of the present impact of a growing human population, with more free time and rapid transportation, on outdoor space and resources. One cannot help but wonder how long a declining acreage of "open spaces" and shrinking shorelines can continue to provide the recreational needs of a rapidly expanding populace.

* A contribution of Federal Aid in Wildlife Restoration Project W-90-R-10.

*Dear Mr. Lesser:*

*In the October-November issue of* THE CONSERVATIONIST *way back in 1953 you had a piece on the "law of averages" in deer hunting. At that time you had shot 26 bucks and two bear, which took an average of ten days hunting per deer. That was twelve years ago. Would you mind providing a report on your luck since then? Also please tell what kind of a gun you use. Any information will be appreciated by me and the grand army of deer hunters who keep trying. Thanks for the dope.*

"CURIOUS"

***These nine deer were taken during the last 12 years. Nine heads averaged ten days of hunting per deer***

# Old Hunter's Secret: Time Out

**by George H. Lesser**

DEAR Curious: Anybody can shoot a deer! All you have to do is put the time in! My how time flies; it seems only a little while ago that I came out with that article on the amount of time required to bag a buck. That was twelve years ago and I have hunted each year since then. I have shot nine more bucks and one more bear. Three of the years I missed out on deer even though I spent time in pursuit. [Mr. Lesser hunts alone and sits on a run mostly.—Editor. ]

I have kept records on each buck and can again provide the amount of time put in. By that I mean the days spent each season chasing these rascals—every hour of which has been the most gratifying of pleasure, buck or no buck.

What could be nicer than to be in the woods when the leaves turn yellow and the air crisp? When old friends get together again and romp through the hills with one thing in common. The prince and the pauper, the old and the young, all enjoying the chase with a big buck in mind. Shouting on the drive or sitting quietly on a watch, all boys again for the day. Perfect recreation.

You can't hunt 'em with a cab. You can't hunt 'em if your feet hurt. Success can be assured with one word: Work.

You have got to be in deer country and put the time in. I can prove to you that you too can collect a deer; even though you may be discouraged . . . keep going.

Now to get down to records let me first remark that the whitetail deer is the Ph.D of the animal world. I should know for I have hunted all species of big game of North America and also Africa—having bagged many trophies including the rhino, the buffalo and the African elephant. But . . . these whitetails . . . they are the smartest and the "greatest." They have to be. Your whitetail will give you the best performance for the price of the ticket ($3.25) of any game.

In regard to these last nine bucks in twelve years—one of them took only three days but another one took sixteen days. Three of the years I got none at all. In 1964 the woods were closed for a long period which gave me little time to hunt, but I did get a big fat bear at Nehasane in northern Hamilton County, with Harry Webb.

I counted the time anyway in those years I did not get one, and find that the average length of time to kill a buck is ten days. This is the same hunting time required throughout my full deer hunting experience. It actually measures up to ten days. So, Curious, if you don't get a deer the first, second or any number of days, keep going. The rule of probabilities argues that you will get one eventually.

During my 42 years of hunting deer I have taken 35 bucks and three bear in the Adirondacks. To sum it all up, it takes a ten-day average per deer.

You ask what kind of a gun I use? Almost all of my deer and bear were killed with a .35 caliber automatic which I have used for many years. Good for quick work. However, the make of gun is not too important—just know how to shoot it. For a final note of advice—a beginner should hang around successful hunters. Men like Bob Avery of Arietta or Harry Webb of Nehasane—they know the game and will be ready to teach you the "art."

There you have it "Curious," summed up; one man's lifetime produced 35 bucks and three bear thrown in for good measure. It took an average of ten days for each buck. ALL YOU HAVE TO DO IS PUT THE TIME IN! These bucks and bear are all on display in my trophy gallery for you to see.

All my deer hunting has been one grand dream and I surely will be sad when the dream has ended. Get in there and hunt!

Sincerely yours,
GEORGE H. LESSER

# Wild Turkey Calls

by Dwight R. Chamberlain,
Dr. W. B. Gross, Dr. Henry S. Mosby,
*Virginia Polytechnic Institute*

BEN FRANKLIN failed in a dynamic attempt to make the wild turkey (*Meleagris gallopavo*), the emblem of the United States. Instead, a handsome and now thinning substitute, the American bald eagle (*Haliaeetus leucocephalus*) was selected by our legislating forefathers. The New York State Legislature, however, has accepted no substitute for the turkey as a game species, and has recently enacted a new turkey law renewing and extending the Conservation Department's power to declare seasons in several Southern Tier counties. If range and hunting conditions remain favorable, the State's present policy of trapping and transferring wild turkeys will encompass one-half of New York's counties, which in turn may have seasons.

From the numbers of wild turkeys presently reported by State wildlife biologists, it seems incredible that this "grandest upland game bird of them all" was absent from the Empire State for almost a century. Originally, "old wattles" flourished in most of the suitable woodlands outside the Adirondacks, Catskills and Tug Hill, but by 1850 he had dwindled—resulting from monopolistic competition waged by fire, axe, and plow—and you guessed it, he was shortly legendary.

*Meleagris gallopavo* is the master of a furtive eloquence which has baffled and bewitched hunters from New York to Florida. Certainly in New York there are more and more hunters, and yet, this bird is thriving and spreading unabashed. Amateur and veteran hunters alike "tootle" desperately on their turkey calls, but the wary birds only cock a quizzical ear—and then take off with the beat of powerful wings.

Hence, reliable answers to the following questions remain as unsure as the path of falling leaves during the hunting season: namely, *what* are the characteristic calls and signals of the wild turkey and *how* are they produced? Unfortunately, turkey vocalization has not been thoroughly researched, but we do know the significance of some of their communicative calls and signals. For instance, a lively "chortle" serves as the common "assembly" call—often employed by scattered birds before flock reassembly. Such notes are frequently given by young hens or gobblers in the fall, and if given truly by the young nimrod, providing he doesn't call often, may result in his limit for the day. On the other hand, sharp "putts" assert "attention," and a sharper "putt" spreads the "alarm" among turkey ranks.

To master the finer "chortle" of the young hen or the coarser "chortle" of the young gobbler almost requires a Ph.D. in turkey calling—as many resultant turkey "alarm" "putts" have well attested. To help earn a "turkey skin," (instead of a goatskin) it might be advisable for the beginner to order and practice with Mr. M. L. Lynch's forty-five r.p.m. record entitled "Lynch's Wild Turkey Calls," before calling in the field. (He resides at 306 Edgewood Blvd., P.O. Box 6022, Birmingham 9, Alabama.) Or one can simply become a careful student of the common barnyard varieties, which "gobble" and vocalize very much like the wild turkey.

During courtship, wild turkeys have been observed making low-pitched "booming" sounds which seemed to be produced by air passing through the tail or wing feathers. The sound only occurred when the male, in full posture, rushed toward the female (Stein, 1963). This behavior is often accompanied by "gobbles" and other mating vocalizations by the male, which follows the feeding female with tail erect, wings drooping, and breast spread. These are only a few of the supposed gamut of "turkey tunes" which are not well documented, with a hope that additional research will aid the ornithologist, game manager, and turkey hunter alike.

The calls of other birds such as crows (*Corvus brachyrhynchos*) are occasionally associated with the presence of the larger game birds. For some reason, crows often mob wild turkeys as implacably as their arch avian enemy—the great horned owl (*Bubo virginianus*).

It appears that more research has dealt with the *how* than with the *what* of turkey voice. Historically, a turkey hen syrinx (or voice box which is formed by the bifurcation of the windpipe and bronchi and is analogous to the human larynx) served the Breslau physiologist, Grutzner,* with his experimental subject way back in 1879 when he described the complex mechanism:

"The syrinx carries on either side an elastic membraneous fold, internal tympanic semilunar membrance, which from the syrinx outward is placed perpendicularly in front of the orifice of each bronchus (windpipe division), and so with the opposite wall forms a kind of glottis."

The first two tracheal (windpipe) rings anterior to the syrinx tend to fuse into a single rigid mass called the tympanum, which becomes ossified in adult turkeys. Further back, the second and third cartilagenous bronchial rings form another rigid support for the external tympaniform membranes *which are the essential vibrating structures in the wild turkey*. Normally these membronchi are held apart by tension of the trachea. In this position air resistance is minimized and sound cannot be produced. Since only the tympaniform membranes attach the tympanum to the pessulus, the syrinx can easily be shortened by a posterior movement of the tympanum. This is normally accomplished by contracting the sterno-trachealis or anchoring muscles which connect the trachea to the sternum (breastbone).

As the syrinx is shortened the tympaniform membranes are brought closer together. This greatly increases air resistance and allows pressure to build up in the bronchi and air sacs. Air passing rapidly between the membranes tends to draw them more closely together (Bernouilli effect) and causes them to vibrate—thus producing sound in the column of air. The pitch is increased by shortening the trachea, lengthening the tympaniform membrane, which increases membrane tension, or by increasing the pressure around the syrinx relative to the bronchial pressure.

In wild turkeys, sound appears to be produced when the pressure in the intraclavicular air sac (which encloses the syrinx) and the bronchi are about equal. This pressure can be as low as 6 mm mercury or as high as 50 mm mercury. The American turkey amplifies and modifies its voice by lengthening and expanding the pharynx and trachea, or by mouth contortion.

There is a fascinating way to preserve the vibratory action and general mechanism of the turkey syrinx if a little constructive patience is exercised. Werner Rüppell outlines in his article methods for fabricating a simulated intraclavicular air sac with glass.

Who knows—such a device might disclose this fall's tactic for outwitting last fall's turkey which escaped.

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* Cited from Greenewalt, Crawford H., Translation of "Physiology and Acoustics of Bird Voices" by Werner Rüppell. J. Ornith., 81:441-453. (1933)

# Should We Fish and Boat on Our Reservoirs?

## The Pros and Cons of an Old Argument

by Lawrence S. Hamilton, E. T. Van Nierop*

MULTIPLE purpose use of natural resources is a relatively new, basically sound and increasingly popular approach to the problem of meeting the vastly increased outdoor recreational demands of the public. It is a good, workable proposition, generally. Occasionally, however, the multiple use philosophy runs aground on the shoals of resource use priorities; even incompatibility. The recreational use of municipal water supplies is a case in point.

A dash of reasonableness is needed in the controversy that frequently has recreation seekers and municipal water supply officials at cross purposes in New York State and elsewhere in the nation. Much less emotion and much more information is needed to resolve the conflicting claims on use of publicly-owned water.

Water supply reservoirs in some instances can serve recreation, but multiple use of such impoundments is not as simple as it appears on the surface. The fact is, that neither the recreationists nor the municipal water supply officials have the basic data to make sound decisions. Compromise among conflicting demands can be effected, but it is essential that recreationists recognize the problems involved. Water supply officials are not simply being capricious or pigheaded in their reluctance to open reservoirs to recreational use.

Water supply officials must realize that, in most instances, they have not the basic data needed to formulate public policy. An amazing lack of knowledge on hydrologic characteristics of tributary streams, fishery resources, movement of water within reservoirs, etc., exists. Steps should be taken to assemble these data.

Recently the authors undertook a study of municipal water supply reservoirs in New York State to ascertain the extent to which these facilities are available for other uses, including recreation, and to find out the criteria which might be used in deciding for or against such multiple use. The study was restricted to communities having complete control over water use in the reservoirs and reservoir lands. Several of the more than 200 municipalities depending for part or all of their water needs on surface storage, share water rights with other interests. Under these conditions recreational use is difficult, if not impossible, to regulate and cities like Syracuse which draws its water from a natural lake of which it is co-owner, were therefore omitted from the investigation.

Both mail survey and personal interview techniques were used. Information was collected from 95 municipalities in New York having exclusive control over 178 reservoirs considered of sufficient size to physically accommodate recreational use.

### Survey Findings

Twenty-five municipalities (26 per cent of those meeting the criteria) permit fishing on a total of 63 reservoirs. Of these, 30 reservoirs, which include nine of the 12 New York City ponds on Long

* *Associate Professor of Forestry at Cornell University, and Assistant Professor of Resource Development at Michigan State University, respectively.*

Island, are open for shore line fishing. Thirty-one reservoirs provide fishing from the shore and from boats (18 impoundments and 6 natural lakes in this group are controlled by the City of New York in upstate watersheds). One municipality permits fishing from boats only on its two reservoirs. No other craft than rowboats may be used in any of these cases. Canoes and sail boats are evidently thought to entail greater risk of depositing occupants in the water. Power boats are also excluded because petroleum pollutants tend to create taste problems. For obvious reasons, none of the municipalities grant swimming privileges.

Two of the communities in the survey reported that difficulties encountered in maintaining sanitary conditions may necessitate closure of their reservoirs to public use. On the other hand, two reservoirs now closed are expected to become available for recreational use on a trial basis, according to water works officials of the two municipalities concerned.

*Crowds on reservoirs create problems—other than landing fish*

## What Prevents Multiple Use of Water Supply Reservoirs

### *Public Health Considerations*

The chief requirement of any public water supply is that it be safe for drinking. Bacterial diseases such as typhoid fever, dysentery and gastro-enteritis and viruses such as those of the Coxsackie group and that causing infectious hepatitis are known to be water-borne. Fishing, boating and other recreational uses of water *per se* are not the problem but rather the hazard of human wastes being deposited into the water during the course of these activities. The disease organisms are present not only in infected persons but also in apparently healthy "carriers." If adequate sanitary facilities and disposal methods were made available and if the recreational public would scrupulously observe elementary rules of hygiene, the situation would be different. But the public, in fact, does not behave this way and it is for this reason that swimming and bathing in particular cannot be tolerated by water supply authorities.

Complete water treatment, including storage, filtration and chlorination, is generally accepted as providing sufficient protection against the sanitary hazards of recreational use of reservoirs. However, despite the continuous attendance of supervisory personnel in water treatment plants, possibilities of breakdown of equipment or errors in operation cannot be ignored. They have occurred in New York State in recent years and will occur again with concomitant health risks. Moreover, complete treatment is expensive and is usually not undertaken where relatively high quality water is available from a watershed. For instance, among the municipalities surveyed, five gave no treatment whatsoever except storage, 52 applied chlorination and only 38 used filtration as well.

It was found that one of the five municipalities using no treatment permitted fishing from shore and boats on its 25 million-gallon reservoir. Since no sanitary conveniences of any kind were available to the fishermen, even though "few" in number, the wisdom of this open-reservoir policy is questionable.

The U. S. Health Service strongly recommends complete treatment where recreational use is to be permitted in water supply areas. The same view is held by the American Water Works Association as expressed in its statement of policy regarding the management of public water supplies.

### *Economic Considerations*

A municipality facing pressure to admit the public to its water supply reservoir and not giving complete treatment currently, would incur additional cost in water purification if it were to meet the safety standards of the Public Health Service and the American Water Works Association. Such outlays would be a financial burden, not always justified, particularly if the water supply area was originally selected in a somewhat distant, relatively uninhabited, watershed. It is often superior water quality that motivates water works management to obtain their water supplies from these


*No swimming, no sunbathing, no fishing, no nothing—a hardship in more metropolitan areas*

*Reservoir systems, as shown above, are often close to large populations and thus are liable to heavy pressure from recreation seekers*

locations, since simple storage and chlorination would give adequate protection. It is natural that water works officials are reluctant to jeopardize the very quality which occasioned the construction of a particular reservoir in the first place. Chlorination plants are relatively inexpensive and their management can be included without too much difficulty in the municipal operations of even small communities. A filtration plant, on the other hand, requires skilled operators, continuously in attendance, and may involve extra pumping cost to restore lost pressure where gravity filtration is employed.

Public access to reservoir areas will also entail on-site expenditures inherent in any recreational development. It requires sanitary facilities, litter cans, safe water access areas, such as boat ramps and the maintenance and policing to keep the area operable and clean.

These costs would have to be met through either increased water rates, taxes or user fees. In New York, as in the United States in general, outdoor recreation has traditionally been free or subject to rather nominal charges. It is doubtful that user fees alone could possibly cover the additional costs to municipalities of opening a reservoir to recreational use.

In the survey, several of the communities charged fees ranging from $1 per season to 25 cents per day. Two required boat permits costing $1 and $2, respectively. Seven others, including New York City, required only the issuance of a cost-free boat permit.

It cannot be denied that there is some justification to the argument that such recreation is a municipal service which should be provided as is police protection, libraries or playgrounds. However, it must be remembered that reservoirs are usually located well outside the corporate limits and, therefore, available to fewer citizens than are the in-town services and facilities. Reservoirs are also likely to be subject to use by other persons who are not citizens of the municipality concerned. Some form of entrance fee would certainly seem justified.

### *Legal Considerations*

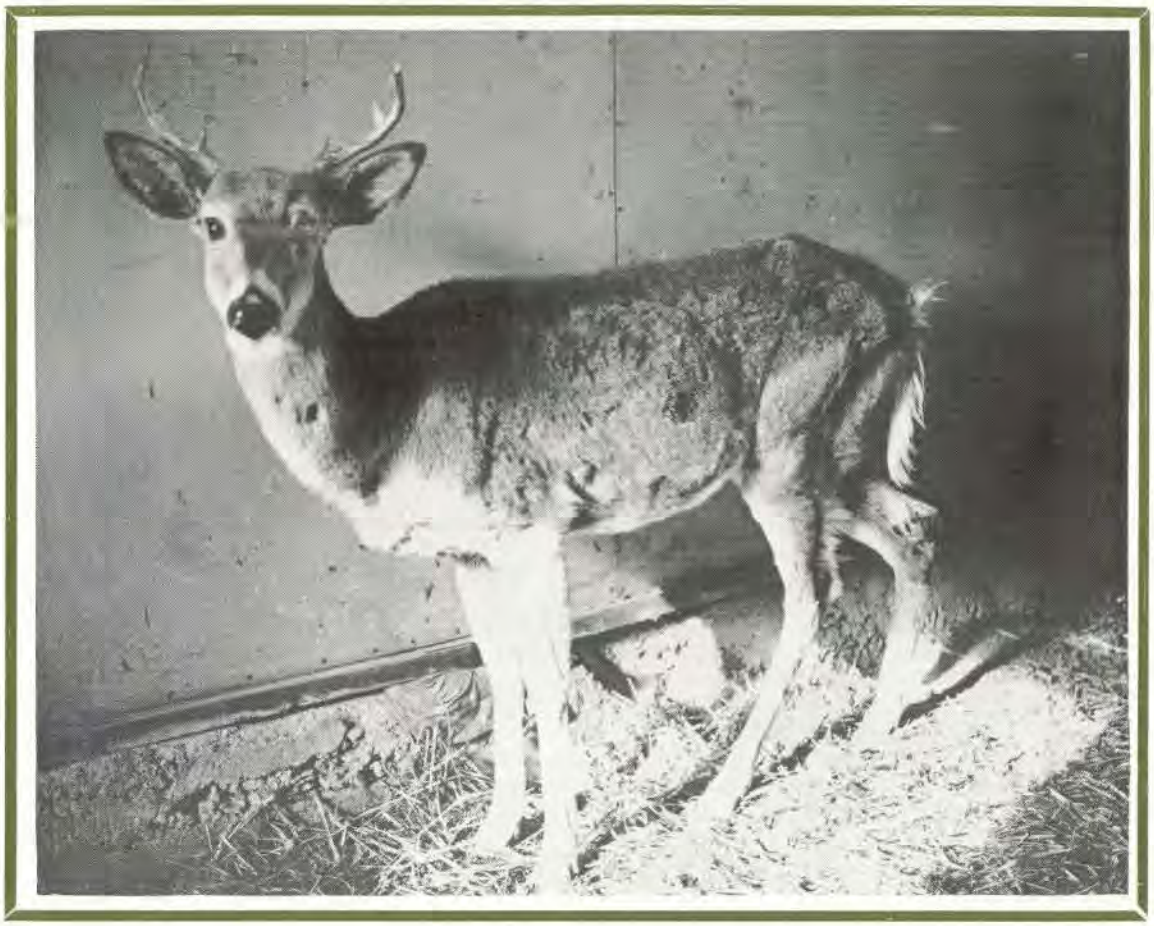
It may actually be against the law, in some instances for a community to permit recreational use of its reservoirs. In 1885, the State Board of Health was authorized to enact watershed rules and regulations with consent of the municipalities involved. These are drawn up individually for each community. In many cases these specifically prohibit recreational use of reservoirs, or permit it only under special conditions. This Act is still on the statute books, though amendments may be made to a community's watershed rules by the community itself after approval by the State Commissioner of Health. Of the 95 municipalities surveyed, 68 have adopted such regulations. Fishing and boating are explicitly prohibited in 47 of these cases, whereas 10 others provide for fishing with special permission from the local water board. In eight cases, recreational use was actually going on in violation of these watershed rules and regulations!

In several major court cases it has been held that if disease or injury can be traced to a municipal water supply, and if negligence on the part of the water utility or municipality could be established, such water suppliers were legally liable for damages. It would seem that the rules of negligence would be applicable where recreation is permitted, despite its prohibition by the watershed rules and regulations. Moreover, where public access is permitted to reservoirs, failure to provide and supervise sanitary facilities might also establish negligence.

Municipalities must surely ponder and investigate these legal aspects as they weigh the pros and cons of multiple use of their water supply areas. This would apply equally to use of municipally-owned watershed lands which might be opened to hunting, picnicking, hiking, etc.

### What of the Future?

Although water-based recreation represents a growing social need and reservoirs in many cases provide suitable media for such activity, the many problems associated with public access for recreational purposes warrant careful deliberation before modifying present policy. Attention should be given to the possibilities of meeting recreational demands through the development of other water areas. Administrators would be well advised to have at their disposal adequate information necessary to formulate public policy. Of primary importance are studies designed to evaluate the feasibility of a recreational program on the basis of health, economic and legal criteria. Also, technical data will need to be collected and analyzed to obtain an insight in the recreational potential of reservoir areas. Such action would serve to determine at an early stage whether future demands for multiple use of public water supplies can be given favorable consideration.



# Old Man From Moose River—An Obituary

by H. Wayne Trimm

WHEN he started working for the Conservation Department on February 7, 1954, he was about seven and a half months old and weighed a lean fifty-four pounds. From that time when he walked into box trap number 10 on the Beaver Lake road in the Moose River Plains of the Adirondacks until he died on April 13, 1965, this buck deer served the Department in many ways.

The original purpose of live trapping deer from the central Adirondack area and transferring them to a large deer corral at the Partridge Run Game Management Area near Albany was to verify the belief of our wildlife biologists who felt that food conditions were major factors in determining the size and weight of deer. The "Old Man" was one of this herd.

As our deer experts had thought, many does in this herd of "small" Adirondack deer when transferred to an area of good food, were soon producing twin fawns instead of singles. These fawns, on good food, soon were larger and heavier than their parents. The fear of some people that "in-breeding" was producing a herd of stunted deer in the North Country was proved groundless.

Following this experiment — which lasted several years—the "Old Man" was transferred to our zoo at Delmar where he was the boss of his own private herd of does. He played a leading role in the Department's film on the white-tailed deer. For the most part, the "Old Man" remained friendly to people, showing none of the belligerence that some tame deer develop. For this reason he was an ideal actor and was enjoyed by thousands of visitors to the zoo, particularly by youngsters.

During the winter of 1964-1965, the "Old Man" began to lose his appetite and to grow weak. Clint Bishop, the zoo manager, moved him inside and with antibiotics and vitamins seemed to restore some of his energy and interest in food. But the years finally caught up with the "Old Man" and he contracted pneumonia and died.

In the wild, had he escaped hunters, it is doubtful he would have lived as long as he did.

Even in death, he continues to serve the Department, for his jaws are the oldest known age set that we have for study and comparison.

We shall miss the "Old Man," but his contribution to our knowledge of deer and deer herd management will benefit the deer and the sportsmen of this State for years to come.

# Private Woodland as an Investment

by Frank Bulsiewicz, *Senior Forester, N.Y.S. Department of Conservation*

*Do you own a woodlot that isn't good for much of anything? Is it the forgotten acreage of your property—be it a farm, summer place or rural residence? Are you also looking for a small investment opportunity? Without suspecting it, you may have the makings of an attractive investment that could provide the extra money for your future needs.*—EDITOR

AN ever-increasing number of Americans are becoming interested in investing their money in this nation's business economy. Over the years Wall Street has become the common market place for millions of these capitalists, both large and small. Today the vocabulary of the stock market is common jargon in many households and mutual funds have found their way into numerous family budgets.

In recent years, however, a growing number of modest investors and potential investors have been searching for opportunities requiring the smallest outlay of money. For many of the more than 250,000 woodland owners in New York State, such an attractive investment opportunity already exists.

Timber production can be a profitable business venture for many Empire State woodland owners. Take for example the case of an Albany County man who purchased 37 acres of forest land for the purposes of providing supplemental retirement income for himself and financial benefit for his heirs. He reports his woodlands "are growing into money faster than the same amount invested in bonds, stocks, or a savings bank." Even while managing his woods mainly for the future, he has made three selective harvests in ten years for an income of $2,800.

Another case in point involves a summer home owner in Greene County. Recently this man purchased 88 acres of woodlands which bordered his property for $3,500. Under proper management of a forester, an improvement cutting was made which resulted in an immediate income of more than the purchase price. As important is the fact that he now has potentially more valuable woodlands producing even greater future profits. Many other woodland owners of this State are realizing equally lucrative earnings from their modest investments in the timber-productive capacities of their properties.

The income potential of this investment opportunity has always been greater than commonly recognized by New Yorkers. Past generations of woodland owners failed to realize the profit-earning value of this resource. As a result they mismanaged and abused their forest properties. Today the average New York wood lot is in poor condition. It's value and productivity have declined to a fraction of its potential. Yet many of these wood lots have many inherent advantages for profitable timber growth. Under *proper forest management* and with the *investment of a modest amount of capital*, many of these same woodlands could produce attractive earnings and profits for their owners.

## Advantages In Timberlands

Timber production can be particularly attractive to New York woodland owners looking for extra future income. This investment opportunity has many advantages some of which cannot be found in the stock market:

*Profitable Sideline.* Under present day conditions, the growing of timber can be a profitable sideline for the average woodland owner. Farmer-owners can develop the woodland investment as a part of the whole farm enterprise, especially during slack periods. Many rural residence-owners could spend some of their spare time in such a venture. And absentee owners could find healthful and profitable diversion in their woodlands during an occasional week end visit or a day or two on vacation. Once under management, these woodlands would require very little in time and effort while growing timber and producing dividends for their owners.

*Compatibility With Other Forest Use.* Timber production can be compatible with the many other owner uses of woodlands, including recreation and aesthetics, under the principle of "multiple use" management. Moreover such management can even improve the land for such purposes as wildlife, soil and water conservation. This basic philosophy of forest conservation has never been fully appreciated by private woodland owners. Very few people who own woodlands realize that they can "have their cake" (profits from timber growing) and still eat it (recreational uses, beauty, etc.)

*Attractive Rates of Return.* Under proper forest management many woodlands in New York State can produce anticipated rates of return ranging up to 10%. In some rare cases, even greater earnings are possible. Essentially the owner who manages his forest at a minimum of expense and grows trees of high quality, will reap the greatest profit.

*Capital Growth.* The market for quality timber is characterized by advancing prices—a bull market so to speak. Prices have been going higher and higher. There is every reason to believe that the trend will continue due to increased demands brought on by an increasing population and diminishing supplies of quality materials. The woodland investment, therefore, is not only attractive from the standpoint of profits earned, but also from the standpoint of capital growth.

*Investment Costs Small.* Investment in the proper cultural care of the woodlands, a basic requisite for profitable management, can be small. This advantage is available to the woodland owner, despite rising costs, through participation in governmental programs and the use of modern methods of increasing timber production. Under the State's Forest Practice Act Program, professional forest management advice and technical aid are available to most woodland owners free of charge. Moreover, through participation in the Federal government's Agricultural Conservation Program, the costs of thinning, releasing, cull removal and other forestry practices can be cut up to 70%. Use of modern labor-and-equipment-saving woodland-tending methods can further reduce the costs of putting the woodlands in top productive condition. Keeping these costs to a minimum will reduce the initial investment and result in increased anticipated rates of return.

*Investment Costs.* As pointed out previously, the cost to the owner can be reduced through participation in the Agricultural Conservation Program.

*An untended wood lot*

These reimbursable costs include labor, whether hired or performed by the owner himself. Consequently, for those owners unable to or not interested in performing the actual work of tending their woodlands, this program can reduce the cost of hiring help to a minimum. However, for those owners who are able to and have the interest to do this work, this program can provide them with immediate extra income. Retired or vacationing owners, farmers, and rural residence owners performing their own cultural improvement work can earn an immediate return from their labors while improving their woodlands.

*Market Flexibility.* Woodland owners of mature timber have the added advantage of harvesting such timber when the market is most favorable. Unlike many other investments, sales can be deferred while the investment grows.

*Profits are Continuous.* Fully productive woodlands, under proper management, can provide earnings and profits indefinitely for their owners. This "sustained yield" feature is possible by managing the capital stock of the forestry business, the timber, and withdrawing only the profits, the increased growth.

*An abandoned farm with a conifer planting on hill*

## Average Antler Sizes

A third factor that is used as an indicator of deer range quality is average antler size. Actually, two factors were studied—average number of points (*Figure 5*) and the average beam diameter one inch above the "burr" (*Figure 6*). The deer hunts in 1962 and 1963 were held at such a late date (actually on the last two Saturdays in January) that virtually all of the bucks had shed their antlers. Therefore, no antler data of adequate sample size are available for 1962 and 1963. However, despite the fact that the 1964 hunts were actually held during the same period of the year (the last two Saturdays in January, 1965) most of the bucks did retain their antlers.

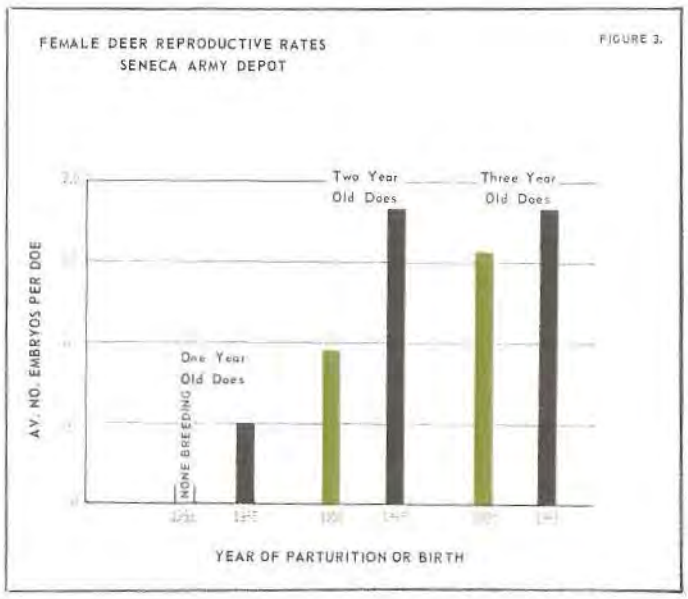
The average antler measurements show the general increase in antler sizes. Again, as with the reproductive rates and average weights, the average number of points and beam diameters of the younger age classes are the ones to really keep tabs on as indicators of the condition of the deer and the range in relation to the deer population. During the 1957 "era," yearling deer with spike antlers were the general rule. In fact, yearling deer with sub-legal antlers (less than 3 inches long) were encountered. With the herd now under control, virtually all of the yearling deer have forked antlers.

The five factors discussed thus far (starvation, reproductive success, average weights, average number of points, and average beam diameters) are the more subtle things that can be studied in evaluating quality of the deer range in the Depot. One of the less subtle things that we also watch is deer utilization of vegetation present on the Depot. No detailed analytical work has been done in this regard, but several comments are offered here to give some indication of just how severely the vegetation was "eaten back" by this vital herd.

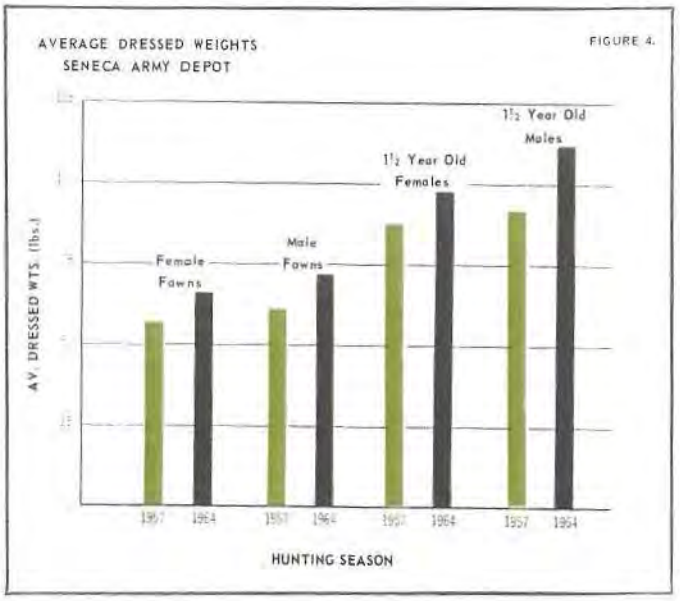
## Terrain and Browsing

The Depot is on land that was farmed originally. The farms were of the type with which most western New Yorkers are familiar—large cultivated fields, vineyards, some fruit trees, wood lots and hedge rows of such species as various maples, elm, ash, hickory, walnut, beech and ironwood. Scattered here and there were other tree species, one of the more interesting being the osage orange. There was virtually no conifer cover except for some juniper.

In the 1940's a reforestration project was attempted. Some 200,000 conifer trees (pines, larch and spruce) were planted each year for four years. *By the early 1950's the deer herd had reached a point where literally 100 per cent of these trees were browsed.* The forester in charge abandoned the project. If left




***White cedar browsed on lower branches by deer***



# Restraint Downs Cankerworm

## No Spray Decision Upheld

by C. J. Yops, Superintendent,
*Bureau of Forest Pest Control,*
*N. Y. S. Conservation Department*

ON June 17, 1964 the Department's Bureau of Forest Pest Control learned that a considerable acreage of woodland in southwestern New York State was being defoliated by a measuring worm type of caterpillar.

This first report came through the District Director of Lands and Forests of the Jamestown office of the Conservation Department. He said that the condition at this time was the most serious of any earlier infestations in the area. The heaviest defoliation was reported to be in Cattaraugus County, in the Ellicottville-Great Valley area. Extensive areas were completely defoliated and showed a "burned" appearance. The Bureau of Forest Pest Control was requested to investigate for possible control measures.

Conservation Department Foresters from Jamestown made sample collections of the defoliating insects during the week of June 15, 1964, and submitted them to Albany for positive identification. These samples were identified as fall cankerworms (*Alsophila pometaria*). Other collections from this area identified at Cornell University showed the fall cankerworms to be doing the most damage but also listed the linden looper (*Erranis tilaria*), Bruce's spanworm (*Operophtera bruceata*), and spring cankerworm (*Paleacrita vernata*) as being associated with the fall cankerworm.

An extensive ground survey of the infested area was made by Forest biologists of the Bureau during the week of June 22, 1964. During this survey almost no sign of living defoliating insects could be found and no pupae were found in the soil, as would normally be the case if the insect had completed its development and migrated to the soil for pupation. Evidence of a heavy predatory calasoma beetle population in the infested area appeared and there was also a high concentration of what appeared to be shrew tunnels in the litter.

The species of trees most commonly defoliated were maple, ash, oak, ironwood, elm, hickory and beech. Damage appeared heaviest along ridge tops, some extending part way down hillsides.

Previous experience of Bureau personnel with outbreaks of this pest in other sections of the State showed that there was a lessening in the seriousness of attack in the years following an epidemic outbreak. This experience, in addition to the absence of live larvae or pupae, indicated to the Bureau biologist that the infestation was at the point of collapsing.

Another indicator of the level of possible infestation intensity for 1965 would be the number of buff colored adult moths that are present in the area in the fall. Arrangements were made to get reports from technicians and residents of the area, as to the intensity of any fall moth flight.

*The Bureau went on record at this early stage of the investigation stating it did not consider that a large scale spraying program would be justified in 1965 in this area.*

By early July, 1964, the Conservation Department was under considerable pressure by organizations and local groups urging that the Department investigate and, if necessary, control the infestation in 1965. Included with the requests received were resolutions by the Cattaraugus and Allegany counties Boards of Supervisors urging Conservation Department participation in surveys and control.

By the latter part of June, 1964, in addition to the ground survey, the Conservation Department conducted an extensive aerial survey of the area so as to better delineate the infestation by noting defoliation and to assess the size of the problem.

By mid-November, 1964, reports started reaching the Bureau of extensive moth flights in parts of the affected area. This inconclusive indicator of future moth intensity did not seem sufficient to Bureau biologists to cause them to change their earlier prediction that the infestation was on the decline.

Interest by residents, forest land owners, and agriculturists continued in the area and brought additional pressure on the Department for continued vigilance. Department news releases again emphasized to local residents that heavy moth flights alone are no positive indication that defoliation will occur next season in the area of observed flight. The insect populations, the public was told, are highly cyclic and are usually held in check by natural controls.

About this time the Bureau sought and received co-operation from entomologists at the Amherst, Massachusetts, office of the U. S. Forest Service and from the State University College of Forestry, at Syracuse. With this co-operation, it was decided to conduct egg mass surveys in the infested areas in January, and again in early April, 1965, to get an idea of the insect's potential.

The egg mass survey showed eggs in sufficient numbers to cause defoliation in some of the affected areas. However, the distribution of eggs along the trunks and limbs of the trees appeared abnormal. The biologists felt that there was some question as to how many of the eggs would hatch. Egg masses were collected and sent to the College of Forestry at Syracuse where viability tests were to be conducted. The U. S. Forest Service entomologist who assisted reported that conditions observed caused him to feel skeptical that heavy defoliation was likely in this area in 1965.

By March, the College of Forestry had completed viability tests of the eggs collected in January. These tests showed conclusively that only a part of the eggs deposited in the area could be expected to produce caterpillars in the spring. A second collection of eggs was made in April and the tests with these eggs confirmed earlier findings. The results of this work showed that the average amount of parasitism found from the January survey was 34 per cent and 44½ per cent from the April survey.

Now that the season for defoliation by the cankerworm has passed, it is acknowledged by all concerned, and confirmed by the Department's July aerial defoliation survey, that the predictions by the Bureau of Forest Pest Control were substantially correct and as a result a large expenditure of money by State and private interests for control purposes was averted. In addition, the use of chemical control measures was avoided. This non-use of chemicals is in line with the Conservation Department's policy of spraying as an emergency measure only and where such action is necessary to protect forests from extensive damage.

# How Many Wild Ducks from New York?

## A Waterfowl Expert Describes the "Duck Factories" and Estimates the Numbers Grown in the State

by Dirck Benson, *Senior Wildlife Biologist, N. Y. S. Department of Conservation*

QUIET! Around that bend is a good spot for broods. Nice feeding area. Good weed beds. Excellent escape cover. Broods can dodge out of sight in a trice. (Locating duck broods can be as exciting as duck hunting.)

Wow! Did you see them go? Those two broods of mallards to the right were gone in a hurry, but those young blacks beat them. But the silly woodducks—mother and children alike—went skittering and squealing via the longest route to cover. Sometimes they seem dumb, but they average out as reasonably successful mothers. I remember one female that had 13 young when I first saw the brood—bright colored down, not more than two days old. Seven weeks later she still had 9 young, just beginning to fly. Not bad when the average number reared to flight is five.

Another female woodduck had 12 when I first saw her. Week by week she lost one or two. Ended up with one young brought to flight stage. But it's no wonder. She never had her young under control: no discipline. Must have believed in a "lose the child but save the rod" policy. Every time danger arose she would yell her head off but not to much avail. In the first place, she let her young range too far—usually half were scattered up to 100 yards ahead of her and the remainder were spread to the rear. Furthermore, the young had not learned the cardinal rule of survival: Get to cover and freeze when the danger signal is sounded.

Did you see that brood to the left? Not the woodduck brood but the ones that slipped into the sedge. I am pretty sure they were blue-winged teal but I did not get a good look. They are contradictory birds. Sometimes they can rear their young on an area and hardly be seen. Other times they seem to be out in the open all the time, but they still average five young reared. The females are very attentive to the young and always seem to have them under close control.

It is no cinch to spot a brood of ducks, determine the species, count the young and make a credible estimate of their age. Frankly it affords just as much excitement, more skill, planning and just as much discomfort as waterfowling. Creeping, crawling and sitting in cramped positions is a part of both sports. And, the attacks of mosquitoes and deer flies can be just as disconcerting as wind and cold.

It doesn't take much to get started. Old shoes and pants for wading, field glasses and patience. Boots and/or canoes are niceties, not necessities. There's no better place to start than in New York. We read reports, and unfortunately they are true, that North American waterfowl are limited: breeding habitat is being lost in Canada and the United States much faster than it is being created. Looking to the future it will only be with luck that enough habitat can be held to support a continental waterfowl population of 40 million breeders to provide a fall flight of 125 million. Even this goal is only attainable in wet years such as 1956 and 1957 when prairie potholes were well-watered. In 1964 there just wasn't

*Mallards, pintail with Canada geese*

enough water on North American duck marshes to hold that many birds.

*Where does New York fit into the duck picture?* We are neither a "have" nor a "have not" state. We winter an important segment of the Atlantic Flyway population, we harbor temporarily an even greater portion in migration, and we produce a substantial proportion of our own harvest. Actually, we are very lucky. Granted, we don't have the very wonderful shooting of the northern prairies when ducks are abundant, but neither do we suffer the near dearth of ducks following droughts. Eastern Ontario and Quebec are kind to us. They provide many of our black ducks, green-winged teal and other species. Geography and duck habits also are kind to us. We draw many birds from the northern and eastern fringes of the prairie area that is most frequently hit by drought, but few from the heart of it.

But best of all we do have marshes: some good quality, some only fair. The marshes do produce ducks—a significant share of our annual cropping. And we can make the marshes more productive; we can help ourselves. Some states aren't that fortunate.

**Brood of blacks with pintails**

New York has upward of 500,000 acres of wetlands (here we refer to marsh, swamp and bog, not open water lakes and ponds). Presently we cannot credit much more than 150,000 of these acres as having moderate to high waterfowl values. Much of the rest is composed of shrub and wooded swamps and bogs. Often these areas are too closed-in to do the ducks much good—they must be classed as having low to negligible waterfowl values. Nevertheless, when all these wetlands, beaver ponds, man-made wildlife marshes, and our many slow-moving streams are put together, they contribute many ducks to the fall flight.

In 1955, New York still had some 65,000 acres of Long Island salt marshes of varying quality. In the few brief years that have followed nearly 15 per cent of these marsh acres have been filled. The purposes for filling in order of importance are: Housing, miscellaneous filling, recreation areas, marinas, industry, dumps, airport, beaches, roads and parking lots. Filling for housing is the biggest single factor, accounting for ⅓ of the marsh acres destroyed.

But what remains still produces ducks. The best areas may attract as many as 10 pairs per 100 acres, others less than one pair. Probably Long Island still produces 1,500 to 2,500 wild ducks per year despite competition with the human population explosion. Black ducks are the common species but broods of mallards, blue-winged teal and woodduck may be seen. Jones Beach Pond has a colony of gadwalls. Both mute swans and Canada geese, from captive ancestry, nest regularly.

Our Southern Tier, Catskill and Mo-

**Housing development encroaches on L. I. marsh—and ducks**

*Wood duck nesting spot and good escape cover*

hawk sections of the Allegheny Plateau, have few water areas, because of their topography. These marshes are only moderately productive and average only two pairs of breeders per 100 acres though we know one area of 125 acres that draws annually 10 breeding pairs. We estimate, with a bit of guessing, that these areas produce 3,000 young per year. Woodducks make up about half the breeding birds. Black ducks and mallards vie for second place with the mallard numbers higher from Ithaca west; while the black is more frequent to the east. Few blue-winged teal get in this section but many slow moving streams have hooded mergansers.

The Lake Plains of central and western New York are good waterfowl habitat. Blessed with many water areas and well churned-up glacial limestone soils, this area contains rich marshes. Both in the flatter western parts with its sluggish streams and the more eastern part where marshes, swamps and bogs are squeezed between the drumlins, the duck brood seeker can have a field day. Mallards, woodies, blacks and blue-winged teal in that order are the key species. Shovellers, hooded mergansers, green-winged teal and gadwalls also occur. Stocked Canada geese and redheads are established—nesting and migrating along with other ducks. Once in a while pintails or ruddy ducks may try the areas for summering. A blending of the weird notes of the coot, galinule and pied-billed grebe, with the calls of redwings, amongst duck and duckling calls one doesn't know, offers a challenge to the best ears and eyes.

Among areas running from small swales to extensive marshes, such as Montezuma, and ranging from bulrush and cattails to wooded swamps—ducks have a wide choice. So does the observer. Take your choice and see what you can find. This region has in excess of 30,000 acres of reasonably good duck habitat and may produce 10,000 or more a year.

The St. Lawrence lowland, the east end of Lake Ontario to Massena, is blessed with limestone outcrops and many water pockets. High value wetlands for ducks approach 25,000 acres. The habitat ranges from small marshes, potholes and beaver ponds to large water areas and productive streams. Black and woodducks make up two-thirds of the production. But others are there (sometimes in numbers) — mallards, blue-winged teal, green-winged teal, ring-necked ducks, even pintails and baldpates, and three species of mergansers. A conservative estimate of the duck production of the area is 3,000 young a year. (Actually, we suspect that 10,000 or more would be more correct.)

New York has one other duck factory —the Adirondacks. Granite doesn't produce fertile soil nor highly productive duck marshes but the advantage of the Adirondacks is its extent. What it doesn't have in quality it does have in quantity. There are many ponds with scarcely any cover but each produces a few ducks. The best areas are those ponds with bog margins and the slow-moving streams. Black ducks are the number one species, but the ring-necked ducks are the most intriguing. It appears that this species moved in during the middle to late 'thirties. First they colonized two areas ideal for ring-necks—ponds with boggy margins. Their numbers built up to two or three times normal breeding densities. Evidently they found the mountain tarns to be good safe country and the population has been spreading ever since. Other ducks are there, too—woodduck in slow moving streams, along with the hooded merganser, the American mergansers on the larger lakes and ponds; and with luck, an occasional mallard, green-winged teal or golden-eye brood will be spotted. We aren't prepared to try to guess the total production.

Now if your field glasses, wet feet and mosquito bites don't convince you that duck broods are there to study, there is another approach. A gentle but sagacious mixing of band recovery records and hunter harvest data gives us another way of estimating duck production in New York. In recent years our duck harvest has been about 200,000 birds—20 to 30 per cent were blacks, 20 to 30 per cent woodduck, 15 to 20 per cent mallards and about one per cent blue-winged teal. Study of band recovery records suggests that about 15 per cent of the blacks, perhaps 90 per cent of the woodduck, 10 per cent of the mallards and probably half the blue-winged teal that are harvested are also produced in New York.

One must allow for a good margin of error in these calculations. (We know we are on the right track but we also know the figures are only approximate.) Anyhow, the records suggest that 40 to 50 thousand of our annual duck harvest —20 to 25 per cent—are New York products. And, since the harvest—based on band recovery rates, corrected for non-reporting—is normally less than half the production, it is perfectly conceivable that 80 to 100 thousand young ducks are brought to flight age annually in New York.

*Food and cover close together in a pond*

# Some Ants of New York

by John A. Wilcox,
*Associate Curator of Entomology, New York State Museum**

THE ants are probably as well known as any other kind of insect. Their proverbial inquisitiveness at picnics is a topic for all sorts of comic comment, but on the other hand, their industriousness has been used as a shining example for all men to emulate.

New York State has about 90 different kinds of ants within its boundaries. I say "about" because there are a few which have been found just across the State line but not yet in New York. There is also the probability that some species may be introduced from other countries and some new species may yet be discovered.

Early specimens of ants have long been known from examples preserved in fossil amber, the hardened pitch from pine or spruce sometimes preserved in fossil deposits. Insects embedded in amber are in a condition of preservation as good as if they had been alive within our life time. Some of these fossils date back to the Tertiary Period, 30,000,000 years ago. Surprisingly enough, even at that time ants were ants. The fossil species belonged to living genera or extinct genera which are easily referred to living subfamilies. Even in Tertiary times the ants were sharply differentiated into male, female and worker phases as they are today. Thus the ants as a family are a very old group probably well established while the dinosaurs roamed the earth.

## Carpenter Ants

Carpenter ants (*Camponotus* species) hold the record for largest size in New York. They are also the most destructive. Their name comes from the tunnelling they do. Galleries are dug in damp wood for their nests and the coarse "sawdust" is dropped outside the nest. They do not eat wood but do feed primarily on animal matter, as do most ants.

The life history of a carpenter ant is fairly simple and is typical of most ants. Adult, winged males and females emerge from their cocoons and leave the nest. Emergence of large numbers of ants usually occurs at certain times and we often notice the ants only at these times. Males seek out females and fertilization occurs while the females still have their wings.

After the mating flight, the female (queen) starts a new nest under loose bark of a log, stump or dead tree, or between the boards of a building. She forms a small cell, removes the wings from her body and starts the development of a new colony. A few eggs are laid and the young queen tends them and the larvae which hatch from them. These larvae live on material which the queen produces in her digestive system and feeds to them from her mouth. At least some of this material comes from a breakdown of wing muscles. Sometimes, when there is a shortage of food, a few of the larvae themselves are eaten. The queen does not leave the cell to forage for food.

Surviving larvae mature, spin cocoons and finally emerge as worker ants. Workers are all sterile, wingless females. The ones which have been reared by the queen are small and are called minor workers. As soon as the minor workers appear in the nest the queen retires to the less arduous job of egg production and lets the workers take over as nursemaids for the next batch of eggs and larvae. Minor workers hunt for food outside the nest and do a better job of rearing larvae, so the individuals under their care become much larger. They are called major workers. Minor workers live about eight weeks, major workers live from eight to ten months and queens have been known to live fifteen years.

Workers wander up to several hundred feet from the nest in search of dead insects or other material which may be eaten there or carried back to the nest. This food is partly digested by the worker, regurgitated and fed to the larvae, the queen and sometimes other workers. They continue to enlarge the nest and care for additional youngsters until the colony consists of hundreds of individuals. After a colony is well established some of the larvae become winged, fertile females and males which leave the colony and start new nests of their own. Apparently there is never more than one producing queen in a carpenter ant colony.

Many competent biologists have been attracted by the behavior, structure, caste system and evolution of ants (Formicology). In spite of this there is still confusion concerning the limits of some species and the question of whether a particular kind should be listed as a species or as a subspecies: form or variety of some other species has no consistent answer. Typically, all carpenter ants belonging to *Camponotus pennsylvanicus* are black. Some other forms are partly red as shown by the minor worker on the center spread. This red form may be called *Camponotus noveboracensis* although the two were considered to belong to the same species until very recently.

## Mound-Building Ants

The nest shown in the center spread is that of the Allegheny mound ant, *Formica exsectoides*, a fairly common ant throughout northeastern North America. Although the insect itself is not overly specialized in form, it does produce one of the largest, most complex nests and the colony in the nest can survive for more than one hundred years. The founding queen may live for only a few years but her daughters sometimes remain in or return to the homestead thus continuing a dynasty lasting many generations.

Although most ant colonies start with a single queen and the young which she first produces, the normal, established nest contains as few as several dozen individuals in the case of the primitive ponerine ants, up to as many as the recorded count of 93,694 in a nest of a European *Formica rufa*. The Allegheny mound ant also has very large populations. One estimate of this species in Maryland ran to 11 to 13 million individuals in a particular 10-acre plot. That is over a million per acre.

Mound ants are well known and re-

*(Continued on page 26)*

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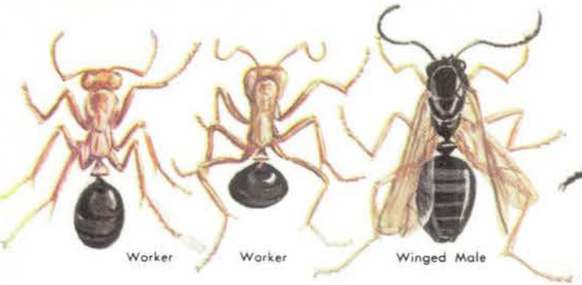
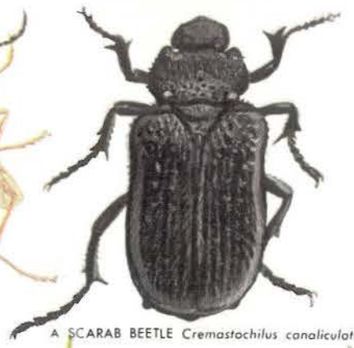
# SOME ANTS OF NEW YORK, AND THEIR ALLIES

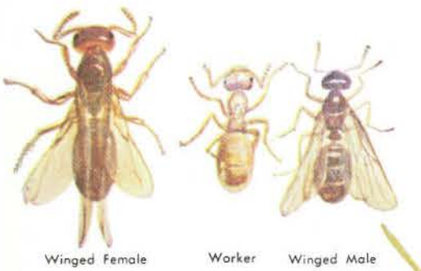


Worker Worker Winged Male

ALLEGHENY MOUND ANT *Formica exsectoides*

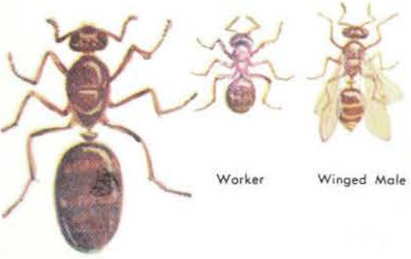


A SCARAB BEETLE *Cremastochilus canaliculatus*



Winged Female Worker Winged Male

YELLOW ANT *Acanthomyops claviger*



Worker Winged Male

Queen

CORNFIELD ANT *Lasius alienus americanus*

Worker

Seed-cracking Specialized Worker

HARVESTING ANT *Pheidole pilifera*

AMAZON ANT *Polyergus lucidus*

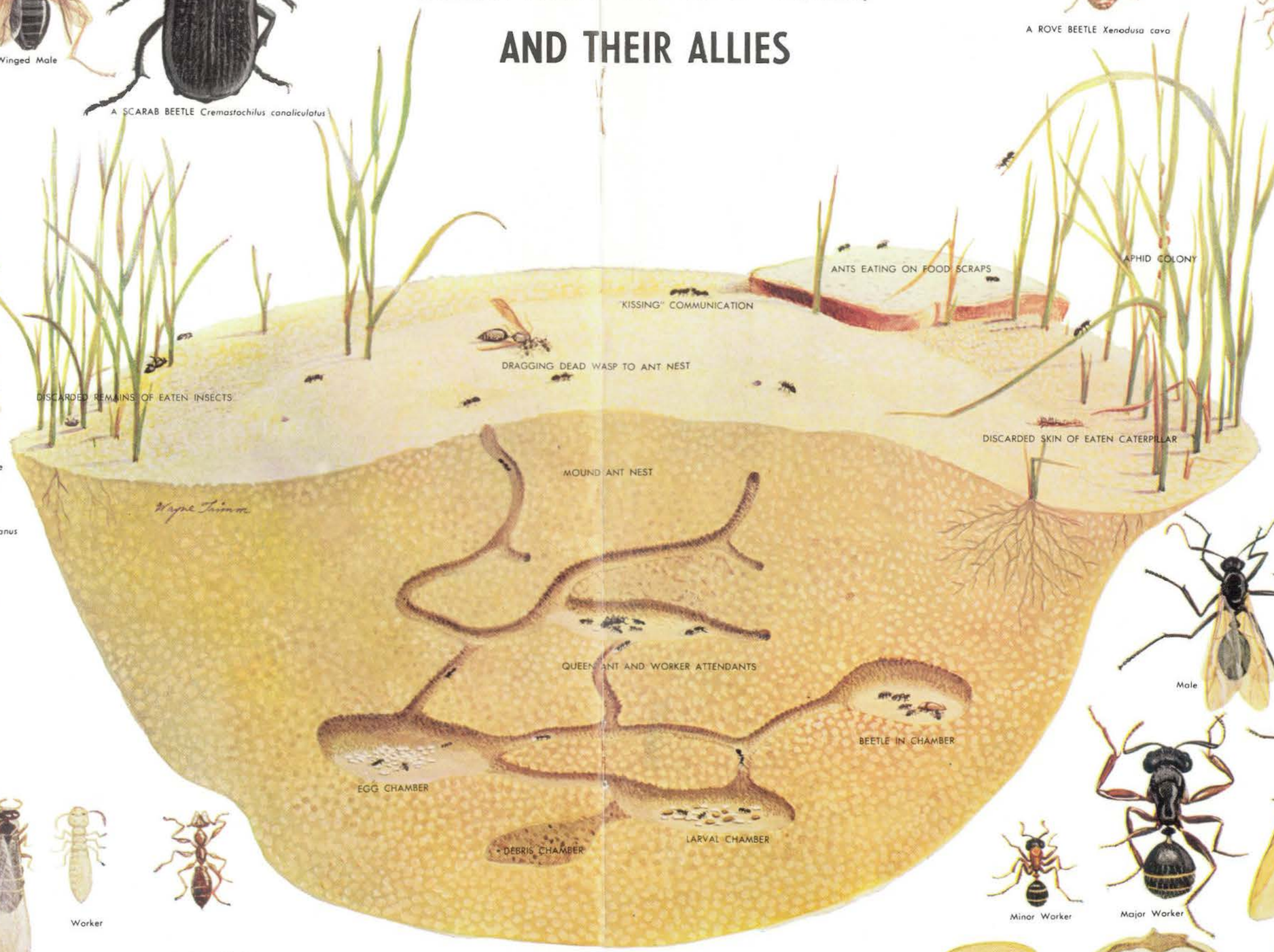
Worker

Winged Adult

TERMITE *Reticulitermes flavipes*

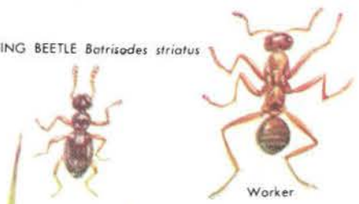


WINGLESS WASP *Chelogynus sp.*




A ROVE BEETLE *Xenodusa cava*

ANT-LOVING BEETLE *Batrisodes striatus*



Worker

SLAVE ANT *Formica incert.*

Worker Winged Female

PAVEMENT ANT *Tetramorium caespitum*

Worker

PONERINE ANT *Ponera coarctata*

Worker

THIEF ANT *Solenopsis molesta*

Male

Winged Female



Minor Worker



Major Worker

Cocoon

Pupa In Cocoon

Egg Larva

CARPENTER ANT *Camponotus pennsylvanicus*

0 inches 1/2

0 cms 1.3

SCALE OF INSECTS

(Continued from page 23)

spected not only for their ability to construct large homes for themselves but also for their ability to protect those homes. A poison composed, in part, of formic acid is produced in their bodies. They can bite and sting and the poison is involved in both biting and stinging. It is strong enough to produce a drying and sloughing of the skin in some people. It is also used effectively in protecting the nest from predatory insects, birds and small mammals.

Damage to the ant nest results in two major types of activity. The first is the direct defense of the nest, a counter-attack against the intruder. The second activity undertaken by part of the workers is the transportation of eggs, larvae and pupae away from the area of danger to a place of relative safety. This activity is of rather normal occurrence and in such ants as the mound builders is frequently performed in order to place larvae and pupae in areas of optimum humidity and temperature. The immatures are continually transferred from one chamber to another. They may be moved up near the surface of the soil in the morning and then taken deeper as the heat of the afternoon penetrates the nest. Larvae, eggs and pupae may all be assembled in the same chamber or more often eggs and larvae in one chamber and pupae in another. In some of the larger mounds, additional chambers may contain refuse or be maintained as resting places for workers or throne rooms for the queens.

The care given to the larvae by the workers appears at first glance to be an admirable, sentimental trait. However, the care given to the larvae does not go totally unrewarded. Young larvae secrete through their skin chemical substances, probably mostly fatty material. The workers appear to find these substances delicious and may be observed frequently cleaning the larvae.

### Ponerine Ants

The ponerine ants, represented on the center spread by the figure of a worker, belong to the ant subfamily which is most primitive. By primitive I mean that these species are less highly developed in social behavior and body structure. Their workers are less specialized, closer in size to the queens, and may even produce eggs themselves. Ants, members of the family *Formicidae*, are most closely related to the wasp families *Sapygidae* and *Mutillidae* (velvet ants). The best distinguishing characteristic is the swollen, knob-like or scale-like segment between the thorax and the major portion of the abdomen in ants. Also, the basal antennal segment is unusually long in ants, giving an "elbowed" appearance to the antenna. These characters are lacking in the wasp families and are rather poorly developed in some of the ponerines. Wingless workers are typical of the ant family but some of the wasps have wingless individuals. One of these, *Chelogynus*, figured on the center spread, will be confused with the ants if not examined carefully.

Ponerine ants form small colonies, often of only a few dozen individuals, and are comparatively rare except in Australia. The queen differs from a worker only in possession of wings, larger thorax and larger eyes. She is not attended by the workers as are the queens of more highly specialized species. Workers break up their insect prey and feed the pieces to the larvae. The larvae are not fed material regurgitated by the workers as is done for species in other subfamilies.

### Harvesting Ants

The two workers of the harvesting ant figured on the center spread differ remarkably in the size of their heads. This ant, *Pheidole pilifera*, is a vegetarian, although it will sometimes eat pieces of insects. The minor workers forage for plant seeds which they bring back to the nest. Larger or harder seeds are given to major workers, who can crack them with their very strong jaws. The enlarged head, containing the jaw muscles, results in the major worker becoming a very effective "nut-cracker."

### Pavement Ants

The pavement ant, *Tetramorium caespitum*, is figured here because it is the ant which is most frequently confused with termites. Winged adults are about the same size, shape and color as termites, and their swarming behavior is somewhat similar to that of termites. Although they may forage in houses, they are relatively harmless little creatures living in the soil or under stones and sidewalks.

### Cornfield Ants

Although ants are primarily meat eaters, a number of them have converted their taste to feed on seeds or sugar. Ants will cluster around a wound in a plant to get the sugar in the sap or they may get sugar in the form of nectar from flowers of plants. A far more extreme method of acquiring sugar is demonstrated by those which collect honeydew from other insects. These insects, particularly aphids, suck sap from plants on which they live. As the sap goes through their bodies, part of the nutrient material is absorbed and part is passed out as honeydew which has a higher sugar content than the sap. An ant will stroke an aphid with its antennae to make it give off a drop of honeydew. This relationship has developed to the point where both ant and aphid benefit.

Some of the ants, such as the cornfield ant, *Lasius alienus*, care for aphids in their surrounding area much as a farmer cares for his cows. Aphids are placed on their host plants by ants, and may even be transferred from one plant to another by the ants. This ant carries aphid eggs to its nest in winter, tends them there, and carries the young, newly-hatched aphids out to the host plants in spring. Of particular importance in this respect is the relationship between the cornfield ant and the corn root aphid. Destructive corn root aphids are "planted" on corn almost exclusively by ants. Control of the aphids can be accomplished by destroying the ants.

### Thief Ants

Thief ants, represented on the center spread by a figure of *Solenopsis molesta*, are a group which usually move into a nest of some other kind of ant. Their workers are extremely small and there is no major worker or soldier caste in the species. Queens are veritable giants compared with their workers. Their nest is usually built in the walls of the nest of some larger species. The midget thief ant workers escape from their hosts by clambering into the much smaller tunnels which they make. They need not forage far for food: they can enter galleries of their host and make off with the crumbs that the host drops or even the host's eggs and very young larvae. Many of the thief ant group are restricted to this parasitic life but *Solenopsis molesta* is sometimes a pest in our homes where it makes its nest in a box or corner of the kitchen, foraging onto the kitchen table or pantry shelf.

### Yellow Ants

The yellow ants, belonging to the genus *Acanthomyops*, are among the most common of ant species. Although they may be found frequently in the soil, they are rarely noticed unless one looks for them. Queens are average-sized ants but the male is very small and workers are even smaller. Workers are subterranean in their habits, living almost exclusively on honeydew produced by aphids living on roots.

### Amazon Ants

The amazon ants belonging to the genus *Polyergus* are rather well named, vicious creatures. The major point of interest is their adaptation for fighting and dependence on other ant species for survival. Amazon queens and workers are unable to maintain their own

nest. The species survives only by capturing other ants and making slaves of them.

The young amazon queen, instead of building her own nest, enters the nest of some species of *Formica* such as *Formica incerta* illustrated on the center spread. She kills the *Formica* queen and is accepted by the *Formica* workers. The workers take care of the amazon's eggs and rear the young. When amazon workers emerge from their cocoons they do not take part in the work of the colony. They do not forage for food nor care for the larvae. In fact, *Formica* workers feed the amazon workers as they did the larvae.

In the absence of a *Formica* queen the proportion of amazons to *Formica* workers increases. The necessity for maintaining the larger colony creates a crisis which is overcome by a raid on a neighboring *Formica* nest. The amazon workers band together, rush into the *Formica* nest, capture the cocoons found there and bring them back to the home nest. As these cocoons mature, the emerging *Formica* ants become a part of the nest now ruled by the amazon and continue the work of maintaining it.

## House Guests

Other insects besides ants and aphids may be found inside ant nests. Over the millions of years ants have been in existence, evolution has adapted other insects to live in the special habitat produced, as a nest, by ants. Among the insects specifically adapted to live in ant nests are many kinds of beetles. There seem to be two major types of adaptation correlated with existence in an ant nest. Some of the beetles are modified in form to the extent that they look very much like ants in general appearance. Constrictions between head and thorax and between prothorax and wingcovers may be more extreme than usual (as in the pselaphid beetle, *Batrisodes*, figured on the center spread) so that anyone might mistake these beetles for ants.

Another adaptation acquired by some beetles is an ability to produce substances which the ants like. The scarab beetle, *Cremastocheilus*, and the rove beetle, *Xenodusa*, figured here, are able to produce such substances. Tufts of hair associated with secretion-producing glands are characteristic of these beetles. The tufts may be seen at the hind corners of the prothorax on the scarab and along each side of the abdomen in the rove beetle.

Ants welcome these beetles into their homes and appear to derive a certain enjoyment in feeding on the substance produced by the beetles. The beetles on the other hand, often return the favor by feeding on the ants themselves or their larvae. Certainly a high price for the ants to pay for their unusual taste. Other less-dangerous house guests feed on debris or part of the food ants bring back to the nest.

## Termites

Termites, sometimes called white ants, bear no relationship to true ants other than that they are both insects. Termite adults look very much like small to medium-sized black, winged ants. There are four good characteristics by which ants and termites may be separated. Probably the easiest trade mark of the termite to recognize is its complement of four wings all of which are the same size and shape. Ants have four wings also but the front pair are larger than the hind pair. Ant wings have dark brown veins, particularly in the front half of the front wings. Termite wings have veins but they are not colored and are not darker than the rest of the wing. The ant has a typical wasp waist. Termites do not have an extreme constriction at the base of the abdomen, so they appear to be chunkier insects. The fourth characteristic lies in the form of the antenna. All but the most primitive ants have antennae more or less elbowed or bent near the middle. The termite's antennal segments are all more or less the same size and the organ does not have any indication of such a joint.

Termites, which are found throughout New York State, have the very deserved reputation of being house wreckers. Control of termites is difficult because the white workers do not come out in the open to forage. Termite nests are in the ground and the workers travel exclusively in the ground to buried pieces of wood or they may come up through the foundation of a house to the wooden parts. Control measures consist of breaking into the soil or through the foundation and placing an insecticide as a poison barrier between the nest and the wooden parts of a building. Of the ants, only the carpenter ant is apt to do damage to wooden structures. While the termite eats wood, the carpenter ant excavates galleries in the wood only to provide a nest for itself. It must forage outside the nest for food. Consequently control of ants may be obtained by spreading an insecticide in the general area where they forage.

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More detailed information can be obtained in the following books:

*Ants, Their Structure, Development and Behavior*. By William M. Wheeler. Columbia University Press, New York. Copyright 1910, reprinted 1960.

*American Social Insects*. By Charles D. Michener and Mary H. Michener. D. Van Nostrand Co., New York. 1951

## HEARTS AND HUNTING

Hunting season is here again, and so is the tragedy of heart attack deaths. Here are some recommendations from the New York State Heart Assembly, to help bring hunters back alive:

First off, ask yourself this question: Do I have the heart to hunt? It's not sentiment or ethics but the condition of your heart. Deer hunting, for instance, often demands a level of energy output which may be triple or quadruple the level at which most part-time hunters operate during the rest of the year. Extremes of weather, change of altitude, rough terrain and the stress of the chase can levy a heavy tax on the heart's capacity.

Accordingly, the most important advice is:

Have a complete physical examination before you plan your hunting trip. Then your doctor can, if necessary, suggest ways in which you can pace yourself, get your deer and at the same time minimize the strains on your heart.

(1) Don't drag a deer alone. If you down your deer, let him lie until you can get a couple of able-bodied persons to help move the animal. If you have a heart condition, let them do this job without you. Make your contribution to the hunting party in a less strenuous way.

(2) If you have a heart condition, take at least one member of your party into your confidence. Tell him what medicine you take, how it is given and the symptoms which indicate the need for medication. He should know which pocket you keep it in, and the container should carry clearly typed instructions.

(3) The heart may be a lonely hunter, but you shouldn't be. Don't hunt alone.

(4) Get a good rest—preferably a full night's sleep—before you set out.

(5) If you're hunting at a higher altitude, go a few days early. This will give your heart time to adjust to the lower oxygen content of the thin air before the stresses and strains of hunting are added.

(6) Rest as often and as long as you have to, before you get too tired; take your stand near camp and let the younger set do the "driving" or strenuous hunting. Your chances of getting a deer from a "stump" near camp are often better than a full day of activity.

For all hunters whether a heart condition is evident or not, the Heart Assembly has this advice: Condition yourself as for any unusual physical exertion, with an increasing schedule of exercise in preparation for the big event. Choose lightweight but warm clothing, to lighten the load on your heart. Be moderate in eating and drinking.

# Deer Facts from Seneca Depot

## A Further Report on the Lessons to be Learned from the Ups And Downs of the Deer Herd Enclosed Within a 10,000 Acre Army Depot*

by William T. Hesselton, *Conservation Biologist,*
C. W. Severinghaus, *Supervising Wildlife Biologist,*
John E. Tanck, *Conservation Biology Technician,*
*N.Y.S. Department of Conservation*

ONE often hears the remark among deer hunters: "If they would only leave them alone, the deer would take care of themselves and there would be good hunting for everybody, just like in the old days." Well, big game managers, and in particular deer managers, have accumulated vast amounts of information to refute this widely-held belief. For the past ten years accurate records have been maintained documenting just what happens to a deer herd that has been left "to take care of itself" at the Seneca Army Depot in western New York.

The history of the deer herd in this unique outdoor laboratory provides convincing evidence that sound deer management (yes, even shooting fawns and does) does indeed work. We have gained a great deal of knowledge about deer populations, reproductive success and improvements in physical condition of deer through proper management.

But, let us go back to the beginning of the deer herd at the Depot and follow the course of its growth and response to management, since we do have detailed figures, which when examined closely produce some interesting conclusions for the deer hunter and the conservationist.

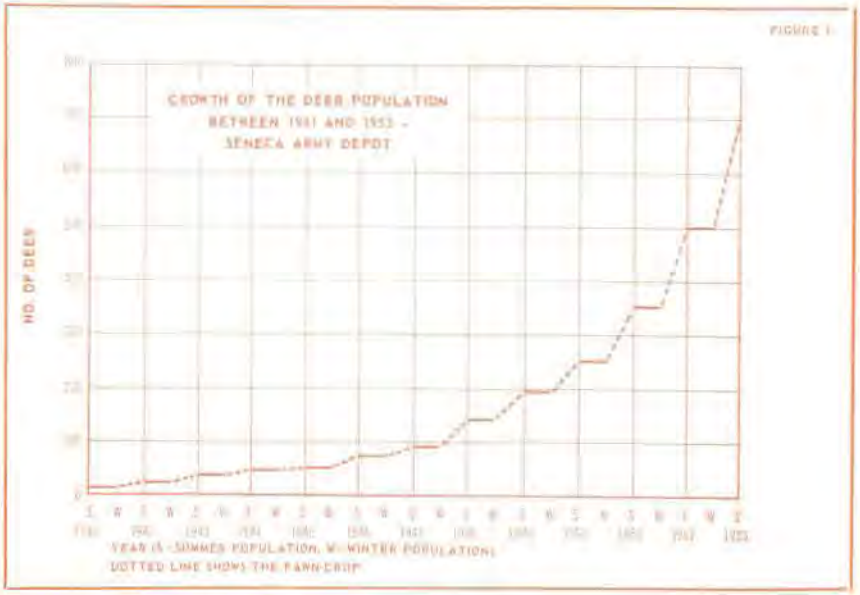
### History of the Depot Deer Herd

The Seneca Army Depot is located in Seneca County, a few miles east of Seneca Lake, near the village of Romulus. It contains 9,872 acres of which approximately 7,500 acres can be considered actual deer habitat. The area is entirely surrounded by a seven-foot high fence. When the fence was first erected in 1942 there were approximately 20-40 deer on the area. They increased to about 1,100 by the summer of 1954 and had become a real nuisance—actually a menace to normal Depot activities. Vehicle-deer collisions were rather common. It had become obvious that some sort of herd reduction was necessary. An attempt was made to harvest some deer in the early 1950's by giving permission to a local group of archers to hunt deer with a bow and arrow. They succeeded in killing a few deer, but it was obvious that more drastic control measures would have to be taken.

The Army then enlisted the aid of the Conservation Department to cope with the problem. Given alternative measures to consider, the Army decided that a trap and transfer program would be initiated during the winter of 1954-55, to be followed up again during the winter of 1955-56. During the two winters, trappers actually succeeded in removing 318 deer at an estimated cost of $9,199.74 or $28.93 per deer! However, the population continued to increase simply because the fawn crop of 1955 was greater than the number of deer removed during both winters put together.

Then, when the 1956 fawn crop was born, there were almost twice as many deer on the Depot range in the summer of 1956 as there had been in the summer of 1954 prior to the trap and transfer program. We now know that there were at least 2,000 deer (171 deer per square mile of deer range) present in the summer of 1956. It wasn't possible for that deer range to support so many deer—and it didn't. Starvation appeared in the winter of 1956-57, when approximately 196 deer starved to death!

Upon re-examination of all the facts as presented by Conservation Department biologists, the Army decided to permit the taking of deer by shotgun in the fall of 1957. The nature of materials stored at the Depot necessitated the utmost caution in regard to fires, matches, and firearms. Through co-operation with the De-




* Contribution of Federal Aid P-R Project, W-89-R-9:IV-E

*Seneca Army Depot. Deer range extends around picture*

partment, a deer hunting program for the fall of 1957 was devised. Buck hunting by Army personnel and civilian personnel attached to the Depot was permitted during the regular season, and antlerless deer were taken on the last day of the buck season. Also, a deer damage permit was issued by the Department allowing deer to be taken prior to the regular season.

The shooting was done by "sharpshooters" among Depot personnel, and the carcasses were donated to charity institutions. During that fall 1,127 deer were removed from the population. Because the age and sex of virtually all deer removed has been recorded, we have been able to reconstruct a known minimum deer population for each year. From this reconstructed population, we now know that a minimum population of about 2,500 deer were in the Depot prior to the 1957 hunting season, or 215 deer per square mile of deer range.

Knowing what number of deer have been removed over the years since 1957, we now know that about 1,400 live deer were in the Depot during the winter of 1957-58. Again, starvation took its toll—338 deer. And, once again, deer hunting was permitted during the fall of 1958. Hunting accounted for a total of 607 deer. Starvation during the following winter accounted for only 18 deer. From that time to the present, annual deer hunts have been conducted each fall and/or early winter, and starvation has been virtually non-existent. All told, hunting has allowed the removal of 3,987 deer, and has provided many thousands of man-hours of deer hunting.

The number of deer in the Depot was steadily reduced from 1957 to 1962. Now the population is close to the carrying capacity of the winter range. In winter, the population should be about 250 deer (20 deer per square mile). This winter population should produce, in the spring, about 175 fawns, bringing the summer population to about 425 deer. The annual hunting seasons should be designed to harvest a number of deer which together with the other losses during the year would about equal the annual increment and thereby hold the winter population at about 250 deer.

## What Has Been Learned?

Accurate records have been maintained on virtually all deer removed from this population. Dressed weights, ages, sexes, antler beam diameters and number of points, and female deer reproductive tracts have been collected and analyzed. Dead deer surveys have been conducted in the spring of the year, aerial censusing has been done, and periodic ground surveys have been conducted so that additional information could be gathered. From the information we have gained a factual account of the effects of an "eaten out" deer range on the welfare of a deer herd, and how the deer herd has responded since being brought under control—factors that can be used as guides for deer management both on the Depot and elsewhere in the State.

The growth of the deer population was rapid between 1941 and 1953. The *average*, surviving, post-fawning season population, during this interval, grew at a 40.5 per cent annual rate. (See *Figure* 1.) In other words, each successive summer population was 40.5 per cent greater than the previous summer's. This average annual growth rate accounts for the annual increment (fawn crop) as well as any decimating factors (hunting, starvation and other).

The annual growth rate, resulting from each year's fawn crop, and the reduction of the population by all known causes of losses between fawning seasons, occurring between 1953 and 1964 is illustrated in *Figure* 2.

In contrast to the 40.5 per cent average annual growth rate for the earlier period (1941-1953) is a slightly lower average rate of 36.7 for the 1953-1957 period. This decline is a direct result of several factors: (1) Trap and transfer of deer in 1954-55 and 1955-56; (2) starvation of deer in 1956-57; (3) lowered reproductive rates caused by malnourishment; and (4) possible post-fawning losses due to inability of poorly-nourished does to provide adequate nourishment for newly-born fawns.

The average annual growth rate then became a negative value between 1957 and 1961 as the decimating factors

(hunting, starvation and other) became greater than the annual population increments (fawn crops). From 1961 to the present we have been able to maintain the status quo in the population size, hence the average annual [herd] growth rate has been zero.

In contrast to the annual growth rate is the *annual rate of increase*. This rate is the percentage increase of the post-fawning or pre-hunting (fall) season (for practical purposes one and the same) population over the pre-fawning (spring) season population. It is derived by dividing the increment (fawn crop) by the pre-fawning season population. *Table* 1 shows the annual rates of increase for the period 1954 to 1962.

This table also shows the constant upward trend in the annual rate of increase from 1957, when the first large-scale reductions in deer populations were made, to the present. In fact, the annual rate of increase for the two most recent years (1961 and 1962) demonstrate the remarkable recuperative ability of this deer herd. Addition of the fawn crop during each of those two years practically doubled the respective pre-fawning season populations.

Further, the increase in herd size from 1953 to 1957 points out the tremendous growth rate potential of this herd. During that four-year interval, between the summer of 1953 and the summer of 1957, the deer herd increased some three and a half times. This occurred despite the fact that trapping and removal, and starvation, accounted for 514 deer during that same interval!

In fact, a total kill of 1,465 deer (hunted and starved) during the fall and winter of 1957-58 reduced the total population by only 286 deer. This figure can be derived by subtracting the fall 1958 pre-hunting season population of 1,540 from the spring 1957 pre-breeding season population of 1,826 deer in *Table 1*.

**TABLE 1. ANNUAL RATE OF INCREASE OF SENECA DEPOT DEER HERD, 1954-1962**

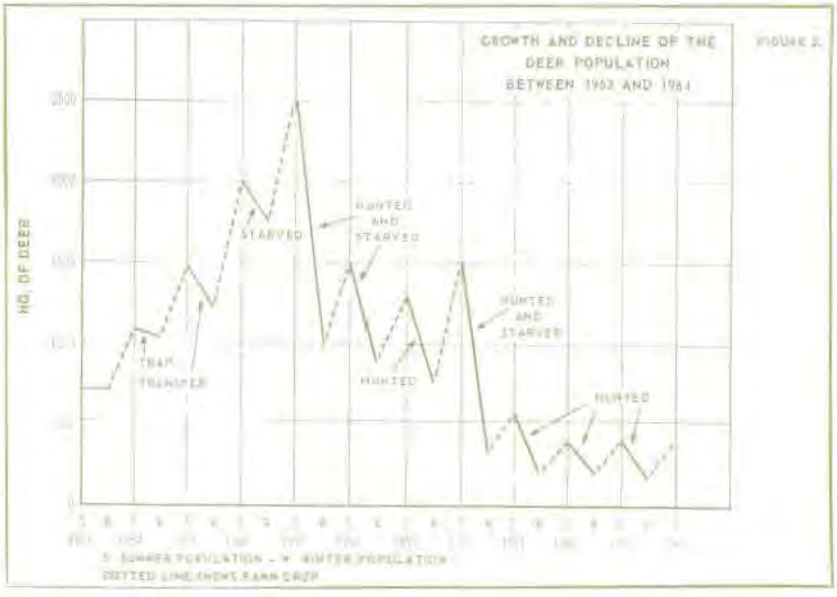
| Spring | Pre-fawning season population | Fall or pre-hunting season population | Per cent increase |
|---|---|---|---|
| 1954 | 721 | 1,125 | 56 03 |
| 1955 | 1,056 | 1,477 | 39 87 |
| 1956 | 1,228 | 2,022 | 64 66 |
| 1957 | 1,826 | 2,520 | 38 01 |
| 1958 | 1,055 | 1,540 | 45 97 |
| 1959 | 904 | 1,350 | 49 34 |
| 1960 | 739 | 1,275 | 72 53 |
| 1961 | 300 | 550 | 83 33 |
| 1962 | 228 | 325 | 86 40 |

## Reproductive Success

Many physical improvements have been noted in the deer over and above the fact that they are no longer starving, which certainly is an improvement in itself. Accurate tallies have been made since 1958 of the deer's reproductive success, that is the number of embryos, or potential fawns, that each female deer produces. *Reproductive success is a direct reflection of the quality of the deer range in relation to the population. All other things being equal, deer getting their bellies full of good nutritious food all year around will produce more fawns than deer going hungry part of the time.*

There is also an added bonus to keeping a deer herd "up to their bellies in clover" and that is—the fawns of the year themselves will breed and produce a fawn of their own when they are about one year old. These are the reasons why a healthy deer herd can be shot harder than a not-so-healthy deer herd. It is why we say you can carry fewer healthy deer than poor deer through the winter and still have as many or more deer the next fall.

The accompanying graph (*Figure 3*) illustrates the improvements in the reproductive success of the Seneca Army Depot deer herd. Notice the improvement in the reproductive rates. In 1958 there were no fawns breeding, whereas our most recent data (1965) show this age group contributing 48 fawns per hundred of 12-month-old dams! This is very important, because in a well-managed deer herd the fawns of the previous year, being 12 months old in the spring, comprise a large percentage of the total population.




## Average Weights

A second factor we have studied is the change in the dressed weights of those deer removed by hunting. The fawn and yearling age deer best illustrate increases in weights that occurred as the population came into close balance with its food supply. From 1957 to 1964 there was an average increase of 12 pounds per female fawn, 11 pounds per male fawn, 10 pounds per female yearling, and 16 pounds per male yearling (*Figure 4*). Examination of available weight records indicates that white-tailed deer, on northern ranges, generally lose weight as winter progresses, unless they enjoy something more than merely an adequate winter diet, which is not yet the situation in the Depot. The 1964 data were all collected in late January of 1965. Thus, these deer probably had already lost some of their prime weight. [Hence the difference between the weights for the most recent years and the earlier years (when most of the data were collected in the fall) was probably even greater.]

## Average Antler Sizes

A third factor that is used as an indicator of deer range quality is average antler size. Actually, two factors were studied—average number of points (*Figure 5*) and the average beam diameter one inch above the "burr" (*Figure 6*). The deer hunts in 1962 and 1963 were held at such a late date (actually on the last two Saturdays in January) that virtually all of the bucks had shed their antlers. Therefore, no antler data of adequate sample size are available for 1962 and 1963. However, despite the fact that the 1964 hunts were actually held during the same period of the year (the last two Saturdays in January, 1965) most of the bucks did retain their antlers.

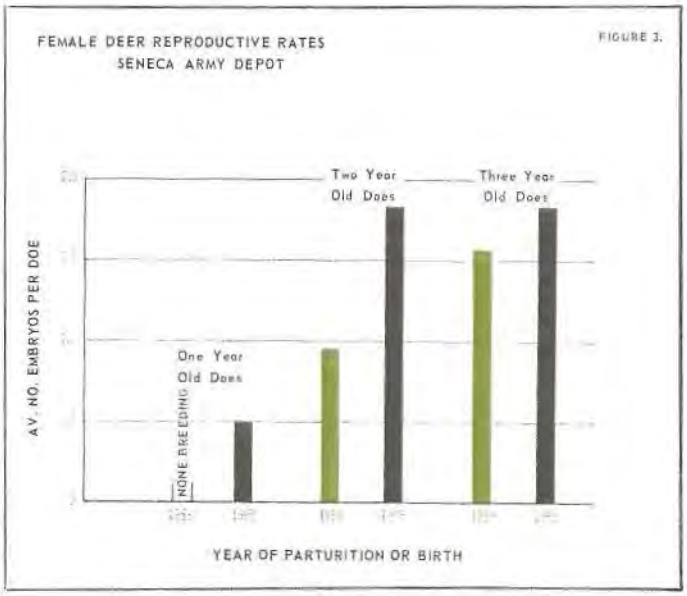
The average antler measurements show the general increase in antler sizes. Again, as with the reproductive rates and average weights, the average number of points and beam diameters of the younger age classes are the ones to really keep tabs on as indicators of the condition of the deer and the range in relation to the deer population. During the 1957 "era," yearling deer with spike antlers were the general rule. In fact, yearling deer with sub-legal antlers (less than 3 inches long) were encountered. With the herd now under control, virtually all of the yearling deer have forked antlers.

The five factors discussed thus far (starvation, reproductive success, average weights, average number of points, and average beam diameters) are the more subtle things that can be studied in evaluating quality of the deer range in the Depot. One of the less subtle things that we also watch is deer utilization of vegetation present on the Depot. No detailed analytical work has been done in this regard, but several comments are offered here to give some indication of just how severely the vegetation was "eaten back" by this vital herd.

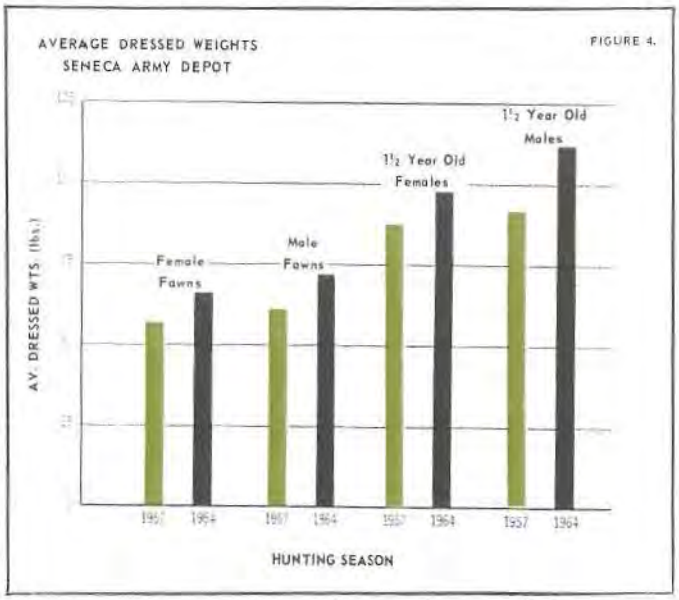
## Terrain and Browsing

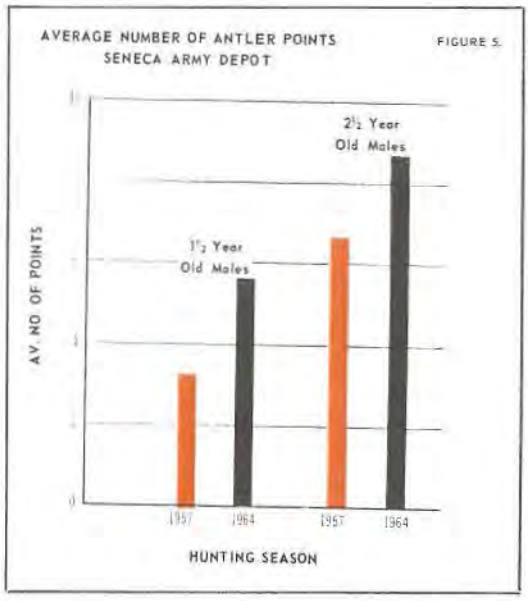
The Depot is on land that was farmed originally. The farms were of the type with which most western New Yorkers are familiar—large cultivated fields, vineyards, some fruit trees, wood lots and hedge rows of such species as various maples, elm, ash, hickory, walnut, beech and ironwood. Scattered here and there were other tree species, one of the more interesting being the osage orange. There was virtually no conifer cover except for some juniper.

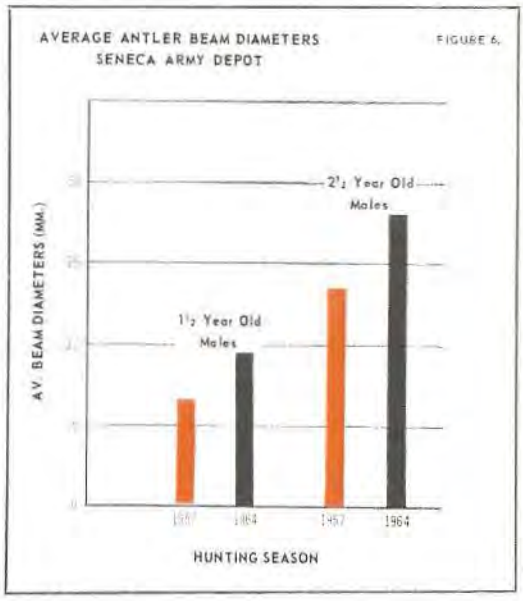
In the 1940's a reforestration project was attempted. Some 200,000 conifer trees (pines, larch and spruce) were planted each year for four years. *By the early 1950's the deer herd had reached a point where literally 100 per cent of these trees were browsed.* The forester in charge abandoned the project. If left




***White cedar browsed on lower branches by deer***






alone, those trees would constitute a young forest today. However, the situation had been so bad for so long that these trees have retained no annual growth at all until the past three years. There has been no regeneration at all of the hardwood species except for some beech, a low palatability food. There has been virtually no invasion by shrubs of the old abandoned fields, actively cultivated prior to establishment of the Depot. The one exception is some local expansion of gray-stemmed dogwood, again a low palatability food.

We plan to continue working with, and studying this special deer herd. We have been most fortunate in having the excellent co-operation between the United States Army and the New York State Conservation Department. As a result, this deer herd has demonstrated such things as: (1) How rapidly a deer herd will increase under protected conditions; (2) how rapidly a deer herd can literally eat itself right out of house and home; and (3) how rapidly a deer herd will improve physically, in a relatively short period of time, when it is brought back to the level where it is in balance with its food supply.

Very likely had this herd growth been checked and held at a lower level in the early 1950's—before any serious range damage had occurred—it would be possible to carry more deer now, on the same range than the recommended 250 winter deer population. Over the long haul, a well managed deer herd, in balance with its range, produces more deer than a herd managed by the "peak and bust" method.

Is the Depot deer herd typical of other deer in the State so that direct comparisons can be made? The answer is a definite "Yes."

The fence surrounding the Depot is an artificial barrier that interferes with natural ingress and egress of both deer and men (predators), thereby speeding up some of the habitat and deer physiological responses to an over-abundance of deer. This is one of the advantages of this area in serving as a "laboratory." However, severe winter weather factors in any part of the State create just as confining a barrier to deer travel as a fence. Under such conditions, in spite of critical food shortages, deer habitually remain in tight confinement until weather moderates. Consequently, the influences on habitat, and the deer themselves, that result from over-browsing or from correction of the imbalance between deer and their winter food supply are alike.

The major lessons to be learned here are that deer abundance can and will build beyond the range carrying capacity unnoticed unless reasonable controls are exercised. Indices that are accurate reflectors at the balance relationships between deer and their range, are available for use and should be heeded by the deer manager.

These indices, of course, have been discussed above—reproductive rates, average weights, average antler size and the much more obvious index, actual starvation.

The major points in the history of the Seneca Army Depot deer herd can be applied in the same way to most of New York State's deer herds. First, there was a large build-up of the deer herd brought about by protective measures. Secondly, the herds got so large that range deterioration became noticeable. Thirdly, starvation began to take its toll; and fourthly, adequate hunting seasons were designed to bring and keep the deer herds in balance with the food supply. There should be no doubt in anyone's mind that the data collected and analyzed from the Depot prove what deer managers have been saying for years—give the deer an even break; keep them in balance with their natural food supply and they will certainly prosper—as evidenced by the improvements noted in the Seneca Army Depot deer herd.

***Heavy browsing on sumac, by large deer population.***

# Publishing Research and the Law

by Robert W. Darrow

WHAT is the Department's "best seller?" Sorry, it isn't THE CONSERVATIONIST, although that has a healthy circulation of close to 100,000. It is the Department's *Hunting-Trapping-Fishing Guide* with an annual distribution of some one and a half million copies. This free "bible" of New York State hunters and fishermen is a product of the Technical Publications Unit.

As shown in Dr. Cheatum's article setting forth the budgetary structure of the Division of Fish and Game (THE CONSERVATIONIST, December - January, 1964-65), the Unit is under General Fish and Game Programs and Services. It is part of the central office of the Division of Fish and Game.

Its major functions are: (1) to publish the *New York Fish and Game Journal*, the *Fish and Game Law* and the *Hunting-Trapping-Fishing Guide*, (2) to collaborate in drafting legislative proposals from the Division and in preparing statements of the Department's position on legislation concerning fish and wildlife resources, and (3) to draft orders. Other editorial work and special assignments are done as needed.

Publication of the *New York Fish and Game Journal* was undertaken in 1954 to provide a permanent and readily available record of important results of fish and wildlife research carried on by the Department. For example, a future issue will contain a more technical presentation of the data concerning the use of tooth sections to judge the age of bears which is the subject of a more popular article by Stuart Free to be published in this magazine. Related papers by others are also accepted. Except for brief notes of interesting observations, material must have application to management problems of concern to the Department. The *Journal* is published twice a year. This Unit is responsible for selecting and editing manuscripts, as well as preparing copy for the printer, handling proofs and distribution.

For the use of law enforcement officers and others who need its exact text, the *Fish and Game Law* is published each year as amended by the Legislature. To furnish those who hunt, trap and fish in the State with a concise manual giving the current regulations that govern their sport, the *Hunting-Trapping-Fishing Guide* is published annually. The job of incorporating the necessary changes from year to year, preparing copy for the printer and proofreading is done by this Unit.

Another function, in collaboration with the Assistant Director of Fish and Game and the Department Counsel, is drafting legislation proposed by the Division, together with supporting memoranda. Then, during the legislative session, this unit is responsible for maintaining a record of all bills pertaining to fish and wildlife and action on them. Statements requested by legislative committees or the Governor's office concerning the Department's position on specific bills are also prepared in collaboration with the Director and Counsel. And summaries of new laws are made for the information of Department field personnel prior to publication of the *Fish and Game Law*.

A wide variety of regulations pertaining to hunting, trapping, fishing and related activities are fixed by Department order. These include open seasons for most small game and fur-bearers, special open seasons for big game and certain fish, use of bait fish, tip-ups, spears and longbows for fishing, commercial fishing including sanitary regulations with respect to shellfish, use of State fish and game management areas, and various special licenses. Orders to establish or amend such regulations are drafted in collaboration with Division personnel responsible for recommending the provisions to be included.

The Unit's current budget is approximately $52,300. Publication of the *Fish and Game Journal*, including a supply of separates of the various papers, costs about $6,000. The 1,500 copies of each issue have a wide distribution among conservation agencies, colleges and universities, both in this country and abroad, as well as to subscribers who wish the *Journal* for personal use. The *Fish and Game Law* costs about $4,000 for the 6,400 copies printed.

The largest item is the *Hunting-Trapping-Fishing Guide* which this year will cost about $29,000 for the 1,450,000 copies needed. The number of guides printed is calculated to provide one copy to each licensee, even though he may buy more than one license. No allowance is made for more general distribution.

## A Peek at the Work of the Department's Technical Publications Unit

# The Back of the Book

### Wary duck slows down

One of the smartest ducks that ever dodged a load of shotgun pellets finally met its fate in the vicinity of St. Catharines, Ontario, Canada. The computers at the Migratory Bird Populations' Center, Laurel, Maryland, have furnished Bureau of Sport Fisheries and Wildlife biologists with proof that this duck, a female redhead, had dodged the shotguns of Canadian and United States hunters for sixteen years before being downed last hunting season.

### Key to better hunting

In these days of rapidly expanding suburbs, it's not unusual to arrive at a spot you remembered from last season as open country, where the hunting was great, and find it covered with a brand new housing development or shopping center. Even more discouraging is to find a large no trespassing, hunting or fishing sign posted on land that was still open.

Unfortunately "posting" can usually be traced back to careless or inconsiderate people who have failed to ask the landowner's permission to fish or hunt on his property and who haven't respected his property rights.

Places to hunt are the key to good sport for all of us and it pays to take some pains to cultivate good relations with landowners. The fundamentals of common courtesy are the best guide lines; here are a few simple ones which any co-operative sportsman can use to make himself welcome:

Always ask permission to hunt on a farmer's or landowner's property. Hunt only in the areas he designates. Never go on ground he asks you to avoid. Stay away from his stock. Respect his fences. If necessary to climb them, climb over by a post. Use a gate if possible, but be sure you close it behind you. Always replace lowered fence bars.

Never shoot near houses, barns or livestock. Leave his fruit and other crops alone. If you want some, offer to buy from him. Go around fields where people are working, or pastures with livestock.

Do not walk on seeded ground. Don't walk through standing grain. Share your game with him. On your next trip bring him, his wife or children some small gift or token of friendship.

These are but a few of the keys that can help you to unlock the door to the landowner's hospitality. At the same time they can make friends for you and bring better hunting to both you and the landowner.

### Ducks reach record low

Drought in recent years and large kills in Canada and the United States last year have reduced the duck breeding population to the lowest levels since reliable surveys were started in 1947, according to reports from the U.S. Bureau of Sports Fisheries and Wildlife. The duck kill increased last fall under the Canadian, United States and Mexican regulations and cut significantly into the continental breeding stock.

Improved water conditions in the prairies this year merely accentuated the scarcity of ducks, and did little to increase the number of breeders. Federal surveys indicated that the total duck breeding population this year is 8 per cent below the record low year of 1962, and is 6 per cent below 1962 for mallards and 11 per cent lower for pintail.

### Walnut log exports

Recent reports from the U. S. Commerce Department reflect large increases in walnut log exports since controls were removed in February. As predicted by the American Walnut Manufacturers' Association, "the flood-gates are open" and in the months of March, April and May, walnut log exports exceeded the 1964 export quota of 7.3 million board feet by 133,000 board feet. At this rate, exports for 1965 could exceed the combined consumption of both domestic and export users during 1964.

### The hunters' dollar

American hunters help in the "War on Poverty." They spend about $1.3 billion a year on their favorite sport and a good percentage of it is spent in remote areas where the hunters' dollars are badly needed. Many tourist areas would stagnate in the fall and winter if it were not for the hunters who seek out places of small population. Large regions, such as the Appalachians, get a steady flow of hunters after the normal summer vacation period is over, and, for every dollar the hunters spend on sporting equipment, they spend at least five times as much on side expenses.

According to government and National Shooting Sports Foundation studies, the hunters use $130 million a year on food, hotels and motels and spend over $10 million for train, air and bus transportation.

With modern highways and longer vacations, distance means little to the avid hunter. In one year (1963) hunters traveled 4,780,000,000 auto miles and here's what his travel by car meant to the American economy:

Figuring the average life of a car at 100,000 miles, hunters wore out 47,800 cars at a total cost of about $143 million; 300 million gallons of gasoline were used at roughly $101 million; about $2 million went for oil and grease; 215,000 tires valued at about $5.5 million were worn out; and they spent $3.8 million on automobile maintenance. All this just for hunting trips.

Here are a few more expenditures that add to the total:

According to the Foundation, hunters spent $268 million last year for apparel, from bright red shirts to GI surplus jackets; they wore out more than 4 million boots while trailing deer or stomping brush piles for rabbits; outdoor appetites accounted for $100 million dollars on food away from home;

for new firearms, $4 million was spent for steel and $3 million for walnut and, nearly $12 million was spent for lead.

Simply for the privilege of hunting each fall, the American sportsmen spend about $68 million for licenses, tags, and permits. This money is scattered into all parts of the states for refuge purchase, wildlife protection, habitat improvement and research. There is no way to estimate what the hunters spend for local guides but thousands of farmers, ranchers, loggers and others pick up daily or weekly fees for guiding city hunters.

The amounts the American hunters spend each year has grown steadily since World War II and all indications are that the hunters will continue to add more to the general economy.

On one subject the Foundation could get no statistics, but only a general impression—the average hunter seldom lets his wife know how much he spends on a hunting trip.

### Honors for Jim Matthews

The Kingston Newspaper Guild named James (Jim) Matthews as the winner of the 1965 "Page One Award in Conservation." Jim, a Kingston attorney, has long been known in Conservation circles as an ardent supporter of progressive conservation movements. He is a member of the Advisory Board of the Joint Legislative Committee on Natural Resources and the Advisory Board of the Joint Legislative Committee on Revision of the Conservation Law.

Jim holds or has held positions on the N.Y.S. Fish and Wildlife Management Board; the Federated Sportsmen's Clubs of Ulster County; the N.Y.S. Conservation Council; Conservation Commissioner's Advisory Board and is a member of The National Wildlife Federation; the Wildlife Society; and the Wilderness Society.

The Conservation Council's 12-page bi-monthly publication "Council Comments" was founded and edited by Jim.

The honor bestowed on Jim is well deserved.

### New duck stamp book

A new 40-page booklet—Fish and Wildlife Circular III "Duck Stamp Data"—pictures and describes all 32 duck stamps issued to date.

The booklet reviews the origin of the Duck Stamp, reports on investment of money resulting from the sale of various stamps, and explains how a new stamp is selected each year.

It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 25 cents.

### Nationwide system of trails

The detailed study that could lead to establishment of a nationwide system of trails has been proposed in the President's Natural Beauty Message to Congress. A four-member Steering Committee to conduct the study has been appointed by the Secretary of the Interior.

The objective will be to evaluate present trail programs and recommend a comprehensive plan for the development and use of trails so that their full potential for outdoor recreation can be realized. The ultimate aim is a system of trails that will meet present and future needs.

The Steering Committee will consult the Bureau of Sports Fisheries and Wildlife, Bureau of Public Roads, Bureau of Indian Affairs, Corps of Engineers, Bureau of Reclamation, and other interested Federal, state, and local public agencies and private organizations.

Three classes of trails will be considered for inclusion in the system:

*Trunk trails*—Scenic and historic trails of national significance intended to permit extended hiking or riding trips. Such existing and proposed trails typically might be 500 miles or more in length, pass through two or more states, have overnight shelters at appropriate intervals, and be connected with other trunk trails.

*Specific area trails*—Trails primarily on public lands that enable people to make full use of recreation opportunities. An assessment will be made of the adequacy of existing trail systems in national parks, national forests, public domain lands, national wildlife refuges, and other Federal and state lands.

*Regional and local trails*—Trails intended primarily for day use that are directly accessible from urban centers. Such trails are built because of their closeness to population centers and their capacity to satisfy needs for limited hiking and riding. They include existing and potential trails operated by public agencies and private organizations.

The study will consider the acquisition, construction, operation, and maintenance of trails by one or more appropriate Federal, state or local public agencies, or by private organizations.


### Natural beauty conference

More than 1,000 delegates, observers, and panelists at the recent two-day White House Conference on Natural Beauty agreed that the meeting succeeded in developing new ideas and focusing attention on helping to restore and create natural beauty in city, suburban, and country environment, according to the Wildlife Management Institute.

The meeting resulted in the submission of the conference report to President and Mrs. Johnson and Vice President Humphrey at the White House by Laurance S. Rockefeller, the conference chairman.

The conference chairman urged that the system of national parks, forests, wilderness and recreation areas continue to be strengthened and expanded and that strong measures be taken to abate water and air pollution.

The President told the conferees that natural beauty is not a luxury. "It is not a pleasant frill or a superficial enjoyment. Natural beauty, as you and I conceive it, is the world that we live in. It is the environment in which we were born, and grow to maturity, and live our lives."

### "Land for Living"

A new Cornell University film, shows how city families are converting nearby hill farms to places of fun and relaxation for their own private use.

Craftsmen, mechanics, and factory workers from cities and towns in much of the State are turning these small farms into year-round homes or week end and vacation spots.

Farm ponds are developed to provide swimming, boating, fishing, and skating. Some families plant crops and shrubs to attract wildlife and improve hunting in the area. Others raise pheasants, plant trees, improve the wood lot, or own horses.

The film "Land for Living" is available from the Department of Extension Teaching and Information, New York State College of Agriculture, Cornell University, Ithaca, N.Y. It is 28 minutes long and in color.

## Back Again! 1965 N.F.A.A. Champion Tournament

For the second year in succession, the National Field Archery Association visited New York State, holding its 20th Annual Championship Tournament from July 26 through July 30 at the New York State Conservation Department's archery field courses at Sugar Hill near Watkins Glen.

The archers enjoyed generally good, if a bit cool, weather, and some record scores. The courses were interesting, challenging and, in places, beautiful with long views of valleys dropping away from the headquarters-fire tower area.

The top male archers were defending bare-bow champion Clifford Necessary of Richmond, Va. and Dickie Roberts of Three Rivers, Michigan, shooting free style (with sights). Roberts took up archery about four years ago as part of therapy to recover from a serious car accident. It was doubtful at that time whether he could ever walk again, much less shoot a bow and arrow. Both of these he now does well and with spirit, as his new record score of 2,692 indicates. The scores of Bill Bednar of Ohio with 2,671 and Ed Rhode of Iowa with 2,635 also set new records. Cliff Necessary beat the record he set last year with a score of 2,528.

Among the top women archers was Lou Shine of California who, after many years of trying and nearly succeeding, finally regained the women's free style championship. Lou is well known and liked and was given the longest applause of the day when her win was announced. Winner of the women's bare bow championship was Mrs. Betty Grubbs of Oklahoma City, Oklahoma, who came from behind in the final rounds to defeat Mary Craft of Tabb, Virginia, by 15 points.

A full schedule of barbeques, dances and seminars helped to fill the non-shooting hours of the archers and their families and give them pleasant memories of the Shoot and their visit to the scenic Finger Lakes region. We hope they will return again.—H. W. Trimm.

**Cliff Necessary (above), Bare Bow Champion**

**Dick Roberts (below), Free Style Champion**

### Conservation awards

The National Wildlife Federation and the Sears-Roebuck Foundation have announced a $100,000 recognition program. It will be administered through state affiliates of the Federation and outstanding achievements in 10 categories will be honored.

The categories are: Conservationist of the Year; Wildlife Conservationist of the Year; Soil Conservationist of the Year; Water Conservationist of the Year; Forest Conservationist of the Year; Conservation Communications Award of the Year; Conservation Educator of the Year; Conservation Organization of the Year; Youth Conservationist of the Year; Legislative Conservationist.

State winners in each category will be eligible for national awards and winners of the "Conservationist of the Year" title in every state will receive an expense-paid trip to Washington, D.C., where one of the 50 will be awarded a $2,000 cash prize. A $1,000 cash award and Washington trip will go to one winner in each of the other nine categories.

### For conservation—$76 million

Nearly $76 million is being apportioned to states and territories from the Land and Water Conservation Fund. New York State's share is $4,892,740.

The total represents 90 per cent of nearly $84.5 millions appropriated from the Fund for the new fiscal year. Five per cent of the appropriation is reserved to meet unforeseen state needs. Another five per cent is expected to be apportioned among the states early next year on the basis of out-of-state visitor use of their recreation areas.

The amounts must be matched by the states and territories and are to be used for planning, acquiring, and developing outdoor recreation areas and facilities.

The Land and Water Conservation Fund is administered by the Bureau of Outdoor Recreation and derives revenues from the sale of the new $7 Federal Recreation Conservation Sticker and other Federal outdoor recreation fees, the Federal motorboat fuels tax, and proceeds from the sale of Federal surplus real property.

States, to be eligible for acquisition and development grants, must submit statewide outdoor recreation plans to the Bureau of Outdoor Recreation for a decision on the plans' acceptability. Money for planning purposes, however, is immediately available.

The Land and Water Conservation Fund Act provides for financial assistance to states, to their political subdivisions, and non-Federal public agencies for outdoor recreation purposes. Political subdivisions and public agencies may receive such assistance through the state agency—the Conservation Department in New York—designated by the Governor.

### *Gingko biloba*

The gingko or maidenhair tree has separate sexes and is known as a gymnosperm. The fruits of the plant are highly odorous from gingkoic acid and the male and female seeds cannot be differentiated. The seed requires an "after ripening" in the winter period before it can successfully germinate.

The tree has its origin in east central China and is a material component of the vegetative complex at five to seven thousand-foot elevations. It is well known in oriental temple gardens and there is one specimen, still alive, in Philadelphia, dating back to the 1700's.

The embryonic background includes swimming sperms. Recent cross-breeding has brought about quite a few special forms that are very useful for landscaping. The tree (male) is excellent for planting in cities because it withstands air pollution and few, if any, insects or diseases affect it. The female tree should not be used where the odorous fruits will be objectionable.

### Wild rivers

A 44-page four-color booket entitled "Wild Rivers" has just been published by the Wild Rivers Study Team of the U.S. Departments of Agriculture and Interior. This new publication, financed with privately-donated funds, extolls the attractions and values of wild, free-flowing rivers and recommends establishing a National system of wild rivers.

This beautifully illustrated and well written booket is well introduced by Secretaries Udall and Freeman in this quote: "We have harnessed many of our rivers, dedicating some to navigation, others to power, water supply, disposal of wastes. But we have not yet made adequate provisions to keep at least a small stock of our rivers as we first knew them: Wild and free-flowing. In a Nation as bountifully endowed with rivers as ours, it is time to do so."

Issuance of the wild rivers booklet coincides closely with Congressional consideration for establishing a National system of wild rivers.

### Annual campvention

On a cold, blustery Memorial Day week end more than 5,000 members of the New York State Chapter of the National Campers' and Hikers' Association gathered for their annual campout at the Grand Prix race area near Watkins Glen.

Almost every conceivable type of camping equipment was in evidence, from simple pup tents to handsome trailers complete with flower boxes and name plates. This array of campers actually formed a small city, with the camp area laid out in main highways and side streets.

In spite of the cold weather, planned activities such as beauty contests were held amidst the traditional atmosphere of good spirits which these outdoor enthusiasts usually show. They claim to be the friendliest people in the world, and from the good nature evidenced around the camp grounds, this may well be true.

National Campers' and Hikers' Association is composed of people who take to the roads and hills for camping and hiking and who, in their local areas, often form a social group where camping ideas and trip plans are discussed. There are local chapters in many communities of New York State and most of these, complete with identifying banners, were represented.

It is obvious when one sees such enthusiastic participation in camping activities, that this is and will continue to be an important type of recreation. It is easier to understand, too, why camp sites of New York and other areas are often filled to overflowing and why, in the future, there must be increased facilities for this type of recreation.

### Harry O. Stevens

The Department of Conservation lost a valued employee with the passing of Harry O. Stevens on August 4, 1965.

Harry began work with the Department in 1930 as an Exhibits Attendant. He presented the conservation story in exhibits at State and county fairs and in special exhibits of many types. Some of his more popular works were a series of miniature dioramas depicting Department programs and activities.

Harry was a Scouter from 1910 and devoted much of his time throughout his life to this activity. He became Scout Executive of the Fort Orange Council in 1922, and in 1960 received the 50-year Scout pin for service to this organization.

Harry will be greatly missed by his host of friends and the many Department people with whom he worked so well.

### The tags are important

Numbers 3708T and 3395T were carried by two brown trout caught at the New York-Vermont line by a New York State angler. Stamped on the surface of each was "Ret Vt.F&G Mplr Vt." and a number. Translated, the message reads, "Return Vermont Fish and Game (Dept.) Montpelier, Vermont." One fish measured 19 inches long, the other 20 inches according to the angler's letter returning the tags.

On the surface, the above facts are not very startling but the numbers tell the whole story. These trout were released as 8- and 9-inch fish in August of 1963. The growth rate is indeed excellent for a two-year period.

Returned fish tags are processed by a fisheries unit and a card sent to the angler telling the history of his fish. While the process is somewhat time consuming, it does provide an incentive for the angler to turn in his tags every time.

The exchange of information is important to his fishing in the long run, for it enables the fisheries unit to evaluate its management techniques.

### Nicholas D. Andrews

The Conservation Department lost an excellent Conservation Officer and the sportsmen a good friend when death came to Nicholas D. Andrews of Oswego, N.Y.

He received his appointment in August of 1942 but in 1943 he was called into military service and served with the U.S. Army in the Aleutian Islands until September of 1945. He returned to his conservation work and served continuously for nearly twenty-four years.

Born in Phoenix, N.Y. he spent most of his life in Oswego County and was a member of many organizations in and around Oswego.

### Little lake fisheries

After completing a ten-year study of New York farm ponds, and establishing a long-term fisheries research program at Oneida Lake, biologists of Cornell University's Warm Water Fisheries Research Unit are now investigating fish populations in one of the many small lakes in the State. Site for this new study is Dryden Lake in Tompkins County, a shallow, 116-acre body of water recently purchased by the State. The lake was created in the 1800's to provide ice for milk trains, and has provided fine recreational fishing ever since.

The investigators hope to estimate the number of fish present, determine their age and growth, study the reproduction of largemouth bass, and observe angling catch. The primary objective is to gain a better understanding of the complex relationships which limit the abundance of bass, pickerel, and other sport fish in small warm water lakes. This knowl-

### Teachers' workshop grows

The largest group of teachers enrolled to date—50—spent a week at Cornell's Arnot Forest learning about such varied topics as forest land for recreation purposes, the effect of the drought on the woodlands, and the importance of the salt marshes on Long Island. This important summer program operates each year at the conservation workshop. Elementary and secondary school teachers from all over the State received training from the staff of the N.Y. State College of Agriculture in methods of teaching conservation in the classroom.

Director of the workshop, Prof. Richard B. Fischer, provided a varied program of lectures, demonstrations, and field trips conducted on soil and water conservation, forestry conservation, and wildlife conservation. In addition, he arranged for specialists in various natural resource fields to speak at evening campfire programs.

Teachers attending the workshop received two units of credit for in-service training and their camp fee is paid by the N.Y. State Conservation Council, a private state-wide organization.

edge is needed to determine the effect of regulations, stocking, and other management techniques in maintaining adequate stocks of sport fish to meet future increased recreational demands.

Funds for the study will come from the Federal Aid in Fish Restoration (Dingell-Johnson) Program, which is administered by the New York State Conservation Department.—D. E. ARNOLD

### *Bonasa umbellus*

If crowns were bestowed upon wildlife for sporting quality, *Bonasa umbellus* or the ruffed grouse might well wear the finest one of all. Few winged creatures are as sought after with such comparatively low success ratio as is *Bonasa*, or "Old Ruff," as his admirers popularly know him. A bird of the woodland edges where he can find the ideal combination of food and protective cover to suit his everyday needs, the ruffed grouse flourishes through the length of the Appalachians and Rockies, across the northern tier of states, up through Canada, clear into Alaska.

Favored items on his menu include: Wild grapes, apples (both seeds and fruit), partridge berries, bittersweet, skunk-cabbage seeds, birch and alder buds, elderberries, blackberries, barberries, thornapples and beechnuts. On finding a locale to his liking, the ruffed grouse seldom strays more than a half-mile from home during his daily routine. Starting at daylight he feeds for several hours before seeking a sunny slope where he can alternately dust and sun himself. Mid-afternoon signals another chow session 'till dusk, when he wraps up his day's activities and goes to roost.

Perhaps "Ruff's" most unusual characteristic, one that must thrill any hunter or hiker chancing to hear it, is his drumming. From a vantage point that allows him to survey his immediate environs, the cock grouse begins a series of wing beats that increase steadily in speed until producing a sound somewhat like distant thunder. Most frequently done during the spring mating season, drumming has provided game management census takers a fairly reliable index to the grouse population in a given area. In size, *Bonasa* averages about 18 inches long and weighs about 24 ounces. Though basically a mottled, reddish brown, the ruffed grouse is found in several color phases throughout his range. Even in the same region, his colors may vary from shades of light and dark red to gray. But whatever his plumage may lack in gaudiness, his reputation as one of America's sportiest game birds continues to inspire hunters to the most colorful adjectives in the English language.

### $15 million for fish and wildlife

Federal Aid funds for fish and wildlife restoration projects made to the 50 states July 1, amounted to $15,000,000 —an increase of $800,000 over a similar distribution a year ago. Of this amount $12 million is for wildlife restoration and $3 million is for sport fishery projects. An additional apportionment is made in the fall.

These funds come from Federal excise taxes collected from manufacturers, importers, and producers of certain types of hunting and fishing equipment. Under the Federal Aid programs, states spend their own funds on approved projects and are then reimbursed for up to 75 per cent of the cost.

Distribution of the funds is based on the number of paid license holders in a state and the state area. New York's allocation for wildlife is $376,125.69 and for fish, $77,464.97.

### New wildlife import regulations

New regulations to govern the importing of wildlife into the United States are effective on January 1, 1966. Previous regulations covering imports applied only to those species of wild mammals and birds which were deemed harmful to agricultural and horticultural interests.

The new regulations cover species of fish, mollusks, crustaceans, amphibians, reptiles, mammals and birds determined to be potentially injurious to humans, agriculture, horticulture, forestry, or to native United States wildlife and its habitat.

### Bear aging

Staining sections of canine teeth of bears so the growth layers can be more easily read is a process used to help determine their relation to age.

### 4-H conservation camps

A new conservation camp for girls and a record enrollment for the boys' camp were highlights of the 4-H Club conservation program this summer at Cornell University's Camp Arnot.

For the first time in New York State, a special camping period for girls interested in conservation leadership and in learning the basic principles of conservation was held Aug. 15-19 with girls, 14-19 years old, enrolled for the training program.

The boys' camp, with an enrollment of 70, many for the second and third years, was held Aug. 8-14 right after the teachers' conservation workshop. Both camps offered instruction in soil and water, wildlife, forestry, and outdoor living. The boys' camp is basically a work camp, teaching skills that may be practiced at home as well as the principles of conservation which were stressed in the girls' camp.

The class in outdoor living was new this year. After selecting a camp site, the boys constructed an Adirondack-type lean-to which became a permanent contribution to the camp.

They also learned how to set up various types of shelters and had an opportunity to inspect camp trailers. The course covered such subjects as building fires and fireplaces; outdoor cookery; clothing; personal equipment, and sleeping bags that are suitable; and use of maps and compasses.

Prof. Fred E. Winch Jr. of Cornell's Conservation Department, was program director of both camps, and Mrs. Laura McGuire of Ithaca was assistant director for the girls' camp.

Evening programs covered topics on current problems in conservation, development of water resources, careers in conservation, bird songs, and conservation projects.

*Edward F. Smith*

*Walter A. O'Brien*

## Change in Finance Bureau

Edward F. Smith, Director of the Conservation Department Finance Bureau for more than 15 years, has been appointed Administrative and Financial Consultant to the Adirondack Mountain Authority. Mr. Smith, came with the Conservation Department in 1916 as a $50-a-month laborer, transferred to financial clerk in 1922 and worked his way up to Director of the Bureau in 1949. Since 1945 he has been closely associated with the financial management of the Authority.

As Consultant to the Authority, Mr. Smith will work under the general direction of the Authority Chairman in matters of supervision and guidance of the Authority's fiscal and administrative affairs. Facilities operated by the Authority are Whiteface Mountain Ski Center and Memorial Highway, Gore Mountain Ski Center and Prospect Mountain.

Succeeding Mr. Smith as Director of Conservation Department accounts is Walter A. O'Brien, who has served as Assistant Director to Mr. Smith since 1956. Mr. O'Brien, a native Albanian, is a graduate of Christian Brothers Academy and the University of Notre Dame, where he earned his Ph.B. in Business Administration. He began State service in 1932 with the Department of Audit and Control. In 1956 he transferred to the Conservation Department.

## "Birth control" of bluegills

A research worker for the Michigan Conservation Department is working at the Oak Ridge Institute of Nuclear Studies, in Tennessee, in the hope of developing a new technique for controlling excessive populations of stunted bluegills. The Institute has a summer course in radioecology to show how radiation can be applied to studies dealing with wildlife.

The situation of too many small bluegills is one of the knottiest problems faced by fisheries biologists in managing warm-water lakes for fishing. After years of trying other approaches, which have been only semi-successful at best, biologists are still looking for a way to keep these prolific fish from over-running many of our inland lakes.

## Salt water fish nurseries

The value of tidal creeks as nursery grounds for winter flounder was revealed by a recent analysis of data collected in Long Island waters by seine in 1961, 1962 and 1963. A total of 74 "paired" seine collections in Peconic Bay and Shinnecock Bay were compared statistically. Significantly more young-of-the-year flounder were taken in tidal creeks than in the shore zone of the main bay. In several instances, 1,000 young-of-the year were collected in a single set of 300-foot haul seine.

There is evidence then that changes in tidal creeks by dredging and bulkheading may reduce the area available as nursery grounds with resulting reduction in the number of additions to the winter flounder population.

## Milt Hick retires

A career forester and conservationist for the past thirty-five years, R. Milton (Milt) Hick of Oneonta, N.Y., retired from his position as District Director of Lands and Forests of District No. 1 on August 31, 1965.

Milt received his B.S. degree from the New York State College of Forestry, Class of 1920 and a Master of Silviculture degree from Harvard University in 1927. Before coming to New York State in 1930 as the first District Forester appointed by the Conservation Department, he practiced forestry in Canada, Connecticut, and Massachusetts.

His first assignments in New York under the State's enlarged reforestation program were land acquisition. At the present time, Forest District No. 1, which he has administered, comprises 70,000 acres of State Forests on which have been planted more than 45 million trees. Since 1947, he has also been charged with the administration of more than 39,000 acres of State Forest Preserve land within the Catskill State Park.

As a member of the Society of American Foresters, first editor of the "New York Forester," a member of the American Forestry Association and Alumni director of the College of Forestry at Syracuse, Milt's contributions to professional forestry have been outstanding.

## Land and water conservation funding

The first grant to an American city under the Land and Water Conservation Fund was $50,000 for outdoor recreation planning in New York City, with the Home, Housing Finance Agency putting up an equal amount under a joint agree-

ment which is another first under the new co-operative arrangements of the two agencies.

State plans are prerequisite to project funding under the LWCF and the scramble is on. Under review in the Regional Office of the Bureau of Outdoor Recreation (N.E. Region) are state outdoor recreation plans from New York, Connecticut, and New Hampshire, with more expected. All are getting top priority attention.

### Billions of organisms

Tiny organisms called plankton swim by the billions in fresh water as well as in the ocean, grow in numbers and die unpredictably. Factors that determine the growth and decay of these aquatic animals pose some interesting questions that need answers.

An ecologist at the N. Y. State College of Agriculture, Cornell University, Prof. D. J. Hall, is seeking the answer in an experimental field study that could lead to control of these small creatures commonly found in ponds or lakes. During the next three years, Professor Hall will conduct experiments under actual field conditions, using 20 man-made ponds at Cornell—a unique approach so far in aquatic ecology.

Scientists have long been puzzled over sudden increases and decreases in numbers of these living organisms. Many factors, including food shortage, toxic substances, light, temperature, natural cycles and predation are believed to affect the populations.

Experiments will include three types of animals, including two kinds of crustacean zooplankters, which often look like dust specks, yet are shrimp-like under magnification. These tiny planktonic creatures are not at all harmful to humans, contrary to common concept. They eat mosquito larvae and bacteria, digest decaying matter and provide nutrients for other animals. Fish feed on them yet they are so minute in size that many gallons of water often must be filtered to collect a teaspoonful, although at the peak of population increase, the water may be dense with the creatures.

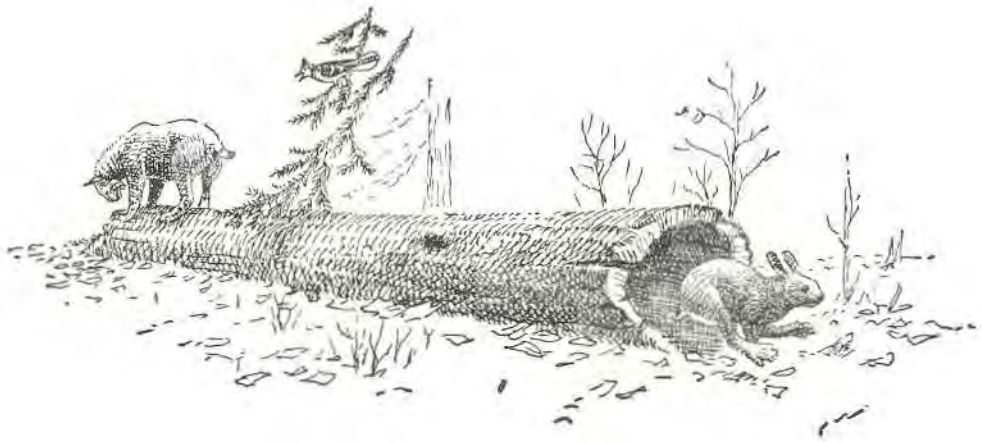
Fertilizers of nitrogen, phosphorus, and potassium compounds in various ratios will be used to see how they will affect the populations of the three species under test. These chemicals support the growth of algae which provide the major source of food for these water animals.

Backed by the National Science Foundation with a research grant of $74,000 for a period of three years, the study is designed to determine the mysterious mode of regulation of these aquatic populations.

### Scuba class for fishery biologists

The use of self-contained underwater breathing apparatus (SCUBA) is a new technique finding increased use by fishery biologists. At the request of the New York Co-operative Fishery Unit at Cornell University, Conservation Department personnel from Region #3 gave a basic training course in safe diving procedures to interested students and staff in fishery biology.

The instruction, under the direction of Robert Harding, started in mid-winter in the Teagle Hall swimming pool at Cornell University. The first phase of the program was basic swimming to be certain that all were competent to handle themselves in deep water. Following several sessions of snorkeling to master underwater swimming, the "lungs" were used. Particular attention was given to meeting emergency situations and safe diving procedures. The final class was a free dive in the cold water of Cayuga Lake in late May.—P. M. Kelsey.



# Letters to the editor

## Cat + rabbit = "Cabbit"?

Dear Sir: While stationed in Connecticut while in the service, I spent many hours hunting and fishing there. On several occasions I noticed a small animal either in my path or on the side of the road. Upon the first glance I took it for a rabbit, on the second, a housecat. Later while talking to a resident of the area, he said they were common there and were a crossbreed of rabbit and cat.

I didn't want to be so gullible so I went out prepared to catch one and see for myself. While driving up toward the section where I saw them most often, I hit something in the road and got out to check. It appeared to be what I was looking for. Its hind quarters were that of a rabbit, puff tail and all. The head was definitely that of a cat.

Could you find out if any of these "Cabbits" have been sighted in New York as yet? I would imagine many have seen them but couldn't believe their eyes, or did not say anything for fear of being committed to some "happy house," but I have seen them and would like a more scientific explanation of what they are.

William B. Davis, Baldwin

• *So would we. If another one comes to grief, freeze it, if possible, and call the Department's Conservation Officer in your area.—Editor*

## Artist vs. old timer

Dear Sirs: In appreciation of your article and centerfold pictures of N.Y. State Panfish:

My 11-year-old son was fishing in Beaver Lake, nearby and caught a few sunfish—just the colors of the ones in your article. At the edge of the lake lived an old timer—83 years young and a long-time resident of this town.

"Hmph," he grumbled, when my son showed him his catch, "them ain't no sunfish, they're blue gills!!" Well, just that day the magazine came and there was perfect proof and identification. And when my son returned to show the old timer proof-positive, he replied with another grumble "Well, the book's wrong! Don't ya think I know blue gills when I see 'em?"

You can't win!!

Claire Collins, Krumville

• *Not with old timers.—Editor*

## Bluebird nest size

Dear Sir: We have read with interest the many and different articles about bluebirds. We tried for several years to get them to nest in one of our bird houses without success. This year we hit the jackpot; one brood has already left the nest and are living in our yard where there are plenty of bugs. We cleaned the house after the young birds left and now we have another brood almost ready to leave.

We found the trouble to be in the size of the opening, which according to the book was to be 1½ inches. The birds would hang on the front of the houses but would not go inside because the openings were too small; we made the openings one and three-quarters inches and now we have a yard full of bluebirds.

Our houses are made out of old lumber and left unpainted, the dimensions are 4 x 4 x 8, on a post about four feet high, facing southerly in an open field.

Mr. and Mrs. Joseph J. Donohue, Lake George

## Tagging is for pros

Dear Ed. I do quite a bit of trout and striped bass fishing and I generally release about 90 per cent or more of my catches. I have been wondering what becomes of these released fish and have tried, unsuccessfully, to find a way to tag them. Although bird banding can be done by individuals, I have only heard of Conservation Departments tagging fish. Is there any way that an individual sportsman might start tagging his released fish?

Gary R. Vervoort, Flushing

• *As helpful as your proposal sounds, the fisheries biologists take a dim view of free lance tagging. Throws their data for a loss.—Editor*

## Chummy squirrels

Dear Sirs: I am writing concerning a rather interesting phenomenon which my wife and I witnessed yesterday at our summer home which is a few miles outside of Gloversville, on a lake.

For three or four years we have been pleased to notice that gray squirrels were appearing around our place. At times we would see four or five at our feeding stations. The red squirrels and chipmunks are around also. Yesterday, about nine o'clock in the morning we saw two gray squirrels going up to a feeding station on the tree, they were not fighting, then four more appeared and they were all swarming up and around the tree, not going into the feeding station, just milling around.

Then they went down to the ground, hopped about forty feet across the driveway, in a body, their bodies were actually touching each other, all going in the same direction, they all swarmed onto the chopping block which is small; they were practically on top of each other. They were there for about a minute and then all six of them loped up over a hill, in unison, not one veered off in any different direction; they moved almost as though they were one animal.

Then they came to a pine tree and again, all six went up. After another minute or so they all came down and went off over a hill, again, almost in a tight body, huddled together. It was such an unusual sight, they seemed to be all the same size. At first I thought it might be parents with four little ones but later thought not. They were not fighting, they were not mating, just swarming all over each other. The only way I could describe it is like the lemmings I have read about, en route to the sea.

(Name Supplied)

• *It is peculiar to say that your squirrels have us buffaloed. However, not one of us here at the State Museum, to which institute the editor of* THE CONSERVATIONIST *magazine forwarded your question, could recall any written description of any exactly similar experience concerning the activities of squirrels such as you describe. Nothing the gray squirrel did would surprise us too much. Our best guess is that you were watching a nearly full-grown family of*

*squirrels going through maneuvers which might be construed as team games or playing soldiers.*

*We have seen gray squirrel families playing together on the lawn and chasing each other through the trees, we have seen them playing leap frog, we have seen them gathered in a close contact group about a bit of food, and we have seen them playing follow-the-leader through the trees, all in groups of five or six or ten or eleven. What you have seen certainly takes the prize for gray squirrel behavior.*

*The comparatively new science of animal behavior is learning many things of use to the psychologists. Such observations as yours are valuable to an animal behaviorist as another bit of data in the jigsaw puzzle of animal life in general. Maybe some psychologists will see in your squirrels the start of such human maneuvers leading to military formation, or at least to the start of the obvious enjoyment some people take in close-order drill.*

*At any rate, we are convinced that this is not the start of mass emigration for which the squirrels are noted, since if this takes place it is later in the fall and is more of a dispersal from an area in which the squirrels have been too closely crowded and not well enough fed. It is probably, however, the type of behavior which leads squirrels under stress to perform these emigrations.*

*I know this is not a definite answer to your question, but it is the best we can do with our present knowledge of animal behavior—E. M. Reilly, Jr., Associate Curator, Zoology*

## Orchids: Camp Caretakers

Gentlemen: Last year we made a trip to the Adirondack Mountain region. On our way, we stopped off at Northhampton Beach, Sacandaga Reservoir. The campsite was the best we had ever visited and the Conservation Officer in charge was "tops." We did not intend to camp out on the trip unless conditions were ideal as we had less than the necessities of camping gear with us. However this campsite and the help of the Conservation Officer [caretaker] made it one of our best camping trips.

On the way back we stopped at Crown Point campsite. The Conservation Officer and his wife were wonderful and we enjoyed our stay (one night only) better than we have enjoyed a campsite with complete camping equipment.

The point I wish to make is that the two campsites referred to above, were the best we had ever seen and we have visited a considerable number of campsites in over 12 states. The attitude, help offered, bearing, and just plain "likeableness" (my own word) of the Conservation Officers were the best and will not be forgotten.

Your magazine is the best I have ever subscribed to. I have subscribed to a total of six conservation magazines. Your magazine is tops in all areas.

Roy F. Cook, Oceanport, N.J.

• *Your hosts are Caretakers. Conservation Officers are law enforcement men.—Editor*

## Age of bass

Gentlemen: This summer, when we caught a delicious 6¾-pound, 23-inch largemouth bass in an upstate New York lake, we began wondering how old such a fish is. Thus far, I can find no information on the subject. Is there any information for bass, correlating weight, length, girth with age? Or, is it known how much a bass gains each year?

I should be very appreciative to receive either this information or a reference to it. Thank you.

Dr. Gerald Ente, Jericho, L.I.

• *Growth of bass and other fish vary so widely in different waters that there is no method of determining age with any accuracy except by microscopic examination of individual scales from the fish. However, from the dimensions you give, you can be sure the fish is no youngster.—Editor*

## Beaverkill trout: "Fabulous"

Gentlemen: Regarding the sport fishing section of the Beaverkill River—three of us Wiscoy Creek regulars, Major Tom O'Brien, John Black and myself went to the Catskills to attend the annual outing of the Theodore Gordon Flyfishers and to sample some of these historic waters.

We caught the evening rise on June 11th and then the morning of June 12th we fished it again. Fabulous! Major O'Brien landed one 12-inch brown that had been hooked at least twice previously. The three of us hooked, landed and released about 75 trout in about four hours on that Saturday morning.

The size of the fish was one thing that was surprising. We expected 6 to 7-inchers. True we caught them, but we also landed them up to 14.

Ray Ernst, Clarence

## Astronaut woodchuck

Dear Sir: Last spring while marking a pole stand of hardwood trees for improvement cutting on a Forest Practice Act co-operator's property near Pine Plains, New York, I noticed an animal lying on a dead chestnut snag which was lodged in a live tree. At first I thought it was possibly a raccoon or porcupine, but at closer examination the animal proved to be a live woodchuck.

He appeared to be sunning himself and made no attempts to move from his perch which was about 25 feet above the ground. It was also unusual in that this location was at least 100 yards from any open field where you would expect to find a woodchuck.

I have often wondered why they call these animals woodchucks, since they normally don't live in the woods or eat woody plants for food. I guess this fellow just wanted to live up to name of being a real "woods" chuck.

Gerald Gotsch, Forester, District #14

• *They not infrequently climb trees.—Editor*

## Cause of fish kill

Dear Sir: This past June—the 16th to 19th, to be exact—we visited a favorite lodge on Blue Mountain Lake in the Adirondacks. We had planned to swim up there, as we have in the past. What was our disappointment to find the lakefront edged with dead fish, both along the water line, and lying on the sandy bottom as far out as we could see. Naturally we did not go swimming.

I might add that two other people at the lodge went out in the early evening to fish, and came back "without a single bite."

Has this condition on the "prettiest lake in the Adirondacks" been reported before, and do you know why it occurred? This is distinctly a recreational area, and we doubt that industrial pollution has taken place. Is it insecticides, and another case for "Silent Spring?" (But some black flies were thriving nicely!) Or what? We should like to know.

Gertrude B. Fiertz, Manhasset

• *Your recent letter directed to the managing editor of* THE CONSERVATIONIST magazine *regarding the dead fish in Blue Mountain Lake has been referred to this office for reply.*

*After examination of a number of specimens of whitefish (the only fish involved in the kill) not only by this office but by our fish pathologist at our Rome Laboratory, it appears quite certain that these whitefish died from a fairly heavy infestation of parasitic tapeworm located generally within the heart and major blood vessels of the fish.*

*Like most tapeworms found in aquatic environments, it has a rather complicated life history. To briefly summarize it, it goes from an aquatic bird, probably a gull, to a small animal organism in the water commonly called copepods, then into the whitefish, probably via ingestion. It apparently bores into the circulatory system of the fish, ending up in the heart and major blood vessels. It is not yet clear as to the exact cause of death but we suspect that it may be due to either internal hemorrhaging of the circulatory system or lack of oxygen due to the slowing down of the flow of blood.*

*There is no question that many thousands of whitefish died from this in Blue Mountain Lake, but except for the disagreeable odor, there is apparently no possible harm to other organisms, including humans. We are continuing some investigational work on this fish kill and we hope to learn more about this particular heart parasite.—Robert C. Brewer, Regional Fisheries Manager, Region #6.*

## Birth of research facility

Dear Sir: Enclosed find check for $9. Please send 12 copies of June-July 1965 CONSERVATIONIST and 6 copies of August-September 1964 CONSERVATIONIST. We plan to put some of these copies in our "customer library"—primarily because of articles on "Warm Water Game Fishes of N.Y. State"—and "Pan Fish of N.Y. State.'

If our planned use of the above in "education" warrants more copies for the enclosed check—we will see sample copies are given to those most likely to subscribe to your magazine. We thank all of you active in the production of THE CONSERVATIONIST. It is a beautiful job—issue after issue. Our first copy goes back to June-July, 1959.

The article on Cape Vincent Research Center (last issue) is of special importance and pride to me. The conception of conversion to research instead of abandonment to "Federal General Services—and their uses" took place over a steak dinner Bill Pearce (Regional Fisheries Manager) and I had in Watertown.

It was Bill's encouragement that prompted me to carry the first thought on the subject to Dr. Webster at Cornell. After a personal visit, letters exchanged hands—and a public issue was created—which resulted in the article by Dr. Greeley in your last issue.

Although some distance from Cape Vincent (20 miles) I joined the Chamber of Commerce so as to officially carry the ball, in this matter.

I'm blowing my own horn on this matter—because more than anything I have ever done or felt in public interest—I am proud of the result and hopes for its future promise in the field of conservation.

Besides which—it's my horn!

My good wife had a great part in encouraging my efforts in what at first seemed like a formidable windmill to our Don Quixote.

Enclosed clipping to substantiate. Date 1/28/64 is day before meeting—purpose to create public awareness of research possibilities.

Alfred A. Delgado, Three Mile Bay

• *Shows what enthusiasm can do!—Editor*

## Squirrels in his attic

Dear Sir: A search of the indices of THE NEW YORK STATE CONSERVATIONIST covering about fifteen years, together with a scanning of Letters to the Editor has failed to uncover the answers to my problem: Squirrels in the attic. Red squirreds. I have known others to be afflicted, but this is my first unhappy experience. I have read that mothballs will do the trick. I spread them liberally throughout the attic insulation. I am now satisfied that if they don't eat them, they play marbles with them or ignore them.

I covered their entrance under the eaves with hardware cloth. They promptly gnawed new entrances. I used shingles, boards and more screening. It was a losing battle. They even ate away the shingles from the *inside* under the screening. I sprayed the attic with an unpleasant type of bug killer. I set rat traps. With peanuts. I caught a mouse. I can't use a .22 on them outside as we are beside a lake and near a road.

A local friend told me to get a good cat and put him up in the attic for a little while. I am less concerned with my relations with the S.P.C.A. than I would be about the cat.

Possibly some of your good people or readers might have a suggestion based on their experience. But please don't ask me to take the roof off and rebuild a squirrel-proof attic. There is no such thing.

Paul Gravel,
Mount Royal 16,
Quebec, Canada

• *Forget about them—they'll keep away ghosts.—Editor*

## Seeing is believing

Gentlemen: At the time this picture was taken, our local State Policeman had picked up this fawn at the scene of an accident in which the doe had been killed. He took it home for a while and he owned the shepherd dog shown. I happened along at the right time and, as usual, had my camera handy.

I call it "Seeing is Believing."

R. C. Lain, Port Jervis

## Fees for camp visitors

Dear Sir: Mr. Schrader's "Why Fees?" answer in the June-July CONSERVATIONIST, brings an unqualified "amen" from yours truly. The charge for use of campsite facilities is both just and extremely reasonable. However, there is one time and one time only when I feel that the day charge is both unjust and unreasonable.

To clarify: For the past nine years we have been camping out, and have cheerfully paid the $21 (twenty-one dollars) to pitch our tent on a State camp-site for two weeks. In effect, then, that campsite becomes our home for that brief period, and we invite friends to come visit us. Imagine our surprise to find that our guests were subject to the day charge on a campsite (ours) on which the fee already has been paid.

Incidentally, our campsite to which we regularly travel every year has no picnic facilities, so the charge, that some people say they are visiting campers merely to avoid paying the day charge, sounds pretty silly, since on this particular campsite, there is no place else to go, but to visit friends already there.

We have talked to other veteran campers who ran into the same situation and are incensed to say the least, at what they consider "charging double."

It seems that the Department could figure out some way to remedy this annoyance, so that campers could have friends visit them without being subject to a charge on facilities on which the fee has already been paid.

Mrs. J. B. Mazonek, Glens Falls

• *Regarding the 50-cent day use service charge as it applies to visitors of campers at the public campsites:*

*The day use service charge has been in effect at all campsites since the 1957 season. It is collected from persons who enter to call on parties camping on the campsite because these persons receive substantially the same benefits as other day users.*

*While calling on a camping party the visitor may swim, picnic or engage in all other activities available to the camper. In addition, water, sanitary facilities and other services are also provided. It is our feeling that the visitor is indeed deriving the same benefit from his visit to the area as other users and that he should share in the cost of maintaining and operating the facilities and services—Victor Glider, General Manager, Forest Parks*

## Baby 'coons

Dear Sirs: This article I am enclosing [telling about Game Protector retrieving baby 'coons held by boy as pets] was in last night's *Journal News*. My daughter and I were both very upset by what appears to be stupidity. We also would like to know "what law?" I have been an ardent conservationist all of my life and subscribe to your wonderful magazine, and am a member of our local association, and also my daughter and I buy all the stamps that are sent to us. If, however, some one sitting at a desk up there can order those three baby raccoons taken away from the 10-year-old who saved their lives, and obviously was taking such good care of them, then I am through with being a conservation supporter.

For some time I have been meaning to write to you about another matter, and it took this article to get me started. The subject is entirely unrelated and deals with birds. I will tell you now that I probably am a law breaker also, for both my daughter and I have taken in many orphaned and sick or injured birds until they either died or became well or old enough to fend for themselves. Use this against me if you want to.

Part of my conservation training has been to waste nothing, so I have a compost pile. On this I put all fruit skins, etc. Well, it has been very amusing this spring and summer to watch the grackle with the grape fruit and lemon skins. They sit on them and take bits of the outer skin and preen their feathers with them. I have read about "anting," but never heard of a bird doing this. I was wondering if this was "oiling" their feathers or perhaps the oils from the citrus fruit acted as a mite repellent?

Mrs. Ethel Haubner, Spring Valley

• *The Conservation Officer didn't feel any better about this than you, or the boy who had the raccoons. But he had no choice; the Conservation Law forbids possession of protected species of wildlife taken in this manner.—Editor*

## Elk in Dutchess?

Dear Sir: Recently I heard of a herd of elk which is supposed to be around Dutchess Co., N.Y., which is on the loose. Someone was supposed to have owned these animals and it is said that they either got loose or were turned loose. Is there any truth in this?

There are supposed to be about 12 animals. Also these animals are supposed to be on the protected list. If this is so, shouldn't more people be told about this so when out hunting, one of these animals is not shot by mistake?

Edward W. Ingalls, Sloatsburg

• *Sorry, we have no reports of elk.—Editor*

## Carrying tin cans

Dear Sirs: Just a thought by an old guy 88. The Boy Scouts to make some signs like this at the bottom. I am sure a lot of paper box mfgrs. have a lot of paper that is waste. They could put them up along the streams.

I think if some of the slobs could think they might do it. Maybe we could get more fish. The water would be cleaner. The streams and surroundings would look much prettier.

Yours for nicer surroundings.

J. P. Quinn, Brooklyn

YOU CARRIED THE FULL CANS IN
HOW ABOUT TAKING THE EMPTY
ONES OUT AND LEAVE THE PLACE
NICE FOR THE OTHER GUY?

• *We like your thought.—Editor*

## Question from Togo

Dear Editor: A Peace Corps worker in Sotouboua, Togo, was puzzled by the caption under an illustration in my article on the Adirondack lean-to in the February-March issue. Other readers of the younger generation may have shared his puzzlement. Here is his letter in part:

"I am now serving with the Peace Corps here in French West Africa, teaching English, physical education, and music as my main duties. I also do some tutoring in my spare time as well as a little health education and a try at Scouting.

"One of the things which keep me in touch with the 'Old World' is my subscription to THE CONSERVATIONIST. Although it comes by slow boat, its articles always hold their interest. It was with particular interest that I recently read your article about lean-tos. My main interest in the magazine is its coverage of the High Peak area and Lake George; I care less about fisheries or hunting except as a historical tale.

Most of the time I have spent in the High Peaks was in leading groups from a Lake George YMCA camp up the trail from Adirondack Loj to Mount Colden via the dike. My appearance in the area usually accompanies the beginning of a week of rain, but I have done the trip under ideal conditions and my movies taken of Avalanche Lake, the dike itself, and the walk to and from are some of my most prized films.

"The one thing that puzzled me in your article was the caption under the picture on page 7. Could you explain why it was titled 'Lean-to formerly at Mt. Colden?' Where is it now? Also, exactly where was it located on the mountain? I think I know those lean-tos fairly well but don't locate the one pictured. . . ."

(Signed) Scott C. Manuel

The illustration on page 7 of the February-March issue shows the original Caribou lean-to. The photograph was taken by my hiking companion Stephen S. Slaughter in 1941. The site made this, I believe, the prettiest of all lean-tos, past and present. It stood in a birch grove backed by conifers under a cliff of Mt. Colden at the foot of Avalanche Lake. It faced a vertical boulder that served as a heat reflector for campfires on coldish nights. But in September of 1942 a storm caused landslides on the unstable west face of Colden. One of these blocked the outlet of Avalanche Lake, raising the water level several feet and flooding the lean-to. The camp was ruined by the slide and the action of the water. Though the outlet was soon cleared, the site was probably judged too risky. In 1943 the present Caribou lean-to was built three-tenths of a mile south near the junction of the blue trail with the yellow. This successor is less exposed to slides but has no view of the lake, of Mt. Colden, or of its namesake (Caribou Mt. is also called Avalanche Mt.). It may serve the younger generation well enough, but those of us who remember the original Caribou camp regret its passing.

Paul F. Jamieson
Canton

**And for winter evenings—THE CONSERVATIONIST!**

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## Plea for pure water

Dear Sir: I have been reading an article in our local newspaper that the sale of fishing licenses have been decreasing in this State. They seem to think that this is due to the high price for fishing licenses.

Through my observations while fishing, I think the big problem lies in the water pollution problem. I do not think that there is anyone who enjoys going out fishing and have his fishing line ruined from the oil that is laying in the water or to smell the sickening odor that comes from the water, and, also to fish all day in these waters and not get any fish except scavengers. This is the biggest reason why people will not go out and buy fishing licenses.

I think that a lot can be done to improve this situation, by having our water cleaned up. But we also need the support from each and every sportsman. I have noticed a lot of people thoughtlessly throw their garbage in our rivers or streams or on the banks when they are through with it. If we could only get people to pick up their trash around their fishing holes, it would be a big help, I think. I know I have been trying to clean up the fishing holes that I visit when am through. I try to make it cleaner and nicer than when I came there. I only wish we could all do this. This would also help to preserve our fishing for our children.

I am afraid that if the present conditions are not taken care of, there will be no fishing for the younger generations. Let's give our children a break and everyone help to clean up our waters.

Calvin M. Arthur, Buffalo

• *A "Yes" vote on the Billion Dollar Bond Issue in the November election will also help. See the article "New York State's Pure Waters Plan" in the last issue.—Editor*

## Basha and the deer

Dear Editor: That four burner torch in the April-May issue of THE CONSERVATIONIST must have been used for spearing fish. We used an ox muzzle and fastened it to a stick filled with oily waste like the railroads use to pack the journal boxes on cars. We speared silver eels in the streams around Livingston Manor. The eels would lay on the bottom and were easy to spear. Now and then one would start and give you a merry chase and we would get splashed with cold water. That was God's country at that time with no, no-trespassing signs, no autos, no airplanes, and no fishermen; only the sound of partridges drumming in the woods. Now and then a snowshoe rabbit would scurry away in the brush.

I liked to fish the riffs in the Willowemoc and could fill my basket. I would stop at the eddies and watch the trout pockmark the eddies jumping for flies. There were plenty of cottontail rabbits which you could get with a ferret. If there were any deer in that part of the country, I never heard of them. The city people never got farther than a couple of miles north of Liberty until the advent of the auto. Lenope Lake, west of Old Morrison, was owned by a private club.

We stopped at the bridge that spans the sluggish stream that drains the big swamp between Westbrookville and Wurtsboro. Part of the water goes east to the Hudson and the other outlet goes west into the Delaware. The legend has it that the stream was named after Basha, the chief's wife. She was crossing the stream with a deer on her back; she slipped and was drowned.

There is not enough fishing places to go around. My heart went out to these fishermen and women casting again and again without any results. I understand the swamp is included in the Delaware recreation project. I still have my lancewood pole a man made for me, which I never use.

William H. Goldsmith,
Middletown

• *Moral for hunters: Never let your wife carry deer over streams.—Editor*

### Killing poison ivy

Dear Sir: First, let me tell you how much I enjoy reading THE CONSERVATIONIST. . . .

Now—here is my problem—and a serious one it is! *How* does one get rid of poison ivy permanently? About ¼ of an acre of what could be beautiful lawn is involved. The plot borders a brook (Wyomanock Creek) and on the banks at this one site the ivy grows lush and heavy! It has crept into the lawn and is spreading each year.

What can I do to kill it and not kill everything else—grass, etc? Somebody said to keep cutting it down with a mower—I'm doing it and haven't been free from ivy poisoning since spring!

Help!

Esther A. White, Plainville, Conn.

P.S. The summer place I'm speaking of is in Lebanon Springs, N.Y.

• *A successful battler with poison ivy says he eradicated his crop in two years by spraying it twice a year with "245-T," which is purchasable at any large garden supply store. It is a powerful herbicide, so don't use it near crops or valuable plants. It can be applied by large hand sprayer of the type used for spraying against houseflies.—Editor*

### Fishing for fun

Dear Mr. Gavagan: I was very pleased to read "Experiment in Fun" in the recent issue of THE CONSERVATIONIST. I would like to commend the Conservation Department for the establishment of the Genegantslet and Beaverkill "fishing for fun" areas along with the Amawalk area.

There is a fifth such area, counting the Schoharie, in New York State. With the opening of the 1964 trout season a fishing for fun area was initiated on Kelsey Brook in Chenango County. This area was established by interested fishermen and Trout Unlimited members with the co-operation of the landowners. (Landowner acceptance was 100 per cent with everyone still completely satisfied.) Anyone can fish the area provided he abides by the governing regulations. A copy of the regulations is enclosed.

In 1963 a stream improvement project was undertaken and since that time "V" deflectors, plank dams, rip rap, brush cover, etc. has been constructed.

Kelsey Brook is a small stream approximately ten miles in length of which 2.2 miles comprises the fishing for fun area. The stream population is primarily native brook trout with a fair stock of browns in its lower reaches. With a little effort and some wise management Kelsey Brook is beginning to prove itself.

The assistance that the Region #3 Fisheries Manager A. C. Petty has given us in this project has been very gratifying.

P. T. Sypher, Chenango Forks

### Comfy woodchucks

Dear Editor: Do you or any of your associates know of any odor that will discourage or drive away woodchucks? They are living under the floors and foundation of my old farm house in the Adirondacks and I can't seem to catch them or destroy them. Thanks for any help you can give.

Gregory W. Spurr, Sparkhill

• *There are dog and cat repellent sprays which I would assume would discourage the woodchucks if you are persistent enough about using them. What would seem more effective is borrowing a terrier or Doberman Pinscher and keeping him around the house for a few weeks.—Editor*

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# Bad Weather Bonus: Mounted Duck Heads

*(Continued from page 48)*

two-inch finishing nail into the rear surface of the panel, so that its point emerges from the surface at the pencil mark and protrudes through the front of the panel about one inch. As you view the front surface of the panel the nail should have a slight upward angle. Next, impale the head on this nail, arrange the entire mount as you desire, (*See Fig. 7*), and set two small tacks, of the blued variety, through the lower edge of the breast skin. With your needle, arrange the eyelid so that it appears as it did in the live bird.

The eye is the most critical part of any mount, bird or mammal, and should get the most attention. The mount is now ready for drying and to accomplish this, it should be set aside in a dry, warm room for a period of three to five days. In certain ducks, such as mallards and wood ducks, the bill will dry dark in color and, for the greatest amount of realism, such bills should be painted in the natural color with oil paints, after drying is complete.

There are a few tricks which can be employed in obtaining these mounts, such as the removal of the head and breast skin from the freshly-killed bird, and then storing these skins in plastic bags in the freezer until they are needed. *Do not skin the head prior to freezing.* Make sure that you select ducks which are in good condition after being shot; badly mutilated birds never produce good mounts. For those who take their head collecting seriously—when a bird is shot and looks like one you would like to mount, stuff a small wad of cotton, rag, or even dried grass down the throat immediately after shooting, for birds will sometimes leak a bit of fluid from the bill, and soil the breast. A small ball of body feathers will serve also.

If you are like me, you will soon become interested in a modest collection of the many species of waterfowl, and will discover that they make excellent decorations for the walls of your den or cabin. You will also discover the additional thrill of returning home after a day in the marshes, with this, your "bad weather bonus."

# Bad Weather Bonus: Mounted Duck Heads

by James D. Greiner,
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HOW many times during recent years have you heard the duck hunter's lament: "It hardly pays to set up a blind and decoys these days, what with the bag limits so small." Many have deserted the perfume of early morning mud and the essence of wet retriever in favor of more bountiful pursuits. I came close to parting with a three-inch magnum and duck horn myself, but found respite from this dastardly decision through regular doses of the stuff this article is made of.

Several years ago, a close friend and long-suffering devotee of marsh madness described and demonstrated the process of saving, as trophies, the ducks that he brought home. The sudden realization of how easy this process seemed to be, acted as adrenalin upon my three-bird-limit blues. I was eager to try my own hand at this simple, easily understood process. During the years that followed, I have spent many pleasant winter evenings creating trophies for the walls of my den. (Even my wife, a person who shuns the glassy stare of big game heads, readily admits her liking for my handiwork.)

You will need little in the way of materials. One of the first questions that I am often asked is: "How do you tan and preserve the skin?" My answer is that you do not tan the skin, but merely dry it. Borax powder, the kind that used to keep twenty teams of mules busy, is the preservative and drying agent. More about this later. A wad of cotton and a small manicure scissors are next on the list, along with a spool of white nylon or linen thread, a small, sharp knife, and a four- or five-inch piece of stiff wire with the tip bent in a ninety-degree angle. Add a lump of clay (the kind your kids work into the living room rug) and a few glass eyes. The latter can be purchased for a few cents from a sympathetic taxidermist or from one of the taxidermy supply houses, such as Jonas Brothers of Denver, Colorado. Just drop the latter a note describing the species of duck that you are working on, and they will supply the proper eye. To complete this list of materials get a suitable wooden panel (the veneer plywoods are excellent) of your own choice. And, of course, you will need a duck—preferably one not too badly shot up or blood-stained.

The accompanying sequence of photos shows the simple process of mounting game bird heads. The procedure is the same for all ducks, geese, and even pheasants, the latter making beautiful trophy mounts in their own right. The following text explains each step:

*Step 1*—Make a cut which completely encircles the body of the duck and which just touches the front edges of the wings. Cut only through the skin and then roll the skin forward, as you would remove a sock, toward the head. After you have exposed the neck of the bird, sever it at the body and dust liberally with borax powder (*See Figs. 1 and 2*). Borax is not only a drying agent, but is a reasonably good deterrent of decay. It is also used here for the purpose of collecting blood and to avoid soiling feathers. Use borax frequently, and lots of it; it will shake out of the feathers easily when the mount is complete.

*Step 2*—Now, look at the bird carefully and choose the best appearing side of the head and neck. This is the side which will face outward when the mount is complete. Cut the skin up the middle of the back and angle this cut over toward the side of the neck which will lie against the panel upon completion. Continue this incision up the neck and end it at the rear corner of the eye. Dust liberally with borax (*See Fig. 3*).

*Step 3*—Carefully separate the skin from the head and neck of the bird. *Work Slowly*, for as you reach the head you will encounter the ear opening. Before you even begin work on the head, locate the ear opening from the outside with the small wire and remember its size and position. It is a small hole just behind and below the eye. Skin the head carefully, taking pains to cut the skin close to the skull at the ear, and to skin around the eye, leaving the eyelid untorn. The latter is probably the most important step in the whole procedure, and can be easily accomplished by pulling the skin away from the eye as you cut. The small, sharp knife should be used on the head (*See Figs. 3 & 4*).

*Step 4*—Remove the eyes with the bent wire, working around behind them and taking care not to puncture them as they are removed. Dust the eye sockets liberally with borax powder, and then cut a small "window" in the rear of the skull (enlarge the opening that is already there). Again using the bent wire, remove the brain. This step sounds a bit messy, but is really quite simple to accomplish. After the brain has been removed, dust borax liberally into the interior of the skull. If bits of brain tissue remain, do not be concerned, as the action of the borax will dry them and they will not create a problem. Now, look at the bottom of the skinned head. You are looking at the outside of the bottom of the mouth. Cut through the floor of the mouth on each side of the tongue, and pull the flesh of the floor of the mouth away along with the tongue.

All that remains now is the filling of the eye sockets with clay and the insertion of a glass eye. Use enough clay and build it up so that the surface of the clay is continuous with the contour of the skull. Roll the skin back over the head and when it is positioned properly, mark the center of the eye opening in the clay. Again, roll the skin forward, exposing the skull, and set the glass eye, centering it on the mark in the clay that you have just made. Push the glass eye into the clay so that it appears natural and does not "bug out" (*See Fig. 4*). You are now finished with the bulk of the job. The skin should be dusted with borax and pulled back over the skull, positioned properly, and you are now ready to sew the skin.

Adjust the eyelid so that you are sure that it looks natural, and then lay a thin roll of cotton in the neck skin and a small wad of cotton in the breast. Use caution here—*do not use too much cotton, especially in the neck region.* (*See Fig. 5*). Now, beginning at the rear of the eye, sew the skin down to a point about one and one-half inches above the beginning of the cut. (*See Fig. 6*). You will notice that only one artificial eye was used. The reason for this is that the mount lies so close to the panel, upon completion, that an eye here would be unnecessary. You do, however, fill the rear socket with clay, to fill up the space.

Place the panel you have chosen on a table in front of you, and position the head and breast as it will be in the completed mount. Place a pencil mark on the panel exactly where the center of the head touches it. Drive a small,

*(Please turn back to page 47)*

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2

3

Completed Mount

4

6

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*Red false beechdrops* (Photo by Ruth Smiley)