

The New York State
Conservationist

December-January 1954-55



MEL HUNTER
11/54



To our subscribers

The Holiday Season seems a good time to pay our respects to our subscribers; also, to admit cheerfully that for reasons in addition to the obvious ones, we couldn't get along without them.

As this magazine is not a giveaway proposition, our financial dependence on our subscribers is obvious. When we started out nine years ago, about six thousand of them decided to string along with us, perhaps because they figured they didn't stand to lose much with the asking price only a dollar. Subscription rates are still the same, and although we can't give you accurate figures on the present number of paid-up subscribers (our Circulation staff is presently trying to get on top of Christmas gift subscriptions), we do know that our last press run was for 84,000 copies, and that there are only a few left.

But our dependence on our subscribers goes a lot deeper than that. In at least three ways:

(1). Here in the office (and no doubt elsewhere) most readers of the magazine adopt the Chinese system, which involves beginning at the back of the book and working toward the front. (The posterior part of the magazine, as you know, is where our subscribers express their opinions, vent their furies, etc.) We have no objection to this Oriental approach—which some may consider Standard Office Procedure for everything in this Department—except that our subscribers tend to steal the show. And we guess we'll have to adjust our pride to that.

(2). Right from the start, our subscribers have been our principal means of luring other people into shelling out for this publication. We have no funds for advertising or promotion, and our increase in circulation has been due almost entirely to early birds who have told later ones that there's a juicy worm to be gotten for only a dollar. Many have gone farther; they've staked their friends to this bi-monthly meal.

(3). We would like to call your attention to the article by Mrs. Vars on page 4 of this issue. We don't know Mrs. Vars. The article arrived in our mail one day, with a note that we could use it for free if we thought it suitable. We thought it a good deal more than suitable.

And then we had a letter from Mayor Corning of Albany, who said he had a friend in Maine who would like to do a piece for us on the subject of eating ferns. That little piece will appear when the ferns do—early spring. We are not permitted to pay anything for articles or illustrations, so this kind of help means a lot.

But unquestionably the most important contribution of our subscribers is the real conservation work they do. They read about—say a farm pond—write in for more information and help, then go ahead and build one. That is what this magazine is for.

So—extra special Season's Greetings to our subscribers.—Editor.



The New York State Conservationist

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The Christmas Tree Business in New York

by Leslie R. Stutzman

“Topsy” would be a good name for the New York State Christmas tree industry: It wasn't born, it just grew. The name is appropriate in other ways too—the industry is young, growing by leaps and bounds, and is destined to take a leading role in the Christmas drama of American homes.

It was only fourteen years ago that a Christmas tree dealer and myself, looking for a supply of pine boughs for Christmas decorations, noticed a block of fine Scotch pine trees planted by the State on the West Almond turnpike in Allegany County. Both of us agreed that never would New York State families forsake the traditional short-needed balsam for the long-needed pine. Both of us were wrong.

Topsy is now a young lady full of promise. Last year buyers from markets as distant as Texas flocked to the Southern Tier counties of New York State, actively bidding for Scotch and red pine, and Norway spruce Christmas trees. (They looked for Douglas fir too, but few could be found.) And another sign of the times: A recently formed New York State Christmas Tree Growers' Association has 100 members, and is growing rapidly.

Actually, almost all the credit for the now flourishing Christmas tree industry should go to the New York State Conservation Department which grew the seedlings, and the C. C. C. boys who planted many of them. They started the reforestation movement that led to the discovery that pines would sell as Christmas trees.

Let's have a look at the economic aspect of growing Christmas trees. The principal varieties of planted trees in order of importance are Scotch pine, white spruce, Norway spruce, red pine, and Douglas fir. But right here we in order of quality, value per tree, and should call your attention to the fact that



saleability, Douglas fir is so far in the lead that there is almost no comparison; it is, however, hard and tricky to grow. Scotch pine is next best. Balsam, for the most part, is a wild tree of excellent inherent quality, but a slow grower and used only occasionally for Christmas tree planting, although many wild trees are marketed from the Adirondack section.

The area commonly called the Southern Tier is the principal area of production, in spite of the fact that some plantations have been and are being established in almost every county of the State. The industry probably centered in the Southern Tier because it was (and still is) assumed that cheap abandoned land was necessary to profitably grow Christmas trees; another factor has been the tendency of a business once started in an area to continue and expand there.

But these assumptions are open to argument, for as we learn more about growing trees, some plantation owners are finding out that the old adage—"The best is the cheapest in the long run"—holds true. On cheap Southern Tier land (and by cheap we mean \$10-\$12 an acre) we have these economic advantages, as compared with farm lands in the better agricultural areas which sell for \$100 per acre and up: *Low land investment, low taxes, comparatively low labor costs, plentiful supply of land, somewhat less chance of snow damage, than in the Adirondacks, and, in most cases, an opportunity to establish a hunting camp on the plantation.* Then, of course, the above mentioned advantages all lend themselves to the opportunity of allowing

the uncut trees to grow on to timber size. Obviously it would be unprofitable to plant trees, with timber in mind, on very expensive agricultural soil.

Some disadvantages are *isolation*, which encourages theft; *poorly drained soil*, which causes severe heaving in some years; *browse damage by deer*; *fewer paved roads*, with the resultant possibility of having trees snowbound at harvest time, and equally, the lack of accessibility in case of fire.

So where to buy land to grow Christmas trees is a matter of personal choice, although the consensus favors Southern Tier land. But a word of warning—buy the *best* in the Southern Tier.

Here are a few pointers: (1.) Don't buy land which is poorly drained; your trees will heave badly, and may not live to reach Christmas tree size. (2.) Preference should be given land which lies uphill from the highway or at least, not below it; it is much easier to drag cut trees downhill than uphill. (3.) Stay as far away as possible from hardwood seed trees or woods to the southwest or west, since hardwood reproduction encouraged by prevailing winds can be very troublesome in plantations. (4.) North and east slopes generally grow better spruce and fir than west and south slopes (pines do well on almost all exposures). (5.) Remember, a steep hill (in the Southern Tier, anyhow), is not necessarily well drained, nor is the top of a hill always dry. (6.) By all means, consult a land map, your County Agent, the District Forester, or the Soil Conservation Service about drainage before you buy; once trees are planted,



then of course it's too late to switch.

Most Christmas tree growers now space seedlings six feet by six. This spacing figures roughly 1,200 trees per acre. Some plantation owners are planting five by five, which puts an additional 550 trees on each acre, just in case of poor survival. If survival is good, any crowded trees can be cut as table trees, releasing the best specimens for six- to nine-foot Christmas trees. In figuring the cost of planting, we should consider cost per 1,000, not cost per acre—as the cost per acre depends considerably on the spacing.

Now as to planting costs: If you want to plant them yourself, or hire it done, better figure 500-600 seedlings per 8-hour man-day for inexperienced help; experienced tree planters can plant up to 1,000 trees or more per man-day. Many owners are now having their trees planted on a contract basis. The seedlings are available from the Conservation Department at \$2 per 1,000 for two-year seedlings, and \$3.50 for three-year stock.

Within the past few years, tree-planting machines have been perfected to a point where they do a highly satisfactory job, and some plantation owners report a survival rate of 95 per cent with machine planting. The principal advantages of machine planting are straight rows, high survival, erectness of the planted seedling and the opportunity for good root spread. Of course, a machine planter will plant seedlings ever so much faster than by hand. Efficient operators plant about *one thousand trees per hour*. Tree planting machines, however, work well only when the soil is dried to a

consistency that would be about right for plowing. If the soil is too wet, either the tractor gets stuck or the trees are mudded in. If the soil is too dry, there is difficulty in penetration, and even if penetration is achieved, the packer wheels are sometimes unable to close the furrow properly, with a resulting drying of roots and low survival. For hand planting, two-year seedlings are satisfactory, but for machine planting, the larger three-year olds are best.

The distribution area for New York State Christmas trees is expanding by leaps and bounds. Ten years ago only a few Scotch pines were sold in western New York and northern Ohio and Pennsylvania cities, while today buyers from almost every state of the Union, east of the Mississippi River, are inquiring for Empire State-grown Christmas trees.

Prices for the past few years have been good. Scotch pine have wholesaled on the stump at around \$1 to \$1.25 each, although some growers who prune or trim trees have received higher prices, and those with poorer quality have had to sell for less. Red pines, although gaining in popularity, are still not considered as good as Scotch, and have wholesaled in recent years at around 50 cents. White and Norway spruce usually bring 75 cents to \$1.50 on the stump, depending on the quality. Douglas fir, the most beautiful Christmas tree in existence, wholesales at \$3.50 to \$5.

There are factors other than quality that sometimes determine the price a plantation owner will receive for his trees. Some of these factors are availability or nearness of the trees to a good

road, the amount of assistance given by the purchaser in the harvesting of the trees, and of course, the ever fluctuating market controlled by the law of supply and demand.

So far the picture is all rosy, and you may think that all we have to do is buy some cheap land, plant it to Scotch pine, return seven or eight years later and harvest at \$1.25 each the 1,200 trees planted per acre—and retire. Nothing could be further from the truth. Christmas tree farming requires as much skill and experience, and is fraught with as many heartaches and disappointments as any other type of farming can be.

As the industry grows older some of the risks may be lessened, but at the present time there are some unsolved problems. First and foremost seems the problem of Scotch pine *color*. Some varieties lose their blue-green color as cold weather approaches, and it has only been during the last few years that a better understanding of the relationship between seed source and color has been established. Generally speaking, the yellow type, or "Riga," is considered best for timber planting, while the green strains are best for Christmas trees.

Another item of labor and expense not generally considered by the would-be Christmas tree grower is shearing or pruning. Trees harvested a few years ago were "Topsy" trees that "just grew." Then it was discovered that shearing or pruning vastly improved the quality of Scotch and red pine trees, so that today all buyers—from the wholesaler to the consumer—are demanding better shaped trees. A plantation of unsharped Scotch pines may yield a very small percentage of marketable trees today, as compared with a few years ago when buyers were not so quality conscious.

Then there is the ever present danger of fire, which can wipe out a whole plantation in a few hours. Mother Nature in addition is busy producing new and better insects to harass Christmas tree growers. Styles change too—today's Christmas trees are a far cry from the ones first used in this country by Hessian soldiers, who introduced the custom during the Revolutionary War. It is not only possible, but quite probable that the "Scotch Pine Era" will be followed by the "Douglas Fir Dynasty," when growers discover that this finest of all Christmas trees can be produced in carefully selected New York State locations.

But no matter what happens, you would have little doubt of the future of the New York State Christmas tree industry if you had attended the last meeting of the New York State Christmas Tree Growers' Association. These people love their trees, and one does not easily give up that which he loves.



by
Nancy
Kincaid
Vars

The Carr Collection

ON occasion, the soil of upstate New York yields pottery fragments, coins, arrowheads and other mementos of earlier times. Rarely, however, is so unusual a cache brought to light as on a day in the spring of 1903 when a farmer, plowing a field near New Berlin, Chenango County, stopped to investigate an obstruction in his path. Instead of a log or boulder it proved to be a large wooden box, as black as the soil, covered with the scum of more than a century and a half beneath the ground.

In the box were 75 pieces of collectors' porcelain and glass, meticulously packed and in mint condition. Plates, platters, pitchers, sucriers, tea pots and tea bowls, in Oriental Export and transfer-printed Worcester china, as well as glass flasks, tumblers and fluted salts, had been spared the ravages of time in their dark and airless hideaway. A remarkable story was pieced together, explaining the peculiar circumstances leading to the burial of the mysterious box and to its long period in hiding.

The field in which the box was unearthed had been, it seems, within a 10,000-acre tract in the valley of the Unadilla River, awarded by George III to Colonel John Edmeston of the British Army for distinguished service during the

French and Indian Wars. Adjacent to the scene of the farmer's unique discovery had been a homestead, built around 1765 by Percifer Carr, friend of the Colonel and a soldier of his regiment, dispatched with a dozen companions to take possession of the grant.

Carr built a substantial home there and erected barns and outbuildings and cabins for his servants. He cultivated fields and planted orchards. Then he sent to England for his wife. Mrs. Carr brought handsome furnishings to her new home, including glassware and porcelains, possessions prized by affluent families in England and irreplaceable luxuries on the York frontier.

For more than a decade the Carrs lived peacefully, remaining loyal to the Crown. The Mohawk chieftain, Joseph Brant, protege of the celebrated loyalist Johnsons, overlords of great domains in the Mohawk Valley, was a frequent visitor at their home. During the Revolutionary War, Brant and his Indian warriors, at the instigation of Sir John Johnson, terrorized the frontier, working with the Tories to strike time after time at Patriot settlements, plundering, burning, killing and taking prisoners.

Tragedy finally enveloped the Carr homestead. On a day in August, 1778, Joseph Brant, whose headquarters were

35 miles to the south at Unadilla, kept a rendezvous with his Tory conspirators near the Carr farm. Later that evening, four Patriot scouts, on a mission to investigate the Indians' position, stopped to rest at the homestead, planning to slip through to the Indian stronghold for further intelligence the following day.

Fate, however, decreed otherwise, for the next morning, almost before they were out of sight of the farmhouse, the scouts were surprised by an ambush in the orchard, where Brant and his men were waiting for them to pass. One of the Patriots, according to tradition, escaped to make his way northward to the Mohawk and then to German Flats (now Herkimer) to warn settlers there of impending danger. Brant's savage band, following closely on his heels, crept swiftly toward the Flats, burning and pillaging en route, spreading more terror with each dreadful episode.

Percifer Carr and his wife, meanwhile, were apprehensive. They set about to conceal their most precious belongings. They filled a wooden case with their finest china and glass, the story goes, carried it to a field not far from the house and buried it, along with their savings in gold.

The Carrs' misgivings were well-founded, for not long afterward Brant and his men returned to the farm, driven back toward their headquarters by the militia. After stopping long enough to bury the ambushed scouts in the orchard, they made prisoners of the Carrs. Forced on before the Loyalist Indians, they were held until hostilities had ceased.

In time the Carrs came back to their home in New York. There they found the farmstead a charred ruin. Their livestock had been slaughtered where it grazed in the fields. Landmarks, by which they may have indicated the location of their buried treasure, were probably obscured by the Indians' thorough desecration of the place.

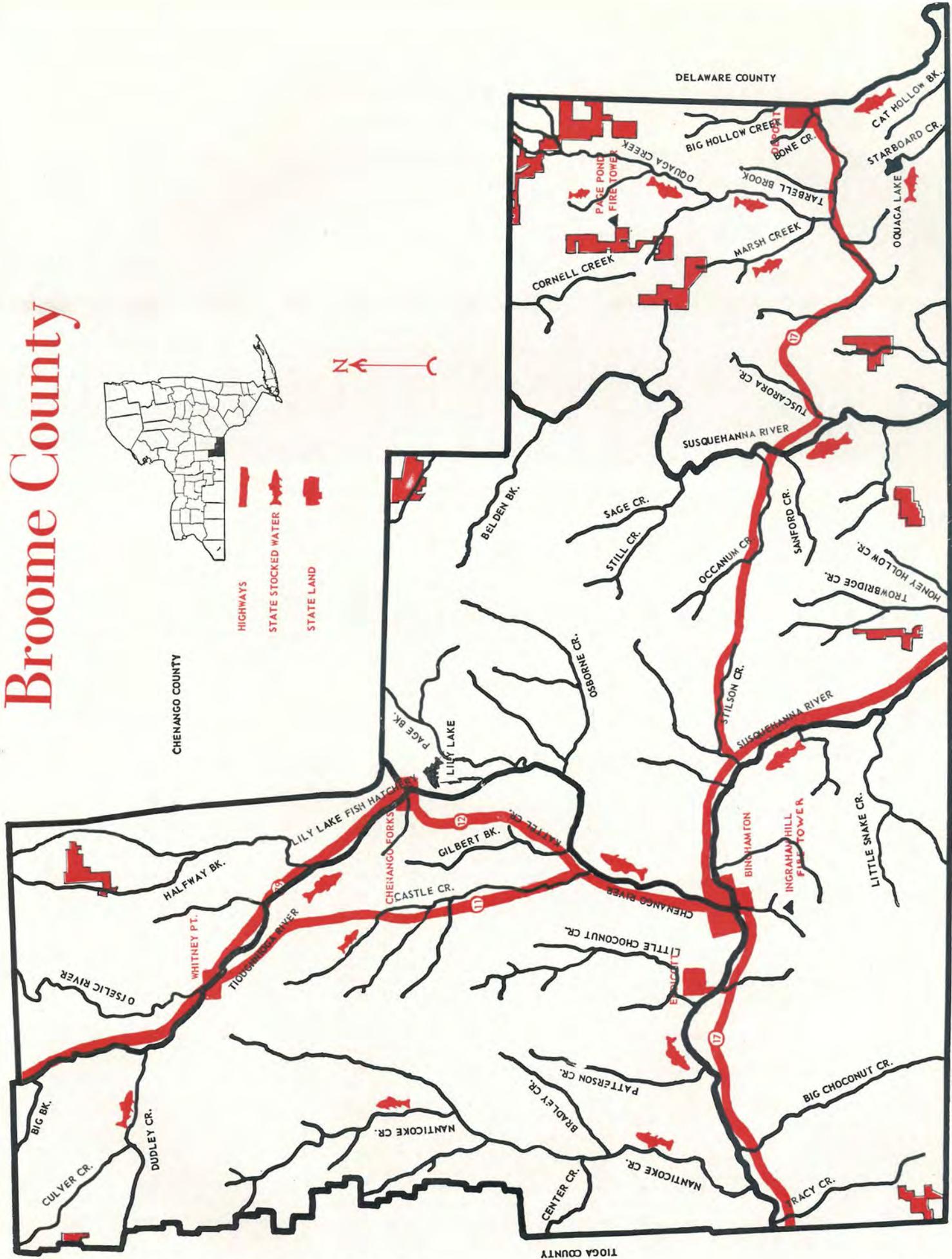
During the years that followed the "Carr Garden," as the estate became known, was rebuilt. The owners prospered and their home was famous over the frontier for its lavish hospitality. For more than a hundred years afterward the field on the farm did not give up its secret. Meanwhile, although some of the cache has been discovered, the disposition of the gold, thought to have been buried at the same time in the same hole, remains a provocative mystery.

Today, a few miles away in New Berlin's George Rogers house, now the village library, part of the contents of the wooden box are on permanent display. Nineteen pieces of the original 75, loaned by the owner of the land on which the box was discovered, comprise one of the most intriguing historical collections in upstate New York.

Broome County



- HIGHWAYS
- STATE STOCKED WATER
- STATE LAND



Checking up on the Beaver



Pilot and observer must combine dexterous flying and a quick and practiced eye in evaluating beaver clues from the air. Aerial picture on left shows work of active beaver colony—see new house midway along lake channel. At right—abandoned site. Some patching on dam (lower right) but beaver gave up and moved on.

DURING the last 30 years beaver have increased in New York State from a few scattered colonies to a very large and well distributed population. Actual numbers of beaver may vary considerably from year to year as a result of the harvest by trappers—which in turn is influenced primarily by the price level for beaver pelts. Because of these circumstances the beaver population may, during a period of low fur prices or unfavorable weather conditions for trapping, build up to a point where damage to roads, railroads, timber, streams—and in some cases, to the beavers' own supply—becomes a serious problem.

It follows that there is need for a dependable method for beaver census in order that the Department may be in a position to set intelligent and practical open seasons for the harvest of surplus animals, thus minimizing to the greatest degree possible excess population build-ups and resultant damage to property and beaver range.

Various methods of keeping track of beaver populations and colony locations have been used in the past in New York State, but no actual survey of a very large area was attempted until 1946, when an aerial survey on an experimental basis was made. The results of this experiment indicated that a large scale aerial survey would be practical.

In farming districts and other more settled areas of the State, where roads are only a few miles or so apart, District Game Managers and Game Protectors

are able to supply adequate beaver survey coverage. But that does not hold for the Adirondacks. Accordingly, in the Adirondack area an extensive aerial beaver survey was started on October 15 and ended December 12 of 1953. The survey was terminated because snow covered the area; one more day of flying would have completed it, but ground conditions were never right after that date.

U.S.G.S. maps of the survey area were used, and six equidistant lines running from north to south were drawn on each map. As it was decided that a 50 per cent coverage of the survey area would be sufficient to establish a population estimate and to show distribution of the beaver colonies, three of these lines were picked at random, and then flown.

The area surveyed was bounded on the south by the Mohawk River and the Barge Canal, on the north by the St. Lawrence River and a line running east from Ogdensburg, on the east by a line that ran north and south approximately five miles east of Troy, and on the west by a line running north and south just east of Oneida Lake. Approximately 13,838 square miles, or all of what is considered the Adirondack Area, was sampled in this survey.

Sixty-three U.S.G.S. maps were required to cover the survey area—nine maps from east to west and seven from north to south. As each map covers an area of 17½ miles in length, each flight line was approximately 123 miles long. A distance of approximately one mile was observed each side of the line. This re-

quired considerable zig-zagging, as the 'plane was flown about 100 feet above the tree tops. This low altitude was necessary to observe properly the several factors used to determine whether or not a colony was active; when flying at such low altitudes it is impossible to see behind ridges and into hollows, and therefore a straight course could not be held.

The active colonies observed were plotted on the U.S.G.S. maps in red pencil. Several factors were used to determine whether or not a colony was active, the most important being a fresh feed bed or wood pile. But, sometimes food is too scarce for beaver to get enough material to make a noticeable feed bed, so other factors have to be used—including condition of dam, amount of water in pond, signs of cutting near pond, condition of house and fresh peeled sticks and twigs in the pond.

No one of these factors, however, could be used alone; for example, muskrats often fix up an old beaver house to live in, and it would be impossible to tell from the air whether such fixing was muskrat or beaver work. Also, dams are often patched up by beaver passing through during the summer, when they may also do some cutting. But if *all* the above factors are considered, few mistakes should be made as to whether or not a beaver colony is active. This is time consuming work, however, as a site may have to be circled several times.

On the larger streams and rivers, there are quite a few bank beaver that build no dams and often no houses. But the

At left—site of one-time beaver colony, long abandoned as evidenced by sprout growth along edges of old flow line. At right—beaver have moved back into an old site, repaired dam at right, built new house (center) and stocked winter larder (see feed bed, adjacent to right side of house). More ambitious predecessors flooded larger area—see old flow line.



feed beds in the water and the cuttings on the shore showed up very well, and in most cases this type of colony was as easily seen as any other. Colonies on natural ponds and lakes could be spotted by the same signs.

We know that some small colonies were missed on the survey. Often one beaver (or a pair of them) will make a small pond and the dam, house and feed bed will be hidden by thick spruce or other trees and cannot be seen from the air. Several of these small colonies were picked up by noticing the reddish tinge of the evergreens that had been flooded. And often when beaver move back to an old colony site, they do not raise the water level as high as it had been before. This gives the appearance of an old inactive colony from the air, and special care must be taken in looking over such places, as many deserted dams have considerable water behind them.

Another factor that gave some trouble, especially in plotting colonies, was the inaccuracy of some of the U.S.G.S. maps. Also, many physical changes have taken place since some of these maps were made; several large dams such as those on the Beaver and Sacandaga rivers have changed the whole landscape.

In addition to the line type survey described above, and as a check for accuracy, a large block of approximately 100 square miles was completely surveyed. This block is located in Herkimer County on lands controlled by the Adirondack League Club. No lines were used on this survey; streams, ponds, lakes and any place that might have beaver were checked. Parts of this area were ground checked during March and April. Other parts were trapped and the active colonies

were plotted on U.S.G.S. maps by the trappers. This ground check confirmed the effectiveness of our aerial surveys.

A total of 116 hours were flown on the line survey. The number of active colonies observed was 1,279.

Several unusual things pertaining to beaver habits were noted during the course of the survey. One of these was the cutting and storing by beaver of spruce and balsam in their feed beds. Some of these feed beds seemed to have nothing but evergreens in them; no poplar, birch or maple available to the beaver could be seen. Beaver often cut and eat a few spruce twigs when they first come out in the spring, or during a winter thaw, but storing evergreens in the feed bed is not common. It appears, therefore, that in some places beaver may be forced to change their food habits.

The present high population apparently is forcing beaver to return to many of the old colony sites. It seems that there are few places suitable for beaver colonies that have not been or are not now occupied by these animals. In other words, it appears as though the damage to timber and streams by beaver *has already been done*, at least over most parts of the Adirondacks.

BEFORE either an aerial or ground survey is started, the leaves should be off the trees and there should be a hard freeze. Beaver often do not start building or putting in a feed bed until this time—which, of course, varies from year to year.

Parts of the lines surveyed from the air this fall will be selected and checked on the ground by the aerial observer after the aerial survey is finished. When

this survey and ground check are completed, the percentage of error between the aerial survey and the ground survey can be determined.

An accurate beaver survey cannot be made by an inexperienced pilot or observer. It is very difficult to fly the lines at such low altitudes, because the field of vision is limited and over much of the area, good check points are few. In order to plot colonies accurately, both pilot and observer must know exactly where they are at all times. This calls for close teamwork. The pilot* is indispensable to the observer in keeping him oriented and in pin-pointing colonies on the map. The observer must spend some time marking colony location on his maps and when doing this, he is often confused when he looks up from the maps and down at the ground again. At such times the pilot can set him straight by showing him the position and heading of the 'plane on the map. The pilot must also watch for beaver colonies which the observer might not see, and at the same time, of course, must fly the 'plane, keep track of time and gas consumption, watch his engine and navigation instruments and keep close check on the weather. It is very easy to become so interested in the work that weather may be forgotten for a few minutes, only to find that a snow squall has closed in and visibility dropped to zero. The time that is needed to run a survey will vary from year to year because of weather. Often part of a line can be surveyed, then low clouds, storms or high winds will be encountered, forcing the survey to be discontinued for the day or longer.

(continued on following page)

* Pilot for all of this survey was John Schempp, Department pilot, flying a Stinson Station Wagon.

Diseases and Parasites

The observer should be a licensed pilot for several reasons. He can assist the pilot by watching instruments and weather, and when not actually surveying, can relieve the pilot by flying the 'plane and giving the pilot a chance to rest. He will also know the limitations of the 'plane and will not expect the impossible from either 'plane or pilot.

In addition, the observer should have a thorough knowledge of the species being surveyed. This is something that will determine the success or failure of any survey, and it's particularly true for beaver. If a person cannot tell an active colony from an inactive one on the ground, he obviously cannot from the air. For instance, there are often four or five dams and several ponds, all strung together. This may indicate one or more active colonies, or may be a combination of active and inactive colonies. An observer must be able to determine and plot such situations quickly and accurately and not waste minutes of valuable time wondering what he is looking at. This knowledge should be acquired on the ground by trapping beaver through several seasons, or by working with an experienced person on ground surveys.

And of course the observer also has to be immune to air sickness, and not timid or nervous. The air is usually rough and turbulent over mountains, especially at the low altitudes it is necessary to fly for this work.

A survey such as that described here is valuable in determining population trends and colony distribution only; it is not—and was never intended to be—an actual census which would reveal the exact number of beaver in a certain area, since only colonies can be spotted from the air, and the number of beaver per colony of course varies considerably. The results of such a census, however, have already been proved extremely valuable in meeting the objectives, as defined above, established for it.

Surveys of game and furbearer abundance, preparatory to the setting of seasons for individual species, are now accepted as an indispensable part of sound wildlife management. For certain species—and particularly the beaver—such surveys can be conducted from the air far more economically and effectively than on the ground. Just imagine what it would have cost to cover the Adirondacks on foot, compared to what it cost to do the same job in 116 hours of flying time. And we believe that we know enough about this aerial beaver survey work so that we can cut down our flight lines to one line per U.S.G.S. map, instead of three—and still come up with the right answer.

—ED. MAUNTON

EVERY year a million sportsmen set forth in New York State to hunt white-tailed deer, chase down ringneck pheasants, outwit ruffed grouse or bag their limit of ducks. But what, every year, does the tally sheet show when the smoke has cleared away? Invariably that Mr. and Mrs. Cottontail Rabbit supported the show, piling up more pieces of game and probably more pounds in the sportsmen's larder than all other legal game combined.



Rabbit tapeworm: Broken fragments of a single tapeworm found in the intestine. Seen in the body cavity of the host rabbit only if the intestine is punctured.



Rabbit bot: Generally found in neck region. Inset—close up of the bot at the stage when it leaves the rabbit to enter the ground to pupate.



Dog Tapeworm: White arrows indicate bladder-encased larvae on a rabbit liver. They may be found anywhere in the body cavity. Black arrows show white scars left by migrating larvae.

of the Cottontail Rabbit

Moreover, the scales would be tipped even further in the rabbit's favor if it were not for the fact that hunters, alarmed when dressing the animals by the presence of parasitic worms in the intestines or body cavity or white spots on the

liver, annually discard and needlessly waste countless pounds of perfectly good rabbit meat.

This occurs mainly because the recognized disease conditions are not fully understood. Throughout the hunting sea-

son a deluge of letters pours into the Wildlife Research Laboratory with inquiries, descriptions and careful explanations, to the effect that "the rabbits shot last week end appeared diseased and were discarded." In most cases the descriptions or enclosed samples prove that the particular rabbits involved had been needlessly wasted, and if properly dressed would have made safe and tasty eating.

This great concern of the rabbit hunter about disease stems mainly from dim recollections of past warnings about tularemia. At the time of the warnings large numbers of rabbits had been and were being imported from the mid-western states. This section has the highest reported incidence of this disease in the country, and at the time of importation into New York it was reaching epidemic proportions. Since then a better understanding of the futility of stocking imported rabbits as a means of increasing abundance—and the present refusal of many former source states to export rabbits—has resulted in fewer rabbit importations and thus reduced the prospect of infecting our "native" population with the disease.

This article was written to clear the cobwebs from a few of the more commonly misunderstood rabbit diseases and parasites, to better acquaint hunters with these conditions, and thus to lessen the needless waste of this valuable game species.

The descriptions and actual contacts with the disease and parasite conditions described below do not convey a pretty picture. However, it should be borne in mind that similar conditions are found in the domestic animals we normally use as sources of meat. The difference is that the evidence is removed in the dressing process and as far as the user is concerned "out of sight—out of mind." We hope that through a better understanding of the described conditions some of the long standing phobias and fears will be allayed, and that you will enjoy more rabbit dinners.

Tularemia

This bacterial disease of rodents and rabbits is transmitted to man either by the bite of a tick or deer fly, or from dressing an infected animal. It has been reported that over 90 per cent of human cases in the United States have been contacted from rabbits. In the past 20 years the New York State Department of Health



Shope's fibroma: Typical locations of these skin "warts" on nose and front feet of rabbits. Edibility of meat not affected.



Tularemia: Characteristic appearance of liver of rabbit affected with tularemia. This condition is very rarely seen in native New York State rabbits.

A Comparison of the Diseases and Parasites Commonly Encountered in the Cottontail

DISEASE OR PARASITE	COMMON NAME	ORGANS INVOLVED	APPEARANCE	STATUS OF MEAT
Tularemia	Tularemia	Liver, spleen	Liver and spleen swollen, covered with white necrotic areas of pin head size	Not safe to handle, meat unfit
Cysticercus	Dog tape worm	Liver, body cavity	White glistening bladders $\frac{1}{8}$ " to $\frac{1}{4}$ " diameter	Safe
Cittotaenia	Rabbit tape worm	Intestine, body cavity by accident	White serrate ribbon	Safe
Cuterebra	Rabbit grub	Skin, particularly neck region	Large grub—covered with short black bristles	Safe—cut out areas around grub
Shope's fibroma	Rabbit wart	Head, feet, occasionally body	Hairless, pink colored wart, $\frac{1}{4}$ " to over 1" in diameter	Safe

has reported 44 human cases, of which only about a third have been traced to rabbits taken in the wild. Most of these were shot in counties which have histories of heavy stocking with rabbits imported from mid-western states. It is highly probable that tularemia has also been imported. Therefore, in light of the possibility of establishing new sources of tularemia, any future importations should be very carefully considered. *On the other hand it would appear that the possibility of contracting the disease from our native cottontails is very slight.*

How to recognize and avoid possible infected animals? In the advanced stages of tularemia the animal will not readily flush from cover. If it does run it may stagger a few yards, stop and even fall over on its face. Do not handle such an animal, but bury or cover the carcass with rocks to prevent scavenging animals from feeding on it. If, in dressing your rabbits, you should find an animal with a liver thickly studded with tiny, whitish miniature discolorations and one in which the liver and spleen are swollen, wash your hands with strong soap and rinse in disinfectant. Send this rabbit express collect to the Game Pathologist, Wildlife Research Laboratory, Delmar.

Dog tape worm

The larva of this parasite (*Cysticercus pisiformis*) has been found in the body cavity of about 80 per cent of rabbits examined in New York State. They have little adverse effect on the rabbit and, because they are not found in its muscle tissues, none on its edibility. These parasites appear as white, glistening bladders or as white trails on the liver; or they may be found on the coils of the intestine. The white spots and trails left by these parasites often confuse persons who are concerned about tularemia. A comparison

of the illustrations for tularemia and dog tape worm will show quite a distinctive difference.

A word of caution: Do not feed the entrails of the rabbit, particularly the liver, to your dog or leave them (or the dead rabbit) where dogs can find them. The adult worm which will develop from the larva eaten by your dog will of course have an adverse effect upon the dog and will aid in the further spread of the parasite.

This parasite probably accounts for over 90 per cent of the useless waste of excellent meat. In properly dressing the rabbit all larvae are removed, leaving only a clean rabbit carcass.

Rabbit tape worm

This parasite (*Cittotaenia variabilis*) of the rabbit is normally found in the intestine. However, it may escape through holes made in the intestine by shot and be seen by the hunter while dressing his game. Rabbits become infected by eating small infected mites occurring on plants. This tape worm is not infectious to humans or dogs and has no appreciable debilitating effect on the rabbit. Since it does not invade the flesh of the rabbit it can have no effect on the edibility of the meat.

Rabbit bot

This parasite, commonly called a grub or warble, is the larval form of a bot fly (*Cuterebra cuniculi*). When found, this unpleasant looking grub is located usually in the neck region, occasionally in the groin region, and infrequently elsewhere. It lies just under the skin, causing a very pronounced bulge; this black bot is about one inch long and five-eighths of an inch wide, and has a segmented, "spiny" appearance. More than one may

be found on a rabbit, but they are found infrequently during the hunting season. As in the case of the dog tape worm, the rabbit serves only as a mid-way station in the development of the fly from egg to adult. Although unpleasant in appearance the grubs do not impair the food qualities of the meat except at the point of contact. Simply cut away the small area of flesh in contact with the bot and the rest is unaffected.

Shope's fibroma

Occasionally rabbits taken during the hunting season are found to have wart-like protuberances on the skin. These are usually soft and pinkish in color, and most commonly occur on the feet and face. These skin tumors are caused by a virus and are spread by the bites of mosquitoes and possibly mites. It is a close but non-lethal relative of the virus which has all but wiped out the European rabbit populations in Australia and Europe. These warts are more prevalent in some years than in others. A minor outbreak was noted near Baldwinville in the fall of 1953, when nearly 9 per cent of 174 rabbits live-trapped were found to have one or more warts. Unless the warts become so numerous around the eyes as to close the eyelids and impair vision they have no harmful effect on the rabbits. Such warts are removed with the skin and again have no effect on the quality of the meat for food.

The various disease conditions presented above may at first examination look rather confusing but a careful comparison will show that each disease condition is quite different. The table below summarizes the diseases and gives a rapid means of comparison.

—JAMES R. REILLY, JOSEPH DELL,
Game Pathologist,
Game Research Investigator

Chazy Lake

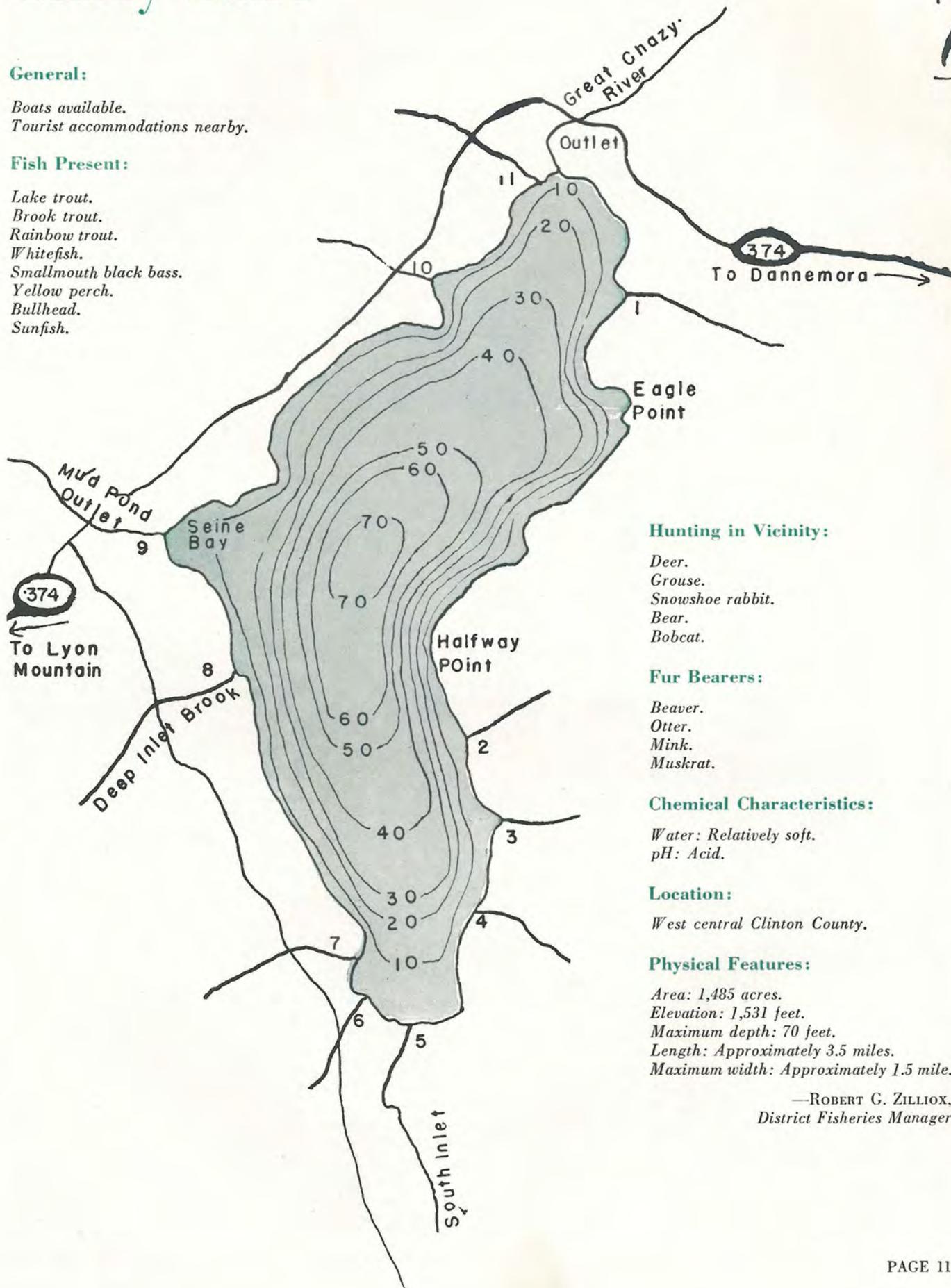


General:

Boats available.
Tourist accommodations nearby.

Fish Present:

Lake trout.
Brook trout.
Rainbow trout.
Whitefish.
Smallmouth black bass.
Yellow perch.
Bullhead.
Sunfish.



Hunting in Vicinity:

Deer.
Grouse.
Snowshoe rabbit.
Bear.
Bobcat.

Fur Bearers:

Beaver.
Otter.
Mink.
Muskrat.

Chemical Characteristics:

Water: Relatively soft.
pH: Acid.

Location:

West central Clinton County.

Physical Features:

Area: 1,485 acres.
Elevation: 1,531 feet.
Maximum depth: 70 feet.
Length: Approximately 3.5 miles.
Maximum width: Approximately 1.5 mile.

—ROBERT G. ZILLOX,
District Fisheries Manager

The Great Lakes Fisheries

SEPTEMBER 10, 1954 may well become a date to be remembered by all who are interested in the fisheries of Lakes Erie and Ontario. For on that date representatives of the United States and Canada, meeting in Washington, signed a Treaty on Great Lakes Fisheries. This is the most recent and perhaps the most promising development in the long effort to obtain co-operative action on the part of the United States and Canada to maintain and develop the fisheries of the Great Lakes.

A little background information will serve to illustrate the importance of this development. The Great Lakes have been important as food producers since the area was first inhabited by man. The fishing industry was the first to develop when white men settled the region, and down through the years these lakes, despite the growth in population and the attendant increase in intensity of the fishery, have continued to supply the American and Canadian people with high quality protein in large quantities.

For example, in 1952 the New York waters of Lake Erie yielded over 500,000 pounds of fish valued at about \$170,000 wholesale. Fifteen species of fish contributed to this catch, of which whitefish and blue pike were by far the most important. The commercial catch of food fish in the New York waters of Lake Ontario in 1952 was 667,000 pounds valued at about \$106,000 wholesale. Blue pike accounted for 70 per cent of



Gill netter leaves port at dawn

the catch. Bullheads, ciscoes, whitefish, eels and suckers followed in importance.

While commercial fishing has a long history in the Great Lakes, a relatively new fishery, namely the sport fishery, has seen its great development only in recent years. Detailed information is lacking on the extent of this sport fishery, but it is certain that it is both important and that it will continue to grow at a

fast rate. The smallmouth bass fishery of eastern Lake Ontario and the St. Lawrence River has long been an intensive and famous one. Nevertheless, it continues to attract more fishermen each year. Moreover, there is a growing in-



Powered net puller swings out

terest in fishing for pike, walleyes, perch and bullheads in the bays and shore areas of Ontario, and an increasing sport fishery for blue pike is developing rapidly in the western end of the lake.

Blue pike, smallmouth and walleyes are the species most sought after by sport fishermen in the New York waters of Lake Erie. Here, however, there appears to be considerable room for expansion, since the smallmouth bass population, for example, has increased in recent years to the point where it was deemed sound to encourage greater harvest. To accomplish this, legislation was enacted this year to open the bass season in Lake Erie 15 days earlier than heretofore.

What the future may hold for the commercial fisheries of the Great Lakes is difficult to predict, although there is room for expansion in the harvest of certain species such as smelt, white bass, alewives and ling which are often present in tremendous numbers (perhaps to the detriment of more desirable species) and which are only harvested in limited amounts under present market conditions. There can be no doubt, however, that the sport fishing will in the years ahead assume an even greater part in the overall picture of the Great Lakes fisheries.

Almost as old as intensive fishing in these lakes is the recognition that their management poses a unique problem because of divided ownership. All of the lakes except Michigan are shared with Canada, and all except Ontario and Huron are shared by two or more states. New York and the Province of Ontario participate in the fishing in Lake Ontario, while New York, Pennsylvania, Ohio, Michigan and the Province of Ontario

participate in the fishing in Lake Erie. This being the situation, a number of stocks of fish are shared by people from several states and the Province of Ontario. Consequently, it is not possible for one state or province by itself to obtain the information essential to better development of these fisheries—or to manage them effectively. The only practical solution to this problem—co-operative action of all the interested parties—was recognized as early as 1875, when the State of Michigan urged the adoption of uniform regulations.

In the ensuing years many interstate and international meetings and discussions were held to consider the problems of the Great Lakes fisheries. While progress was made, the basic problem remained because there was no effective means of establishing truly co-operative action. This led to the establishment in 1940 of the International Board of Inquiry for the Great Lakes Fisheries to consider and recommend measures for the conservation of this resource. The Board of



Hauling net on turntable

Inquiry submitted its report in 1942. A Great Lakes Fisheries Treaty, incorporating the recommendations of the Board of Inquiry and providing for the establishment of an International Commission for the Great Lakes Fisheries—with authority to develop specific research programs and a comprehensive plan for the management of the fishery resources, and to make necessary regulations—was signed in 1946. But this treaty was not ratified by the United States because of the opposition of one or two states and some fishermen.

The failure of ratification of the 1946 treaty might seem to have put an end to this approach. But a continuation and intensification of the conservation problems on some of the fisheries of the Great Lakes led to a renewed demand from many people of that area for a review



Catch entangled in net

of the situation and negotiation of a new treaty. The new treaty is the result of several years' consideration required to develop an agreement which would accomplish the desired objectives and would be likely to be acceptable to the governments and people involved.

The 1954 treaty provides for joint action by the United States and Canada in fishery research and in control of the sea lamprey in the Great Lakes. To carry out this work both governments agree to establish a Great Lakes Fishery Commission of three appointees from each country.

The duties of the Commission include the development of research programs on the Great Lakes fisheries and the development and carrying out of programs for control of the lamprey. The Commission may recommend to the governments, on the basis of research findings, measures to make possible the maximum sustained yield from this common resource.

The Commission will have, however, no regulatory powers; authority to regulate the fisheries will remain in the hands of the states—as at present. In the performance of its functions the Commission will, wherever feasible, make use of the existing state, provincial and federal agencies in each country.

The treaty, with an initial duration of ten years, will become effective upon ratification by both countries. The United

States Senate will probably consider the treaty during the special session in November or early in its 1955 session. If the treaty is ratified, the next step will be for the Congress to enact such legislation as may be necessary to give effect to the provisions of the treaty.



Fish in one box, net in other



Flag buoy marks net reset point



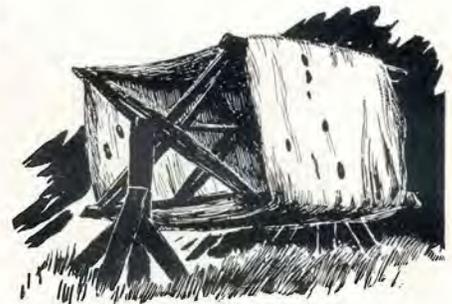
Catch to fish house for shipping

The New York State Conservation Department endorsed the 1946 treaty as the most effective method for obtaining the co-operative action needed to maintain and develop the Great Lakes Fisheries. The 1954 treaty is much more limited in scope, but *does* establish a basis for joint

action and *does* put into effect the part of the former treaty dealing with research. Accordingly, the Department feels that the new treaty is an important development and should lead to significant benefits in the years ahead.

There is a sound reason for this feeling. Treaties have been employed in the past (and are being so employed even more today) to insure proper management of stocks of fish in the ocean which are shared by several countries. The accomplishments of the treaties which have been in effect long enough to be evaluated, such as those concerned with the Pacific halibut and sockeye salmon, have conclusively demonstrated their soundness and value.

It should be emphasized that the workings and accomplishments of an International Commission, if and when established, will be of equal interest to commercial fishermen, sport fishermen and all groups having a stake in greater development of the Great Lakes fisheries. Research which may point the way to greater sustained production of lake trout, blue pike and perch would obviously be of benefit to both sport and commercial fishermen. Equally important, however, is the fact that more information on almost any Great Lakes' problems will have wide application because of the interrelationship of the many species in these lakes.



Nets dry on huge wooden reels

Incidentally, the correct name of the new treaty is the Convention on Great Lakes Fisheries. The word treaty has been used throughout this discussion because it was felt that it would be better understood. But whether convention or treaty, it may well mark the beginning of a new era in the development of Great Lakes fisheries, a tremendously valuable natural resource in which so many people and so many governments share a common interest.

—W. MASON LAWRENCE,
Chief, Bureau of Fish,
N. Y. S. Conservation Dept.



Extracting catch from net

How to Start a Fire



IN our last issue, we gave you a rather full account of what has been done and is being done to *stop* fires. We now apply the reverse twist, and tell you how to *start* them.

The reason for this was a letter recently received from Forest Ranger Randolph Kerr of Glenfield, in which he described an incident that occurred while he was on a canoe trip through the Fulton Chain this past summer. There had been three days and nights of steady rain, and near Axton, Ranger Kerr encountered a family of campers in real trouble. The man had not been able to start a camp fire, and he and his wife and children were cold and sick and hungry. Would the Ranger start a fire for them? He would, and did.

We suspect that there are a lot of people who find themselves in similar difficulties from time to time. So we sent a form letter to a few of the Department employees who enjoy reputations as experienced woodsmen, and put this proposition before them:

Suppose that you want to start a camp fire, for cooking or warmth or both; that conditions for starting such a fire are as adverse as could be imagined—prolonged rain, heavy snows, sleet storms, or what have you; that you have only one dry match (so you can't afford to fool around). How would you start a fire?

We feel that the answers to this questionnaire, considered all together, give a good deal of information. And there is enough variety so that you can suit this information to your own needs or local situation. As to the answers themselves, we begin with Solon Hyde, whose business in this Department is entirely at odds with the subject of this piece:

I would first make very careful preparation by cutting up a good supply of dry softwood (pine, if possible), prepare some fine kindling and shavings and get a good supply of birch bark. Then build a small lean-to (about 2 feet high) from some of the larger pieces of wood to shelter the fire from rain or snow. Kindle fire beneath this shelter with birch bark, fine kindling and dry wood. Be careful to strike that one match on a dry surface.

—**SOLON HYDE**, Superintendent,
Bureau of Forest Fire Control

1. Find some fat spruce. From it I would make some fine shavings.

2. Locate some birch curls from the under side of a leaning birch.

3. Cut a dead snag and chip out and split some dry inner wood.

4. Assemble all of the aforementioned material close at hand, protected from precipitation.

5. Pick a sheltered spot against a boulder, near a ledge, or in a hollow; clear away the duff and place fat spruce shavings in a pile; shelter match from wind with jacket if necessary and light fire; when started, add more fat spruce and curls.

—**RANDOLPH KERR**,
Forest Ranger, Glenfield

Be careful of that one dry match. One morning way back in, Hal. Burton, Sat. Eve. Post Writer, V. Peters, Albany printer, and yours truly peeped out from a pup tent with a northeaster in full swing. "No coffee today," sighed Burton. "We'll see," says I, as I rolled out of my blanket and donned boots and rain suit. After breaking off a big armful of small dead branches from pines and spruces, I cut down a dead balsam, cut it up, quartered the sticks and stacked them in the pup tent. Inside the tent I split the balsam into fine kindling. Next I whittled a big handful of long balsam shavings. Over the back of the fireplace I erected a small lean-to of forest litter to keep off the beating rain. Then I went to the tent, held the shavings (curled ends down) in my left hand, carefully lit them, laid them flaming against a backlog and between two side logs, and piled on the dead soft-wood twigs previously gathered. As these got going the fine split balsam was laid on, log cabin style. Had a roaring fire and hot coffee in jig time. Ask Peters. He knows. Be sure you can *whittle* long shavings. Whittling is a lost art. Birch bark sometimes is hard to find.

Just in case, carry on a woods trip an axe file and a small water tight tin full of burned linen. This is tinder. Fish from the brook a piece of quartz. Dig out a bird's nest from a woodpecker's hole, or a mouse nest from under an old log and have plenty of fine *split* dry wood handy. With stone and file strike a spark into the black linen tinder. It should glow quickly. Carefully move the glowing tinder into the nest and blow. When this

bursts into flame, put in fireplace and pile on split wood, log cabin style. Then there is the bow and drill method, with axe, knife and leather shoestring. Ask some Boy Scout to show you how.

—**A. T. SHOREY**

Assuming you have a knife: Find preferably white pine, with hemlock next best. Break off dead lower branch, and shave away wet outer wood. Then shave thin kindling shavings from dry inner wood. Cover pile of these shavings with the tips of dead, standing white pine branches. Have pile of progressively larger white pine twigs at hand for fuel. All taken from standing timber. This set-up should be made in a covered, sheltered place free from any chance of a gust of wind extinguishing the match. Feed very small pieces of fuel until fire picks up, then add larger wood.

—**HENRY BERNSTEIN**,
Game Protector, Phoenicia

The conditions you state are really tough and I feel I must make the comment that no one with woods experience would ever get caught without a supply of waterproof matches in the hollow of his gun stock. The butt plate can be removed with a knife—or if necessary by breaking the stock over a tree.

Being lost with only one match means that a person must first sit down quietly and get his nerves under control. Then, with a great deal of care select the under curls from a birch tree, and then the dead under branches that are still attached to a standing spruce. The next thing is to make a thorough search for fat spruce, which I would shave with my knife into fine splinters.

I would place a large piece of the birch bark in a sheltered place, take the powder from several of my shells and place it on top of the birch bark next the fat spruce and dry curls of bark. When the powder is lighted it will set the rest on fire and you will have a fire to which to add larger pieces of wood. The selection of the material and the order and way in

which it is put on one's fire makes the difference between having a fire or not.

The sparks from a dry cigarette lighter will also ignite the powder and can be used instead of a match.

—HOMER W. PRESTON,
Game Protector, Piseco

One match and a bad day: Find some natural shelter—a ledge, clump of trees or gully. Level off a spot by scraping away snow or wet litter. Gather a fist full of tinder. Birch or shredded cedar bark is the best; fine dead branches from a spruce or hemlock thicket are also good. If unavailable, split a dead dry limb or small log using material inside as shavings and kindling from the size of a match to a pencil gently placed on the tinder, tepee fashion or crisscross. You are ready for the worst ordeal—scratching that only match!

If no match, go Boy Scout with boot lace, bow and dry spindle with fuzed up tinder. If you are desperate and have a shotgun or rifle, *carefully* remove shot or ball, unravel dry wool from your sock or underwear. Lightly fill gun barrel, discharge where you can pick up this smoldering wadding. Use tinder, and fan or blow until you get fire.

—WILLIAM E. PETTY,
District Forester, Ray Brook

One match: Find a piece of fat spruce (often sticks up through 12" to 15" of snow). Can be used as a torch.

No match: Have gun; take out bullet, don't spill powder, pack with dry cloth cut out of pocket lining or any other dry spot. Have dry material ready for fire; now shoot wadding against tree or rock. Pick up wadding. Put in prepared material, start blowing.

Should be faster than rubbing two sticks together.

—MOSES LEONARD,
Forest Ranger, Raquette Lake

There is nearly always a birch tree near where you start a fire, and by peeling off outside bark it's always dry inside. Then find dry dead limbs still on tree of softwood in sheltered spot for kindling. Put a couple of small logs on snow near a stone, on opposite side from wind. (I always dip matches in parafine and carry them in a dry tin box.)

If I only had one match and lot of snow or woods wet: First I find a sheltered spot near a large stone on opposite side from wind. I scoop out snow to ground, and lay a couple or more logs (3 or 4 inches through) on ground. Then find a birch tree, peel off some bark. The bark separates; peel off outside if wet. Bunch it in a ball. Then you can always find some dry dead soft wood limbs still on trees in

shelter. Break them up first, put them on the bark, lay large limbs on brush across one way, then across ends running the other way. Say a prayer and light the match.

—JOHN LONGWARE, *Forest Ranger,*
Elizabethtown (retired)

My idea of starting a fire in the woods with only one match would be to collect a quantity of dead hard wood and stand

when ignited will generate enough heat to dry out and set afire small dead twigs, pine cones, pieces of dead bark which can gradually be built into a fire that will burn wet wood.

—MERRITT W. ROE,
Game Protector, Catskill

Shred green birch bark into long narrow strips and pile loosely on platform of logs if snow is deep. Dig out pitchy



it up endways to let excess moisture drain off. Dig out a hole beside a fallen log, if possible, then lay some spruce or balsam boughs on the hole. Collect some yellow or white birch bark, some fatwood and some dry dead boughs found on the lower parts of spruce, balsam or tamarack trees and break them up small. Light your bark and fatwood, pile on the twigs, then the stacked wood. It really burns.

—HALSEY PAGE,
Forest Ranger, Speculator

Use birch bark, either white or yellow for a starter. This will burn even if soaked. Usually dry material can be found in standing hollow trees or stumps. Often strips of dry wood can be pulled off the inside of the trees or stumps by hand. If you have shotgun or rifle shells, the powder from these and the paper shotgun shell are a big help.

—ED. MAUNTON,
Conservation Aide, Clarksville

The most important thing in starting any fire is in obtaining dry tinder. This could be the inner bark of a white birch tree, the pitch from a pine, hemlock or spruce tree, nests of field mice, chipmunk nests and squirrels' nests. These are some of the available materials that are always found dry. Any of these materials

spruce roots from old stump or dry wood near center of standing stub. Shave several pieces fine but don't sever stick and place over bark. Ignite shaved sticks if no bark available.

No matches: Remove bullet from cartridge, sprinkle part of gunpowder over piece of dry cloth or mix with bark under shaved sticks. Place cartridge in gun and point muzzle at dry cloth or bark, and fire. Good luck!

—S. M. FARMER,
District Forester, Lake George

Under the hypothetical conditions stated, if no axe is available, then the dry material for a fire must be made up of dry twigs, a sliver of fat spruce or birch curls. Under icing conditions or prolonged rain followed by freezing (the most difficult situation I can imagine) they will be hard to come by. One searches for such material under overhanging ledges and openings under large stones. Birch curls under such conditions of exposure will be bad risks for a one match fire.

However, I am going to assume that you are equipped with a hunting axe or a regular axe and a jackknife, and recommend the following procedures:

1. Don't get panicky and start shivering.
2. Search for and find suitable dry ma-

terial for starting a fire, such as, (a) fat spruce (spruce impregnated with pitch as a result of being scarred or blazed; if found, it makes fine shavings). (b) Fat pine—same. (c) Dry cedar; make kindlings, use inside sticks and make shavings. (d) Dry pine shavings; prepare as for cedar. (e) From inside of most any dry tree, make kindlings and shavings.

3. Provide shelter to shield the match from wind and moisture.

4. Provide dry suitable place to strike match.

5. Finally light the match and pray.

Note: A good item to add to your equipment is a wax candle. Use your one match to light it in a protected place, and then use the candle to start your fire.

—AL. DAVIS, *Forest Surveyor*



Find a piece of fat spruce or fat pine (sometimes called fatlighter); select or create a sheltered area and there is no problem, providing one's physical or mental state has not become "adverse" with weather conditions. Fat spruce will burn like a piece of wood dipped in kerosene. (It makes an excellent torch for light.) A good stunt which I have practiced for years is to carry a stub of candle in a pocket or the bottom of the pack-basket.

It is possible for one to reach a point where he is so miserable from cold that he could not start a fire with any number of matches. I remember an incident on the Sentinel Range many years ago, when I would have frozen if Forest Surveyors Lem. Merrill and Al. Davis, discovering my plight, had not built a fire and thawed me out, when I was beyond doing it for myself.

—EDWARD G. WEST,
Forest Surveyor, Allaban

The method used would depend upon (1) whether an axe and saw is available, and (2) kind of fuel available. In rock ledge areas dry leaves or needles are often found in protected spots even during periods of heavy precipitation. Shreds or birch bark make an excellent starter fuel where available. Dry wood secured from the center portion of a dead log or stump, preferably cedar or white pine, can be obtained if a saw or axe is available. Fine shavings made from such wood make good starter fuel. In any case, if there is precipitation a sheltered location must be found.

—CLARENCE PETTY,
District Ranger, Parishville

First I would strip a supply of very light or thin yellow birch bark, gather a supply of very small branches of dead hemlock, (as these will burn even though wet); get plenty of heavier fuel (wood); then I would arrange a wind break with tent canvass (or use my jacket) to protect the lighted match and proceed to light the fire.

—MARCUS HINKLEY,
Game Protector, Narrowsburg

If I were in the woods after it had been raining for say, twenty-four hours, then turned to snow, and everything was covered with snow, and found I only had one match, but must have a fire to keep warm, I would look for some birch bark. After finding the bark I would go to the nearest spruce or balsam thicket where I would break off the small dry limbs from the trunks of these trees and pile them, teepee fashion over the birch bark. These small limbs are always dry and very easy to ignite. I would then get some larger limbs ready before lighting the bark as the small limbs burn very quickly. I would add these larger pieces until the fire was large enough to burn any kind of wood available.

—JOHN HICKEY,
Forest Ranger, Keene

If still raining, wait. Hunt up a sheltered place for the fire, out of wind, and clear snow away to bare ground. Be sure there's no snow overhead in trees to melt and quench your fire. Some dry kindling absolutely necessary, also the finer "makings." You'll need something perfectly dry to strike that precious match on—a dry stone from the under side of an up-turned root, or the inside surface of a hunk of bark from a big maple or pine. It's got to fire, or else! A lighter in working order better than one dry (?) match.

—AL. KING,
Forest Surveyor, Speculator (retired)

Shiners

THE production of a pound of beefsteak, fish, rabbit or similar "livestock" represents the consumption of at least several pounds of other food by the animal doing the eating. Everybody knows that cows eat grass. But what game fish eat has remained somewhat of a mystery, even though a large amount of nice-looking tackle, believed to imitate natural food, is cast hopefully in the general direction of the supposed dining tables of bass, pickerel, muskalonge or other desirable fish. Once in a while one of these wary fellows is thereby hoaxed. As he succumbs and gasps his last, maybe he thinks: "Must be something I ate."

Before making a final, fatal error in choice of food a game fish must have made a great number of nourishing selections from a well-supplied aquatic larder, and many pounds of tomorrow's big ones swim in our waters today in the form of several times this poundage of small forage fish. The fact is that the great importance of such non-game fish tends to be overlooked. We have all these little fish quietly sacrificing their lives for the production of big fish—with little recognition given them for the vital role they play.

One of the biggest families of little fish is the minnow family, *Cyprinidae*. Although by no means consistent in regard to small size (the carp being a member) this group consists of a wide variety of finny forage, including what are commonly called "shiners," "dace" and "chubs."

The "shiners" include many species, more than we can illustrate in one number of THE CONSERVATIONIST, though we present in this issue the most important ones. They are mostly shiny, with large scales that come off easily. Some are silvery throughout life, while others (such as the common or red-fin shiner) have brilliantly-colored males during the breeding season in spring or early summer. Many species are partially herbivorous, their long and efficient digestive tracts being suited to utilization of algae and other aquatic plant life. Shiners thereby comprise a vitally important link in the production of desirable game fish—which are mainly carnivorous.

Great quantities of shiners are sold as bait, thus contributing to an industry netting many thousands of dollars. Just as the principal food which goes into beef production is pasture, so the greatest value of the shiner resource is the direct forage provided for game fish in some millions of acres of aquatic pastures in New York.

—JOHN R. GREELEY



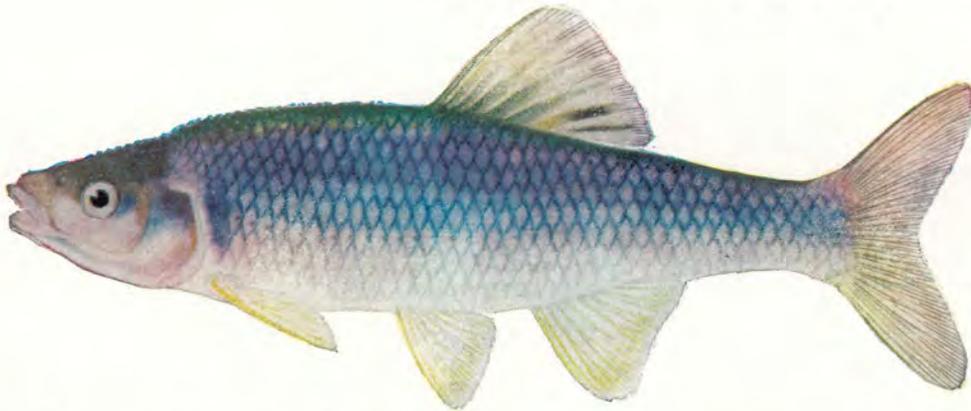
SPOT-TAILED MINNOW, *Notropis hudsonius* (Clinton)
From male $3\frac{1}{4}$ inches long

This is truly a distinctive New York shiner, for it was named for the Hudson River by a former Governor of the State, De Witt Clinton. About the right size for bass bait, the spot-tail is well known to many bait dealers and anglers. Inhabiting large waters across the State, from Lake Erie to Lake Champlain, this shiner is abundant and of great value as natural forage for warm-water game fish. A gravel bottom is the favorite spawning area and schools of spawning spot-tails run up tributary creeks in late spring.



EMERALD MINNOW, *Notropis atherinoides* Rafinesque
From female $2\frac{13}{16}$ inches long

This species is often known as lake shiner and inhabits large lakes. In Lake Erie, its numbers are so great that no one has even attempted to figure out how many miles they would reach if laid end to end. Blue pike and other predatory fish are more interested in laying them side by side in their own stomachs, thereby producing many tons of food and game fish. These slender shiners are a ready source of bait at all times of the year, and in the winter they are in demand for ice fishing in Oneida Lake and the Lake Erie region.



SATIN-FIN MINNOW, *Notropis whipplii* (Girard)
Breeding colors from male $4\frac{1}{8}$ inches long

A black blotch on dorsal fin will usually identify this little shiner. Breeding males are iridescent with purple and greenish hues suggesting the color scheme of a peacock tail feather. Only occasionally found in bait pails, this shiner is more valuable as a wild forage for bass and other warm-water game fish in many streams and lakes across the entire State.

Opossum

Weight, 4-14 lbs. A night-loving animal of the open woods. Increasing in numbers and extending its range in New York. It is the only marsupial or pouched mammal in North America. The young, about the size of a honey bee, are born after a gestation period of about 12 days, spend about 2 months in the pouch. Although 18 young may be born, seldom more than 7 or 8 survive. Two litters are born between January and September.

The hand-like feet and prehensile tail adapt this mammal well for an arboreal or tree life. The coarse fur brings little on the market, 25 cents being a good average price, and is used mainly for trim on coats. The meat, after the excess fat is removed, is quite good when roasted.



New York FUR- BEARERS

Red fox

Weight, 6-15 lbs. With increased agricultural activities and the subsequent increase of mice, the red fox has increased. An animal of field, brush country, and deep woods, the fox makes its den in a burrow—perhaps an old woodchuck burrow. There the young, 4 to 10, are born in late March or early April after 51 days gestation. The family group disbands in August.

Food consists of mice, rabbits, birds, carrion, apples, berries, corn, woodchucks, poultry, snakes. But mice are by far the main item. While the fox has increased in popularity as a "hunt" animal in this country, the present low value of its pelt offers no inducement for trapping; a good prime pelt may bring as much as 75 cents.

Long-tailed weasel

Weight, 3-9 ozs. This medium-sized weasel is found in rocky areas of brush and cut-over forests. While an agile climber, it seems to be more at home on the ground where it makes its home. The 4 to 8 young are born in mid-April after a gestation period of about 280 days.

Food consists of rabbits, field mice, rats, chipmunks, small birds and other animal matter. They may on rare occasions do considerable damage to a flock of poultry. The white pelage is acquired about November and lost during March. A good all brown or all white pelt will bring about 75 cents.

Marten

Weight, 1½-4 lbs. Once a common fur bearer in New York, the marten has been trapped almost to extinction, being found at present only in the Adirondacks. An arboreal member of the weasel family, it prefers the spruce and balsam forests where it feeds extensively on red squirrels. The 3 to 5 young are born about the

middle of April after a gestation of 31 to 33 weeks.

The fur is very fine and highly priced. At present there is no open season on this fur bearer in New York.

Fisher

Weight, 5-12 lbs. A large, dark, tree-climbing weasel, preferring the wilder spruce forests of the Adirondacks. One to 4 young are born in a tree cavity or rock den in late April after a gestation period of 343 to 355 days.

The fisher seldom, if ever, takes fish. One of its principal foods is the porcupine which it seems to be able to handle with apparent safety. Other prey includes squirrels, marten, foxes, mice and rabbits.

At one time the fisher was extremely rare and the season was closed, but in recent years there has been a recovery in their numbers and a limited season is allowed. The price for an average pelt is about \$25.

Short-tailed weasel

Weight, 1½-3½ ozs. A small weasel of the woodland or brushy areas, preferring rocky ledges, stone piles or hedgerows. Its small size, coloration, and secretive habits make it difficult to see, even where common. The young, 4 to 9 in number, are born in mid-April after about 10 months gestation. The nests are often in hollow logs, rock piles or chipmunk burrows.

The color change from summer brown to the winter "ermine" or white usually occurs during November, and during March for the return to the brown; the time varies somewhat but is not influenced by the presence or absence of snow.

Food consists mostly of mice, chipmunks and other rodents. Greatest value of this mammal is perhaps in rodent control, since a good skin will bring only 50-75 cents.



Raccoon

Weight, 12-16 lbs. This ring-tailed climber is well distributed wherever woods afford food and hollow den trees. The young, 3 to 6 in number, are born in early April after a gestation period of 63 days. The family group remains together until late fall. Food consists of frogs, crayfish, berries, corn and insects. When water is available the food may be washed before it is eaten.

A good prime pelt suitable for shearing will bring about \$3 this season. Some raccoon are taken by hunting with hounds at night. It is hoped that an increased demand for 'coon pelts will help control the present high population.



Mink

Weight, 1½-3 lbs. An animal of the stream banks and marshes, but may be found in the upland woods in winter. Fairly common in suitable locales, but seldom seen. The young, 4 to 8, are born in late April or May after a gestation of 42-44 days. Although normally nocturnal, family groups may sometimes be seen abroad during daylight hours until late summer.

Food consists of fish, frogs, mice, muskrats, rabbits, and whatever else it can find and capture. The fur is valuable and highly prized; a good skin averaging about \$15. Since only a small section of the back is used, it takes a large quantity of these pelts to make a mink coat.

River otter

Weight, 10-30 lbs. With its great swimming ability the otter spends much of its time on lakes and streams. The 2 to 3 young are born during April or May after a gestation period of 288 to 380 days.

Food consists of about 50 per cent fish and the remainder of the diet is crayfish and frogs. While capable of taking trout, these fish comprise only a small portion of their diet. The season on the otter, set annually by the Conservation Department, depends upon the current population. The price of a good pelt is around \$18.

Striped skunk

Weight, 4-10 lbs. A creature of hedge-rows, old fields and small woodlots, the aromatic skunk is well known and generally avoided. In an old woodchuck burrow or similar retreat the young, 4 to 7, are born about mid-April after a 51-53 day gestation period.

Food includes mice, insects, garbage, berries—in fact nearly everything edible and available. Although the odor is nauseous to man it does not bother the Great

Horned Owl which regularly preys upon the skunk. Foxes and bobcats will also kill them. Fur is worth about \$1 for a good prime black or half stripe pelt.

Grey fox

Weight, 7-13 lbs. This is a southern species that has moved into New York and done well. A good climber, it may go up a tree in the manner of a bear or jump from limb to limb with ease. More often, though, it frequents marshes and swamps. The 1-7 young are born in March or April after 53 to 63 days gestation.

Food is much the same as that of the red fox with a slightly higher proportion of game being taken. Mice, however, comprise the bulk of the diet. The pelt has little value, a good prime skin bringing about 25 cents.

Bobcat

Weight, 8-40 lbs. A wild cat that may be equally at home in the forests or the brushy swamps near large cities. In the den, a rock recess, the 2 to 4 young are born during April after a 50 day gestation period.

Food is mainly hares, rabbits, squirrels, mice, muskrats, grouse and occasionally deer, particularly when they can be run down in deep snow. The pelt is worth about 65 cents.



Beaver

Weight, 12-20 lbs. Large swimming mammal with a knack for engineering, often constructing large dams impounding successfully (too successfully, in some cases) millions of gallons of water. The dams are constructed of mud, sticks and grass. In the pond created by the dam, or in a natural body of water, the lodge

is built, the entrance below the ice line of the pond and the floor of the inner chamber above the water level. With a warm dry home and an escape port, all the beaver needs is food, preferably aspen which is collected and stored near his home. The young, 1-6, are born in April or May after about 3 months gestation. While aspen is the preferred food tree, the bark of maple, alder, willow, and others is eaten. In spring and summer succulent roots of lilies, duckweed, clover and alfalfa are eaten.

An average beaver pelt brings about \$18. It is only in recent years that we have had an open season on the beaver; at one time they were nearly exterminated. But restocking, suitable protection and seasons adjusted to their population level have reestablished them.

Muskrat

Weight, 1½-4 lbs. This large rodent is the most important fur bearer in New York State, being found in marshes, lakes, and along streams. The conspicuous, domed rush house is a familiar sight on many a farm marsh. The young, 1-9, are born after a 30 day gestation period, the first litter being born in April or May. Several litters are born each year.

Food consists of roots and stalks of cattails and other aquatic plants. They will also eat clover and alfalfa if these are available. The fresh water clam is eaten, but little other animal matter.

The muskrat is pursued not only by man for its pelt but also for food by foxes, owls, and particularly mink. The average pelt is worth about \$1.50.

Over the years, the trapping of fur bearers has achieved various degrees of emphasis and importance. As the wilderness was invaded the animals of the deep woods—the marten, the beaver and the fisher—were taken, and huge fortunes were built and many communities established in the process.

But with the opening of the forests, changed land use and a growing agricultural economy, a different group of animals became important. The muskrat and its nemesis, the mink, increased on the marshes which developed as a result of changed soil drainage. The mouse-eating skunks and foxes found farm lands to their liking and have increased in numbers. The result has been that the trapper of today is more often than not a farm boy or some professional man with a few hours to spare, while the old time professional trapper has virtually disappeared.

But the fur bearers are still with us. And they annually find their way from the woods, fields and marshes of the State to the fur markets of the world.

—H. WAYNE TRIMM



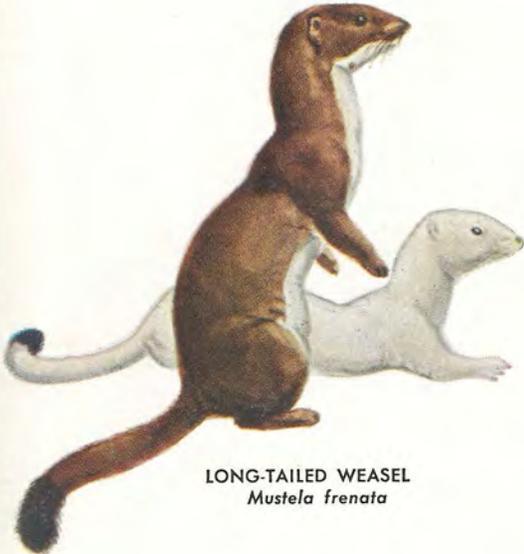
MARTEN (SABLE)
Martes americana



SHORT-TAILED WEASEL
Mustela erminea



MINK
Mustela vison



LONG-TAILED WEASEL
Mustela frenata



FISHER
Martes pennanti



RACCOON
Procyon lotor

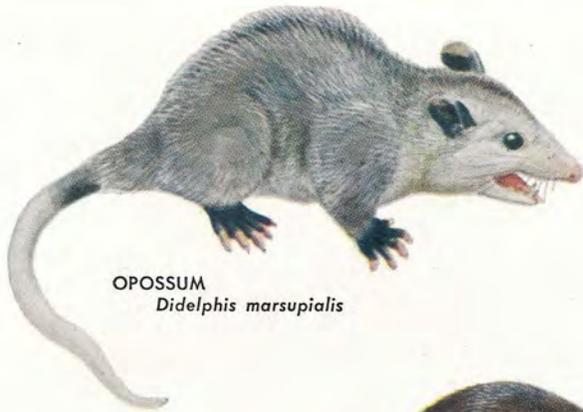


GREY FOX
Urocyon cinereoargenteus

RED FOX
Vulpes fulva



BOBCAT
Lynx rufus



OPOSSUM
Didelphis marsupialis



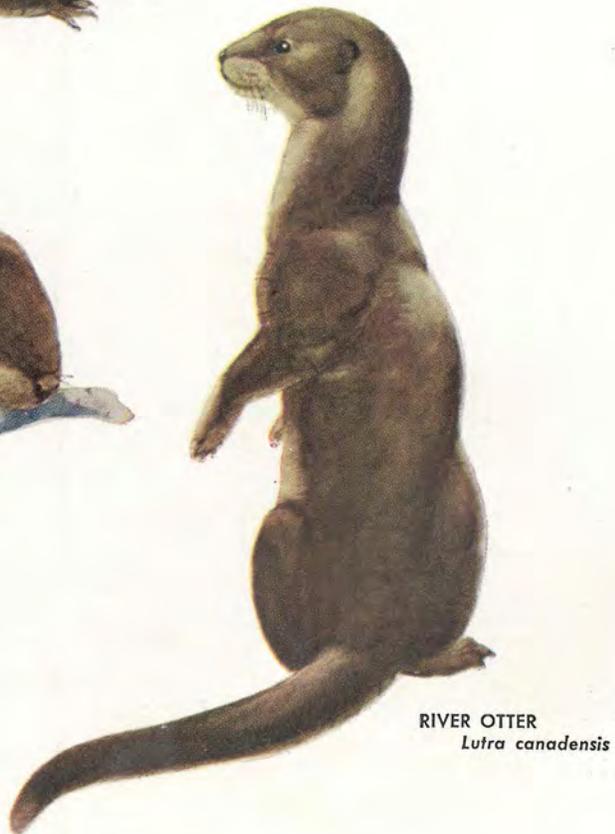
STRIPED SKUNK
Mephitis mephitis



MUSKRAT
Ondatra zibethicus



BEAVER
Castor canadensis



RIVER OTTER
Lutra canadensis

Catching Coyotes

The Scent Post Set

WE still have coyotes in New York. And indications are that they will be here for some time to come. While our records show the coyote is not increasing rapidly in New York, if at all, it is recognized that he has become a serious predator in areas of local infestation, and this how-to-do-it pictorial is prompted by letters requesting information on how to get rid of him. The sets shown here are the results of six years of experimental trapping by Ed. Maunton, a State Trapper.

To date, Maunton has caught 43 coyotes, 35 of which have been taken in the Newcomb (Essex County) area in traps which have been set out in the same spots during the last five years. Ed's job was to experiment with sets to find the best method of catching coyotes, to experiment with baits and scents, and to find out something about the habits of this animal. At Newcomb, Ed's trapping results are: 1948—5; 1950—3; 1951—8; 1952—6; 1953—4; 1954—9.

For those who wish to trap coyotes, the sets shown here are the best we know of. The sides of woodland trails and roads seem to be the best spots for *scent post sets*, where clogs are employed on long chains. For heavily wooded sections (conifers) which have clearings, the best set is the *bait hole set* where the trap is fastened with a post; trailing a coyote dragging a chain and clog is too difficult in such spots.

Instructions for making scent and bait will be sent to readers requesting the information. Unfortunately, the ingredients are too foul to print here.

—NICK DRAHOS, ED. MAUNTON

Left: Railroad beds, trails & old roads are good trapping grounds. Below: The 1954 coyote catch.





(1.) Spread a 3-foot square of canvas at your trap site. Stand on it and place the soil you dig up on it. Dig a semi-circular hole 4" deep, 5" wide and 12" long to fit a double long-springed No. 4 trap. Soil should be saved to re-cover the trap.

(2.) Place a clog (drag) in the hole. Clog should be about 10" long, made of rigid wire rod material $\frac{3}{8}$ " in diameter. Tips of clog should be 6" or so apart.

(3.) Lay the chain (10 feet or more) on top of the clog. Chain links should be about $\frac{1}{8}$ " thick.

(4.) Cover the chain and clog with soil. Trap pan should lie $\frac{1}{2}$ " below ground level with the trigger facing away from the approach of the coyote.

(5.) Next, tamp soil around the jaws solid enough to prevent the sinking of the soil around the trap during a rain. Be careful not to bind the trap jaws. Leave a hole under the pan so it can operate.

(6.) Place a screen or cloth on the trap. Screen should be large enough to fit the inside diameter of the trap jaws, allowing the jaws to close. Cut a slit in the screen to allow trigger to operate without interference.

(7.) Cover screen and rest of the trap with sifted soil to the level of the surrounding ground. Level uneven spots.

(8.) Finished trap area should look like this. Root small plants over the trap site and scatter debris around to make area blend with surroundings. Add scent to attract coyotes and scatter unused soil remaining on canvas. (Buried trap is outlined.)



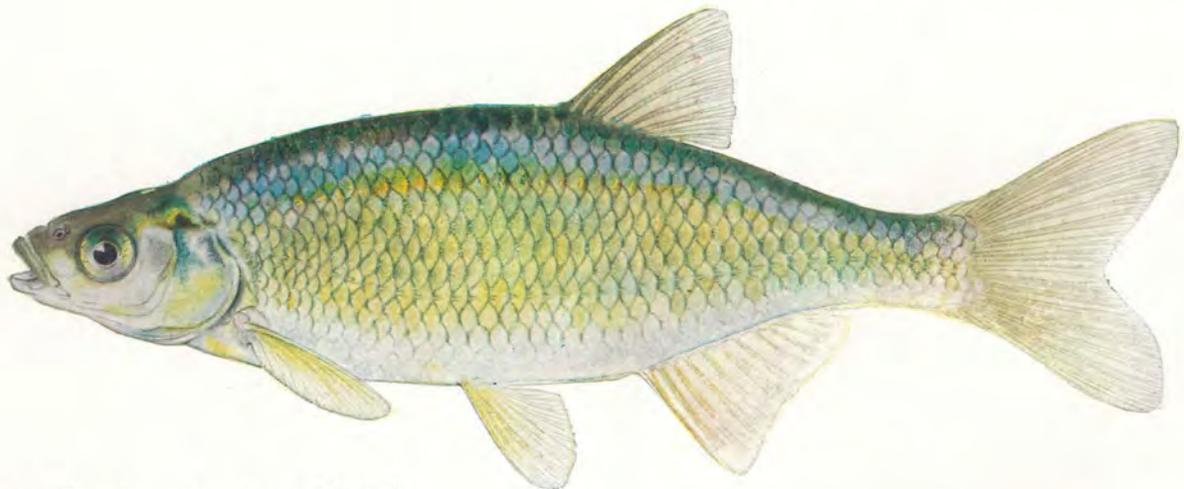


STRAW-COLORED MINNOW, *Notropis deliciosus stramineus* (Cope)
From female $2\frac{3}{8}$ inches long

This is a small shiner which exists in great numbers along sandy beaches of the Great Lakes, also many other large lakes and rivers. It might well have received the species name *deliciosus* from a black bass or wall-eyed pike because it is too small to be delicious as human food. Or, perhaps, the ichthyologist who first described it by this attractive name was thinking about its ultimate transformation into the more toothsome form of food and game fish. Being only about "perch bait"-size, this shiner is not one of the top flight bait minnows but is a highly important natural food fish.



FATHEAD MINNOW, *Pimephales promelas promelas* (Rafinesque)
From female $2\frac{1}{16}$ inches long



GOLDEN SHINER, *Notemigonus crysoleucas* (Mitchill)
From female 4 inches long

This is the best known shiner and is widely used as a live bait for pickerel, pike and bass. Big shiners, eight or ten inches long, are surprisingly good game fish on a fly and can be caught in many lakes. This species spawns on aquatic vegetation in ponds, lakes or sluggish streams. The large schools of young golden shiners help feed warm-water game fish in wild waters. To an increasing extent, farm fish ponds are being used for rearing this species for marketing as bait.

The Bait Fish Business

Darting or lurking in most of the waters of New York State is a host of small fishes, little known to the general public but very interesting and also beautiful in their own right, very important in the intricate pattern of the lives of larger fishes, and very valuable as the basic commodity in what has now become a big business—the business of raising and selling little fish so that you can use them to catch bigger ones. We will have more on this subject in future issues.

IN recent years it has become increasingly evident that bait dealers cannot supply the demands of fishermen for certain sizes and species of baitfishes at all times of the year. A generation ago, minnows for use as bait were easily obtained from lakes and streams, but with a tremendously increased number of fishermen these natural bodies of water now appear to be inadequate to supply angling needs. So the bait minnow business is now big business in New York.

In the South and Mid-West the demand for baitfishes has been met by the culture of minnows in artificial ponds, and the success of commercial minnow producers in such areas has led the New York State Conservation Department, in co-operation with Cornell University, to explore the possibilities of producing bait in New York ponds.

Ponds stocked by the Farm Pond Research Unit at Cornell University in 1953 have demonstrated that several of our native baitfishes can be successfully raised in farm ponds. Several years' data must accumulate before many of the problems of bait pond management can be solved and the financial returns from bait culture determined. However, for those pioneering individuals who have decided to build bait ponds a few words of advice are offered based upon preliminary data from New York ponds and published information from other northern states.

Bait pond construction

Properly constructed ponds are essential to success in any bait-raising venture. Farm ponds, which are becoming a conspicuous feature of the New York landscape, are suitable for bait raising on a small scale. To simplify harvesting, farm ponds should have a surface area of less than one acre; for those who want to grow only enough bait for their own use a pond 45 feet by 45 feet is sufficiently large. The depth of water required in a bait pond is governed largely by the danger of oxygen depletion during

periods of ice cover. Ponds with a large spring flow or a controlled water supply may be satisfactory if the maximum depth is only four feet, but those fed by run-off water should have a maximum depth of at least six feet for holding minnows over winter. A few extra dollars spent in smoothing the bottom of the pond and removing obstructions will pay dividends when it comes time to harvest the crop; hauling a seine full of rocks and refuse benefits neither the net nor the net operator.

Most farm ponds, although suitable for bait culture, lack one valuable feature—a permanent water supply. A continuous flow of water through the ponds is neither necessary nor desirable; however, enough water to maintain the ponds at a fixed level and to fill them whenever necessary will simplify bait culture operations. Springs, a stream, or a large reservoir pond may furnish a satisfactory supply of water. In many respects a bait hatchery is designed like a hatchery for game fish, and many valuable ideas on construction can be gained through a visit to some of the hatcheries operated by the Conservation Department.

Kinds of minnows to raise

Success in minnow propagation requires choice of the right species of fish. Over most of New York the golden shiner, fathead minnow and common sucker are the most practical to raise. Preliminary studies indicate the silvery minnow (*Hybognathus nuchalis*) may also be suitable for propagation in New York. Bait producers will find it necessary to raise at least two of the above species of minnows in order to have bait minnows of saleable sizes throughout the angling season. Golden shiners of bass-size (three to four inches long) and pike-size (four inches and over) are in demand throughout the year, but shiners less than three inches long cannot be economically seined and transported in mid-summer. Suckers grow rapidly and are valued as a hardy pike bait which can be handled any time during the fish-

ing season. The demand for hardy summer perch bait (two to three inches) can be met by raising fathead minnows. When only a single pond is available for minnow raising, the local demand and bait prices will usually determine the species to raise. A combination of the above species in a single pond is not recommended. Needless to say, the presence of game fish in a bait pond results in a very low yield of minnows.

It is not possible to recommend stocking rates and other management practices which are universally applicable. Development of the most efficient methods for operating bait ponds requires much experimentation by the individual pond owner. It is hoped that the results of preliminary research by the Farm Pond Research Unit, together with a knowledge of the requirements of each bait species, will help the pond owner to produce a saleable crop of minnows from the outset.

Golden shiner

The golden shiner is popular with both fishermen and bait dealers; it spawns readily in ponds and reaches a size sufficient for bass and pike bait. For these reasons it is one of the best species of minnows to raise commercially for bait in New York. Golden shiners over three inches in length can be seined, transported, and sold even in warm weather if treated with care. Smaller shiners tend to lose scales and become fungused when handled during the summer, and they cannot be considered a good perch bait. Consequently, golden shiner ponds will generally prove most profitable if managed for the production of bass-size bait.

Stocked at rates of 250 to 500 adults per surface acre of pond, golden shiners will produce as many young as can be reared to a saleable size in the pond. The initial stock may be purchased from bait dealers or seined from natural waters. Brood stock should be over four inches in length and free of external parasites. In ponds, spawning begins in May and continues into late August. The

slightly adhesive eggs are attached to filamentous algae, pond weeds, and trash. In new ponds, lacking any vegetation, straw or similar material scattered along the shore will provide suitable spawning sites.

By September of the first year the pond should contain shiners ranging from one to three and one-half inches in length. It is desirable that the bait producer start grading and removing the bass-size shiners as soon as sufficient numbers are present. In this way, the fastest growing fish will be removed, leaving more food for the smaller ones. Generally only a small proportion of the first year's hatch will reach bass-size by fall. The majority of the minnows must be overwintered in the pond for further growth the following year.

A large proportion of the saleable golden shiners should be removed in the following spring or early summer. This harvest will assure sufficient food and space for good survival and growth of the second year's hatch. During late summer and fall additional shiners can be removed as they grow to bass-size. A properly managed and fertilized golden shiner pond can be expected to produce 20,000 to 30,000 bass-size shiners per acre during the second growing season following stocking.

Where several ponds are available for raising golden shiners, perch-size shiners may be removed from ponds containing adult minnows in the fall or early spring and transferred to rearing ponds. Restocked at rates of not over 50,000 per acre, these shiners will reach bass-size during the summer following stocking. The principal advantage in transferring the young shiners of perch-size to other ponds is that these fish, when harvested for sale, are fairly uniform in length and need not be graded at this time.

Fathead minnow

Few New York bait dealers are familiar with the fathead minnow, which is found in only a few of our lakes and streams. But the fatheads are propagated extensively in the South and appear equally well suited for bait culture in New York. This species will reach a maximum length of about three and one-half inches in this State. A stocking rate of approximately 1,000 adults per acre is recommended. The spawning period is similar to that of the golden shiner. The eggs are attached to the undersides of rocks, boards and plant leaves where they are zealously guarded by a male. To assure sufficient spawning sites, floating boards should be attached at intervals along a wire stretched across the pond. The fathead minnow normally

reaches sexual maturity one year after hatching.

Brood stock usually must be purchased from established bait producers. A list of individuals who are able to furnish fathead stock is available through the Farm Pond Research Unit at Cornell University, Ithaca.

Where a market exists for a hardy summer perch bait the fathead minnow is the logical species to raise. In many areas the larger fatheads will be readily accepted as a small bass-size minnow. With reasonable care fathead minnows can be seined and transported without loss in the hottest weather. Young fatheads hatched early in the spring will reach a length of two inches by late August. Fatheads have a short life span and relatively few reach an age of two years; hence the harvest of yearlings after they have spawned during their second summer should be as complete as possible to forestall excessive natural mortality and to provide food for the growth of the remaining small minnows of the current year's hatch.

Silvery minnow

The silvery minnow is frequently seined in large numbers along Lake Ontario and a few other large lakes in New York. Adults (individuals over three and one-half inches) should be stocked in ponds at a rate of 1,000 per acre. Spawning occurs early in the spring, all of the mature fish spawning within a period of a few weeks. In selecting brood stock precautions should be taken to assure that the correct species is obtained. Silvery minnows are frequently called buckeyes or lake chubs, but these same terms are applied to other species as well.

Young-of-the-year silvery minnows should average two and one-half inches by fall and reach a length of three and one-half to four inches the following summer in properly stocked ponds. Harvesting should begin as soon as sufficient numbers are of bass-size. Although silvery minnows are not as tolerant to handling as fatheads, they can be sold in warm weather without difficulty if treated with care.

Common sucker

The common sucker is the only bait fish tested in New York ponds which will consistently reach a length of over four inches in one year. Suckers rarely spawn in ponds and must be stocked as eyed eggs or fry. Many bait dealers will find the advantages of a dependable supply of pike minnows justifies the labor involved in collecting and hatching eggs.

Eggs and milt are usually removed from suckers captured on their spawning run, and the fertilized eggs are incubated in running water. For small operations, the necessary flow of water can be supplied by siphoning water over the pond dike into suitable incubating containers. Details of the taking and hatching of sucker eggs are found in Circular 12 of the U. S. Fish and Wildlife Service entitled "Propagation of Minnows and Other Bait Species" available from the Superintendent of Documents, Washington 25, D. C. (price 40¢).

In ponds where fertilization is planned, 50,000 to 100,000 sucker fry per acre should be stocked. Because suckers derived from the same planting of fry grow at different rates, there will be bait in the pond ranging from two to four inches in length by mid-August. The pond operator may net and remove bass-size suckers at this time, leaving the remainder of the population to reach pike-size the following spring.

Fertilizing and feeding

The growth of bait minnows in ponds is increased by the use of fertilizers. Commercial fertilizers or organic fertilizers such as manure will increase the production of microscopic plants which, in turn, increase the production of animals utilized as food by minnows. Commercial fertilizer should be applied by broadcasting from shore over the pond surface. Applications of 200 pounds per acre should be begun in early May and repeated at two-week intervals until the water becomes murky and appears green or brown due to the growth of microscopic plants. Subsequent applications should be made whenever the water begins to lose this green or brown color and becomes clear enough for the bottom to be seen in 12 to 18 inches of water. Occasionally the use of fertilizer fails to produce the desired 'bloom' of microscopic plants. Even in such cases, however, applications of fertilizer are believed to increase growth of the minnows. Commercial mixtures such as 5-10-5 and 10-10-5 give satisfactory results in the majority of New York ponds, although other mixtures may be equally suitable. In most ponds of the State, fertilization should be continued until mid-September, but in ponds having a maximum depth of less than six feet (which are more subject to oxygen depletion under ice cover), fertilization should be stopped a month earlier.

Ten to 30 bushels of manure per acre may be applied to ponds at two-week intervals in place of commercial fertilizer. The fertilizing value of manure varies considerably and the proper quan-

Regulations

THE increasing interest in the commercial raising of baitfish brings inquiries and letters to the offices of the Conservation Department almost every day. While a myriad of questions are asked, most of them relate to two major aspects of baitfish propagation: (1) The information that is available on the raising of baitfish, and (2) the laws and regulations which govern the raising and selling of such fish.

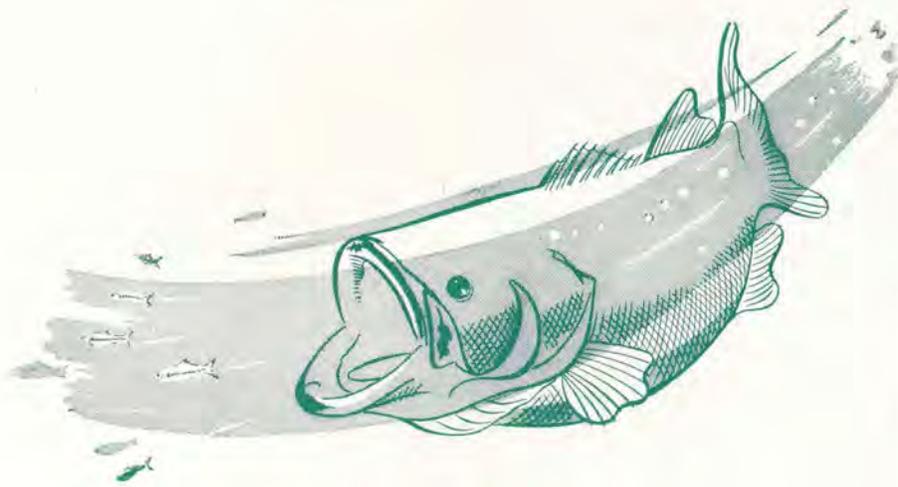
As to question No. 1, the information that is currently available on the raising of baitfish in New York is summarized in the accompanying article by John Forney, leader of the Department's research project at Cornell University on the propagation of bait minnows. As to question No. 2, we attempt to give the answers here.

First, it should be noted that the Conservation Law does not deal specifically with the commercial raising of baitfish. There are, however, several laws or regulations which may be applicable—depending on the type of operation undertaken.

Usually the first problem faced by a person who decides to go into the commercial propagation of bait is the construction of a suitable pond or ponds. No license or permit is required from the Conservation Department to build a pond. However, a permit must be secured from the Superintendent of Public Works before constructing a pond if (1) the area draining into the pond exceeds one square mile or (2) if the dam is more than ten feet in height above the natural bed of the stream at any point or (3) if the quantity of water which the dam impounds exceeds 1,000,000 gallons.

This law was amended at the last session of the Legislature to make it unnecessary to obtain a permit to construct farm ponds which meet certain specifications. The Superintendent, N.Y.S. Department of Public Works, should be contacted for further information concerning these specifications.

In planning a pond, a site in the course of a stream should not be selected. Ponds so situated cannot be efficiently managed due to the ever present possibilities of loss of baitfish from the pond to the stream, the loss of fertilizer and the effects of fertilization, and the invasion of the pond by undesirable species of fish. Moreover, if the stream is inhabited by trout, as many small headwater streams are, it would not be possible to secure a license to net and sell baitfish from the pond; the law prohibits the use of nets in trout waters. If it is desired to use a stream as a source of water for bait ponds, then provisions



tity to use must be determined by the pond operator. One disadvantage of using manure in minnow ponds is that the straw or other debris often introduced into the pond with manure may interfere with seining operations when the minnows are harvested.

Fertilization frequently stimulates the growth of filamentous algae or pond scum instead of the desired bloom of single-celled plants. This troublesome algae can be safely and effectively controlled by the use of copper sulphate. Information on the use of copper sulphate and other chemicals for controlling weeds and scums is contained in Cornell University Extension Bulletin 910, "Controlling Weeds and Algae in Farm Ponds."

Feeding may be used to supplement the natural food supply produced by fertilization. Most species of minnows can be brought to a saleable size sooner, and the yield of the pond increased, by feeding animal and vegetable meals. Soybean meal, cottonseed meal, poultry laying mash, and fish meals have been used with success for feeding fathead minnows and suckers. Whether earlier and increased yield will compensate for the added cost and labor involved in feeding has not been determined under New York conditions.

Financial considerations

In New York, pond-reared bait must be sold in a market where the prices paid are governed by the availability of wild minnows. Careful choice of species and management procedures will enable the pond owner to have minnows for sale when wild minnows are least available. The higher prices are offered during the summer months when bait from natural waters is scarce, and at this season the more hardy species are particularly in demand. Wholesale prices per 1,000 for

perch-size minnows vary from \$5 to \$15 and for bait of bass-size from \$15 to \$30. Minnows four to six inches in length wholesale at \$25 to \$50 per 1,000.

On the basis of price alone it would appear logical to devote all ponds to the production of pike-size minnows. In practice, however, the returns from rearing "pike minnows" will frequently be less than the returns from the rearing of smaller sizes. A pond will produce only a limited quantity of food, and this food supply can be used to produce a large number of small minnows or fewer large ones. As a general rule, the price obtained for pike minnows must be three times the price for bass minnows to justify raising bait to the pike length of four to six inches.

Although in New York State the supply of wild minnows is limited during the summer months, the shortage of bait here is not yet as severe as in other regions of the country, where bait raising has been most financially successful to date. Under present market conditions, the established retail bait dealer in New York is likely to find bait raising profitable as a method of supplementing his supply of wild minnows. Farmers with ponds already constructed can realize a return on their investment by stocking bait minnows or leasing ponds to dealers for bait production. Most farm ponds will produce a modest crop of saleable minnows with only small investments in fertilizer and labor. The large-scale rearing of minnows for sale through wholesale channels, however, involves a large capital investment in ponds and equipment. Such a venture should be considered only after the likelihood of its success can be judged from experience gained in operating a small group of ponds.

—JOHN L. FORNEY,
Research Assistant, Cornell University



Biologists sample production of a bait pond; 3,000 pounds per acre of water can sometimes be obtained.

should be made to divert water from the stream to the ponds and to return it to the stream, together with the necessary control structures so that the flow into the ponds may be carefully regulated.

The next question is how to obtain the stock of baitfish breeders to be placed in the pond. One method is to purchase the breeders from established commercial baitfish dealers. No license or permit is required to buy baitfish. Another possibility is to net brood stock from waters open to the commercial taking of bait. To do this, a net and sell-baitfish-license is required. The fee for residents of the State for this license, which is issued for a calendar year, is ten cents per lineal foot of net to be used, with a minimum fee of \$1. A summary of the laws and regulations pertaining to the netting of baitfish and a list of waters in which netting is permitted are furnished with the license or may be obtained upon request to the Conservation Department.

Before fish or fish eggs may be legally placed in a pond, a stocking permit must be secured unless the pond has no inlet or outlet. Since most suitable ponds will have inlets or outlets, it will usually be necessary to obtain a stocking permit. Application for a stocking permit should be made to the District Fisheries Manager's Office for your area. If you are not acquainted with your District Fisheries Office, a list of these offices may be obtained from the Albany office of the Department. There is no charge for a stocking permit.

It should be emphasized that the law prohibits the netting of carp or goldfish for bait or the use of either of these species for bait. Stocking permits will not be issued to stock either carp or goldfish in bait ponds. Great care should be exercised to avoid contamination of bait rearing ponds with these species which—if transferred via the bait bucket to other waters—may cause considerable damage.

Assuming that all operations have

proceeded successfully, the final step is to harvest and sell the crop. A net-and-sell-baitfish license is required to remove the baitfish and sell them. If a net and sell license has already been secured in the calendar year, the license is applicable provided that the licensee uses only the net or nets which have been licensed. As explained previously, the cost of this license is ten cents per lineal foot of net. Application for the license should be made to Bureau of Fish, New York State Conservation Department, Albany 1.

Licensed farm ponds may be used for the production of baitfish. Baitfish raised in such ponds, however, may not be sold for bait unless the operator has a net-and-sell-baitfish license. The farm pond license entitles the holder thereof to manage such pond for the production of food fish. Consequently, while baitfish may be produced in a licensed farm fish pond, the licensee is not entitled to sell them for bait purposes under the terms of his farm pond license.

It might be noted here also that if a person raising baitfish wishes in addition to purchase baitfish for resale he is required to possess a buy-and-sell-baitfish license. The cost of this license is \$1.

From this discussion it may appear that the laws and regulations pertaining to the raising and selling of baitfish are quite complex. Actually, this is not the case as may be illustrated by the following summary of the steps with which a person undertaking the commercial production of baitfish would usually be concerned:

- (1) Secure a permit from the Superintendent of Public Works to construct pond or ponds, if the ponds are to be of such construction that a permit is required.
- (2) Secure a stocking permit from the District Fisheries Management Office for your area.
- (3) Secure a net-and-sell-baitfish license from Bureau of Fish, New York State Conservation Department, Albany 1.

—W. M. LAWRENCE

Champlain ice fishing census

The winter of 1953-54 marked the fourth year of the Lake Champlain Ice Fishing Census. This joint undertaking of the Vermont Fish and Game Service and the New York State Conservation Department is designed to acquire a reliable estimate of the number of fish caught per various units of measurement (such as hours, anglers, tip-ups, hand lines, line hours, etc.) as well as the species composition of the catch, measurement of the fishing pressure and the source of this pressure. In addition, growth data has been acquired for various species of fish throughout the course of the census.

For purposes of census, the lake is divided into four zones in New York and five zones in Vermont. Game Protectors from the Saranac Lake and Glens Falls Division take the census on one of each of the week days and one Sunday per month during the period December 15 to March 15. In addition, during January, February and March an airplane census is taken once a month in order to count the total number of shanties, cars and anglers on the ice. Biologists from the Adirondack Fisheries District secure the growth data and summarize the creel census figures. Co-operation from anglers to date has been excellent.

In general, certain types of comparative data taken from the first three years of the census in New York show a remarkable similarity. Non-resident anglers comprise about 0.4 per cent of the total number, while women anglers comprise about 5 per cent. The average fisherman fishes about four hours. The success of anglers varies widely from year to year. In 1952-53, for instance, fishing success was not equal to the previous two years. An analysis of available information indicates that the low smelt catch was mainly responsible for this. It appears that poor ice conditions—rather than the lack of abundance of smelt or other fish in the areas where smelt are normally caught in abundance—was primarily responsible for the low average catch per fisherman in 1952-53.

Up to the last of February ice fishermen were having excellent smelt fishing. Catches of 30 pounds are not uncommon—and this means pulling up plenty of smelt through the ice during a day's or a night's fishing. (Night fishing for smelt with lights suspended in the water is profitable in certain areas of the lake when conditions are right.)

Plans are now afoot for continuing this season the Lake Champlain ice fishing census.—ROBERT G. ZILLIOX, *Senior Aquatic Biologist, Adirondack Fisheries District*

Opening Day at Rose Marsh

THE modern day duck hunter is a strong character. He must be to exercise the degree of restraint necessary to withstand the overpowering urge to kill not ducks, but other duck hunters in the same marsh.

Normally the stage setting for such homicide is the dawn flight on the opening day of the season. The villains whose early demise is so earnestly desired by veteran waterfowlers are, for the most part, not duck hunters at all but licensees whose philosophy is never to miss a season opening, no matter for what. Chances are the marshes will see no more of this type of duck hunter for the rest of the season, and this hope is all that sustains the veteran waterfowler in the pursuit of his sport.

The first offense committed is shooting before the legal shooting hour. This violation of law and ethics appears to stem from the feeling: (1) "If I don't get in there and start shooting early, these other guys will;" and (2) "There's a lot of us

here in the marsh and nobody can be sure who did it." It only takes one or two such hunters to start a marsh-wide barrage for the simple reason that nobody wants to be last in line.

Then, with the day already off to a bad start, the veteran knows what to expect next. And it's never long delayed. A flight of blacks or maybe mallards swings in high over the marsh, makes a wide arc and drops down to an elevation of 300 or 400 yards for a closer look. That's close enough for the novice, but not for any ammunition yet made for shotguns.

The veteran crouches in his blind, and curses loud or soft according to his nature. Usually he is too upset to recall clearly just what happened to ruin the day, or how much of it. This fall, however, one of the Conservation Department's waterfowl biologists concealed himself in a typical small marsh and, with notebook on knee, carefully recorded the whole nerve-shattering opening day phenomena. This is his report:



ROSE MARSH is a former bay of Lake Ontario, west of Rochester, which has been cut off from the lake by the deposition of a sandy barrier beach. The marsh has a wooded margin but the heart of the area, about 150 acres, contains a mixture of cattail, buttonbush and swamp loosestrife, with other species making up only a minor part of the habitat. Before the hunters started to pile into the marsh for the noon opening on October 16 there were about 250 or more ducks feeding in the marsh—probably a third of them blacks, a quarter woodduck, and the remainder a mixture of mallards, pintails, blue-winged and green-winged teal, coot and a few odd baldpates. At the opening hour there were 37 cars parked adjacent to the marsh which had brought something over two hunters apiece—or an estimated 75 to 80 hunters.

A few hunters jumped the noon opening, but most were good sportsmen and the real barrage did not let go until the mid-day whistle blew at the neighboring village. Firing was hot and heavy for the first half hour and then began to taper off quite sharply as more and more of the ducks realized that nearby Lake Ontario made an excellent refuge. By 1:30 p. m. nearly half the hunters had called it a day, but the others stuck it out, with at least

25 persisting until the closing hour of sunset. As the smoke began to clear the story of their hunting success began to unfold.

Many of the hunters had no luck. Others who had chosen either good shooting sites and/or who could shoot well had harvested three or four ducks apiece. In the total picture there was an average of three-fourths of a duck per hunter. The bag taken home was believed to be close to 60 ducks, but likewise (by the hunters' own reports) at least another 20 ducks were knocked down and lost. Those who had dogs reported a lower crippling loss. Even including the crippling loss, there appeared to be less than a 35 per cent harvest of the 250 plus ducks present which is quite a reasonable and safe take. It should be noted, however, that the cagey and most numerous species on the marsh at the opening crack, the black duck, made up less than a fifth of the harvest.

Perhaps the most spectacular part of the hunt was the anti-aircraft shooting without benefit of anti-aircraft guns. During the middle of the afternoon, when only an occasional single or small flock came in over the marsh, notes were kept on the number of shots fired at high-flying

ducks. Some 39 flights, of which over half were singles and most were flying at 100 yards or more altitude, drew a total of 607 shots, but only 11 ducks were brought down for an average of 55 shots per duck harvested. One black duck flew in from the lake and followed up one shore, circled a couple of times at the head end, then followed down the other shore and back out to the lake. A total of 44 shots were fired at this single duck, and following the bird with field glasses, he was not once seen to alter his course as if disturbed by near-flying shot. Several ducks had 20 to 30 shots fired at them without apparently being hit. Probably the earlier shooting resulted in more success per shot fired than that indicated above, but many hunters admitted at the end of the afternoon to having shot up a box of shells and several acknowledged having shot 50 or more times. Perhaps high shooting has a conservation effect by reducing the kill, but it seems as if a little forbearance when ducks are out of range would be more sportsmanlike. And it might let the other fellow have a chance. And it might reduce the number of cripples that founder off to die.

—DIRCK BENSON,
Game Research Investigator



THE BACK OF THE BOOK

Scattershots
And Department Activities

30 Tons of muskalonge

During the 1953 season, fishermen harvested more than 30 tons of muskalonge from Chautauqua Lake and smaller adjacent waters in Western New York. Conservation Department records, toted up from the special license reports, showed that 1,066 anglers of 5,570 reporting took 1,962 muskalonge weighing a total of 20,601 pounds; an average of 10½ pounds per fish. However, less than 30 per cent of the special licenses reported, necessitating calculation to get an approximation of the total yield.

The tally for the 1954 season is not available as yet but it appears from preliminary reports from fishermen and observations of Department field men that the "Chautauqua Tigers" have again given a good account of themselves.

One musky in particular, a 31½-inch male, has been giving an account of himself ever since 1941. In that year he was first encountered by Department hatchery men in their spring netting operations. Stripped of his milt, he was tagged (No. 3552) and returned to Chautauqua waters.

This spring No. 3552 put in his appearance again for the eleventh year. Only in 1942 and in 1950 has he failed to show up in the Department trap nets, since first being captured in 1941. With these exceptions, his eleven reappearances have been in the same location—a trap net located in Nigger Bay near Bemus Point along the east shore of the lake.

Fisheries men say that No. 3552 is more than 20 years old and he's presently losing ground having dropped from 32" in 1949 to 31½" this spring; only ¼" longer than when he was netted back in 1941.

1953 Muskalonge angling returns

Water	Average Length Caught (inches)	Number of Fish	Average Weight Caught (lbs.)	Number of Fish	Percentage of Catch
Chautauqua Lake	34.1	* (33) 1,768	10.6	* (518) 1,283	91.8
Cassadaga Lakes	32.8	29	7.9	* (10) 19	1.5
Findley Lake	33.6	* (1) 63	9.7	* (24) 40	3.3
Bear Lake	32.1	15	7.0	* (2) 13	0.8
Conewango Creek	33.9	46	10.4	* (22) 24	2.3
Other Waters	34.4	7	—	* (7)	0.3
All Waters	34.0	1,962	10.5	1,962	100.0

*Indicate fish taken but no weight or no length given.
 Figures without () indicate numbers providing weight or length data.
 Number of licenses sold 20,452.
 Number returned 5,570 or 27.2 per cent of those sold.
 Number of anglers reporting fish 1,066 or 19.1 per cent successful.
 Number of anglers reporting no fish 4,504 or 80.9 per cent unsuccessful.
 Average hours of fishing per fish caught, (all anglers who reported hours) (4,812 anglers) 1,628 fish, 155,251 hours—95.3 hours per fish caught.
 Average hours of fishing per fish caught (successful anglers who reported hours (913 anglers) 1,628 fish, 64,742 hours—39.8 hours per fish caught.
 Average hours fished by unsuccessful anglers who reported hours (3,899 anglers) 90,509 hours—23.2 hours.
 Percentage of Chautauqua Lake catch under 32 inch length—425 total or 23.6 per cent.

Number of Fish Taken Per Successful Angler in Chautauqua Lake

561 anglers caught one fish for total of 561 fish.
176 " " two " " " 352 "
103 " " three " " " 309 "
66 " " four " " " 264 "
63 " " five " " " 315 "

Total 969 1,801

Calculated poundage caught from all waters—75,642.0 lbs.
 Calculated catch based on percentage of licenses returned—7,204.0 fish.

It can happen there, too

The following is from the Michigan Conservation Commission:

About 50 miles of trout streams in Michigan will be placed under experi-

mental and management basis fishing restrictions on January 1, as a result of recent Conservation Commission action.

In general, the restrictions involve "flies only" or increased size limit regulations on portions of seven state streams.

Game Protector exam

If you are a good practical woodsman, can take outdoor life under all kinds of weather conditions, know your New York State species of fish and game and their habits, are between 21 and 36 years old, have bought a hunting and fishing license in the past 10 years—and can meet certain qualifications on physical condition and education—then perhaps you want to take the Game Protector exam to be held February 19, 1955. The pay is \$2,870 to \$3,700, and 9 permanent appointments to positions now filled temporarily (pending examination results) are expected upon establishment of the eligible list. Of course, additional appointments will be made as vacancies occur by retirements, resignations, promotions, etc.

The Game Protector's job has been described in detail in this magazine and reprints are available. Briefly, a Game Protector is an important eyes-and-ears link between the public and those engaged in conserving the State's fish and game resources. The line of promotion open to him is first to Assistant District Game Protector; then to District Game Protector; then on up to Assistant Superintendent, Law Enforcement; and then to Chief, Bureau of Law Enforcement and Field Services.

As to training and experience requirements, you may offer two years of a college course in wildlife management, forestry, or the natural sciences, or you may be a high school graduate and with three or more years as a licensed hunter and fisherman, or other proof of interest. To be appointed in any given county, you must have lived there for four months just preceding the date of the exam.

For more information and application blanks, write to the New York State Department of Civil Service, 39 Columbia Street, Albany, New York. Don't wait too long—the deadline for filing applications is January 21, 1955.

All's well that ends well

Not so long ago a short, heavy set fellow walked into the Law Enforcement Office in Binghamton, walked up to me and said: "Listen you, I got something I want to tell you."

Here it comes, I thought. Something has happened that shouldn't have happened, or something didn't happen that should have. This character was obviously burned up about something, and it seemed that this was it:

He was out fishing one morning in 1953, south of Cortland, and was about to quit in disgust when he was approached from behind by a mountainous man in a green uniform who presented his badge

and asked to see the fisherman's license. The Game Protector then remarked "You're using the wrong fly." Whereupon he walked some distance back to his car, returned with a pet fly which he had tied himself, and gave it to the fisherman. "Put that on a 4X leader and try it," he said.

The fisherman explained that he didn't own a leader like that, and the Game Protector made a second trip to his car, brought back a leader, tied the fly on it, and said: "O.K., try that."

The first cast produced a nine-inch brown trout, and by the time the Game Protector left the fisherman had two more in his creel. A short while later he hap-

pened to turn around, and there stood the Protector again. He had brought two more of those flies, and about noon the fisherman quit the stream with his limit.

I still couldn't figure out what this character was burned up about. But he explained it this way:

"It's not often you meet a guy like that. And just think, I didn't even introduce myself, and I don't know who he was. Boy, am I disgusted with myself."

I gave him the name of Protector David Rowe, and the Protector's address, and the guy went away happy. I wish all the beefs that come into this office could be handled as easy as that one.

—H. S. CANFIELD



Fire control in miniature

Enclosed is a picture of our exhibit at the Steuben County Fair. I am sending it to you to show the clever work done by our Ranger Ray Murray. Both the tower and cabin are built in the scale of 1" to 1 foot and the blueprints of an actual tower and cabin were used as plans. The cabin has floor studding, flooring, partitions, wall studs, and even knotty pine panelling. The tower has in-

dividual planks in the landings, and in the flooring and trapdoor. The legs and cross arms were sawed to resemble angle iron. The tower cabin is equipped with glass windows, a map stand table, and an alidade. The tower was sprayed with aluminum paint, while the cabin was stained with burnt umber and linseed oil and its roof stained green.

—ROBERT M. ROCHE, *District Ranger*

More about Colvin

We had a hunch that after our article on Verplanck Colvin (February-March issue) appeared some one would come forward with the information he also had worked for the Superintendent of the New York State Land Survey.

Mr. Leroy A. Lincoln, chairman of the board, Metropolitan Life Insurance Company, relates:

"You mention that you contacted two men who had worked for Mr. Colvin. I can hardly say that I worked for Mr. Colvin but I do think I may be classed as having worked under him when he was at the head of the Adirondack Survey. At any rate, as a college under-graduate, I spent three summers in the Adirondacks in the employ of the State of New York. The first summer (1898) I was in a small party which was running a line of levels up Mt. Moxham near North River. The next summer (1899) I was a member of a party which was engaged in surveying the 30,000 acre tract which was being given by the State to Cornell University for its Forestry School. That time, we were located mainly at Axton. The next summer (1900) I was engaged with a small party which was building a cofferdam in connection with some kind of work between Upper Saranac and Lower Saranac. We lived in a camp along the Saranac River with mail address at Saranac Village.

"How much or how little of this work was under Mr. Colvin, I do not now remember, but I do remember having met him on one or more occasions. He was a good friend of my father, who was Counselor to the Governor during those years.

"I am writing you this personal note to get you to refresh my recollection which is probably wrong about Mr. Colvin's official position as possibly relating to the parties with which I was working during those summers."

We checked with our Surveyor, Al. Davis who has a nice touch in putting his finger on the right answers supported by the records, and came up with the information that Mr. Lincoln was working for Mr. Colvin running a line of levels up Mt. Moxham that first summer.

However, as a member of the party surveying the 30,000-acre tract which was being given by the State to Cornell University for its Forestry School, this work was done by Cornell and later checked by the State Engineer's office. No mention is made of this work in Colvin's unpublished report of 1899.

The third party in which Mr. Lincoln worked (building a cofferdam in connection with some kind of work [locks] between Upper Saranac and Lower Saranac) was also under the State Engineer's office supervision. —ROLAND B. MILLER



Lynx—or bobcat?

The photograph reproduced here appeared originally in the *Boonville Herald*, along with the following information: That this member of the cat family was a lynx; that it was killed on August 14th by Elmer Rocker of Hawkinsville and Bob White of Port Leyden (shown above) while they were working on a logging job near Mink Lake.

As the lynx is extremely rare in New York (we have only two records since 1907), this photograph attracted our attention. We had suspicions that the animal was not a lynx, but a bobcat, so we wrote the *Boonville Herald* for a copy of the photograph and then referred this to E. L. Cheatum, Chief of our Bureau of Game. After examining the photograph he sent us a memorandum to the effect

that in his opinion this animal was a bobcat, but to be sure it would be a good idea to refer the matter to Ralph Palmer, State Zoologist.

So we did. And in short order, we had the following comments from Dr. Palmer: "This animal is a bobcat, and probably a young one; older ones—say two or more years old—usually have darker marks on the legs at any season. The tail in the photograph (if I may use a poor pun) is a dead giveaway. Enclosed are some page proofs from a recent opus of mine."

The photograph shown here includes a part of Dr. Palmer's opus—the part in which the distinctions (with regard to the tail) between a bobcat and a lynx are shown.

Cited by Red Cross

Assistant District Game Protector Carl F. Prue of Malone has been cited by the American Red Cross for first aid rendered Lyle Avery of Westville, N. Y. who wounded himself while hunting last fall in a section about 19 miles from Malone on the Loon Lake road between Duane and Loon Lake.

The citation came from James J. Tattersall, national director of safety for the Eastern Area. It notes "the splendid first aid rendered to a hunter who was suffering from a gunshot wound. Your quick action and knowl-

edge may well have saved the man's life. We in the American Red Cross are proud of our volunteer workers such as you and extend our deepest appreciation and gratitude."

The injured man had been hunting all day with a companion. They returned to their auto and Mr. Avery unloaded his rifle. Thinking it was completely unloaded, he pushed it on to the seat of the auto, butt first. The gun discharged the one remaining shell into his right side. After administering first aid, Prue, who is a qualified first aid instructor in the Franklin County Chapter, took the hunter to the hospital.



Deer in trouble

For several years I have wandered through the fields and woods of western New York trying to get a picture of a deer. Early last spring I got two close-ups of a lovely young doe. The strange thing about it is that as soon as I saw her I wished then, and I wish now, that she hadn't been there at all.

I was far back on the hill, going down an old trail, when I first spotted the deer. She was but a short distance ahead of me lying near the trail. Her ears were lifted and her eyes were bright with expectancy as she looked in my direction. I thought it was queer that she didn't leap up and dart into the woods. When I got nearer I saw that she had tangled one hind leg in an old wire fence and was locked there.

As I approached, she laid back her ears and began to tremble. She then made several lunges trying to break loose. When she found she couldn't, and that she need fear no harm from me, she relaxed and laid quietly while I worked to free her leg. It was badly broken at the second joint and terribly torn by her struggles.

It took nearly two minutes to untangle and pry loose her leg. It had been caught near the top and second wire of a 4-foot field fence and twisted around the upright stay. As soon as I freed her leg the deer looked steadily at me but made no move to rise.

I took her picture and then came the most amazing part of the whole proceeding. I eased myself quietly over the fence and sat down beside the deer. Without the slightest hesitation she put her muzzle on my leg and let me stroke her neck and head for over ten minutes. She had seemingly lost all fear and uncertainty and also was probably too exhausted to move.

There was little I could do for the injured leg. I had no knife with me and to go for other help and return would have taken two hours. When I finished

stroking her head and got up, the deer struggled to her feet and stood there watching as I took her picture again. She then tried to walk but sank down only to rise immediately. With one last look in my direction she turned and made off through the brush bravely to face her lot in life.—GEORGE MCGILL HAYES, *Canandaigua*



Deer find all kinds of ways to get into trouble but one of the weirdest "jams" thus far brought to the Department's attention is pictured here—a steel spring encircling the tongue.

Possessor of the tongue—and the spring—is a four point, year and a half old buck deer taken this fall in the Moose River section of the Adirondacks by Lewis J. Fowler of Penn Yan.

Fowler brought his deer into the Department's Big Moose check station where the game biologists in charge first noticed another curious circumstance—the buck had not shed the velvet from its antlers. At this season of the year retention of velvet on the antlers is a sure sign some accident or physiological handicap has occurred to retard the normal sexual development of the animal. Closer examination disclosed the steel spring encircling and firmly imbedded in the tongue.

Game technicians believe, because of the otherwise normal development of the deer, that it acquired the steel mouthpiece during the spring months (no pun) this year and thereafter was so handicapped in masticating its food as to suffer malnutrition.

Why the deer stuck its tongue through the spring in the first place is anybody's guess.

Litter and the conservationist

Of no small concern to those active in the conservation program of our State is the matter of litter. There exists no accurate estimate of the cost of keeping our public campsites, trails and forests free

from empty cans, broken bottles and other manner of man-made trash. But a guess at this expense might be made in the light of other litter costs.

Something more than \$30,000,000 is spent every year just to pick up trash along the nation's highways. And on long holiday week ends such as the Fourth of July, American motorists, campers, picnickers and tourists scatter a trail of rubbish that costs \$5,000,000 to remove.

The litterbug is no more respecter of virgin woodland than he is of his well-traveled highways. The answer lies in education . . . in changing the outdoor manners of millions of citizens. Fortunately, unlike the vandal, the litterbug can be educated. Unlike vandalism which is intentional, littering is for the most part simply thoughtlessness . . . and laziness.

For the first time in our country's history we have a nation-wide organization dedicated to the elimination of litter. *Keep America Beautiful* is a non-profit corporation supported by industry and aided in its work by some 30 public service groups, including the Association of State Foresters.

Laws and strict law enforcement are only partial answers to the problem. Since items of litter are not objectionable when properly used and disposed of, restrictive legislation against the packages themselves has never been effective. And anyway, it doesn't reach the heart of the problem—the individual who litters.

After extensive research, KAB believes the solution to the litter problem lies in a continuing program of long-range education. This is being carried out at the local or state level, heavily reinforced by a national publicity and promotion campaign.

This organization has in the past advocated closer co-operation between the Conservation Department and the public in the apprehension of vandals. It now stands for closer co-operation in discouraging the litterbugs.—JOHN GUENTHER, *Keep America Beautiful*

J. N. ("Nat") Locke

Central Adirondackers and hunters and fishermen who frequent the Indian Lake region missed an old friend this year. J. N. ("Nat") Locke of Sabael died April 8 at the age of 86 years, 9 months. Mr. Locke operated the Locke Hotel at the Lake for a great many years, retired and ran a boat livery at Headquarters Camp in the summer months. He was an experienced guide and woodsman who lived all his life in Hamilton County.



To The Editor

Antlerless deer

Dear Sir: In your May-June issue, you published an article showing a map of two areas in the Adirondacks which are to be opened for the killing of antlerless deer to hunters who apply for a special license. One of these areas extends from the northwest shore of Raquette Lake to and including the Oswegatchie River, and the other, as I recall, is in the Little Moose-Honnandaga Lake area. One of the facts which struck me at once concerning each of these areas, is that they may be primarily on private land, and in the case of the first area mentioned two of the boundaries of said area are the existing boundaries of the Brandreth Park, that is Township No. 39, Totten and Crossfield Purchase, Hamilton County. Also included are large sections of the Webb and Whitney preserves, and smaller properties such as Little Rapids Park. Unless I am greatly mistaken, the other area comprises most all of the land owned by the Adirondack League Club.

Since any sportsman reading this article, and studying said map might readily feel that by buying a special license to kill antlerless deer he had the right to go on said lands, I fear that you have done the owners of these lands a serious disservice, which will result in many trespassing violations.

It just happens that I am one of the owners of Brandreth Park, and we are not in accord with the plan to kill antlerless deer in our area. We do have a substantial deer herd on our property, but we do not find evidence of over-browsing in any area. We feel, therefore, that all applicants for this special license should be warned especially against hunting on private lands, even though said private lands are shown as part of these special areas.

Eugene W. Potter, New York City

• We referred this letter to E. L. Cheatum, Chief of our Bureau of Game, who tells us that all applicants for special licenses will be informed as to the location of posted pri-

vate lands. This will be done at every check station maintained by the Department on the perimeter of these areas.

We appreciate the position which you have taken with regard to the kill of antlerless deer on Brandreth Park. A number of other private land owners, (including the Adirondack League Club) have seen fit to go along with the program. It should be noted too, that the Department does not advocate an antlerless deer season except on areas where there is a demonstrated need for it.—Editor

Dear Sir: I have recently just returned from Cranberry Lake in the Adirondacks during the special antlerless deer season and was somewhat surprised at some information that I picked up there.

It seems that many of the residents do not like the idea of a doe season in their area and the influx of so many hunters, and have taken measures accordingly. Some have bought up many of the special licenses through friends; one I spoke to had as many as fifty-two accounted for. These licenses will never be used, but are strictly a means of taking that many more off the market to cut down to some extent the potential number of hunters that may arrive in their particular area. There is no doubt that many hunters that had applications returned might have received licenses if this condition did not exist.

If this condition exists in other areas as well, a good part of the program to harvest deer based, on the hunter kill ratio of licenses issued, will be defeated. It is indeed unfortunate that the selfishness of a few can so undermine the long and careful planning of the Conservation Department in creating this special deer season. If any such seasons are planned for the future it might be wise to try to find some solution to this problem to prevent its reoccurrence, so that as many licenses as possible out of those issued can be put to use.

R. J. Blumenstetter, Auburn

Antlerless deer licenses

Dear Editor: Somehow we expect, in any dealings with branches of government—Federal, state or local—to find justice and fair play. However, our faith has been sadly shaken in the Conservation Department, as a result of the very badly mismanaged granting of licenses for the antlerless deer season this year.

As we understood it, the application for the license was not to be mailed before September 15th. How then, unless he had a jet-powered carrier pigeon, could anyone mailing an application from Buffalo to Watertown expect to compete with those who flocked by thousands to the Conservation office on the 15th? Some who could take time off from work took as many as twenty applications with them and traveled 300 miles to stand all day in line to get the licenses. We found that out too late.

As far as we can see, there was no attempt made to give any break to out-of-towners who had to send in their applications. Nor was there any screening of applicants whereby real sportsmen would be separated from would-be nimrods and gun-happy irresponsibles who can't tell a doe from a Jersey cow.

I doubt if mine will be the only letter of protest you receive. I'm bitter and disappointed and angry, and I don't mind admitting it. That's my hunting territory. I grew up near the limits of the Oswegatchie tract and learned to hunt there, and I can find my way out of there without a bloodhound. But I've talked with many others who feel the same way. Nothing was said in the directions about having to appear in person in order to get a license, and yet, in what other way could anyone get it? If there is any fairness in that system, I should like to know what it is.

And finally, if I hear anyone say that he got a license but has no intention of using it, I shall personally deliver his scalp to the first one who offers a bounty.

Clifford R. Hazetta, Buffalo

• Your letter of October 6 relative to issuance of antlerless deer licenses (Adirondack wilderness areas) has been referred to me for reply.

I am very sorry that you doubt the "justice and fair play" of the Conservation Department in the issuance of antlerless deer licenses for the wilderness areas of the Adirondacks.

Each individual who requested application forms was furnished with detailed information on the procedure for applying for a license, and the regulations for the season. Under instructions for applying for a license it was specifically indicated that "applications should be sent or brought personally or by agent" and "no applications received or post-marked before September 15 will be honored." The law governing this particular season stated that applications would be honored as received, whether by mail or personally, and this was done. There is no doubt a person living a considerable distance from the issuing office was somewhat penalized by the post-mark requirement, if he was unable to appear personally. Nevertheless, applications by mail and in person were honored as received and less than one-half of the licenses for either tract were issued to personal applicants.

We fully realize that certain inequities did exist because of these regulations, but, with a quota of licenses to be adhered to, there seemed no other method more fair. According to law, the State cannot conduct a lottery, which might have been less discriminatory. But lotteries were used several years ago for antlerless deer seasons in the Southern Tier and even there, considerable dissatisfaction was experienced among the participants.

It must be admitted that we did not expect as great a demand for the special licenses as occurred. In fact we expected difficulty in securing sufficient applications to fill the quotas for such an arduous type of deer hunting. Had we realized that the demand would be so great, certain revisions in the license issuing method would certainly have been considered.

It is true, there was no screening of applicants for the "would-be nimrods and gun-happy irresponsibles who can't tell a doe from a Jersey cow." The only method the Department has, at the present time, for such a screening is the tests required of newly-licensed hunters and a continual conservation education program.

We hope you will appreciate that controlled hunting of antlerless deer in the Adirondacks is in the experimental stages with this particular season, but is based on sound biological management of deer. We have no delusions that it will go off without a "hitch" but we do hope, and expect, the hitches will not be serious and that we can rectify them in our future planning.

—Earl A. Westervelt, P-R Co-ordinator

Death on the highway

Dear Editor: At a six-county sportsmen's meeting last Monday night it was suggested I furnish you with the following information:

Mr. Reuben Gregory, a carpenter, residing in Pulaski and commuting to work in North Syracuse, a distance of about 33 miles, be-

came interested in the large amount of game killed on the highway, U.S. Route 11. He began taking an accurate daily count on his way to work in the morning. He did not work Sundays or holidays and counted only on the morning trip.

From May 1, 1954 until he reported the kill on October 20, 1954, at a meeting of the Pulaski Rod & Gun Club, it was as follows:

Cottontail rabbits, 251; dogs, 18; cats, (house) 168; raccoon, 78; opossum, 62; skunk, 23; muskrats, 27; hen pheasants, 31.

LaFayette Petrie, Pulaski

Who's foxing whom?

Gentlemen: The following article appeared in the editorial section of the *Jersey Journal* (Jersey City) on October 1st: I think a better title would be "Red Fox—Red Tape."

Tally-Ho and \$3.50

"Ralph Williams, a truck driver of Newark, is a good citizen. He caught a fox up in West Orange in the act of stealing a chicken, swerved his truck and killed the fox. Then he showed up in the Essex County's Sheriff's office to claim the \$3.50 bounty.

"Getting that \$3.50 is easier said than done. First he must make an affidavit in Municipal Court telling of the circumstances of death. Next, the Judge must issue a certificate to the County Board of Freeholders who must pass a resolution authorizing payment. Then the Freeholders must cut off the fox's ears and burn them in the presence of a qualified voter. Then Williams will get his \$3.50.

"Soon Williams will wish that stupid fox had been smart enough to do his chicken stealing somewhere off the public highway."

H. L. Jaycox, Ridgewood, N. J.

About trapping

Dear Sir: In going through some back numbers of the most excellent CONSERVATIONIST, I find in the issue of Oct.-Nov., 1951 a series of pictures of steel traps for the capture of animals. These remind me of the Maiden of Nuremberg and other ancient articles of torture. I understand that the laws provide that traps be visited every 24 hours. This, instead of being an act of humanity, merely provides that an innocent creature may be tortured for 24 hours. Better far for our women to parade nude than to wrap themselves in such agony!

T. Seton Jevons, Huntington, L. I.



A turtle done it

Dear Editor: Enclosed is a photograph that I hope will be interesting to your readers.

Often we have seen young mallards disappear as the victims of turtles. Here is a photograph of an adult mallard that was attacked by a turtle and got away with just an out-of-shape beak.

Junior Jackson, the custodian of the Sanc-

tuary at Quogue, told me about this mallard and I got the photograph at the posted Wildlife Refuge on the estate of Mr. and Mrs. Ralph Smith at Westhampton Beach.

This mallard, though injured and deformed by the attack, flies and feeds just like a normal duck.

Malcolm Thomas, New York 31

Zoning for small game

Sir: I am not in habit of writing epistles to editors of magazines, but this has been sticking in my crop too long so here goes. Hang on!

Please put me on record as against the present zoning by the Department of the small game areas in the past couple of years!

First gripe: Some of our area "sportsmen" do not seem to understand or choose to ignore the partition which makes law enforcement officers' burdens increase and many violators go uncaught.

Secondly: With small game hunting increasing yearly, the partition would seem to concentrate more hunters into a smaller area at a given time. Seems like the increased hunting pressure would help delete the supply and leave none for seed. Also increased hunting (and abuse of others' property) has prompted local landowners toward more posting, which only makes the situation more aggravated and hunting more of a struggle for survival than the pleasure it used to be.

I understand the need or reason for different opening times due to climatic or geographic differences in our State, but I have never seen the difference show up on opposite sides of a State highway! Wouldn't a division by counties or natural barriers such as rivers, mountain ranges or chain of lakes be more reasonable? At least it would make more sense to the residents of the area.

Yours for better conservation and law enforcement.

William F. Barry, So. Glens Falls

• We do not quite follow the logic of your letter. You state that you understand the "need or reason for different opening times due to climatic or geographic differences." If that is so, then it has been the long and bitter experience of this Department that such zoning can best be defined by using the most prominent land marks available. Everybody knows or can easily find out where highways are—but we doubt if even you know how to locate the boundaries of your county. In other words, it seems to us that if a line has to be drawn—and you concede that it does—then well-traveled highways afford the best opportunity for clear demarcation and a minimum of confusion.—Editor

Gentlemen's agreement

Dear Sir: I have just had the pleasure of reading your editorial, "Gentlemen's Agreement," in your October-November issue and I want to offer my enthusiastic commendation.

It seems to me that you have covered very well the whole situation that exists between farmers and hunters. Statements like yours and the broad-minded policy of the Conservation Department itself are helping to iron out the many misunderstandings that farmers have about trespassing.

The difficulty, as you point out, is that there are so many sportsmen who are not worthy of the name, because they are so careless and have such a lack of appreciation for the privilege which is theirs when they are permitted on farmers' land.

E. R. Eastman, President and Editor,
American Agriculturist, Ithaca



Shoot if you must . . .

Dear Editor: If you can't cure 'em, divert 'em—their bullets, anyway.

That's an Idaho answer to the sign shooter problem that your Ed. Littlefield is justifiably angry about in your current issue. The pictures tell most of the story, which the Conservation Department and other supporters of the Keep New York Green program may want to apply in our state.

Warden Bert Curtis put up a \$12.50 "Keep Idaho Green" sign in 1951's spring. By mid-1954, it had been pocked by 76 bullet holes and was replaced. The new sign was hopefully given a diverting companion, as shown in the photograph attached.

Will the experiment work? Well, a few weeks later, the target had four big-calibre holes; the new "Keep Green" sign was unmarked. But Curtis is keeping his fingers crossed, I understand.

F. B. Willson, Resident Manager,
International Paper Co., Glens Falls

Sign shooters

Dear Sir: If a hunter can't tell another hunter from a buck, how in hell do you think he can tell a sign from game? Fishermen are much smarter. Whoever saw a trout fly stuck in a road sign?

I. C. Betternow, Delhi

P.S. I suggest that you make your signs in the shape of a deer; then they would never be hit.

Charting the way (?)

Dear Mr. Editor: Beginning to wonder from whose Conservation Department the chart "Deer Hunting, 1954" (p. 30, Oct.-Nov. '54 CONSERVATIONIST) may have been compiled. Certainly not ours.

Second item, "During firearms season"—indicates the Resident Special Archery license required, or its equivalent for Non-resident or Alien, and no gunning allowed.

Then, the last item—for deer of either sex. Do you mean the robusts may use only a longbow in the wilderness? Or maybe the gunners are expected to buy the Resident Special Archery License?

And under "Manner of Taking" for both Northern and Southern Zones under the Big

Game Laws, the first weapon named is the longbow. Actually, although certain types of guns are not permitted in certain areas, the longbow is legal for all types of game when and where gunning is permitted.

(Incidentally, our 1954 Hunting Guide, under General Regulations, says "It is illegal . . . to use an arrow head less than $\frac{7}{8}$ inches at its widest point, or that has less than two sharp edges." Under that system, future generations should find the bones of squirrels impaled on sky-hooks, high up in our trees. And, I'm neither archer nor big game hunter.

Also caught another one.

"Quail Progress"—Second column of page 28—is a little behind the times. Mentioning the Counties of Dutchess, Putnam and Westchester, the item ends with "and a shootable crop cannot be anticipated for several years."

How come, may I ask, that there is, during this 1954 season, an open season of November 1 through 15 with limits of 4 daily and ten for the season, in the Counties of Putnam and Westchester?

R. Bartlett, Cortland

• We agree the chart is on the cryptic side, and would have profitted with an explanatory preface. However, the information set forth in the chart, when read in full context, is correct.

The second item, for instance, correctly states that a citizen resident of the State holding the resident special archery license (RSA); a non-resident holding the non-resident special archery license (NRSA); an alien holding the alien special archery license (ASA) may, during the regular firearm season for taking deer, take a deer having legal antlers with longbow only. Item four, similarly interpreted, shows the manner in which antlered deer may be taken during the regular big game firearm season by holders of resident, non-resident or alien big game hunting license; i.e. with either firearm or longbow.

The note in the Hunting and Trapping Guide re use of arrows having heads at least $\frac{7}{8}$ inches at widest point and having not less than two sharp cutting edges refers to manner of taking deer and bear under the special archery license. Archers, under the regular hunting license, may use field points or "blunts" in taking small game.

Considering the small size of the target and the high cost of arrows, we feel that all that future generations will get looking up in trees for arrow-impaled squirrels will be a stiff neck.

The open season on quail in Putnam and Westchester counties does appear to be somewhat inconsistent in view of current efforts to re-establish a shootable crop of these birds in that section of the State. Actually, however, the present population level is too low to encourage any hunting on the species and only an insignificant number of these birds are taken in the course of hunting other game.

Should the co-operative efforts of the Department and sportsmen of the area to improve the quail picture continue to be encouraging, and should it appear the present open season is a threat to progress in that effort, there undoubtedly will be amendments proposed to close the season in Putnam and Westchester counties.—A. W. B.

Dinner (ground-hog) is served

Dear Editor: In the "Letters to the Editor" section of the October-November issue of your magazine, I noticed a request for recipes for woodchuck from a Mr. Michael Michnya of Brooklyn. I am enclosing several recipes which I found in the Extension Bulletin 252, "Good Eating from Woods and Fields," published by the Michigan State College Extension Service. I have never had the opportunity to fix a woodchuck, so can not vouch for these particular recipes. However I have used their recipes for partridge, venison, rabbit and duck and found them very delicious.

The muscles of woodchuck are dark and thick, but the meat is mild in flavor and does not require soaking. If the woodchuck is caught just before he begins his winter sleep there is an insulating layer of fat under the skin. The excess fat should be removed, but it is not necessary to remove all the fat as its odor and flavor are not objectionable. However, it is advisable to parboil the meat of older animals before roasting or frying.

Fried Woodchuck

6 servings; cooking time, 1¼ hours

1 woodchuck; 1 tablespoon salt; 1 cup flour; 3 tablespoons fat.

(1.) Clean woodchuck and cut into 6 or 7 pieces. (2.) Parboil in salted water for 1 hour. (3.) Remove from broth, roll in flour and fry in hot fat (deep fat may be used) until brown.

Woodchuck Meat Patties, Tomato Sauce

325 degrees; 8-9 servings; cooking, 1¼ hours

1 woodchuck; 1 cup bread crumbs; ¼ cup ground onion; 1 teaspoon salt; ½ teaspoon pepper; 2 eggs; 3 tablespoons fat; 1 cup catsup; ¼ teaspoon Worcestershire sauce.

(1.) Clean woodchuck. Remove meat from the bones and grind. (2.) Add ½ cup crumbs, onion, salt, pepper, one beaten egg, and 1 tablespoon melted fat. Mix thoroughly. (3.) Shape into patties and dip into the other beaten egg, then into ½ cup crumbs, and fry until brown in 2 tablespoons hot fat. (4.) Add catsup and Worcestershire sauce and bake in a slow oven (325 degrees) for 1 hour.

Woodchuck Meat Pie

400 degrees; 6-8 servings; cooking, 1½ hours

1 woodchuck; ¼ cup onion; ¼ cup green pepper; ½ tablespoon minced parsley; 1 tablespoon salt; ⅓ teaspoon pepper; 4½ tablespoons flour; 3 cups broth; make biscuits.

(1.) Clean woodchuck and cut into two or three pieces. Parboil for 1 hr. (2.) Remove meat from the bones in large pieces. (3.) Add onion, green pepper, parsley, salt, pepper and flour to the broth and stir until it thickens. (4.) If the broth does not measure 3 cups, add water. (5.) Add the meat to the broth mixture and stir thoroughly. (6.) Pour into baking dish. (7.) For biscuits: Sift the flour, baking powder and salt together. Cut in the fat and add the liquid. Stir until the dry ingredients are moist. Roll only enough to make it fit the dish. (8.) Place dough on top of meat, put it in a hot oven (400 de-

grees) and bake 30 to 40 minutes or until dough is browned.

I hope that you will be able to pass these on to Mr. Michnya and that he has success in trying them. Thank you for a wonderful magazine. My husband and I both enjoy it very much.

Mrs. H. E. Brege, Rogers City, Michigan

• Many thanks; *Ground Hog Day* takes on a new meaning.—Editor

Dear Sir: In regard to Michael Michnya's request about how to prepare woodchuck: After cleaning carcass, remove the glands under the front legs (these glands look like the lungs from fowl, red and white); cut up carcass into pieces; rinse well in cold water and brush meat with a stiff brush to remove particles. Place meat in large pan; cover

with cold water; scatter 3 to 4 tablespoons of salt over meat; let soak 6 to 8 hours; pour off and replace water and salt; let stand 4 hours; rinse well and cover meat with water, adding 3 tablespoons baking soda; let stand 2 to 3 hours; drain off water, replace meat in kettle, cover with water and boil until meat is white and tender.

During cooking remove scum from top of water with tablespoon. Cooking requires about one hour. Then remove meat and fry in butter. Add a few strips of bacon to flavor while frying, or onions.

We used to prepare rabbits this way, using half the amount of salt and baking soda as they are not as strong. But they are delicious also.

Edw. A. DuFour, Poughkeepsie



Rhododendron

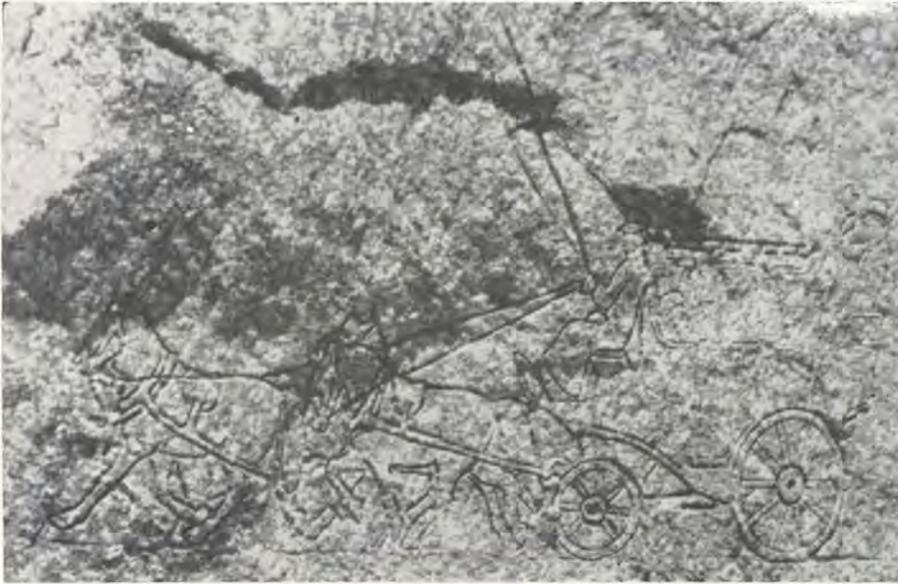
Sir: I am sending you a clipping from our paper, and some photographs, which you can reprint in THE CONSERVATIONIST if you wish. We have owned this property, where these rhododendron grow for the past twelve years. Their growth has doubled in area, now covering ten to twelve acres.

I am rather interested in knowing a little more about these flowers. I have been told by many that these are the only rhododendron in the State of New York. Do you know if this is correct?

Bernard Przelski, Barneveld

• Although the occurrence of rhododendron

as far north as the Barneveld section (Oneida county) is quite unusual, it is not correct that this is the only rhododendron growing wild in New York State. In the southern part of the State, particularly in the lower Catskill area, and in Sullivan and Orange counties, rhododendron is very common and is in fact somewhat of a nuisance in the woods. It has also been reported from a number of localities in the central part of the State. In the region north of the Mohawk however, rhododendron is indeed a rare plant and you are very fortunate to have such a fine growth of it on your own farm.—E. W. Littlefield



Stage coach days

Dear Sirs: Entering the Cascade Lakes from Lake Placid on Route 86A, there is on the left hand side of the road a large stone, perhaps five feet high and four wide, into which is cut the picture of a coach and two pairs of horses. It is a difficult place from which to catch the right light for a picture, but the enclosed will give you some suggestion.

I am interested in finding out who carved this and when. A bus driver told me there had been a horse trough there in the days of stage coaches and that it might be one of the drivers had cut this out. It seems to me, however, that it is too well done for any amateur. I would appreciate it if you could give me any information regarding this stone you may have in your files.

Mrs. Anne A. Heald, Lake Placid

• We passed this along to Bill Petty, District Forester at Ray Brook, with the following result:

During the '30's Mr. Donald Rogers, District Engineer of the New York State Department of Public Works, Division of Highways, at Elizabethtown, had a large boulder slip off the side of the mountain on the Cascade Road. It was nudged off to the north side of the road and since it was in a good wide section of the highway right-of-way, a parking area was made there. With the stone on end it made a good tablet or monument and the highway folks decided that a little carving on the rock might be appropriate. I think probably to commemorate the old stage route up through the Cascades to New-man which is now known as Lake Placid.

The Carnes Granite Company, Inc. of Au Sable Forks did the job with Lewis Brown, working for the company, making the drawing and stencil. Wilfred Carnes, father of the owner, tried out a new portable sand blasting outfit on this job which turned out very well. —W. E. Petty

The Indian way

Dear Sir: The attached clipping was taken from the editorial page of the *Baldwin Citizen*, our local paper. The 100 words carry a message in which you and your readers are vitally interested. Could it be stated any more plainly? The Indian knew how to work in harmony with nature; the white man has not yet learned.

Fred J. Goellner, Baldwin, L. I.

Heap Good Sense

"A deserted farmhouse in a gullied field was pictured in a farm journal which offered a prize for the best 100-word description. An Indian took the prize with this:

'Picture show white man crazy. Cut down trees. Make big tepee. Plow hill. Water wash. Wind blow soil. Grass gone. Door gone. Window gone. Whole place gone. Buck

gone. Papoose gone. Squaw too. No chuck-away. No pigs. No corn. No plow. No hay. No pony.

'Indian no plow land. Keep grass. Buffalo eat grass. Indian eat buffalo. Hide make tepee. Make mocassin. Indian no make terrace. No build dam. All time eat. No hunt job. No hitch hike. No ask relief. No shoot pig. Great Spirit make grass. Indian no waste anything. Indian no work. White man loco.'

'There was no argument from government conservation agencies.'"

More about dogs and deer

Gentlemen: I too love dogs (possess two thoroughbred English cockers) but cannot for the life of me understand "Connecticut's" statement that Protector Murdock's shooting the dogs at Schroon Lake "must have won him scores of despisers." I feel that the

above mentioned subscriber has never seen the results of a dog, or dogs, pulling down a deer. If he had, certainly the maligning of Protector Murdock would never have come forth.

Regarding the issue, as stated in the next to the last paragraph, "To what extent does and should sentiment determine the course of conservation," I can to a certain degree see a buck shot out of season by a really desperate father in order to provide food for children—and I could to a degree see a Protector going stone-blind upon the occasion. But insofar as the current "dog" discussion goes, the law is correct, Mr. Murdock is 100 per cent correct in doing his duty, and our Connecticut subscriber, for my part, is way out of line.

Eugene A. Molzer, Lago Colony, Aruba, Netherlands Antilles

Big game back tag

Dear Sir: I take this means of protesting for my club, about the use of the new yellow license card which according to law must be worn between the shoulder blades of the hunter this deer season.

We have all been schooled for many years in the avoidance of wearing anything resembling white. The N.R.A. Junior Instructors' Program, right here in our own State, teaches this. It is our belief that by the time this season is over we will hear of some unfortunate hunter either being killed or wounded because of this dangerous menace bestowed upon us by our State Commission.

Our club does not wish to go against the laws of our State, but we do feel we are entitled to do something about this for our own self-preservation. Therefore we intend to cover this card with red cellophane and hope others do the same. If we must wear a number, then at least let it be red in color.

Robert R. Wallace, Secretary, Crys-Shokan Sports Club, Baldwin

Dear Sir: There is no doubt you have received and will receive more letters like the one I am writing you now. If you have not, it is a case of gripeing without doing anything about it.

It is relative to the new legislation in regard to the tag required to be worn on the back of big game hunters. There are enough regulations now in effect without this one being added to them. The less regard shown for rules, no matter how minor, helps to create a disregard for more important laws.

Already a racket has sprung up, i.e., plastic cases in which this tag can be protected from being torn. Imagine a hunter going through thick brush or ordinary terrain in hunting and keeping this tag on his back.

Also, the regulation that if the tag is lost another must be obtained immediately! Who would be so naive (or shall I call it stupid) to think that a hunter a few miles in the woods in a camp who happened to lose his tag would immediately walk out of the woods to secure another. And by the time the new tag would arrive the hunter's vacation would be over. This is only one of the foolish consequences of such legislation. Certainly the hunter would stay in the woods and hunt without the tag rather than cut his hunting

short. Many hunters have only a few days or a week's vacation in which to hunt.

The fact that other states have the same legislation does not alter the situation. If one person does a thing, everyone else does not have to ape him.

I hope this will be the last season this regulation will be in effect.

G. A. Fontaine, AuSable Forks

• We think you should know that although the Department drafted the bill requiring the wearing of back tags, this bill was originally sponsored by the sportsmen themselves through their Conservation Council.

We think you should also know that similar legislation requiring the wearing of such tags has existed for many years in many states throughout the country, and has been found to be useful in the curtailment of violations. In this state, as in the others, there are certain obvious drawbacks to such legislation—among them, some of those which you mentioned in your letter. But we all have to sacrifice our own personal feelings and prejudices in the interest of better regulated and more lawful hunting.

Nevertheless, after the Department has had the benefit of this fall's experience with this tag, if it is found that another type of tag will serve better the purposes of the law, the Department will recommend to the Legislature such changes as in its opinion are necessary to this end.—Editor

About veneer

Dear David Cook: I am intensely interested in your article on veneer in the August-September issue of THE CONSERVATIONIST. We are having a difficult time in having jobbers on our land cut the beech along with the high grade birch veneer. This is natural, as the beautiful first growth veneer logs command a much higher price than the beech. But we feel we cannot allow the jobber to leave all the sound beech, as no other jobber would go in to log the land when only the better hardwood trees are taken out.

The nearest basket factories to Lyons Falls and Lowville we judged from your list to be: Wayne Duel, Oswego; Madison Basket Co., Hamilton; Webster Basket Co., Webster; Barden & Robeson Corp., Penn Yan. It is possible the Rice Veneer Co. of McKeever also takes some beech.

I would like your opinion of what percentage of beech to birch and maple is the usual run in the Adirondacks.

Clarence L. Fisher, President,
Fisher Forestry & Realty Corp., Lyons Falls

• I agree that high-grading the woods by taking the birch and leaving the beech is thoroughly bad business. Let me offer the following observations on possible outlets for beech:

(1.) Barden & Robeson Corp. (Bryce Barden, Pres.). They have pretty well cleaned off the beech within easy reach of Penn Yan, have trucked logs from as far as Kane, Pa. An excellent prospect. Would be a one-road rail haul on the N. Y. C. (2.) Wayne Duell, Oswego. A small operator, but worth a try. Consumption around 50 M. Birch-Beech-Maple, species not indicated. (3.) Webster



Coyote

Dear Sir: Although coyotes are supposed to be quite numerous in the Adirondacks, it is not very often that a person has the opportunity to eliminate one.

The enclosed picture shows a 42-pound male coyote which I was fortunate enough to see and kill near the Woodhull Lake Dam on September 14th of this year.

Floyd Van Slyke, Thendara

Basket Co. Good outfit, like B. & R. Corp. but with a better wood supply. Also a one-road haul. (4.) Madison Basket Co. Belongs to Hinman. Know that they have imported logs from the Lowville area. Have heard that they have enough baskets on hand to carry them through the 1954 season. (5.) I'd like to suggest further that you try the Midland Lumber & Veneer Corp. of Herkimer, the milling subsidiary of Standard Furniture Co. They are smart enough woodworkers to use the beech for either veneer or lumber. Perhaps you can help yourself to a better logging job by helping the logger to sell the beech.

You ask for my opinion of the usual proportions of beech, birch and maple in the Adirondack forest. As you know, there is considerable geographic variation in the proportion, both locally and regionally. Some "beech ridges" are practically pure, while swamps may be all birch. The best statistics available indicate the following:

	District 7	District 8	District 10
Beech	29	23	35
Yellow birch . .	31	39	33
Hard maple . . .	40	38	32

These are indicative only. But they do indicate that yellow birch is somewhat more abundant in the relative low and swampy terrain of District 8, and hard maple more prominent on the north side, in St. Lawrence County.—David B. Cook, Supervising Forester

Dear Mr. Cook: I was very much interested by a bit of information in your article on veneer in the current CONSERVATIONIST. Can you give me any further information on the company making sawn veneer? For example:

What species are cut, is the veneer shipped, what is the company's address?

Frederick L. Brown, Midland, Mich.

• The one sawn veneer plant in New York is located at Kimball Mill at the north end of the Hay Meadow on the west branch of the Oswegatchie River. It is owned and operated by Verne Wicks, whose postoffice address is Harrisville. To the best of my knowledge, the only species that he saws into veneer is hard maple. What he does with it, I don't know, but I am quite sure that Mr. Wicks would give you whatever information you require.—D. C.

Dear Mr. Cook: Please send to me two copies of your article in the Aug.-Sept. CONSERVATIONIST. I am particularly interested in your comments on the use of veneer from red pine and small size eastern logs.

Julius Kahn, New York

• To the best of my knowledge, the red pine came off the Luther Forest and was tested by the Blair-Vermont Plywood Company. The small-size hardwood logs that have been of most interest recently are those from Finland. The Finns have been making a very nice veneer sheet, for export, from birch logs not over 10 inches in diameter. I have seen some of this material and it is very nice stock, although it comes in an odd size.—D. C.

College of Forestry

Gentlemen: As a member of the student body at the State University of New York, College of Forestry, I noticed a small mistake in your October-November, 1954 edition which rather disturbed me. In the section called "The Back of the Book" under the heading "Commissioner's Advisory Committee," Ralph T. King was referred to as Head of the Department of Forest Zoology, Syracuse University.

Dr. King, one of the outstanding men in his field, is Head of the Forest Zoology Department of the State University of New York, College of Forestry. Because he does represent the best College of Forestry in the world I believe the credit should go to our school and not Syracuse University, whose campus we are situated near.

A large number of your subscribers are students and faculty at our College, and I am sure every one of them would like articles concerning our school to refer to it as the State University of New York, College of Forestry. Let the people of New York State know that along with an excellent Conservation Department, they also have the best College of Forestry in the world.

Cary H. Burgess, Secretary,
Forestry Club Cabinet

Credits

Pages 2, 3, Leslie R. Stutzman; 4, Fred Chambers; 5, 12, 13, 14, 15, 16, 18, 19, 20, 21, 29, H. Wayne Trimm; 6, 7, Ed. Maunton; 8, 9, Earl McGuirk, Chambers; 11, Robert G. Zilliox; 17, 24, 4th cover, Ellen Edmonson; 22, 23, Nick Drahos; 27, Christopher Lindley; 28, John L. Forney; 31, Robert M. Roche; 32, Boonville Herald; 33, George Hayes, McGuirk.

THE BIG BUCK and the LITTLE BUCK With a Story in Between

PORTRAITS of the remains of two New York State buck deer appear on the opposite page. The heads are actual but the cartridges and the much-chewed deer browse in the old sugar bowl are merely symbolic.

One buck was very large and the other was little, as you can see. What you can't see is that both deer died at precisely the same age—4½ years! The teeth of these two animals told that story to the Conservation Department's deer research unit in whose huge collection of significant physical material the skulls of both bucks now repose.

The big buck bears the New York State record set of antlers. This deer was killed in 1939 by an experienced hunter named Roosevelt Luckey. He shot it at 100 yards, running, with a 12-gauge rifled slug not far from the garage he operates at Hume in Allegany County. It weighed 194 pounds dressed—which gives it a probable live weight of 233. So it was big all around.

The animal lived in part of a western New York woods a mile wide, seven miles long and surrounded by wheat, corn and bean fields. The woods, like much western New York deer range, then grew sufficient adequate-quality winter browse for the growing healthy herd it housed.

So much for the big buck.

The skull of the little one with its scraggly 9-inch antlers was picked up with a dozen others one spring when snow melted in the Joe Indian Pond area of the northern Adirondacks. These deer had starved.

The little buck lived in the roadless wilderness northeast of Cranberry Lake. Not many hunters have the incentive or the physical means to go into such country and, like thousands of square miles in the Adirondacks (and now parts of the Catskills), there are too many deer for the available winter food.

You'll note that winter is emphasized—for you must understand that in summer, deer live all over the house. But in winter on their northern range they vacate the bedrooms and the kitchen and back up to the living room stove (usually a thick stand of conifers—like spruce—in a protected spot). And they stay right there. The deeper the snow, the closer they stick. Now after a time the pickings get scarce since adult deer require an average five pounds of good browse daily. If they can't get it they

grow weak then die. So a deer's house is only as good as its winter range.

Under present conditions of over-population, the first severe winter could kill 20,000 deer in the Adirondacks, maybe more! Even a reasonably mild winter killed that little band at Joe Indian Pond.

Between these extremes lies a story that everybody should know. Parts of this story are nightmare fodder.

The white-tailed deer has grown to be the most valuable large wild animal the world has ever known. It is by far the nation's most abundant such animal with heaviest populations in Michigan, Wisconsin, Minnesota, New York, Pennsylvania, Maine and Texas. In New York, historians a century ago estimated the herd at less than 5,000 head, most all in the Adirondacks. Today it's around a half-million. In 1920 only 17 counties had enough deer to warrant open hunting seasons. Today there are 54.

A decade ago motorists were thrilled to see the new signs "WARNING—DEER CROSSING." Today, thousands of these signs make required highway reading, and not without cause. In 1942, a total of 762 deer were reported killed by cars on New York's highways, often with grave damage both to vehicle and occupants. Now the hazard has doubled. In fact it no longer is safe because of deer to drive at legal speed through many areas, especially at night.

The farmer often suffers heavy crop loss from the increase and spread of this wild herd. In many regions it actually no longer is practical to set out, for example, a new apple orchard or enter into the wide-scale production of cauliflower or Brussels sprouts. Few and far between is the western New York bean field which does not show the tracks of feeding deer. The only wholly effective means thus far devised to prevent crop damage without destroying the cause is the economically prohibitive 12-foot deer-proof fence.

Nor does the agricultural crop suffer alone. As has been pointed out, too many deer starve themselves by ruining the wild food crop on their natural range. Millions of acres through America no longer can support many deer, simply because the size of the herd was not reduced to the capacity of the range in time.

Rising farm crop damage and range damage and highway danger are by no means the only mighty problems posed by deer.

Each autumn, a vast U. S. army of more than 8,000,000 deer hunters now marches and counter-marches across the land. Its discipline mainly must be self-discipline. It marches mostly over private land and it concentrates along the roads and not too far from coffee. New York's share of the army has mushroomed from 68,880 in 1932 to an anticipated 450,000 in 1955! On this State's charted 30,000 square miles of deer range that's 15 hunters per square mile even if they were evenly distributed—which unfortunately *they are not*.

The army continues to grow. In 1930 only 15 deer licenses were issued in New York to every 100 small game licenses. In 1954 about 85 deer licenses were issued per 100. In 1953 a total of 21,247 new hunters under 21 were instructed under New York's firearms safety training law.

In 1955, surveys show that deer hunters will produce about \$56,000,000 worth of business in New York State alone (THE CONSERVATIONIST, Oct.-Nov., 1949). Much of this business will be given to rural communities, particularly in resort areas where it will represent the greatest lift to local economy between Labor Day and warm weather.

Full impact by the deer hunter on the total economy (including his own recreation) and on the negative state-of-mind of the landowner, mostly over whose property the army marches, is not measurable. But the problem of maintaining one and alleviating the other obviously is a nightmare. For it means the maintenance of the deer population at the precisely proper level in any given area.

This hugely complex job is possible only when much of the general public ceases to insist upon a sentimental appraisal of deer and looks upon *all* deer—males or females, young or old—as a crop which *must* be harvested like any other crop when, where and to the necessary extent.

And who alone can say when, where and how much? It's the little band of men whose life work is to probe into every angle of the deer—physical and economic.

New York happens to be blessed with such men. The productive data they have collected over the years of often pioneering research is almost beyond belief. It is to them that this little piece is dedicated—for they alone can ease the mighty nightmare of the deer. On them we must depend to tell correctly and productively the story of the big buck and the little buck and plot the course of what goes on between.

—CLAYT SEAGEARS



10-6-54 R3 12-2 ON57
ARTHUR C. BLENSINGER
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(See also pages 17, 24)



RED-FIN SHINER, *Notropis cornutus* (Mitchill)
Breeding colors from male $4\frac{3}{8}$ inches long

Very likely, you have caught red-fin shiners about four or five inches long in many New York trout waters. These are adult males of the common shiner. Females and immature fish are plain silvery. Ponds and lakes often have large numbers of shiners if inlet streams have riffles suitable for spawning. During May and June many Adirondack streams have a conspicuous run of red-fins. Year 'round, the smaller shiners contribute to the diet of both trout and warm-water game fish. As a live bait the common or silver shiner is in good supply, but does not transport very well.



HANKINSON'S MINNOW, *Hybognathus hankinsoni* Hubbs
Breeding colors from adult male $3\frac{1}{8}$ inches long

There are two closely related species of the genus *Hybognathus* which are herewith discussed together. The silvery minnow *H. nuchalis* is the most important, but we do not have a colored plate. The species shown is *H. hankinsoni*, which seems to have no generally accepted common name other than Hankinson's minnow. Regarding their value as forage fish, both of these shiners have a long digestive tract which is an indication that they are able to digest plant material. By grazing on bottom algae and other abundant food these minnows can be supported in large numbers in suitable waters. This is particularly true of the silvery minnow, which is found in large lakes including those of the Finger Lakes Region and Lake Champlain. Hankinson's minnow is well represented over the Adirondack upland area and in scattered locations elsewhere in the State.