

IOWA CONSERVATIONIST

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For Most Thrills Catch 'Em With A Fly Rod

For years the use of the fly rod has been associated with trout fishing, but during the past few years a remarkable change has taken place. No longer is the fly rod used almost exclusively for trout; thousands of anglers are now using it for many other pan fish, with the result that the army of fly rod anglers has increased tenfold.

To meet the demands for this new type of fishing, different styles of rods have been developed. In the old days most fly rods were known as "Light", "Medium" and "Heavy", and ranged in length from eight to 10 feet, which at best was a rather loose classification, for it is really the ferrule size that governs the action of the rod.

One manufacturer of fine rods has been getting away from these indefinite terms by designating types of rod by the size of the first ferrule. Now it is possible for the angler to obtain a much larger range of actions by specifying the desired length and ferrule size.

For instance, the "Extra Light Trout" rod comes in two lengths, 7½ or 8 ft., No. 1½ ferrule; the "Light Trout", 8 and 8½ ft., No. 1¾ ferrule; "Standard Trout", 8, 8½ and 9 ft., No. 2 ferrule; "Bass Trout", 8½, 9 and 9½ ft., No. 2½ ferrule; "Power Plus", 9 and 9½ ft., No. 2¾ ferrule; "Heavy Duty", 9, 9½ and 10 ft., on No. 3 ferrule. The purpose of these different ferrule sizes (or weights) and lengths is to give the angler a range of action in rods so that it is possible for him to obtain the proper rod for the type of fishing to be encountered, together with the size of the fish to be expected.

Such expressions as a "dry fly"

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War Poses Difficult Problem For Wildlife Conservation Program



If the millions of rabbits that are killed each year for sport and food were allowed to live and multiply, imagine the crop damage complaints we would have from that source alone.

Now You Can Subscribe To The Conservationist

Beginning with the June 15 issue, the "Iowa Conservationist" will be available on a subscription basis at 40 cents per year. It is hoped that it will be possible to continue free distribution to the present mailing list, at least through December, 1943.

Budgetary restrictions have limited the number of bulletins available in the past, and many sportsmen have been unable to secure copies. The state legislature recently passed a bill allowing the Commission to charge cost for publications. Under this law the Commission is now authorized to accept subscriptions for the "Iowa Conservationist". Subscriptions should be addressed to the State Conservation Commission, 10th and Mulberry, Des Moines, Iowa, and should be mailed the 25th of the month prior to the date the subscription is to start. Subscribers are requested to send 40 cents in coin or money order.

EDITOR'S NOTE: Excerpts from an address by Dr. Ira N. Gabrielson, Director of the United States Fish and Wildlife Service, Department of the Interior, to a conference of representatives of federal, state, and private organizations interested in wildlife conservation, held December 7 and 8, 1942, at the Yale Club, New York City.)

In reviewing the effects of the last war upon conservation, I have been rather amazed at the way things have been repeating themselves. The same interests and the same points of view are involved, and to a large extent the same arguments are being used to break down the conservation program. As then, the livestock men in the western states are eager to take advantage of any excuse for cutting down the amount of big game on the ranges. . . .

During World War I, persistent effort was made by commercial fishing interests to do away with all restraint on their activities. Similar pressure is quite in evidence again under the present conditions. We also had pleas of those who like to hunt and fish that restrictions should be eased on the plea of furnishing more food for the war emergency. We are hearing the like now and it has a very familiar ring to me. We are getting the same selfish letters, same suggestions as we did in 1918, but in my judgment their volume is not so great as it was then. We can credit that improvement, perhaps, to better understanding of the basic principles of conservation. . . .

Just as 25 years ago, we are having a growing volume of complaints from agricultural interests as to crop damage by the

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Iowa Conservationist

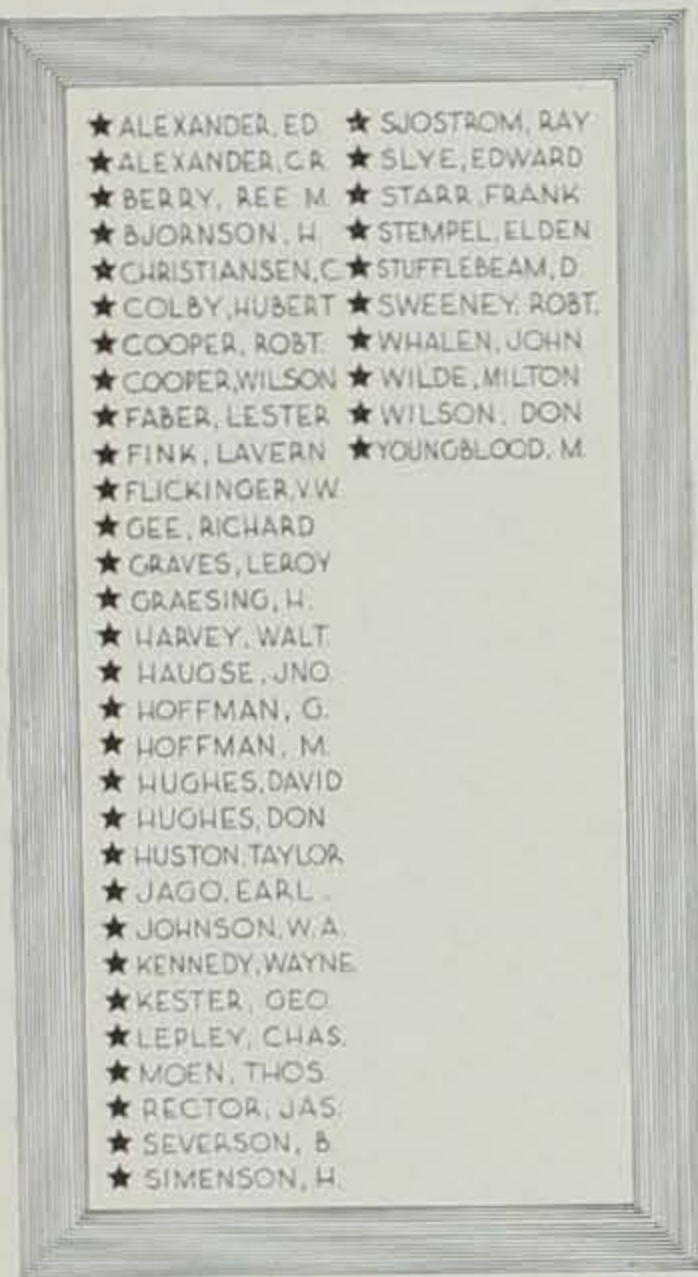
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Conservation Commission Military Service Honor Roll



Conservation in War

(Continued from Front Page)

smaller forms of upland game and by migratory waterfowl.

Over-all, there appears to be one difference in the picture, namely, that wildlife is in a lot better shape than it was in those days. Then people had almost accepted the extermination of big game as inevitable; now, in numerous localities, there are too many deer and too many elk for the good of the herds as well as for the welfare of the people nearby. There is, therefore, more basis for the complaints of damage by wildlife and for the efforts that are being made to reduce their numbers in various areas. Even though the motives of complainants may be selfish, they still have a far better argument than they had in 1918.

The same is true of the migratory waterfowl. During the last three years, we have learned of a growing number of places in which the natural food supply for migratory birds is not great enough to meet the needs of the increasing numbers of birds.

Naturally, the volume and in-

tensity of such complaints from agricultural interests depend a good deal upon economic conditions. I spent a lot of time in my years of field service in the Biological Survey investigating them and found that when prices for agricultural products are low, the number of complaints goes down and that when prices are high this volume goes up.

Nevertheless, we still have heard every year, for the past three years, from new localities where there was significant damage by migratory waterfowl. The latest one I recall is on the North Platte in Colorado, where concentrations of mallards have been wont to stop and where these birds have previously done some damage to agricultural crops. This fall, according to the estimates of our own men who have been out there investigating the trouble, there are between a million and a million and a half ducks on that river bottom, apparently many times what have ever stayed there this length of time before, and they are doing tremendous damage to crops. You can imagine what we are up against with these people being exhorted to produce food for the war program.

Another complicating factor that will have more effect next year than last is that for some months there has been no ammunition manufactured for sporting purposes. What will happen next year if that condition still prevails? Suppose eastern gardeners were involved and that along the Atlantic Seaboard there was no hunting of rabbits for one season. If the millions of rabbits that are killed every year for sport and food were allowed to live and multiply, imagine what we would have in the way of crop damage complaints from that source alone.

Returning to migratory waterfowl, we took a bigger harvest, I think, in 1942 than in 1941; yet if we go one year without hunting, I think that crop damage will multiply and become much more serious. Such damage in normal times is bad enough, but increased in the face of worldwide demands for more food, it might bring disaster to the conservation movement. Once you get enough popular hysteria and there is a pretty good case of crop damage, I can see how wildlife conservation might get a setback from which it would take many years to recover. I am sure that we are all anxious to avoid that. There isn't any question but that we can safely urge the harvesting of additional game in areas where damage is being done.

I am sure that the majority of the state game departments that have experienced a flood of complaints of agricultural damage by wildlife have about the same views that I have outlined. We

are confronted by a real problem that carries potential disaster to the whole wildlife conservation movement if we fail to meet it adequately or go too far in meeting it.

I feel sure that if we don't guide the solution of this problem and it finally gets in the hands of people who are hysterical over the war, have suffered financial loss, or who have axes to grind, the reaction will swing too far for the good of conservation.

This is a very brief outline of the problems war time is bringing to us. I think that it would be a very fine thing if the group here representing most of the agencies having to do with conservation and the administration of wildlife resources, after discussion of these problems, could come to some agreement in general policies. We would then be in a better position to guide the program in a wise way. If we can reach a common understanding, I am quite sure that we will all pull closer in the same direction, and the closer we pull together under present conditions, the more chance we have of something being left of the conservation movement after the war.

There is one other thing that I would like to suggest in connection with present difficulties: that while all of the adverse factors I have mentioned were in existence during World War I, the war did not last long enough after we got into it for them to bring about any great crisis, and conservation did not, except in a few cases, suffer any particular disaster. If we had any assurance that this war would be over in another year, I would not feel too keenly about the danger, but I am not at all sure of that. The effort that is required of us is greater proportionately than it was in the other war; the demands upon us for foodstuffs to feed other nations are already far larger, and I am quite sure that if the war goes on we will face much more anti-conservation pressure than we experienced last time.

One of the ways that we can possibly offset it is to point out that wildlife is contributing a substantial amount to the food supply and if we can take all of the surpluses in the places where they are doing damage, it will add that much more to the food stocks of the country. We have the great advantage of being able to point out that these things are produced with comparatively little expenditure of manpower, labor, or material and that so far as we can continue to produce them on wild lands, we are getting a supplementary food without a corresponding expenditure of manpower.

Food to the production of which we contribute but little,

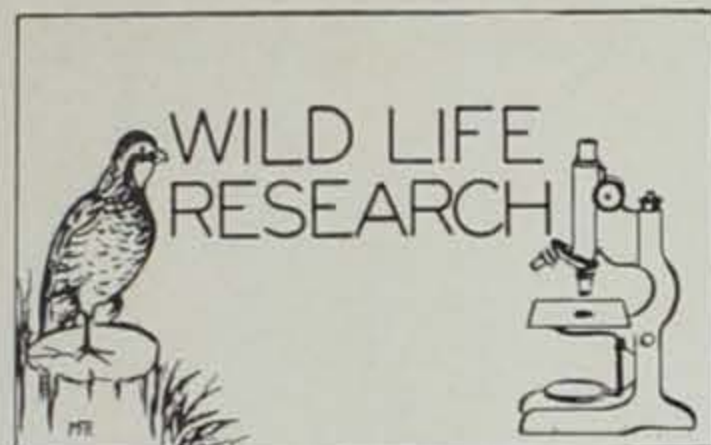
namely that garnered by the commercial fisheries, is a major contribution to the subsistence of the country in normal times. On the average, we glean out of the sea and out of the much smaller fresh waters between four and five billion pounds of fish and fish products a year. About half or a little more of that goes directly into human food and the remainder into production of fish oil (partly for human food and partly for industrial use) and of fish meal, which is largely used for stock and poultry foods, thus aiding in the production of meat and eggs. Although we are being urged to step up that production, the fact is that the number of boats taken out of the fishing fleet by the Army, the Navy, and the Maritime Commission for war purposes is so great that no ocean fishery of this country is producing as much as it did a year ago.

Production is down all the way from 20 to 90 percent; in other words, certain fisheries are producing only 10 percent of what they produced a year ago, and the best that is being done is about 80 percent of the former yield. While this is due largely to this taking of boats and of manpower, it is in part caused by military restrictions on the movements of boats. In any event the effect has been a reduction in food resources and bringing about pressure for increased production to take its place.

Unthinking response to that pressure could produce disastrous results locally on the fresh water fisheries of the country. However, in some places those fisheries could be expanded, and in the Office of the Fisheries Coordinator we are working on a program to that end, in which we are getting fine cooperation from the state departments. We are trying to find a way to increase production of certain species in certain areas, hold down the take of those that are already overfished, and see if we cannot obtain a balance that will result in the needed production of food fishes.

One of the things that we are trying to do is to increase the production and use of carp, buffalo, and other rough fishes from inland waters. We have plenty of those; in fact, can very well spare a lot of them. The problem there is to get people to use more of them.

According to my study and reflections, the best thing to do is to face this food problem frankly and permit utilization to the fullest extent that we dare but try to hold it at that point and not allow any impairment of any wildlife resource. From experience I know what the state administrators are up against, because I am in the same position with respect to the Alaska sal-



By DR. PAUL L. ERRINGTON
Leader Project No. 498
Ecology of the Muskrat

The 1942 Floods and Central Iowa Muskrats

The muskrat breeding season of 1942 in central Iowa furnished illustrations of the compensating trends in loss and recovery rates by which this species produces on something of a quota basis, independently of much good and bad fortune alike.

Production "quotas" in muskrat populations are known to differ according to locality and numbers of adults resident. Year-to-year studies on definite areas in central and northwestern counties are making it increasingly clear that the reproductive success of a particular breeding population is largely predictable from the past record of the area occupied. This is **not** simply a matter of calculating that if so many animals produce an average of so many young, then more animals should produce a correspondingly greater number, **for increase rates are highest at moderately low population levels and fall off as populations become top-heavy.** These rates of increase also seem to be little influenced by **differences** in mortality suffered by the young muskrats through natural enemies (including minks), ordinary diseases, attacks by older members of their own kind, carelessness of parents, and miscellaneous accidents.

It is true that emergency conditions may be drastic enough to upset or nullify the production schedule of a muskrat population—as could be seen again and again during recent droughts. On the whole, however, a surprising proportion of what we have been in the habit of regarding "limiting factors" do not, in reality, do much limiting at all, although they may kill immense numbers of young muskrats—often half or three-quarters of the young born.

At first glance, this sort of thing may look very strange, but it is not uncommon in population phenomena of mammals and birds. In the case of north-central muskrats, populations that have had unusually good luck in rearing their early litters tend (with a few exceptions) to cease breeding by mid-summer, whereas those that have sustained heavy losses of young early in the season tend to prolong their breeding even until early autumn. Then, too, there is much automatic balancing between one type of loss and another, some types

Spring Floods Fail to Daunt Muskrats



When central Iowa stream valleys were flooded in June and July, 1942, there was a loss by drowning of countless litters of young muskrats. Heavy breeding during the balance of the summer made up most of this loss by fall, however.

having ways of increasing as others decrease, and vice versa. Surplus young may be eliminated chiefly by minks under one set of conditions, by a combination of agencies under another, or by the teeth of other muskrats under still another. Intolerance of muskrats to crowding as their densities rise is the one clearly fundamental limiting factor during normal breeding seasons and one that notably comes into play as a consequence of populations enjoying exceptional freedom from predation, etc., and, in general, "getting along too well".

When central Iowa stream valleys were flooded in June and July, 1942, with the loss of countless litters of young muskrats, the question naturally arose as to what degree such losses might be offset by increased security of surviving young and by late breeding on the part of the adults. The adults and the larger of the early young had quite efficiently taken care of themselves without abandoning their home ranges, so the floods had set up the equivalent of an experiment. The program of investigation for the remainder of 1942 was therefore directed primarily to make the most of this experiment, not to "prove" any preconceived idea, but merely to find out, so far as possible, just what did happen.

In August and September, tracks of muskrats less than two months of age were seen frequently enough to suggest that the adults had indeed responded to their flood losses by giving birth to extra litters. Of hundreds of litters for which dates of birth were recorded in previous years of the Iowa investigations, about four percent were born as late as August and about four percent of the young of the year examined in early winter trappers' catches were, judging

by their weights and measurements, August-born. In the winter of 1942-43, 18 percent of the young muskrats examined from central Iowa were of sizes indicating birth in August and September; and two-thirds of the specimens of females bred in 1942 showed placental scars left by one or two (mostly two) late litters. Some local trappers quit trapping muskrats for the stated reason that, even in the middle of December, they were catching "nothing but young ones". One lot of 13 young coming to hand as specimens included seven "kits".

Comparison of rates of increase from the 1942 breeding densities with those recorded for other populations occupying the same areas in other years revealed another fact that should be of interest: That the number of young successfully raised by early winter, 1942-43, was essentially what might have been expected from the numbers of adults involved.

For central Iowa, the most complete and accurate statistics on muskrats relate to two square miles of ditch and stream habitats south of Story City and to 11 square miles of the Squaw Creek valley northwest of Ames. For these areas, the population figures arrived at, as of December, 1942, were: (1) Story City, a total of 143, or a rate of increase of 450 percent from the early summer level of 26 adults, and (2) Squaw Creek, a total of 393, or a rate of increase of 431 percent from 74 adults.

Some of the adult females, the carcasses of which were obtained for examination from cooperating trappers, proved to have been non-breeders; some of those breeding had had only one litter while others had had as many as four litters; others had bred early and then stopped; others had bred late in the season but not early;

others had bred both early and late. But regardless of these variations in performance of individuals and the wholesale losses of helpless litters in the flood waters, one factor counterbalanced another to the extent that about the same number of muskrats were raised as might have been predicted for similar numbers of adults living on the areas in years of lesser mishaps.

From the standpoint of fur production, the floods were costly, in that their end result was a high percentage of low-value "kit" pelts in the trappers' catches; in terms of biological productivity, nevertheless, the net influence of the floods was apparently negligible, their deadliness being cancelled out by the prolonged breeding of the adults and diminished losses of young later on in the summer.

In contrast, the productivity of the Squaw Creek populations really did seem to have been cut down by floods in August, 1940, and October, 1941. Early winter population figures were 126 in 1940 and 167 in 1941, which revealed rates of increase of only 129 percent and 174 percent, instead of a normal rate of perhaps around 700 percent, from the moderate densities of 55 and 61 adults resident in the respective years. In those instances, the flood emergencies were not known to have reduced the adults, but the emergencies had come **after** the breeding season, **after** most of the usual compensating adjustments in mortality and recovery rates had already been made, hence in periods when they could neither stimulate further breeding nor serve as substitutes for some kinds of normal losses that otherwise would have assumed greater importance.

The principles emphasized by the flood data have, incidentally, wide application to problems of conservation and management of game and fur resources. Details vary, and we must of course avoid concluding overmuch from research findings on any single species, but a few broad truths are entirely recognizable. One is that the amount of mortality a certain wild population may suffer is not necessarily a valid "yardstick" for measuring effects of mortality on population levels. Appraisals of influence should take into account not only numbers of animals dying but also the time of year that the dying occurs and the underlying role of population density in determining rates of increase and loss.

Yesterday's conservation is the greatest contributor to today's war effort. Today's conservation insures tomorrow's peace!

Much Work And Skill In Museum Exhibits

By JACK MUSGROVE
State Museum Director

Most people interested in conservation and wildlife have visited public museums and spent considerable time looking at, among other things, the displays of mounted birds. It is the observation of the writer that much of the visitors' curiosity is about how the bird was made to stand. In other words, what processes did it go through in order for it to be finally displayed in the museum cases? Visitors often compare the game specimens in museums with the ones that he has paid hard-earned, cold cash to have mounted; and he notes a marvelous difference, the birds and animals in the museum being almost life-like, while his specimens from the commercial taxidermist, more often than not, look as though they had been prepared in a cement mixer. It is then that he questions the preparator, and the chances are he will learn some of the facts of museum taxidermy.

Birds in museums, except in rare instances, have been collected with great care. They are selected for perfect plumage and are not picked up in a hit-and-miss manner. While collecting and preparing these birds, all possible care is exercised to see that they are not damaged in any way that may detract from the excellence of the finished specimen. The procedure followed in collecting and mounting birds for museum exhibits is briefly outlined in the following paragraphs:

Each specimen is thoroughly studied in the field before being collected. The taxidermist takes mental notes of its position and how it controls its plumage. He may photograph it. It is then shot, and notes are made on a convenient tag that is attached immediately to the bird's leg. This tag states the exact place where the specimen was taken, the date, the color of the beak, legs, iris of the eye, and other pertinent data.

In many cases color sketches are made from the specimen in the field because the color tones do not remain true for any length of time after the death of the bird.

The birds are then taken to the laboratory, where they are skinned. This is accomplished by making an incision on the breast from the breast bone to the vent, then removing the skin from the body with as little damage and stretching to the former as possible. The bones of the wing and leg, as well as portions of the skull, are left attached to

He Didn't Just Happen That Way



Mounted birds in museums are almost life like. The efforts of the amateur taxidermist often look as though they had been prepared in a cement mixer.

the skin, which is then stored and salted in a cooler for from several days to a month or more until the fat and tissues still attached to the skin have been softened by the action of the salt. This fatty tissue can then be scraped and removed rather easily and the feathers readily relaxed.

The scraping process is very tedious, one involving several hours of work, and when this process is completed, the base of each quill is free and the feathers can be independently moved or twisted in a manner that permits the taxidermist to work them into the position seen on the live bird.

The entire skin is then thoroughly washed (to remove salt, grease, and any blood stains that may be on the plumage), first in clear water, then with soap and water, and finally in carbon tetrachloride. The plumage is then thoroughly dried and fluffed in plaster of Paris, which is later blown out with compressed air. After this cleaning process the skin is perfectly relaxed, and the feathers are in a clean, fluffy condition.

The taxidermist next constructs the artificial body on which the skin is to be placed. Formerly this consisted of a wad of excelsior or hay roughly formed and wrapped with twine; but modern museum taxidermists have adopted the use of balsa wood, from which is carved a form the exact size and proportion of the bird's natural body.

The wing bones are now removed from the skin, and substitutes are made by wrapping tow around wires and inserting in the wing. The neck is formed by reeling fine flax fibre around a wire. This artificial neck, the same length and size as the one removed from the bird, is attached to the balsa wood body and curved in a natural position.

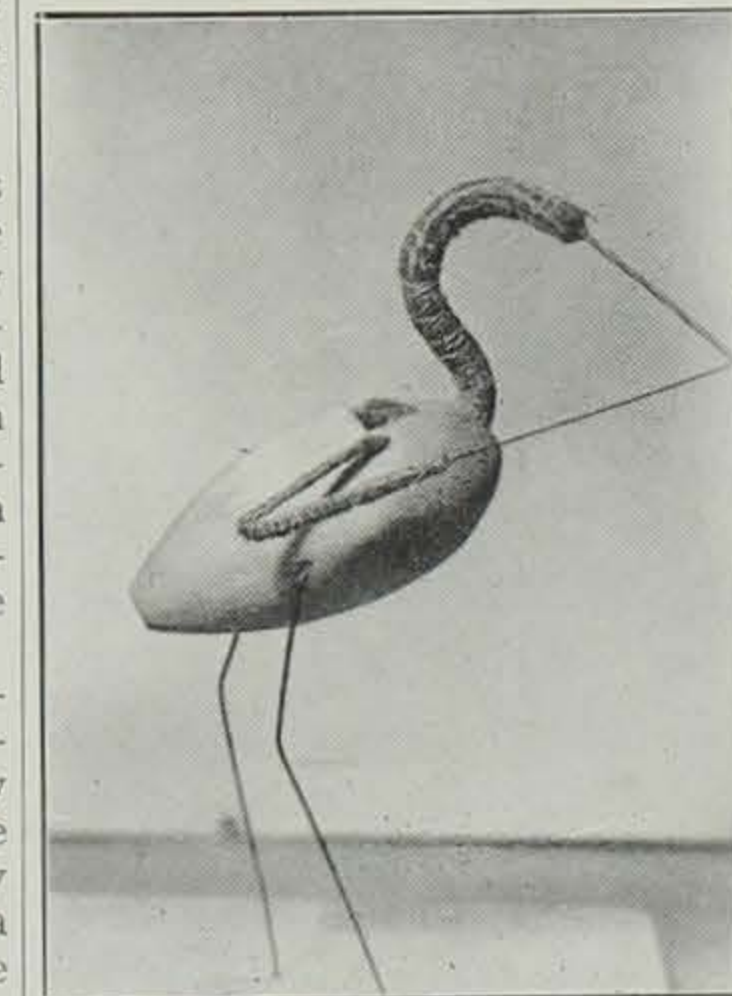
Next wires are passed up through the legs. Before any further work is done, the artificial wing bones are fitted into place and covered with potter's clay. The entire inner surface of the skin, painted with an arsenic solution, is neatly placed on the artificial body; and the wires of the wings and legs, in proper positions, are clenched into the wooden body and manipulated until these parts take on the attitude of a live bird.

At this point in the work the photographs and drawings which the taxidermist collected at the time the specimen was collected are used to great advantage to form the bird into the various poses so admired in the museum. Hours are spent twisting the bird's neck, shifting the wings, moving the center of balance, etc., until the exact effect desired is accomplished. The bird is then placed on a perch or temporary stand from where it can be shaped into final position. Lastly the incision on the bird's breast is sewn together and the specimen put away for a few hours to allow the feathers to set, after which any bad spots are smoothed up.

After the bird has become thoroughly dry, glass eyes are set and the bird's beak and feet are placed in permanent position and tinted their natural colors. The bird's plumage is usually lightly bound with thread to hold it in place until it is ready to be placed on exhibit.

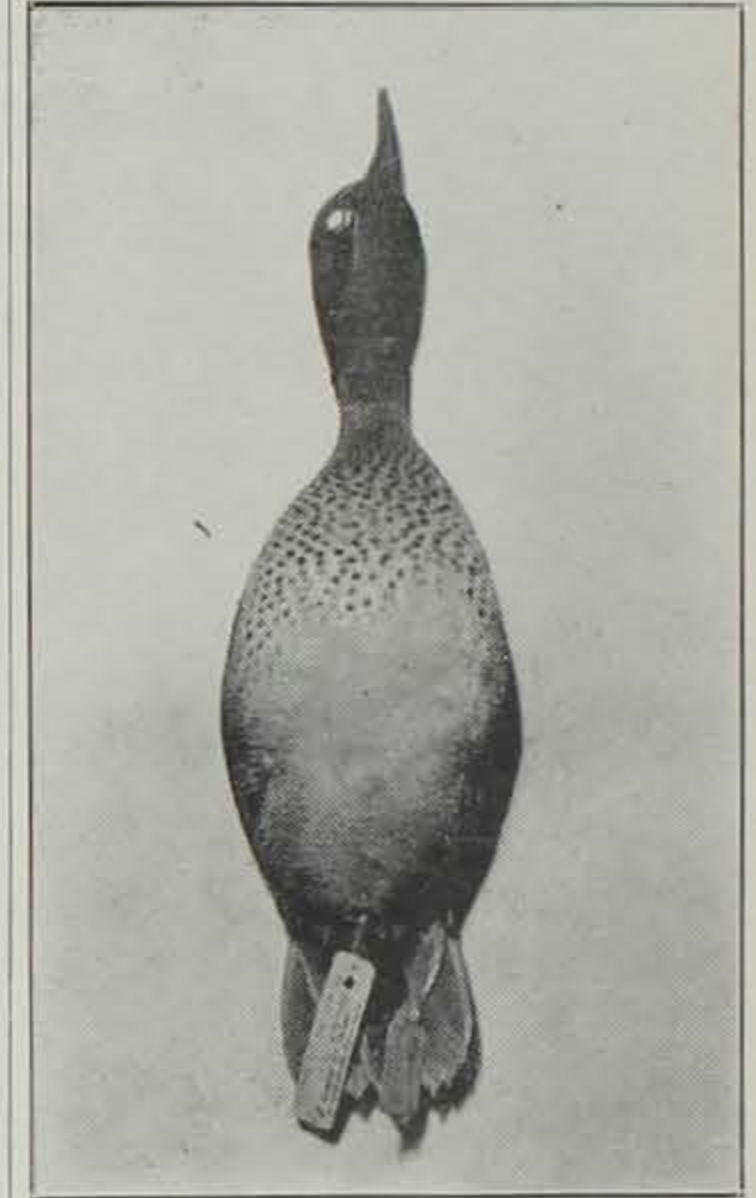
The above outlined procedure is the method used in mounting most of the birds we see in museums. There are, however, many variations. Large specimens are sometimes handled differently than small birds, and various species are treated in various manners. However, the main desire in modern museum work is to

Needs Pants But He'll Soon Look Alive



This artificial body made of balsa wood, when clothed with the skin of an egret, will be life-like in detail.

Many Museum Specimens Preserved Unmounted



The greater portion of birds collected by museums are seldom seen on exhibit. They are kept on hand in the form of skins, which are convenient to study and which may be mounted at any time.

mount specimens with absolute accuracy of data in as life-like an attitude as possible.

The greater portion of birds collected by museums are seldom seen on exhibit. They are collected as research specimens or specimens to be kept on hand in the form of skins which may be mounted at any time. Most museums have rather large collections of study skins.

Formerly birds in museums were mounted by any hit-and-miss method that the taxidermist might choose to use, and they were known as stuffed birds, the process of mounting then being nothing more than to upholster the skin so that it would stand or sit on a perch; and very few of these after a short while resembled any living creature. The upholstering process is the one followed by most amateur taxidermists, and this is the reason why most of the trophies mounted by them are vastly different from those seen in museums. The writer remembers well how a friend described the way he mounted a pheasant, and his method is copied by the ordinary commercial amateur. He said, "All you have to do is cut 'im open, take out the carcass, put in some hay, and you've got 'im."

The Hudson Bay Company and some other records provide a record of the number of lynx furs collected in Canada for 206 years.

It is estimated that there are 50,000,000 European starlings and 150,000,000 English sparrows in the United States.

Location More Vital Than Soil In Wild Flower Culture

By ARTHUR E. RAPP

Shortly after the State Conservation Commission was created in 1935, a number of wild flower projects were started by the Commission. These projects involved a survey of the state to determine where wild flowers could be found, their nature and extent, and the conditions that prevailed in the various areas. In addition, some projects involving the collection, production, and culture of native plant material were started. It soon became evident that without an assurance that these projects could be continued over a long period of time under very competent supervision, they would have but little value.

As a result, the wild flower projects were discontinued as a Commission activity, but most of the projects were carried on privately. During the intervening years, the scope of these projects has been greatly extended, and with the increased interest in wild flowers, there has been an increased number of gardeners giving consideration to the cultural problems involved in growing wild flowers. Considerable time and effort has been spent in visiting and studying places where wild flowers are growing both naturally and under gardening care. This has given the advantage of profiting by the experience of those who have been growing and observing the growth of wild flowers over a considerable period of time.

The suggestions made in this bulletin are the product of a wide range of experience by various gardeners, not all of whom live in Iowa, but almost all of whom have carried on their interests under typical midwestern conditions such as prevail over the major portion of this state. Insufficient time and unsystematic methods do not warrant any statements made herein being considered as conclusions, as at best they are but little more than opinions.

Very early in carrying on these wild flower projects, it became evident that the average gardener interested in wild flowers fails to take into consideration that Iowa is a prairie state and that there is a marked difference in the soils and the climatic conditions prevailing here from those that prevail to the northeast and the southeast. Our soils are heavier, coarser, and much more fertile. We have much more sunshine, and it is more intense. The air is drier, and the winds are hotter and stronger. While we have sufficient moisture to

Bluebells. Most wild flowers indicate a preference for sloping ground, the protection of rotting logs and the stabilizing influence of rocks and stones.



mature our staple crops, only occasionally do we have sufficient moisture to provide good germination on our coarser soils of the seeds of many of our wild flowers.

As a result, woodland flowers only prevail in limited areas, while our prairie flowers are those that can withstand the competition of coarse weeds and strong growing grasses. Even with the limited experiences of the past few years, it is evident that both the woodland flowers and the prairie flowers can be grown quite satisfactorily under garden conditions. Naturally we have a traditional interest in our woodland flowers, while the thrift and permanence of many of our prairie flowers entitle them to our consideration.

The cultivation of most varieties of native plant material in the sense in which garden varieties are usually cultivated seems to be generally undesirable. With the possible exception of occasional bits of hardpan, or where clay and gravel have been so compacted that they cannot be penetrated by plant roots, natural soil conditions as they prevail through the major portions of the midwest seem to be suited to the needs of most wild flowers. The best stands of wild flowers seen in gardens were those in which the soil had not been disturbed other than such disturbance as is caused by the pulling of weeds or other competing vegetation. Hoeing the ground or attempts to provide a dust mulch

were both unsatisfactory.

Most wild flowers indicated a preference for sloping ground, for the protection of rotting logs and the stabilizing influence of rocks and stones. Woodland wild flowers did better on banks sloping in a northeasterly direction, while prairie flowers preferred a southwesterly exposure. The protection from wind and rain of the more delicate woodland flowers by coarser and stronger plants of other varieties seemed more important than deep shade or a constant supply of moisture. Considerable attention was given to determining the types of plant material suitable to give such protection, and excellent results were obtained where columbine was planted so as to give the protection that is needed by early spring bloomers in the maturing of their stems and foliage. Toothwort, sweet-cicely, and milkwort were also used in the same manner for protection of later blooming wild flowers. None of these protective plants seemed to have adverse effects upon lesser wild flowers.

The lack of moisture did not appear to injure wild flowers as much as strong or hot winds, especially the winds that are deflected toward the ground surfaces under trees and around masses of shrubbery. The roots of trees and shrubs did not seem to have an adverse effect upon wild flowers, and possibly by keeping the ground quite dry, they may have had a beneficial effect upon dormant wild flow-

ers, especially those having bulbs, corms, or strong crowns.

The maintenance of a constant mulch of loose humus over beds of wild flowers proved to be quite a problem, and only through constant replacement of a heavy mulch each fall, the coarsest portion of which was removed in the spring, could a satisfactory condition be maintained. A mulch consisting of dense masses of vegetation often produced the same effect as a mulch of humus.

Where seed had been sown in open beds, it was found beneficial to provide a mulch during the summer time and also protection from hot or dry winds. Most of the prairie flowers preferred an open exposure free from shade, and after the first year they were quite indifferent to the competition of stronger growing grasses and seeds.

Most all wild flowers are of slower growth than are our cultivated garden flowers, and no satisfactory method of speeding up their growth was found. Individual clumps of wild flowers found in gardens were often much larger than any found under natural conditions, and there also was evidence that wild flowers in gardens may be of longer life than those growing under natural conditions.

Wild flowers were found growing under a very wide range of conditions in gardens, just as they can be found growing under the same wide range of conditions in nature, and the impression that is often held that they can be grown only by providing the very exact conditions which may prevail where they are found in nature, is not entirely correct. In general it appeared that the chemical nature of the soil was not as important as the physical condition. Only to a slight extent is it possible to control atmospheric conditions. Ridges of soil built up to a height of two or three feet, extending irregularly in an easterly and westerly direction, made it possible to establish thrifty colonies of woodland flowers on the northerly slopes, while representatives from the higher plains of the west did well on the southerly slopes.

Where logs or field stones are available, planting on the lower sides of the logs is appreciated by most woodland plants, while a fair-sized field stone will provide by condensation most of the moisture needed by others.

The jack rabbit is a hare; the cottontail is a rabbit. Hares never make burrows, but live in forms or nests of a sort, in which the young are born. Rabbits make more or less use of burrows, often the abandoned homes of other animals. Young hares are born with eyes open; rabbits are born with closed eyes.

Trout Fishermen Asked to Aid in Making Survey

By E. T. ROSE

All of the major trout streams in Iowa are stocked annually with a great many legal and above legal size trout, and trout fishing in this state is good. It is good because the fundamental policies of the trout program are sound.

Iowa was one of the pioneers in stocking adult trout rather than fry, a practice that in recent years has been adopted by most of the leading trout states. The old policy of stocking small trout was abandoned due to adverse environmental conditions for fry and fingerling in most of our trout streams.

During the past few years many pertinent questions have arisen relative to the management of trout, and in order to find the answers to these questions the Conservation Commission must have a more thorough knowledge of trout ecology.

We are not sure how many of the thousands of trout stocked in the streams are actually caught by anglers. Neither do we know all the effects of flood waters on the "stay-ability" of trout. Are rainbows more migratory than brooks or browns? We assume so but do not know. Will trout migrate from the cold, spring-fed, trout waters in winter to waters in which they cannot survive in summer time? How much natural food and what kinds are required to induce trout to remain in the streams in which they are stocked? Are rainbows more readily caught than brooks and browns? What becomes of the trout that are not caught each year?

These are but a few of the questions which will be answered by the following plan, an experiment that depends largely upon the cooperation of the sportsmen:

Fishermen on Trout Run, a stream of about two miles in length located in Winneshiek County, will be asked throughout the season to fill out census cards. These cards will be provided at convenient points along the stream. Conspicuous census boxes have been placed at these locations, the upper part containing cards and a pencil and the lower part a slotted compartment where anglers may place the completed cards.

Trout Run was selected as the experimental stream because it is a typical trout stream and because of its proximity to the fish hatchery at Decorah. Conservation officers and personnel from the hatchery will contact fishermen along the stream occasionally in order to explain the pro-

Good Fishing? Well, Tell Us About It



The purpose of conducting the Trout Run creel census is to improve fishing in this and other trout streams of the state, and by cooperating fishermen will provide information that has been conjecture for years.

gram to those not familiar with it, and also to urge accurate observation on the part of fishermen who might not feel that this information is vital to their sport.

Consider, for example, a hypothetical trout stream. Investigation by conservation employees has proved that this trout stream harbors a certain percent of natural food. Approximately 1,000 trout inhabit the stream previous to stocking in the spring. Prior to the opening day, another 1,000 are added from the hatchery supply, which should theoretically add up to 2,000 legal fish in the stream on the opening day. However, if the amount of food present in the stream were not sufficient for 2,000 trout, it is logical to assume that after reduction or exhaustion of the food supply, part of the trout would migrate downstream into unsuitable waters in search of food and eventually perish because of increasing water temperature as the summer advances. If, on the other hand, our inventory and creel census shows an ample amount of food and that a majority of the fish are caught before this food supply is exhausted, it would indicate that heavier pre-season stocking is justifiable.

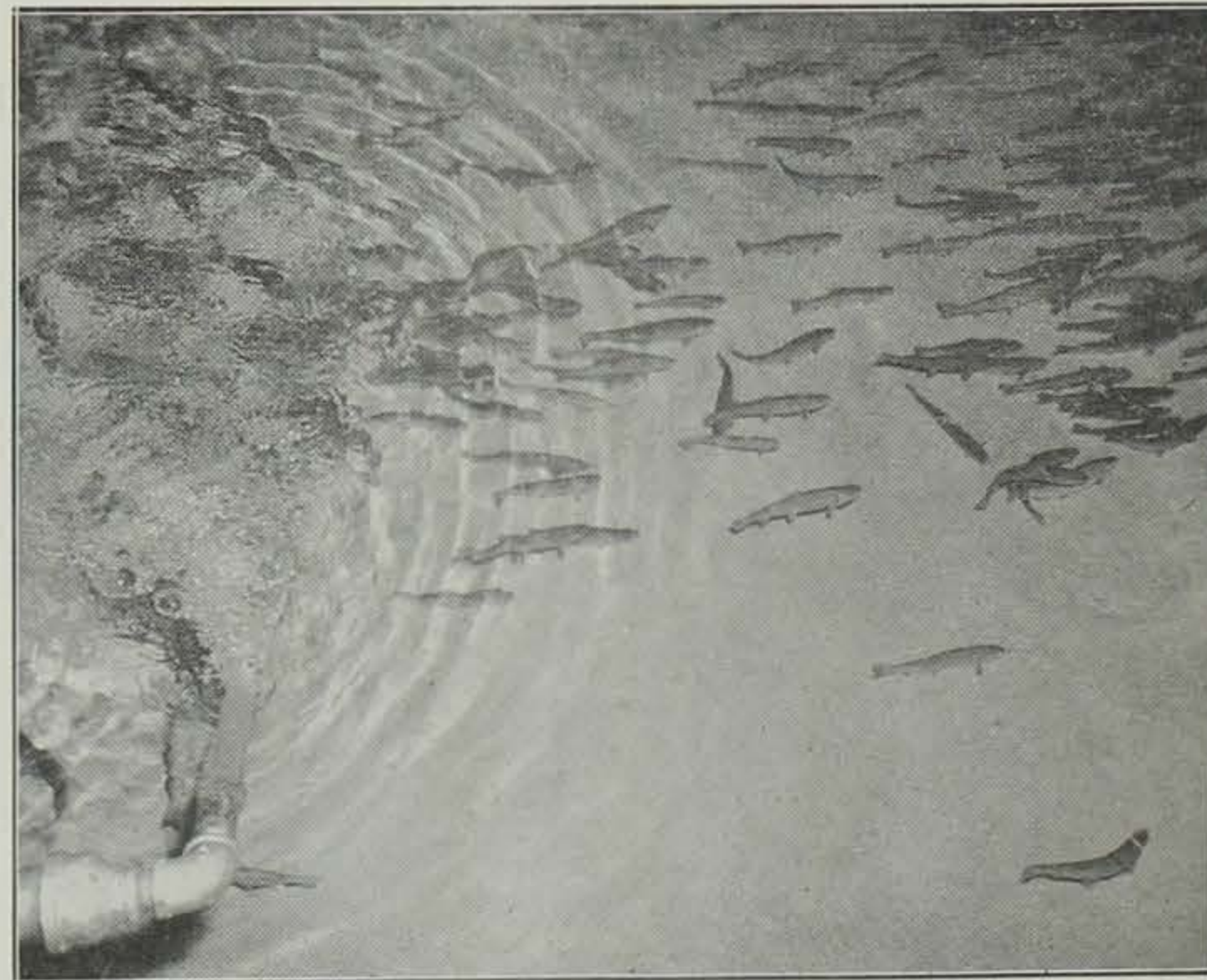
Obviously it is not possible to conduct this census program on all trout streams in the state; however, the plan is to apply the findings of this survey to other streams with modifications to suit local conditions. Details of the Trout Run program for the 1943 season are as follows:

A complete biological survey of the stream from Siewers Spring branch to the confluence at the Upper Iowa River is being made. By use of seines and nets deter-

mination as accurately as possible is being made of the present trout population in the stream. As in the past, prior to the opening heavy stockings will be made.

A certain percentage of all trout stocked in Trout Run will have the left pelvic fin clipped off. This method of marking fish has proved to be very successful and is considered more practical than most other methods used. Fishermen on Trout Run are urged to examine all fish taken and note on the census card any fin-clipped fish. Photographs posted at the census stations will assist in determining the species.

Adult Trout Stocking Proven Wise Policy



Iowa was one of the pioneers in stocking adult trout rather than fry, a practice that in recent years has been adopted by most of the leading trout states.

Creel census depots are being installed at major points along Trout Run to enable fishermen to fill out cards without undue walking. Depots are located at Fishermen's Park near Siewers Spring; at Holland Bridge, confluence of Spring Branch and Trout Run; between Holland Bridge and Rock Island Railroad Bridge; at the Rock Island Railroad Bridge; below the bridge in Holland's lower pasture; and at the mouth of Trout Run on both sides of the stream.

During the opening days of the season and on days of heavy fishing pressure, Commission employees will check the number and kinds of fish caught, whether marked or not, etc.

This is the most extensive project of its kind in the trout region of Iowa, and the Commission feels assured of the 100 percent cooperation by sportsmen so necessary to make the plan effective. Similar work has been carried out on the natural and artificial lakes.

The purpose of conducting the Trout Run creel census is to improve fishing in this and other trout streams of the state, and by cooperating fishermen will provide information that has been conjecture for many years. Do your part, Trout Run fishermen. Make it a point to fill out fish census cards completely and honestly and help us make your fishing better.

There are approximately 16 hunting license holders per square mile in New Jersey.

During 1942 in Johnson County there were 208 bounties paid on foxes, 13 on rattlesnakes, 429 on crows, and 3,322 on gophers.

Fly Rods

(Continued from Front Page)

and "wet fly" rod, "balance" and "tempered bamboo" frequently puzzle fishermen.

Wet and Dry Fly Rods: In the past nearly all of the flies used were "wet" flies, that is, they sank slightly under the surface of the water, and a rod with a soft or whippy action was used, hence the term "wet fly" action. Now, however, with the development of "dry" or floating flies, the need has come for a faster rod, stiffer in the butt and middle section and with a fast, quicker-acting tip, hence the term "dry fly" action. Most anglers prefer "dry fly" action because it can be used for both types of fishing.

Balance: This is the most mis-used term in fly fishing. A rod never did and never will have balance, and there is no such thing as a "balanced rod"; what is meant is a "balanced outfit", which includes ROD, REEL and LINE. The actual weight of the rod has nothing to do with it, but the weight of the rod, with the proper weight reel and, most important of all, the proper weight line, is a true "balanced" outfit. A balanced outfit is essential to efficient fishing; it handles better, does not tire the angler, and permits accurate and longer casts. On some fly rods the correct size line is marked on the rod.

Tempered Bamboo: Only choice rods are made from tempered bamboo, for it is an expensive process. Identify these rods by the brown, "tempered" color of the bamboo. The untempered are straw color. Genuine tempered bamboo results from a special heat treatment which adds strength and backbone and is not a surface stain. "Tempered" bamboo rods never have buggy- whip action.

Reels: In fly casting the reel does not assume nearly the importance that it does in bait casting. As a matter of fact, almost any well made reel will serve in a perfectly satisfactory manner. Generally speaking, there are two main classes of fly reels—the single action and the automatic. In a single-action reel the spool should fit snugly against the frame so as not to allow space to permit the line to wedge between the spool flanges and head or tail-plate of the reel, and yet run true and free. It should be equipped with a good click which

Conservation in War

(Continued from Page 26)

mon catch. I was told in Washington, within the week, that if it weren't for the fool restrictions that we put on in Alaska, we could double the Alaska salmon pack next year. True, we could, but some following year there wouldn't be any pack. . . .

Your Outfit Need Not Be Expensive



puts a uniform tension on the line at all times.

The automatic reel, which retrieves the line by means of a release on a tension spring, is not used to play the fish (as sometimes beginners believe), but simply to take up slack line instantly rather than looping it in by hand. Care should be taken with automatic reels not to let them run too fast, as many a rod tip has been broken in this manner, caused by the line throwing a half-hitch over the rod and breaking the tip before the pressure can be released.

Lines: There are three different types of lines used with fly fishing: the "level" line, the "tapered" line, and a new type known as the "torpedo" or "bullet" line. Before going into these, however, it is well to emphasize the importance of using the proper weight and size line in proportion to the action of the rod, for if the line is too light, or the rod too stiff, it will be impossible to do satisfactory casting.

One fly rod manufacturer has simplified this vital problem by inscribing each rod with the proper size line to use with it, which makes it easy for the beginner to secure an entirely practical outfit even with little experience.

The "level" line is the same diameter throughout. The "tapered" is thicker and heavier in the middle portion, and light on both ends. The new type known as "torpedo" or "bullet" line is designed to give extra weight at a given point in the line, primarily with the idea of getting dis-

stance in casting.

For a beginner our recommendation would be a good "level" line in weight F or E for trout fishing, and D or C for bass fishing.

Lures: Generally speaking, flies are of two types, the dry fly and the wet fly, the former being used late in the season when fish are feeding on the surface, and

War Blasts Sporting Goods Industry With Material Shortages

The sporting goods industry has gone to war.

For beginners a good level fly line, in weight F or E for trout fishing and D or C for bass fishing, is recommended.

Use of steel and other critical materials in fishing tackle, except fishhooks, is prohibited. No new guns are being made, although present supplies are considered adequate, and there's no new ammunition for any civilians except police, certain defense agents and farmers who want to kill rodents.

If the war lasts long enough and existing supplies of fishing tackle disappear, anglers may have to resort to the old-fashioned willow pole. Nimrods may be taking a potshot at game with a slingshot or bow and arrow.

In a review of the sporting equipment supply, the War Production Board disclosed Saturday that the 171 firms which formerly produced fishing tackle are now turning out ski poles, radio antennae, gun mounts, machine gun parts, signal kites and percussion primers.

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the latter when they are inclined to feed deep.

The use of transparent materials has proved very popular in "bugs" and other fly rod lures. These new "bugs" are hollow, lighter and more buoyant than cork, and many times more serviceable, as they will not waterlog.—Heddon Fish-Flashes.

Won't Be Long Till Trout Fishing Time



The Iowa trout season opens at 5 A. M., May 1, and closes at 9 P. M. on September 30. Trout may be fished each day during the open season from one hour before sunrise to 9 P. M. central war time. The daily catch limit is 8; possession limit, 16. Legal length for trout in Iowa is 7 inches. The State Conservation Commission has for free distribution a map folder showing the location of all Iowa trout streams.

WARDENS' TALES

SHOP TALK
FROM THE FIELD

Blaine Hawkins of the Wapello Republican prints letters from local boys in the service and his answers in the columns of his paper. In answer to a recent one regarding the 1943 spring duck flight in that vicinity, Blaine wrote:

"... And I have already seen the ducks, gobs and oodles of them. A couple of the Home Guard didn't believe in the closed season, and Dan Nichols picked them up, all of which goes to show that if one must hunt ducks in the spring, it is safest to go where there ain't any ducks, because where there ain't any ducks there ain't any game wardens either."

—WT—

Conservation Officer Mike Youngblood, now in the armed service, was "laying out" on a pre-season trap line early one morning. About daylight he heard noises of wading upstream, and in a few minutes a man in hip boots approached the bank-set below the officer and reached for a trap containing a muskrat. Mike interrupted him with, "What are you doing so early in the morning?"

"Looking," was the startled reply.

"Looking for what?" asked Mike.

"Oh, just sights."

"Is that all you're doing?"

"No, I was listening, too."

"Listening for what?" queried the officer.

"Oh, just sounds," replied the trapper.

"Looking for sights and listening for sounds", plus two illegal muskrats, was worth \$100 and costs, the justice decided later.

—WT—

Conservation Officer Vern Shaffer was watching a group of carp fishermen through binoculars when he noticed a very fat, very black Negro woman catch a smallmouth bass which, in spite of her frantic efforts, escaped back into the water. The officer approached the woman and asked her a few questions. He was convinced she did not know that the fish was a bass.

"So I explained the difference between carp and bass and told her what would happen if she kept them out of season. When I started to leave, she beamed a wide-toothed grin and said, 'Say, Mister, is yo' a fish poleeece-man?'"

—WT—

"I have a 'dead grass' or blond-colored Chesapeake Bay retriever," writes Conservation Officer

Blondie Proves Able Aid For Bill Morf



Blondie, 75 pounds of Chesapeake Bay retriever, and Conservation Officer Bill Morf, 210 pounds of game warden.

Bill Morf, "that weighs about 75 pounds. She is with me on my territory practically all the time and is as well known by sight as I am. Last fall was the first year that I have used her hunting, and she proved her value as a retriever."

—WT—

"During the last of January this year, however, 'Blondie' proved herself a working dog as well as a hunter. I saw a fisherman about a hundred yards out on the ice in the Mississippi, and I could see with my glasses that he was spearing game fish and had quite a pile. Also, I recognized him as a man having quite a reputation as a foot-racer. The ice was clean, and I could not approach very closely without being seen. I had barely started across the ice when the violator took off, the dog and I in pursuit."

—WT—

"The dog soon out-distanced me and overtook the violator, who stopped and yelled back 'Call off your dog!' He seemed much more afraid of Blondie than of a mere game warden. When I caught up, he was so scared he answered all my questions about illegal fish peddling and followed me into court and plead guilty."

—WT—

"The justice, when confronted with 153 pounds of speared bluegills, crappies, and black bass, plus the violator's admission of peddling game fish, assessed a fine of \$500 and costs. I couldn't convince the fisherman later that the dog has a very gentle disposition and loves to play with children."

Thirty-four out of 50 squirrel den boxes on an experimental area in Illinois were found to be in use in late September.

It is estimated that 88 per cent of all raccoon trapped in Ohio last year were consumed for their meat.

"Take Good Care of It, Dad"

It's just a rough job of peeled logs, but it's all ours. We built it together. And to me it stands for all the things that make life worth living... yes, Dad, worth fighting for! I'll spend many a night thinking about all these things when I'm away...

Gosh, Dad, even building it was fun. Of course it was work, but that kind of work is fun. Remember when we cut and peeled and hauled the spruce? And swatted black flies? And how we hauled the floor boards in from Eagle Lake? And the day we brought the cook stove across in the row-boat? Tough work, wasn't it? But when we got her finished... well, I guess no boy was ever prouder. And no boy and his dad ever had a more wonderful place to enjoy together.

I'll be thinking of those trout in the creek, the smallmouths in the lake, my rods on the wall... yes, and those breakfasts we cooked together, and the rain-drops on the roof above my head... gosh, how a fellow can sleep on those rainy nights! I'll think of the days we just poked around the woods together when we didn't feel specially like fishin'. Say, Dad, you'll look after my fishing tackle, won't you? I'm depending on you...

I'd hate to think of coming back without these things to look forward to, and I expect about ten million boys feel the same way. Not that I want to be selfish, Dad, but with these woods and lakes and streams destroyed, our fish and birds and game gone, it would seem like throwing away the greatest things we're fighting for... this outdoor heritage that makes me proud to be an American. So, take good care of it... will you, Dad?—South Bend Bait Company.

Of 24 artificial nest boxes erected in a study area in Michigan, three were used by fox squirrels, one by red squirrels, one by screech owls, five by honey bees, nine by songbirds, and five were full of comb honey.

A comparison of muskrat trapping seasons in the United States for the years 1937, 1938, 1941, and 1942 indicates a tendency to decrease the length of trapping seasons.

Franklin ground squirrels were found to be quite a factor in the losses of pheasant eggs in Illinois.

In a squirrel population study in Michigan in 1942, 40 adult fox squirrels were trapped on 102 acres of squirrel woods.

During 1942, 14 deer were killed by 1,521 archers in Wisconsin.

Praise The Lord and Pass the Rabbit

With meat rationing likely next month, the government is giving attention to substitutes for common meats. Rabbit stew, rabbit fried and rabbit fricassee likely will become plates de resistance before long.

The Department of Interior, which is headed by the noble Harold Ickes, is advocating rabbit culture. Out at Fontana, California, they have figured out a way to build a big rabbitry from scrap material.

After the rabbitry is built, the rest is simple. "Three or four does and a buck will furnish the average family with all the rabbit meat it will use," says a statement.

In fact, we suspect such a plan would furnish even more rabbit meat than the average family would consume. The whole theory, however, reminds us of an old story.

It seems the watchdog of the city treasury was a hardbitten, hardfisted councilman from the bowery ward who didn't know much about biology or other sciences, but who was strong on economy. So when one of his colleagues proposed the city buy 12 gondolas for use on one of the park lakes, the old codger arose and, addressing the chair, said, "Misther chair-r-rman. I think we should economize. I move we buy only two gondolas, a male and a female, and let nature take its course."—Burlington Hawkeye Gazette.

Material Shortages

(Continued from Page 31)

Production of fishing lines has been restricted to materials other than silk, nylon, linen and Egyptian cotton. However, stocks on hand are large.

Production of fishhooks has been halved and no fishhooks can be converted into lures, baits or flies with such critical materials as metals, plastics or cork.

Ammunition for hunters is short, the WPB explained, because the war department is buying all it can get. Furthermore, hunters have been asked to retrieve discharged shotgun and rifle shells and turn them in as scrap.

Hunters may buy small-gauge shotguns, odd-caliber and some .22 caliber rifles and other types of firearms which the armed forces do not need.

There are no new outboard motors for hunting and fishing boats.

Pleasure boats and canoes, and oars and paddles are still being made because redwood is not particularly critical. — Davenport Democrat.