-Bearers and Game
mmals of Iowa

E.A. Hicks

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UR-BEARERS AND GAME MAMMALS OF IOWA

FEBRUARY, 1940 BULLETIN P3 (New Series)

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AGRICULTURAL EXPERIMENT STATION
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IOWA STATE COLLEGE, AMES, IOWA

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FUR-BEARERS AND GAME MAMMALS OF IOWA

BY

ELLIS A. HICKS AND GEORGE O. HENDRICKSON

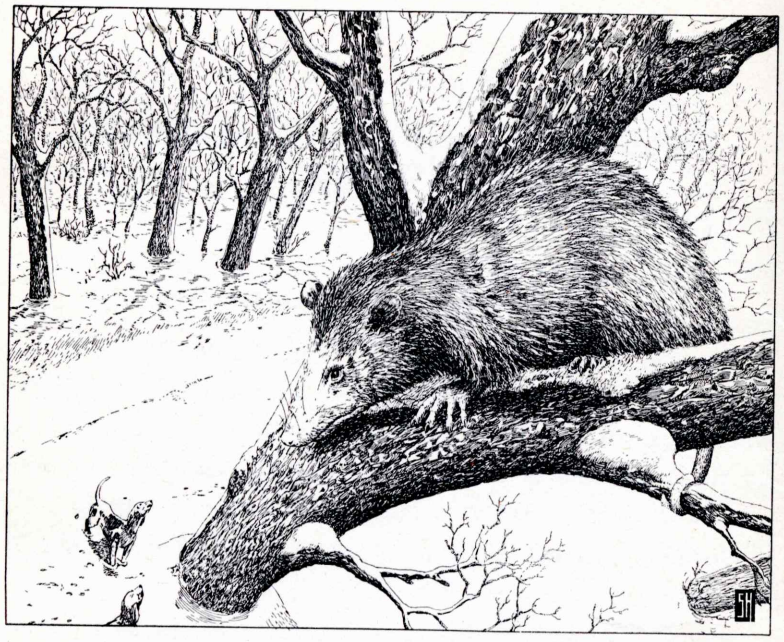
Most people are interested in those mammals which are classed as game, but only a few have a knowledge of their private lives. A first-hand understanding of the intimate habits of these animals is the privilege of only seasoned trappers, naturalists and workers engaged in scientific research.

To some, interest in the habits of mammals is heightened by comparing certain traits with those displayed by humans.

In order that as many people as possible may become acquainted with those wild forms which inhabit the fields, forests, lakes and the water courses, this bulletin presents condensed accounts of the general characteristics of game mammals found in Iowa.

Many and heated are the discussions about wildlife—for example, the nature and appearance of newly born opossums, and the red fox in relation to the pheasant. By presenting pertinent facts about each species, their habits will become better known. This information should result in good management practices and as a consequence a betterment of our fur and game resources, which have been subjected to excessive harvesting.

An understanding of all phases of life histories is necessary if corrective management is to become a reality instead of a theory.



OPOSSUM

Didelphis virginiana virginiana Kerr

Average length: 30 inches. **Average weight:** 4 pounds. **Color:** Body is soiled gray above and on sides with lighter gray on underparts.

On this continent the opossum is in a group by itself, with well-known relatives, the kangaroos, in Australia. The distinguishing characteristic of both is the presence of the marsupium or abdominal pouch into which the premature young are placed until further development has occurred. The number of young varies from 5 to 18 in a litter. At birth they are about the size of navy beans, and each weighs about 1/15 ounce. However, in 1 week their weight increases nearly 10 times, at 2 months they are about the size of mice, and about a month later they are sufficiently developed to hunt for themselves.

The opossum is similar to the raccoon in its liking for timbered water courses, but in its nocturnal wanderings it is often found along fence lines and roadsides, in thickets and woods and in farm groves. Days are usually spent in the den, but nightfall brings the animal out for foraging. It is omnivo

rous in its feeding, enjoying both plant and animal material. Fruits such as berries, haws, apples and persimmons are taken whenever available. Insects and small mammals constitute another portion of the diet. Also included are frogs and fishes to a lesser extent. The opossum is of value as a scavenger, since it has an appetite for carrion. Its greatest use is as a furbearer, since its pelt is in demand by industry for the manufacture of low-priced coats. During the 1937-38 Iowa season 11,755 pelts were taken with a total value of over $3,500.

Because of its slowness and stupidity the opossum has many predators, chief of which are foxes, dogs and great horned owls. Instead of fighting when cornered it more often lies like dead and hence may escape injury at times. The exact cause of this pose is not known, but by some it is believed to be due to nervous shock, since pulse rate and heart beat are slowed down considerably during the act of make-believe.

COYOTE

Canis latrans Say

Average length: 42-48 inches. **Average weight:** 35-40 pounds. **Color:** Coarsely grizzled buffy, grayish and black on upperparts with muzzle, ears and outer sides of the legs tinged with yellowish gray. Underparts are soiled gray.

In Iowa the coyote is of minor importance both as a furbearer and as a predator of domestic stock, game birds and game mammals. In previous years it was much more numerous than at present, but settlement of prairie regions, intensive agriculture and man's massed hunting of the coyote have so modified its range and activities that seldom is one seen during the daytime. A major portion of the coyote's foraging is done at night, at which time any obtainable flesh may be taken. Degree of freshness makes little difference, for carrion forms one of the major parts of the diet. Cottontails are taken frequently and as food are followed in importance by small rodents (mice, gophers, ground squirrels), small wild birds, pheasants, woodchucks and domestic stock. The amount taken of the latter item is very slight in Iowa. In the western states, where small livestock on range territory is much more subject to predation, it has been found that sheep and goats constitute only 8 percent of the winter food. There are many instances in which insects, berries, wild fruits and seeds have been recorded from stomach analyses.

The whelps are born during the forepart of April and average five to seven to a litter. Both parents assist in feeding, the female supplying disgorged material to the new-born young.

Usually the den is constructed by the coyotes themselves, but they may utilize an abandoned badger hole.

Distinctly characteristic of the coyote is the chorus of long howls or yapping barks to be heard either at dawn or dusk, but these howls in the still of the night are easily confused with those of the common dog, one of its close relatives.

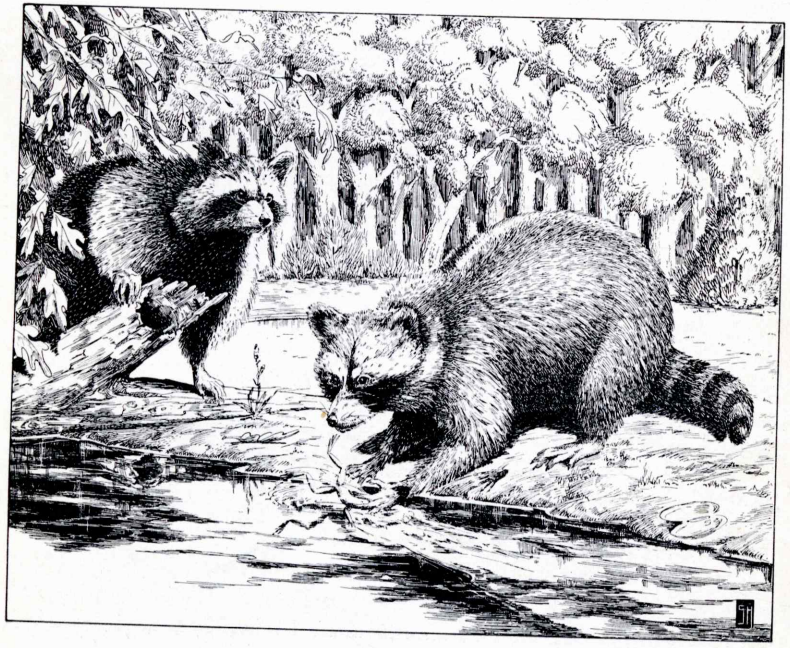
The coyote is similar in size and general appearance to the shepherd dog and can be easily mistaken for it at a fleeting glance. Like the dog and other mammals, it is subject to rabies and when so diseased may constitute a threat to livestock and man.

EASTERN RACCOON

Procyon lotor lotor (Linnaeus)

Average length: 32 inches. **Average weight:** 18 pounds. **Color:** Long hairs are gray tipped with black giving a dark gray appearance on the upperparts. Underparts are lighter in color. The tail is characteristically ringed with alternate grayish and blackish bands.

Perhaps no major fur-bearing animal in Iowa offers as much sport in catching as does the raccoon. On still nights the music of the hounds on a hot scent is sweet harmony to many



a sportsman's ear. By his very nature the 'coon is a game animal. Because he is not exceptionally fast on foot, the raccoon has to rely strongly on his wits to make good his escapes. Being fond of the water he is a fairly good swimmer, and it is in a running stream that he often throws the pack off his trail by traversing the length of the watercourse for some distance. When cornered he is a courageous fighter, asking for nothing and giving the best tooth and claw until he is dead.

Partial hibernation occurs, the length of time spent in seclusion depending upon the latitude. In the northern part of the range, as much as 3 months may be spent in hibernation with possibly an occasional sally forth on winter nights. In the southern part of the range, however, no hibernation whatsoever occurs. Mating takes place in February with one male courting several females. The kittens arrive usually in April or May and average four to a litter, although broods of three to six have been encountered. They are about one-third grown by the latter part of June and have had their curiosity sufficiently aroused to explore about the home den. In July the mother takes her young to the streams and marshes where she teaches them the proper methods for catching crayfish, frogs and other water inhabitants.

Giles of Iowa State College in working with the fall food habits of the raccoon in central Iowa found in the droppings remnants of the following foods arranged in order of their frequency of occurrence: Corn, crayfish, hackberries and other fruits, insects and vertebrates. Fruits eaten, other than hackberries, were wild plum, wild cherry, wild grape and red haw. Of the insects taken, grasshoppers, beetles and cockroaches formed the major portion. Vertebrate remains were those of muskrat, bluebird and mouse. Other foods which may be eaten are mollusks, fish, frogs, reptiles, rabbits, nuts and white grubs. During the fall much of the animal's time is spent in feeding and getting ready for winter.

The natural predators of the raccoon are few, there being none of any consequence in Iowa at present.

There are two essential requirements which must be fulfilled before the raccoon will consider any area as a suitable territory for a home. There must be water and there must be trees. As an examination of food habits indicates, water constitutes a source of some of the major food items. Running streams, swamps and lake margins are all frequented, but the first is preferred, since it offers a more secure means of escape. The favorite nesting site for the 'coon being a hollow tree, well-timbered watercourses with plenty of tangled second growth to serve as cover constitute ideal habitats.

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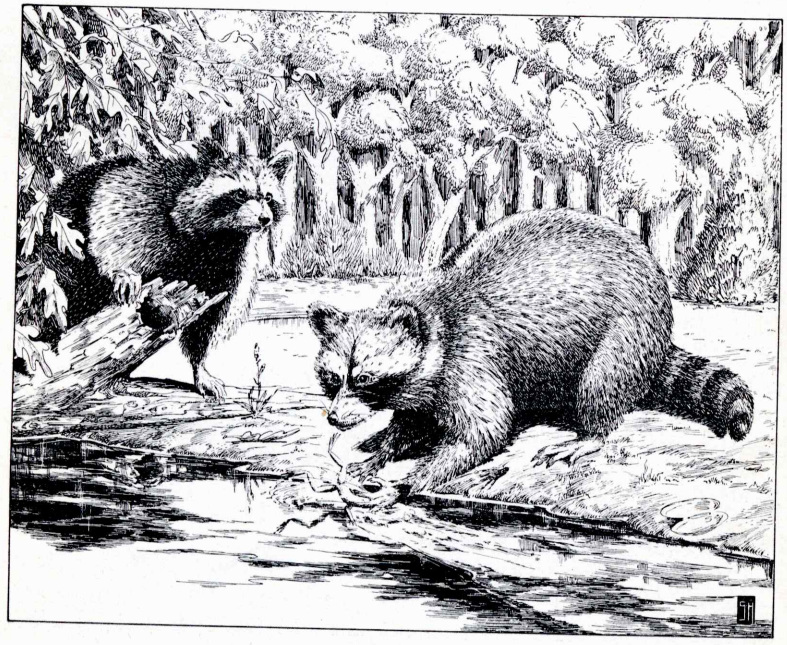

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The raccoon has plenty of trouble, considering the combined action of guns, traps and dogs; but to date, of graver importance is the scarcity of hollow trees. Farmers, not realizing the value of these trees as home sites, very often cut them down in winter for firewood and thus make it necessary for the raccoon to either find another hollow tree, an adequate substitute or go to another territory. If there is a scarcity of trees, old windfalls may be selected as suitable places for overwintering and rearing the young. Muskrat homes, holes of woodchucks and badgers, and tile drains may also be used when nothing better is at hand.

The color of the raccoon is known to vary widely, some pelts being white and gradations occurring to almost black. The white raccoon or albino is the result of lack of deposition of pigment. The dark variety is termed the "melanistic phase" and is due to deposition of a color pigment known as melanin.

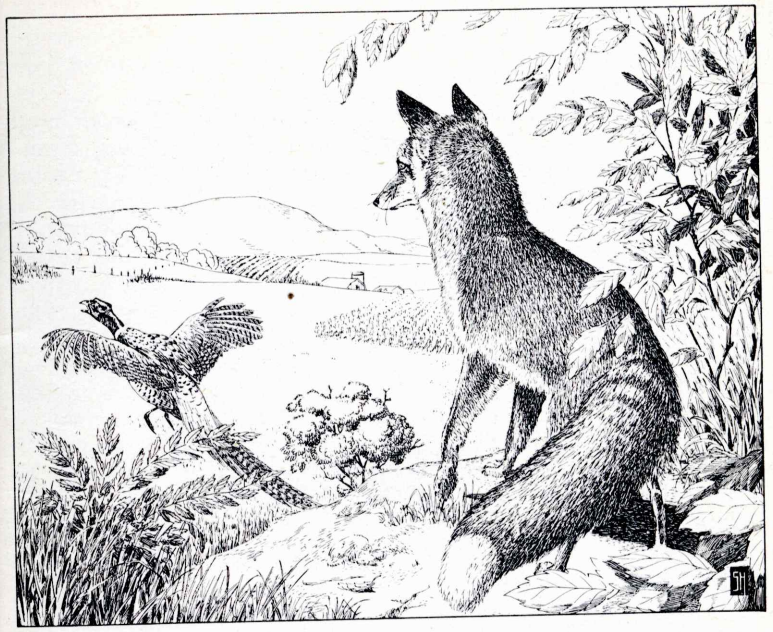
The raccoon is one of the most important fur-bearers in Iowa. During the 1937-38 season 13,287 pelts were taken with a total value of about $48,500. From the standpoint of total value the 'coon ranks fourth in the state, being exceeded by only the muskrat, skunk and mink. Made into a coat, the fur has enjoyed great popularity among young people, since it is attractive, and the long guard hairs withstand a lot of wear.

RED FOX

Vulpes regalis Merriam

Average length: 40 inches. **Average weight:** 10-12 pounds. **Color:** The type form is golden-red, with black feet and ears and white-tipped tail. (The cross, silver and black foxes, are color variations of a red fox species.)

This fur-bearer is one of the best-known animals in Iowa. It has made itself known throughout the state because it is capable of adjusting itself to a diversified environment. In the northern half of the state, characterized by rolling prairie under extensive cultivation, the red fox has become as numerous or more so than in the southern portions. Cornfields, draws with rank vegetation, shrubby fence rows and scattered wooded tracts of the north offer a contrast to the creek bottoms, gullies, scrub oak patches, shrubby waste tracts and rougher agricultural land of the southern sections. Everywhere the results of man's labors have produced radical changes, but they seem to be utilized by the fox in most every instance for its benefit. While it ranges over the prairies and wooded areas the red fox frequents to a lesser degree the level



open areas and heavily timbered tracts which are so characteristic of the environment of the gray fox.

In preparation for the birth of the young the female selects a den site and does the digging or cleans out one previously used by a fox or other animal. The young appear in March or April and number four to nine in a litter. The ground den is the most popular type of home and place of refuge, there being relatively few instances where hollow logs or bases of hollow trees are used. During the spring, summer and fall seasons at the time of producing and rearing young, the den is used much more extensively than in late fall and winter. At the latter period much more time is spent on the surface of the ground, presumably to facilitate escape. The rangings of an individual fox vary greatly according to the seasons. In summer when food is relatively plentiful and more easily obtained, the radius of wanderings from the home den does not exceed an average of 2 or 3 miles. In winter, however, as availability of a food supply greatly decreases more territory must be covered.

Striking characteristics of the fox are its delicate, pointed muzzle, full face, grace of movement and a large bushy tail. Since the tip of the muzzle and the feet are the only parts of the body exposed to weather, the tail is used in much the same manner as is the brush of the fox squirrel for covering these exposed parts when the animal is at rest. In fighting

and in escape the bulk of the tail is used to advantage as a balancing agent.

Of especial interest to people of Iowa are the food habits of the fox. It has been accused of being everything from a pheasant killer to a pig stealer. Extensive studies by Errington of Iowa State College during 1933-34 help to clarify this situation and exonerate the fox of some of the accusations directed against it. Mice and rabbits, especially the cottontail, constitute a large portion of the foxes' diet. Large insects such as grasshoppers are taken in large numbers when available in summer, and fruit such as wild plums, wild cherries and wild grapes are utilized in season and sometimes in large quantities. Also, in summer, ground squirrels, pocket-gophers and young woodchucks are taken. Norway rats of the fields, fox squirrels and frogs are occasionally eaten. In comparison with the numbers of rabbits, mice and other rodents taken few pheasants and other wild birds are consumed. Seldom is a bobwhite caught by a fox. The small amount of chicken flesh devoured is probably largely carrion, dead fowls taken to the fields by farmers.

A good watch dog at the farmstead often keeps foxes from the poultry yard. A dog that spends much time in the fields may damage other game a great deal and not be watchful in the farmyard.

Where the fox becomes plentiful it is wise to take the surplus animals for their pelts which constitute a valuable resource to Iowa hunters and trappers. During the 1937-38 season the total value of red fox pelts in Iowa amounted to over $21,000.

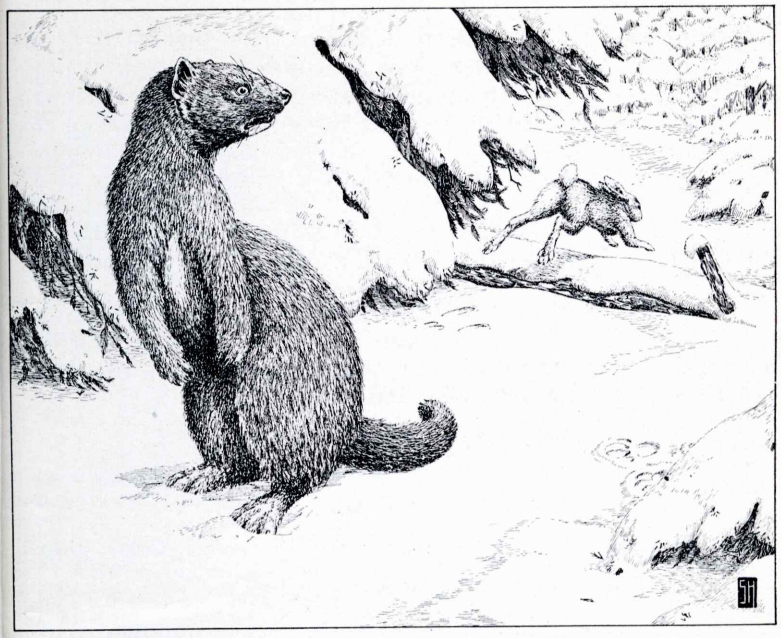
MINK

Mustela vison letifora Hollister

Average length: Male—24 inches; female—20 inches. **Average weight:** Male—2 pounds; female—1 pound, 10 ounces. **Color:** The upperparts are a uniform, dark, glossy brown becoming slightly lighter below. There is a conspicious white area on the chin.

As its scientific name implies, the mink has well-developed musk glands in common with the weasel, skunk, marten, fisher, badger, otter and wolverine—all of which belong to the same family. In general appearance the mink is an overgrown weasel with comparatively dark fur. Although the legs are short it is an animal lithe and supple in its movements and very graceful in action.

The type of habitat selected for a hunting ground is in nearly every case a watercourse which may be situated either in



comparatively rough and rugged terrain or in open plains. There must be timber, weeds, thickets, reeds, luxuriant grass or something to serve as cover along the stream; for, although the mink is not a noted tree-climber, the vegetation may harbor other animals which can serve as a food supply for it. The mink is strictly carnivorous, consequently it has gained the reputation of being bloodthirsty and a relentless killer, although the latter attribute is more often applied to the weasel. But the mink and the weasel must eat to live, and hence as carnivores it is to be expected that they will kill to obtain food. Sometimes more is killed than may be eaten at once, and we do not know what the animal has in mind at such a time.

The food of the mink varies considerably from summer to winter, and some very good data on this subject have been presented by Dearborn of the University of Michigan. In the summer diet it was found that the following animals listed in order of importance were utilized as food: Crayfish, mammals, frogs and fish. In winter the order was changed to: Mammals, fish, frogs and crayfish, with a few birds. The mammals taken in summer were chiefly mice with some muskrats and a few snowshoe hares, shrews and moles. In winter more muskrats were taken than in summer, some cottontails and meadow mice were utilized, and a few red squirrels were consumed. More

rough fish than game fish appeared in the winter diet of the muskrat. In Iowa, Errington has not found the muskrat preyed upon so much by the mink as the data indicate in Michigan.

On account of the mink's great value as a fur-bearer in this state practical management principles should be followed wherever possible. Plant cover along watercourses is of assistance to minks in several ways. Those hunters who trap for the present and not for the future often eliminate the population for years to come by failure to leave sufficient seed stock.

In Iowa during the 1937-38 trapping season, 21,438 mink pelts were sold with a total value of approximately $120,000. The mink ranks second to the muskrat in Iowa from the standpoint of total value of furs taken.

WEASEL

Mustela longicauda spadix (Bangs)

Average length: 18 inches. **Average weight:** 7 ounces. **Color:** Body is yellowish brown above; buffy yellow below; tip of tail is black. In winter body is all white, with black tail tip.

The weasel is likely to be found in a large number of different habitats depending on the abundance and accessibility of the food supply. Timbered regions, meadows, sloughs, hedgerows, brushy gullies and farmsteads all combine to form its general environment. Water courses are often frequented in its search for prey. Its extremely slender body enables the animal to investigate mouse burrows and other refuge sites where its prey may seek protection. Although not strictly arboreal it has been observed to climb trees very readily in pursuit of red squirrels. In spite of its relatively small size, it is a very persistent, cunning fighter and is capable of killing animals much larger than itself. Familiar to most farm people are the depredations which a weasel can effect in a poultry yard. It, like the mink, has the tendency to kill more than it needs at the time. Blood is often taken before the flesh and is lapped from wounds on the neck or at the base of the skull of the victim.

Data on food habits as recorded by Dearborn of Michigan indicate that mammals constitute by far the larger portion of the diet. Birds and insects are taken to a lesser extent. Of the mammals, mice were most numerous, followed by cottontail, shrew and mole in order of importance. Errington of Iowa State College discovered that striped ground squirrels, red-winged blackbirds, birds' eggs, beetles, ants, grasshoppers and blowflies were also eaten. As a destroyer of mice, the weasel is hard to beat, and this is one of the chief assets to be chalked up in its favor.

Its status as an Iowa fur-bearer is relegated to a comparatively unimportant position. In former years the fur was of so little value that no effort was made to obtain it. Now, however, it is readily used by the fur industry. During the 1937-38 trapping season in Iowa, 4,159 weasel pelts were sold at a total value of approximately $1,500. Of all Iowa fur-bearers only the badger, gray fox and coyote were exceeded by the weasel in number of pelts taken, whereas, only the coyote was exceeded by the weasel in regard to total value of pelts.

SPOTTED SKUNK

Spilogale interrupta (Rafinesque)

Average length: 20 inches. **Average weight:** 2 pounds. **Color:** Head and body are black marked by white spots and blotches on the upper-parts.

Probably this animal is better known, although not properly, as the civet or polecat. In general habits it is similar to the striped skunk but is more nocturnal in its wanderings. Due to its smaller size it is more agile and is capable of climbing trees. The young average four to a litter with extremes from two to six. The brood den may be located in a rock pile, a hollow log, under old buildings or in a burrow dug by the animal itself. Secondhand burrows of ground squirrels, wood rats and burrowing owls are sometimes used.

In studies of the food habits of the spotted skunk in the fall of 1936, Selko of Iowa State College found that mammals and insects and their relatives contribute to the total amount of food material in nearly equal amounts. Birds were less frequently taken than mammals. Of the insects white grubs and grasshoppers were taken in greatest quantities. In lesser numbers ground beetles, unidentified larvae and stink bugs were taken. Of the mammals used for food meadow mice were most numerous, and cottontail, deer mice, fox squirrel and mole were less numerous. Traces of skunk fur and pig bristles were found in the skunk droppings. Of the birds taken, blue-winged teal and wild mallard, evidently found as carrion, predominated. This is not surprising, as many of the droppings which were examined were found near marshes. Traces of robin, tree sparrow and red-winged blackbird, also appeared in the droppings. Vegetation comprised an almost neglible portion of the total food taken. Traces of oat kernel, acorn, apple seed, corn and grass and wheat in larger quantities were found.

From this information it is seen that the spotted skunk acts as a scavenger as well as an insect and mouse catcher. Of still more importance, however, is its value as a fur-bearer. Although an individual pelt seldom brings more than 30 cents there is a large enough population to make an annual return of about $10,000 a year.

STRIPED SKUNK

Mephitis mesomelas avia (Bangs)

Average length: 28 inches. **Average weight:** 5.5 pounds. **Color:** Body black with various modifications of white stripe on the face between eyes, on crown, nape and shoulders where it usually forks and continues along the sides into the tail.

Our common skunk does very well in cultivated areas and has profited from farming practices. Open fields with an assortment of cover types constitute the best kind of environment. Brushy fence rows, rock piles, old lumber and post heaps are types of cover which are readily used for both temporary and permanent refuge. Fields supporting alfalfa, bluegrass, lesser ragweed and wild hemp are often selected for the construction of hibernating or rearing dens.

There are usually six young to a litter, produced in April or May. At birth a faint down is sometimes present, but nakedness is the general rule. The diet of the young consists of milk until midsummer at which time they begin to take solid foods. The female is a very devoted mother and the litter usually stays together until the following spring when it breaks up.

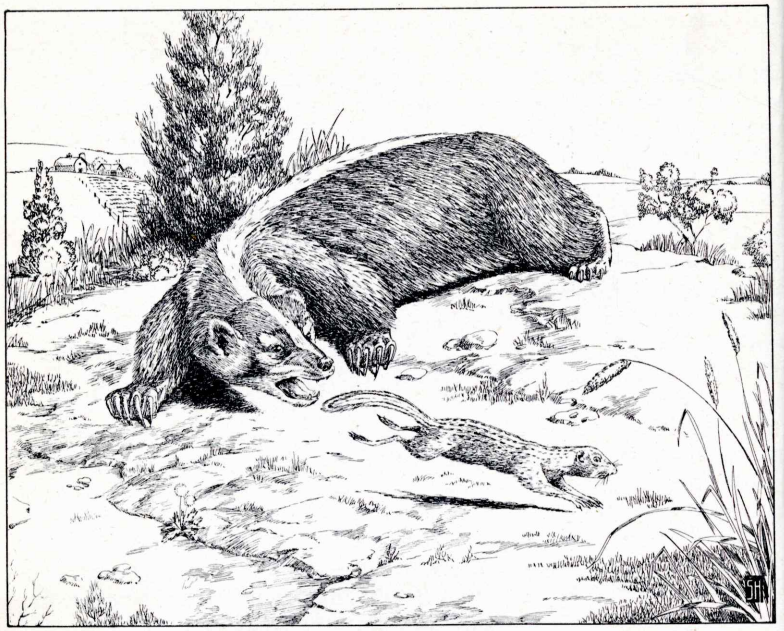
Recent investigations indicate that the diet varies considerably and consists of both plant and animal material. By far the larger portion is composed of insects; chiefly grasshoppers, white grubs, larvae, bee larvae and ground beetles. Mammals form a small part of the diet, with meadow mice and cottontails as the chief items. Chickens make up most of the birds taken to compose another small portion of the total diet. Probably the cottontails and chickens are chiefly carrion. Field observations point to some egg eating where the skunks are numerous. Much of the small amount of vegetable matter fed upon is comprised of such items as ground cherries and red haws and oat kernels.

By considering the types of food taken and remembering the fact that the broad stripe is one of our most valuable fur-bearers, it is seen that he is an asset to both the farmer and the trapper. Every effort should be made to conserve the skunk population as a whole, though during times when food is scarce, or due to other adverse conditions, a consistent poultry killer may develop which should be destroyed without question. Killing out of season, often accompanied by wholesale slaughter of a litter, should be discouraged.

By nature the skunk is a deliberate, slow-moving animal with an extreme curiosity for which he often pays with his life. He habitually lumbers along, poking his nose into every nook and crevice wherever the fancy strikes him. He is always "well-armed" and quickly ready for action. Maybe this accounts for the deference with which other animals treat him. The fox, the coyote, and even the black bear, when they encounter the skunk, tend to detour and give it a wide berth, although the skunk is often preyed upon by large and medium-sized predators.

The blundering ways of the animal account for the high success amateur trappers have in catching it. Sometimes when the animal frees itself from a trap it will turn right around and become trapped again.

The good-sized litters and ability of the skunk to adapt itself to a man-inhabited environment are the major natural assets in maintaining the fairly high skunk populations in Iowa. With good management practices, however, a large population for annual harvest can be maintained.



BADGER

Taxidea taxus taxus (Schreber)

Average length: 23 inches. **Average weight:** 15 pounds. **Color:** The body is silvery gray, grizzled with black. The tail is tipped with silvery white. A narrow white stripe from the muzzle to each shoulder is the most prominent marking.

Dry, rolling uplands claim this fellow almost to the exclusion of any other type of habitat. Heavily timbered areas and swampy regions are shunned altogether. The flattened, compact, muscular body with the strong leg muscles and well-developed claws indicate that the animal is a digger and is as much at home within the ground as most animals are on top of the ground. The badger operates preferably in earth that is gravelly, loose and easily penetrated.

The badger's range significantly coincides with that of greatest rodent abundance. It feeds largely on meadow mice, cottontails, ground squirrels, pocket gophers, moles and insects. The animal is beneficial as a destroyer of harmful rodents, but its greatest demerit lies in the fact that the holes it digs are sometimes the cause of broken legs among domestic stock.

The den may be from 2 to 6 feet beneath the ground and from 6 to 30 feet from the burrow entrance. The young average three to a litter and arrive from May to June. They are diligently cared for by the parents and when old enough are taken out on hunting trips.

As a fighter the badger has made quite a name for itself. The guard hairs are long and the under fur is thick, affording a good outer protection for the loose skin. The jaws are very muscular and capable of inflicting serious injury. There are no constant predators of the animal, but any carnivorous mammal or large bird of prey catching it at a disadvantage would be a potential destroyer.

As a fur-bearer it is of minor importance due to the low population in this state and to the variable quality of the pelt. An erratic demand for use of the pelts in the fur industry also contributes to classifying the animal as one of our less important fur-bearers.

BEAVER

Castor canadensis missouriensis Bailey

Average length: 43 inches. **Average weight:** 45 pounds. **Color:** The upperparts are a dark rich brown growing lighter on the sides and underparts. The head is lighter than the body.

A general description of the beaver is very easily made, since it is the largest of the North American rodents. The body is stout and muscular and well-adapted for the strenuous activities in which it engages while cutting down trees and building its dam. The toes of the hind feet are webbed as an adaptation for the aquatic environment in which it lives. Also characteristic is the cleft claw of the second toe of the hind foot, presumably to act as a comb which the animal uses in keeping itself clean.

Food consists of the bark and twigs of aspen, cottonwood and willow, listed in order of preference. Roots of aquatic plants are also taken, but in much smaller quantities. And the beaver has been known to eat corn. In Iowa, as aspen is scarce, cottonwood and willow furnish the staples of diet.

As far as is known beavers remain paired for life. The young appear usually in April or May and average four to a litter, although extremes of from two to eight have been recorded. The young ones, known as "kits," stay with the parents for a year during which time they serve an apprenticeship, so to speak, and learn how to fell trees, construct dams and store food for winter. Most of their activity occurs between sunset and sunrise.

According to W. W. Aitken, biologist, Iowa State Conservation Commission, there were 67 beaver colonies in the state in 1936, most of them situated along the Missouri River and its tributaries. A general condemnation has been heaped upon the beaver as a destroyer of trees immediately bordering watercourses, but application to the tree trunks of a mixture of lime and creosote has prevented loss of those trees so protected and has diverted cutting activities to willow thickets and other less desired growths.

Some damage is done also to farming practices where a beaver dam backs up the water and causes clogging of drain tiles with silt and debris. This is remedied by live-trapping and transporting the animals to an environment where they can do no harm to agricultural practices.

MUSKRAT

Ondatra zibethica zibethica (Linnaeus)

Average length: 22 inches. **Average weight:** 2 pounds. **Color:** The head and back are dark brown, becoming golden brown on the sides and grayish brown on underparts. The chin and throat are white.

One to four litters are produced a year with an average of six and one-half young to a litter, according to Errington of Iowa State College. The breeding season may extend from March to September with most of the "kits" appearing in May and June. Fairly substantial evidence indicates that the gestation period is from 29 to 30 days. The young develop rapidly and are nearly full grown within 6 months.

A most characteristic feature of the animal is its long, scaly tail flattened from side to side and supporting a few stiff hairs. The body is compact, muscular and well-fitted for swimming. On land, however, it has a rather ineffectual gait when hard pressed by enemies, and its only resource is to turn and fight.

Taking advantage of the prolificness of the muskrat are many predators, chief of which are minks, weasels, foxes, dogs, hawks and owls. None except the mink can follow it into water with any degree of success, and the young may suffer measurably from the predations of mink.

The muskrat is essentially a vegetarian and as such its diet consists mainly of bulrushes, cattails, smartweeds and small willows. Corn is well-liked. In general not all food taken is vegetable material, however, for frogs, crayfish, salamanders, fish and mussels are eaten with relish. Some individuals in a green locality may be quite strictly vegetarian, whereas others in another situation are quite carnivorous. The muskrat is not

at all particular in its diet during hard times and can subsist on dried grass stems, or may even resort to cannabilism.

Construction of the house is one of the most important phases of the animal's activities, since it serves as a refuge from bad weather and predators during fall, winter and early spring and as a source of some food. Early in the summer, work of cutting marsh vegetation is begun, and where the rat population is sufficient the area of open water may be increased many times. The foundation for the house is laid in about 2 to 4 feet of water and frequently at the base of a mass of standing vegetation. Sometimes much more mud than vegetation is used as a means of anchoring the accumulating mass, but the finished house consists of a dome-like mass of vegetation projecting a foot or more above the surface of the water. The house is usually about 4 feet in width. Usually two tunnels are cut into the mass from the base below the water line as a means of entrance and exit, although more entrances sometimes are provided. Compartments are constructed simply by the rats eating out vegetation from the center of the mass. Throughout the winter the internal cavities increase somewhat in size as the animals eat some of the wall of the house. With the approach of warm weather and fermentative action the houses slowly sink from sight.

Many streams of this state are unsuited for muskrats due either to overgrazing or intermittent stream flow, or both. Lack of sufficient marsh vegetation as a source of winter food supply may be partially alleviated by presence of cornfields nearby. This condition, however, can very easily constitute a source of objection on the part of the farmer. The unstable stream flow may be partly counteracted by the presence of water holes distributed along the stream bed, wherein the rats may find refuge during severe drouth. By elimination of overgrazing, streams with a fairly reliable source of water can maintain a sufficient food supply so that the resulting environment is more or less satisfactory throughout the year as a rat habitat. Of great importance are log jams, uprooted tree stumps, bank cavities and brush piles, since they furnish cover even though usually temporary.

As a fur-bearer the muskrat ranks first in Iowa and in the United States, both as to number of pelts taken annually and the total value of the pelts. Figures for the 1935-36 season indicate that 351,968 pelts were taken in Iowa with a total value of approximately $345,000. This natural resource is of great importance to the farm boy in many sections, since the muskrat is relatively easy to trap, and its pelt is easily prepared for sale.

WESTERN FOX SQUIRREL

Sciurus niger rufiventer (Geoffroy)

Average length: 22 inches. **Average weight:** 2.5 pounds. **Color:** The upperparts are characteristically salt and pepper gray becoming rufous or dull orange on underparts and margin of tail.

The fox squirrel should not be termed a fur-bearer, since it is of relative minor importance in this respect. Its greatest value lies in its ability as a game animal to satisfy the sporting moods of those who desire a light form of hunting. A fox squirrel not too aged makes very good eating.

It is more difficult to describe the preferred habitat of the fox squirrel than that of the gray squirrel, since the former has a number of general preferences. The timbered watercourse is a common habitation. Wooded ridges and slopes are also used extensively, especially where oaks and hickories are plentiful. Another environmental type is the farm woodlot or other wooded area situated close to a cornfield.

The food of the fox squirrel is quite varied. When obtainable all manner of seeds and nuts such as walnuts, butternuts, hickory nuts, acorns, plum and cherry stones, and seeds of basswood, maple, boxelder, elm and ash are taken. Chief of the man-provided foods is corn which may be taken in large quantities in a thickly populated squirrel district. Other domestic grains may be taken in minor quantities. Certain foods are chiefly responsible for the more or less shady reputation of the fox squirrel. Eggs and fledglings of birds and domestic fruits are the chief constituents of this last class. The pulp of the fruits is not eaten; only the seeds are taken.

The nests are of two types: the hollow-tree and the leaf-and-twig kind. The first is much more permanent than the second and is used as a permanent residence and much as a brood nest. The leaf-and-twig nests are for temporary purposes, and they serve as places to sun and rest, and sometimes broods are raised in them.

As a good representative of the tree squirrels, the fox squirrel utilizes to good advantage woodlands with a sufficient food supply in the form of walnuts, hickory nuts and acorns. Hollow trees are a necessary part of the environment, for they serve as a more or less permanent residence during the greater part of the year.

NORTHERN GRAY SQUIRREL

Sciurus carolinensis leucotis (Gapper)

Average length: 18 inches. **Average weight:** 2 pounds. **Color:** Upperparts of the head and body are uniform medium gray changing to light gray and whitish on the underparts.

Although both the gray and the fox squirrels are considered as tree inhabitants, the former lives up to its name more thoroughly than does its near relative. The gray squirrel likes dense bottomland timber with plenty of nut trees, whereas the fox squirrel can often be found on wooded slopes and ridges and in semi-open tracts. Neither of the two hibernates over a prolonged period, but during spells of severe weather they may not expose themselves until moderation ensues.

Characteristic of the gray squirrel is its migratory tendencies. There have been recorded migrations of whole populations when food supplies were exhausted. When such a phenomenon does occur there may be considerable damage to farm crops.

In making preparations for winter there is no large storehouse maintained but rather a few individual caches to which the squirrels resort during winter. Much of the food is obtained during the cold months by foraging. The degree of their hunger influences the amount of cold and snow to be weathered in order to get a meal.

The diet is varied and is composed of whatever can be obtained in season. Nuts are highly favored, especially hickory nuts, with other items such as berries, corn and other domestic grains, tender shoots, tubers, young leaves, roots, staminate flowers of oak and hickory, seeds and tree buds comprising the food list. Sometimes the gray squirrel like the fox squirrel displays a varied appetite and in this case, eggs and the young of birds pay for it. The latter instance is quite rare, however, and is not to be expected as in the case of the red squirrel.

In Iowa the gray squirrel is of less importance than the fox squirrel as a game animal. It is most plentiful in the eastern part of the state and continues to increase as one keeps going eastward. In many sections of its common range, the eastern half of the United States, it is one of the most important game animals. Its greatest destroyer, however, is not man and his gun but man and his ax, since man's encroachment on thickly wooded watercourses has greatly reduced the squirrel's ideal environment. Also included as major predators are the red-tailed hawk and the red fox, and to a lesser degree the weasel, mink, Cooper's hawk and great horned owl.

COTTONTAIL

Sylvilagus floridanus mearnsii (Allen)

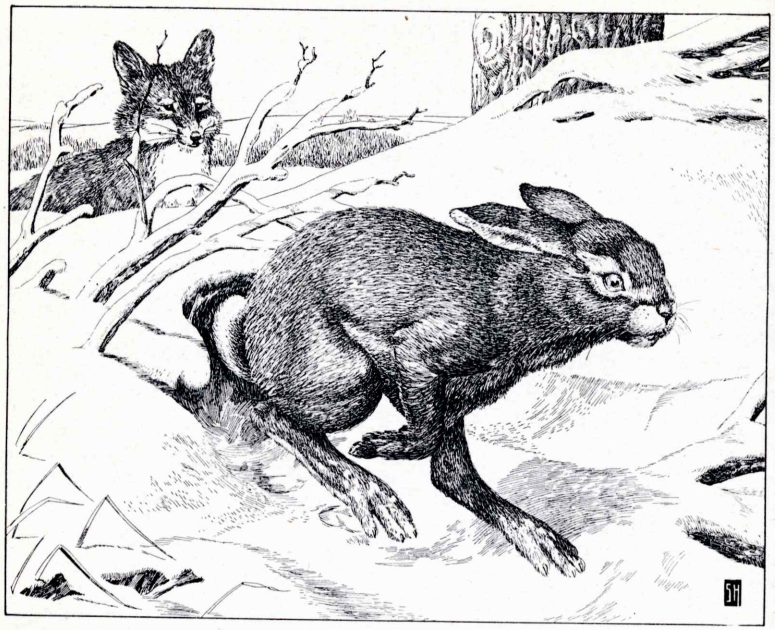
Average length: 15 inches. **Average weight:** 2.5 pounds. **Color:** Upperparts are "pepper-brown" with a tinge of reddish on back of the neck. Chin and throat are buff. Remainder of underparts are white.

As a fur-bearer the cottontail is of minor importance when compared with the muskrat and mink. As a game animal affording pleasure and recreation for thousands of hunters over the state, the animal is unexcelled. Many people do not realize its importance, since in years past it has been so common. Many a farm lad has acquired his gunning eye by associations with Br'er Rabbit in the wintertime and can relate the experience of running down half or two-thirds grown rabbits in the heat of a summer's day.

The cottontail is exceptionally prolific, having the highest breeding potential of any North American game animal. It ranks even higher than the house cat. Because of its abundance cottontail is subject to a wide variety of destructive factors. In addition to the annual toll taken by mankind, his dogs and his cats; the red fox, mink, weasel, skunk, badger and even the raccoon prey upon it throughout the year but chiefly during winter. In addition to predators, parasites and diseases find the cottontail a happy hunting ground. Ticks, fleas, warble flies and ear mites all infest the animal at one time or another. Internal parasites are just as numerous as the external and include one-celled animals of the intestines and blood stream and several species of tapeworms and roundworms. Tularemia is the most common disease to which the animal is susceptible. After contracting it the cottontail usually becomes slow and listless with death resulting soon after in most instances.

The first brood of young may be born as early as March and placed in a nest constructed by the female. The nest may be situated in any number of various locations. Straw mulch for truck crops and vineyards, old stack bottoms, fence rows, well-grassed meadows and even bare earth are a few of the environmental types which may be selected by the female. She hollows out a depression about 5 inches deep and 6 inches in diameter, in it places a basal layer of grasses and roots or straw and then lines it with some of her own fur. There may be from four to seven young in a brood with an average of five. From two to three broods may be produced in a season. Early and late broods may succumb to the cold. So well-concealed is the nest that it is very difficult to find, and when discovered it is usually by accident.

Food may be said to consist entirely of vegetable matter. The chief constituents are clovers, alfalfa, corn, dandelions, barley, apples, berries and tender sprouts and shoots. By



necessity the nature of the diet changes somewhat during winter with bark of trees often forming the main constituent. Sumac, apple, elm, basswood, poplar and wild rose are preferred. Where accessible, grains may also be taken during winter.

For its size the cottontail is surprisingly fast, and speed constitutes its chief method of defense and escape from enemies. The short, slender forelegs and the elongated, muscular hind legs make possible rapid progress by bounds and leaps. Great speed cannot be maintained for long distances, however. The primary purpose of its bursts of speed is to enable the animal to go from one area of protective cover to another without being overtaken by one of its predators.

The briar patch, open, grassy areas with plenty of high growth with which to construct forms, brush heaps piled in ditches to check soil wash, cornfields, sparsely wooded areas, gullies and ravines supporting shrubs, brambles and dense second growth are the types of habitat which comprise ideal cottontail territory. All of these areas furnish protection either from the weather or from pursuing enemies in addition to furnishing a varied source of food. It is thought from recent investigations that a cottontail throughout its life will not range over territory much larger than a few acres unless disturbed by an enemy such as a dog or fox.

WHITE-TAILED JACKRABBIT

Lepus townsendii campanius Hollister

Average length: 24 inches. **Average weight:** 6 pounds. **Color:** The head and body above as well as chest and legs are of a soft, warm gray, speckled with dark brown. Chin, breast, belly and inside of legs are snowy white. The tail is pure white modified on top by a band of gray. In winter the whole body is lighter in color; the tips of the ears remain black.

As compared with other wild animals of North America the white-tailed jackrabbit is rated as one of the swiftest, if not the swiftest. Its chief competitor in speed is the antelope. The coyote and fox are rather easily outrun; but nevertheless those flesh-eating mammals with the great horned owl consitute the chief predators of the jack.

The jackrabbit comes out to feed mostly early in the morning and late in the afternoon during clear weather, and for a longer portion of the afternoon during cloudy weather. Forenoons and the heat of the day are usually spent in forms constructed in the shelter of fence rows, weed patches, grain and hay fields or occasionally thickets. When danger approaches the occupied form, the ears are laid flat on the neck and back so that it is much more difficult to discern the animal. If the danger comes too close the jack bounds up into the air, rebounds stiff-legged and is away for a few leaps or until it is out of sight.

It is generally thought that the number of litters in a year is three, with extremes of from one to seven individuals to a litter. The average number of young in a litter is four. The breeding season extends from April to August, and as the season advances the litters have a tendency to decrease in size. The jack constructs no nest. The young are born on bare ground or on whatever vegetation may be present.

Like the cottontail the jackrabbit is afflicted with a large number of parasites. Of the tapeworms the larval form of the dog tapeworm is most common. Ticks and fleas also are very common but in few instances are abundant enough to do serious injury.

The diet consists of a wide variety of items, many of which are domestic grasses and cereals. Alfalfa, clovers, corn, wheat, rye, millet, cane, soybeans, vegetables and bark of trees are all eaten. The last named is usually taken when there is a shortage of the better-liked foods. Iowa is not bothered with the jackrabbit problems as are many of the plains and other western states which have to instigate control measures when crops are seriously threatened by an over-population of jacks.

WHITE-TAILED DEER

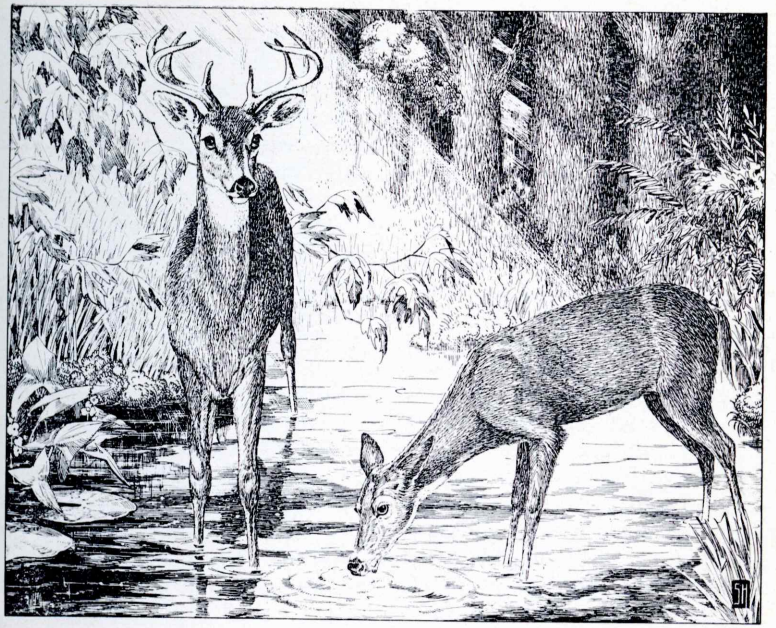
Odocoileus virginianus macrourus (Rafinesque)

Average length: Males—6 feet; females—5 feet, 6 inches. **Average height:** Males—38 inches; females—35 inches. **Average weight:** Males—200 pounds; females—140 pounds. **Color:** The upperparts are yellowish brown in summer becoming darker in winter. Underparts are white; tail is conspicuously white.

In Iowa the white-tailed deer is of minor importance as a game animal, although there are more of them scattered over various sections than most people realize. The majority of Iowa land is extensively cultivated, and such an environment does not permit a deer population without a conflict between deer management and farming. At the present time it is estimated that there are 450 deer in Iowa, chiefly in three main herds. In April, 1937, about 17 were to be found north of Hancock, Pottawattamie County, about 75 northeast of Avoca and about 46 in the vicinity of Irwin, Shelby County. A second herd is to be found near Ledges State Park, and a third herd ranges near Keota, Washington County. This latter herd contained 60 individuals in April, 1937. Browse (twigs and buds of shrubs and trees) and woodland herbs are of primary importance in the food supply. Grasses, water vegetation, mushrooms; various herbs, many of which are commonly known as weeds; buds, flowers, twigs and leaves of our most common shrubs and trees include the major types of food eaten. Representative of the diet are black willow, hazel nut, witch hazel, white elm, sumac, sour dock, wild strawberry and smartweed. Because the wooded areas of the state are relatively few and small in extent, the legumes and small grain crops are bound to suffer in the absence of a natural food supply.

There was a time when deer in the wooded sections of Iowa were very numerous and played an important part in the lives of the early settlers. At first, when small areas of timber were cleared, the deer population tended to increase due to the greater food supply of second growth thickets, but the point was soon reached at which the environmental resistance was greater than the animal was capable of combating. The blizzard of 1855-56 may be chosen arbitrarily as the turning point of the deer population in Iowa. Thousands of deer were needlessly slaughtered by farmers and other citizens with the simplest of weapons as the hoofed animals helplessly broke through the ice crust and floundered in the deep snow until weak from cold and hunger.

For pure grace and speed the white-tail is hard to surpass, sometimes attaining a speed of 25 miles an hour and taking



8-foot fences with ease. Horizontal jumps of 40 feet have been recorded.

Where the animal selects a resting site on a slope the bedding spot is chosen in a slight depression to create more of a horizontal surface. On clear days, regardless of the season, the bedding spot is so selected that it faces south or southeast. On hot days the animal usually moves with the shade to escape the hot sun. Most of the time is spent in either feeding, resting or playing.

The fawns are born in May or June and may number from one to three, with two as the usual number. From the date of birth until they are about 4 months old the young are reddish brown spotted with white. During a part of this period the doe conceals the fawns in vegetation or leaves. About a year after birth, usually sometime in April, the bucks begin to grow their first antlers. The growths when first pushing up from the crown are known as "buttons." The antlers continue in growth until fall, the climax of the velvet stage occurring in September. At this time the bucks begin to rub their antlers against saplings and other hard surfaces to remove the velvet and prepare themselves for combat during the coming mating season, which may last from November to December.

Deer are subject to many parasites and diseases, many of which closely parallel those of domestic sheep and cattle. Ticks constitute one of the most important external parasites. One of the most common of deer parasites is the large deer fluke, a kind of a flatworm which burrows into the liver tissue and causes internal injury. Several different species of tapeworm as well as roundworms are known to infest deer. Insects also bother during the hot summer months, chief of these parasites being mosquitoes, gnats and flies. The head and throat bot is a parasite usually causing violent death of the infected animal, since the irritation set up by the bot causes the deer to run headlong, in attempts to escape, into structures which may break the legs or neck. Well-fed young animals apparently suffer little from parasites and diseases; older and poorly-fed deer succumb more easily.

Over the country as a whole, however, a great toll is taken by starvation and winter exposure and less by predators and other factors. Hence, natural foods and shelter must be provided in maintaining a deer population to support a shootable surplus, and the surplus must be disposed of by shooting or in some other manner in order that the food and shelter may suffice for the seedstock in winter.

CARE AND HANDLING OF FURS

Both farm and town boys make quite a bit of money each season with their trapping activities, and in many instances better prices could be obtained for their furs if the peltries had been removed from the animal, fleshed, stretched and dried properly.

As there are two general ways of skinning a fur-bearer, furs fall into two general groups—case-handled and open-handled. In the first group are opossum, skunk, civet, weasel, mink, muskrat, fox and coyote. In the skinning process slits are cut from the base of the tail along the inner side of each hind leg to the foot. The fur is then peeled off the body toward the head, extreme care being taken not to damage the fur in removing the ears, eyelids and nose from their head attachments. Tails of muskrat, beaver and opossum are commonly cut off, and feet of the opossum, skunk, civet, raccoon, badger, coyote and beaver should be cut off. Feet of the fox, however, should be left on and properly skinned and dried. Open-handled furs are generally those of raccoon, beaver and badger. This type of skinning involves cutting a slit from the lower jaw to the base of the tail, then slitting the inner surface of the front and hind legs to the main body cut.

Any blood spilled on the fur while skinning should be wiped off, not washed off, before it has a chance to dry. It is important that all excess fatty and other tissue be removed from the inside surface of the fur. Sawdust or coarse cornmeal is very good to use in this process, since they absorb excess fat and can easily be shaken out from the hairs. Scraping should not be overdone, else the hairs will lose their means of attachment.

Drying boards are often called stretching boards which is a misnomer. The boards should be finished until smooth to eliminate any injury to the fur. Wire driers are recommended by many as more desirable than boards, because the former permit a greater area of fur surface to be accessible to circulating air.

Open-handled furs are dried by lacing their edges to a wire hoop or frame as tightly as possible without overstretching. After having been mounted, the furs should be placed in a shaded, cool, well-ventilated place and never permitted to be excessively heated. Tails, legs and ears should be straightened and placed normally for the best appearance of the furs. Freshly taken pelts should never be placed near a stove to hasten drying, because excessive heat has a tendency to cook or make the pelt brittle, and it will very likely fall apart or crack when removed from the drying board or wire.

Care should be exercised to place the furs while drying in such a position that they are not accessible to rats. In general, a week or two is sufficient time for a fur to remain on a drier.

TRAPS AND TRAPPING

So many times have the results of inexperienced and careless trappers been brought to the public eye that various humane societies and other groups have agitated vigorously for abolition of the common steel trap and introduction of a humane type of trap. Consequently, various kinds of the latter type have been placed on the market in the last few years but have been very indifferently received by the general trapping public. They work most efficiently with long-legged animals with the wide footpads, such as wolf, coyote and bobcat. In several humane traps the jaws of the ordinary steel trap are replaced by a chain noose, which, when sprung, holds the animal in spite of any pulling, but the tension is not great enough to do injury. For short-legged animals with narrow foot-pads, such as weasel, mink and muskrat, the chain noose is a poor trap. On some steel traps the jaws are padded with softer though stiff materials to prevent injury to animal's feet. Live trapping is often resorted to with muskrats and beavers for the purpose of catching and transplanting the animals without

doing them bodily harm.

Despite persistent and intensive trapping the muskrat still maintains a high population. This characteristic coupled with the fact that it is easy prey to the ordinary trapper has led to its great popularity. Good sets can be made on runways, slides and water entrances, but the surest method is to stake the trap in deep water so that the minute the rat springs it, it will be drowned before having the opportunity to twist itself out of the trap; the resulting injury may be so severe that the animal will eventually die of exposure and weakness. Utilization of proper sets will remedy this fault.

Trapping for fox has been discussed so long and so loudly with inclusion of elaborate preparations that many amateurs do not even try for fox, thinking that it is beyond their ability. It often happens that so many precautions are taken in arranging the set that the animal very readily detects local disarrangement or presence of something so unusual that all the work of preparation is in vain. A prime essential is to destroy human odor as much as possible. Some trappers say that traps can be freed of scent by boiling them in a solution made from plant materials such as maple bark, butternut bark or black walnut hulls previously boiled in water. Others get good results by coating traps with paraffin. This treatment prolongs the life of the trap, preventing it from rusting easily. Some trappers rely on ripe or tainted meat and carrion as bait, since foxes at times have a liking for mellow and putrid flesh. It is difficult to rate the efficiency of various methods and devices in trapping. Some experienced trappers who have good results without baits study the animals and their ranges in detail, and then place the traps in their probable paths. Still hunting of the fox, pursuit without a dog, brings excellent results to some hunters.

To trap coyotes requires as much craftiness on the part of the trapper as does fox trapping. Experienced coyote trappers exercise every precaution to get rid of human scent. The traps are never handled with the bare hands. Rubber shoes or boots are sometimes worn in making sets, and high-smelling meat is sometimes dragged about in the vicinity of the set to subordinate other odors and to act as a bait.

Habits of raccoon and mink are so similar that in many instances identical trapping methods can be used, namely water sets. Both animals frequent water courses and often display a preference for a certain route where investigations of crevices, old muskrat dens, hollow logs and piles of driftwood are quite evident. The raccoon has a tendency to investigate anything bright and shiny. This fact has often led to its capture when a piece of tinfoil or other glittering metal was placed on the trap pan. When using this ruse the trap should be placed in shallow, rather swiftly moving water. When land sets are made it is good to select a site where the pathway is narrowed by some natural agencies such as rocks or logs and set the trap in the pathway so that the animal will be very likely to hit it. The trap should be camouflaged by leaves or dirt. With this type of set edible bait can be used effectively. For raccoon, items such as sardines, dried herring and canned salmon are very good, though expensive. Mink come to fish, muskrat flesh and bits of rabbit for some trappers, whereas, others do better without baits.

The skunk, classed as one of the most unwary of our fur-bearing animals, consequently is not difficult to trap. Late in fall and early in winter skunks display great activity preparing for winter hibernation, and it is at this time that trapping for them is most successful. A good set can be made at the entrance to dens and burrows by scooping out a hollow large enough to contain the trap so that the jaws are level with the ground surface. Fresh, bloody meat, chicken, rabbit and fish constitute good baiting material. The trap chain should be fastened to a good pole drag, and a pole 8 feet or more in length often comes in handy in handling the animal after it is caught.

Food habits of the opossum are similar to those of the skunk, and baits used for one may be used for the other. Chicken heads make a good bait for opossums. Traps may be set at the entrance to dens, hollow logs, chicken houses and along fence rows known to be frequented. In many instances it is not necessary to conceal the trap, since the animal is easily trapped and almost any kind of set will prove to be effective.

GLOSSARY OF TERMS USED IN FUR TRADE

Beaming—Operation, in dressing peltries, of placing peltry with hair side down on a round wooden beam and scraping off the fatty, muscular tissue, and lower skin sheath, with two-handled curved knife.

Beaverette—Trade name for brown-dyed rabbit that has been sheared or plucked to simulate beaver.

Blacks—Assortment referring to skunk, in which stripes along the head and neck extend only for an inch or two.

Bleaching—Process of chemically whitening the yellowish cast on white furs, or changing dark-pigmented peltries to lighter shades.

Blending—Process of improving peltries by applying dyestuffs to tips of hair.

Blue Pelt—A peltry taken before prime. It is colored a slaty blue.

Cased-handling—Peltries removed by cutting across the undertail region, between the hind legs, then pulled over the head and stretched straight like a sausage casing.

Castorette—Rabbit dyed and processed to simulate beaver.

Chapchilla—Rabbit dyed to resemble chinchilla.

Dipping—Known also as "tipping." A dyeing process to darken leather and brighten dark-furred peltries.

Erminette—White rabbit sheared to resemble ermine.

Felting—Action of fur under heat, pressure and moisture causing the fur fibers to intertwine into an almost inseparable mass.

Fur—The skin of a wild or semi-wild animal with the hair covering wholly or partially attached to it.

Gray-Backs—Late caught weasels or ermines.

Green Peltries—Peltries freshly skinned or early caught and very unprime.

Guard Hair—Long, glistening protective hair of wild animal peltries.

Hides—Skin coverings of members of the cattle and horse families.

Hudson Seal—Dressed, dyed, sheared and plucked muskrat.

Lapin—Closely sheared and dyed, or natural rabbits.

Marsh Rabbit—Muskrat.

Matting—Same as felting.

Mink, Cotton—American mink having pale gray fur fiber.

Near Seal—European rabbit plucked, sheared and dyed to resemble seal.

Nutria—Water rodent from South America.

Nutriette—Rabbit dyed and sheared to simulate nutria.

Open-handled—Peltries that are opened along center belly and stretched out flat.

Pelt—Skin with hair covering intact; applied to the sheep family.

Peltry—Technically, the skin and hair intact and used for clothing purposes.

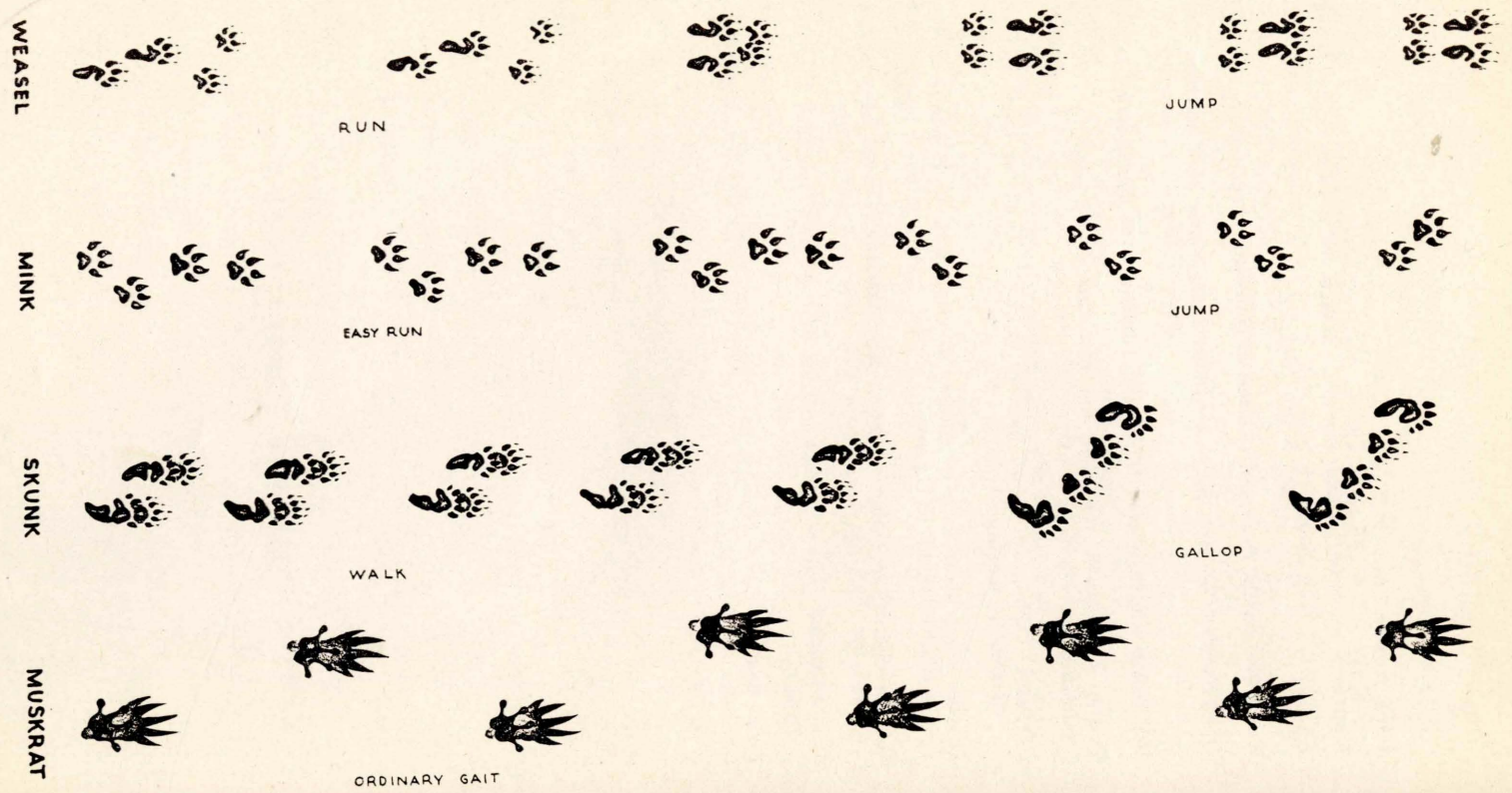
Plucking—Pulling out guard hairs of peltries. Done by hand but occasionally by machine.

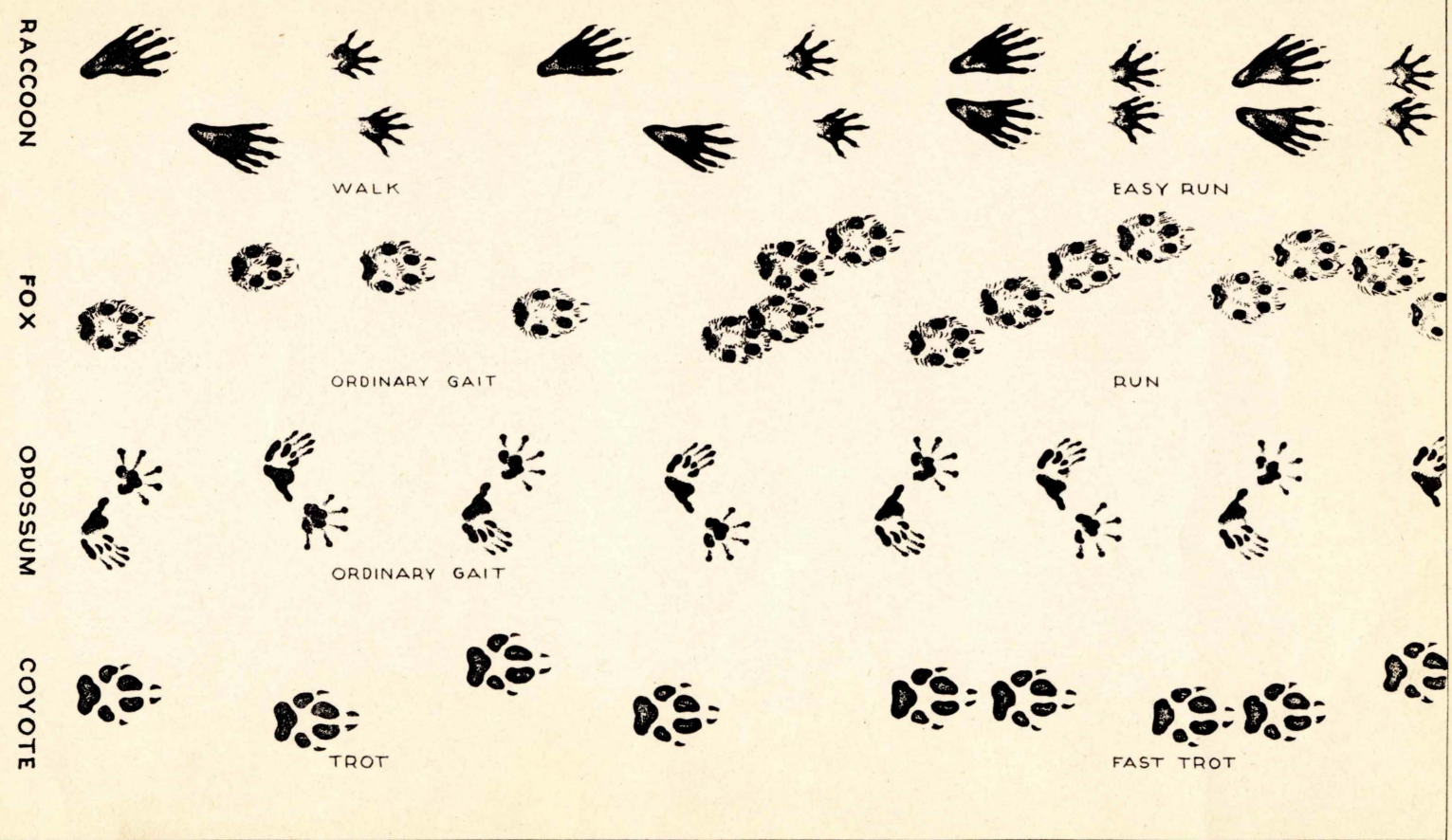
Shorts—Assortment term for skunk, descriptive of short length of the stripes on the back.

Springs—Term denoting spring-caught muskrat, beaver and nutria peltries.

Square-handled—Open-handled peltries that are stretched into a square shape.

Twin Beaver—Dyed rabbits that have the appearance of two small beavers dyed on one peltry.


WEASEL
RUN
JUMP
MINK
EASY RUN
JUMP
SKUNK
WALK
GALLOP
MUSKRAT
ORDINARY GAIT


RACCOON
WALK
EASY RUN
FOX
ORDINARY GAIT
RUN
OPOSSUM
ORDINARY GAIT
COYOTE
TROT
FAST TROT

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