

## AN ABSTRACT OF THE THESIS OF

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Title---The Role of the Domestic Cat in Relation to Game Birds  
in the Willamette Valley, Oregon-----  
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Abstract Approved: Signature redacted for privacy.  
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### Purpose

The main purpose of this study was to ascertain the importance of the domestic cat in the Willamette Valley as a game bird predator; additional reasons were to learn more of its life history and food habits, and to analyze the popular belief that the cat, feral or non-feral, is the greatest predator of birdlife known.

### Location of Study

The region in which investigation was made was the Willamette Valley, Oregon, which is situated 40 miles inland from the Pacific Ocean, in the northwest quarter of the State of Oregon.

### Investigational Procedure

The following seven methods were used in obtaining necessary data:

1. A detailed review of similar past studies of the cat as a predator.
2. A census of 416 farms.
3. Information from 425 4-H Club questionnaires.
4. Field observations.

5. Trapping and hunting of cats for specimens for stomach analysis.
6. Identification of food items in cat scats.
7. Stomach analysis by Charles C. Sperry, Associate Biologist,  
United States Bureau of Biological Survey.

#### Summary of Findings

1. There are approximately 94,000 farm cats in the Willamette Valley, or an average of 2.85 cats per farm.
2. The feral cat population in the Willamette Valley is estimated at approximately 11,000.
3. Total population of feral and non-feral cats for the entire Valley, exclusive of cities and towns, is conservatively estimated as being over 100,000.
4. The average female farm cat has two litters annually, with a mean average of 4.85 kittens per litter.
5. Most farmers value their cats as mousers at \$10.00 to \$50.00 annually.
6. Examination of 63 cat scats showed that 55.6 percent of the material by occurrence was principally of rodent origin. Fifteen field mice were identified out of a total of 35 rodents.
7. The food items found from stomach analysis of 86 cats were principally confined to the Order Rodentia, in which five species made up by volume 45.09 percent of the total food examined. Field mice, Microtus spp., were found in 26 stomachs (22.85 percent), and the Oregon brush rabbit, Sylvilagus bachmani ubericolor (Miller), was second in being found in 11 stomachs (12.12 percent). Only two

California quail, Lophortyx californica vallicola (Shaw), and one western mourning dove, Zenaidura macroura marginella (Woodhouse), was found, making 3.37 percent the total volume for game birds.

### Conclusion

The most important general conclusion reached in this investigation is that the stomach analyses of the feral and rural cat do not bear out the contention that the domestic cat in the Willamette Valley is a confirmed game bird consumer.

THE ROLE OF THE DOMESTIC CAT  
IN RELATION TO GAME BIRDS  
IN THE WILLAMETTE VALLEY, OREGON

by

Nils Norman Nilsson

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# THE ROLE OF THE DOMESTIC CAT IN RELATION TO GAME BIRDS IN THE WILLAMETTE VALLEY, OREGON

## Introduction

A study of the habits of the domestic cat was conducted in the Willamette Valley, Oregon, on a part-time basis, from November 1, 1938, to March 1, 1940, for the purpose of ascertaining the importance of this animal as a game bird predator. Additional reasons for undertaking this investigation were, to learn more of the life history and food habits of the domestic cat in Oregon; to analyze the popular belief of many persons in sportsmen's organizations that the domestic cat is very destructive to game and song birds; and to place the cat problem in its correct classification in upland game management.

Practically no facts were known about the cat as a predator in Oregon previous to this study. There seems to be a widely accepted belief, however, that the cat, feral or non-feral, is the greatest predator of birdlife known. This paper is presented as an attempt to analyze the problems involved with cats in game bird management.



## General Description of the Willamette Valley, Oregon

The region selected for investigation was the Willamette Valley, which is situated approximately 40 miles inland from the Pacific Ocean, in the northwest quarter of the State of Oregon.

Rogers (8) states that "The Willamette Valley is almost rectangular in shape. Its northern boundary is the Columbia River, into which the Willamette River flows at Portland. The eastern boundary is the Cascade Divide; the southern boundary is the Calapooya Divide, which separates the Willamette Valley from the Umpqua Valley; and the western boundary is the crest of the Coast Range, which parallels the shore of the Pacific Ocean. The Willamette River flows northward along the floor of the valley, dividing it into two parts. One of these, on the east slope of the Coast Range, includes about one-fourth of the drainage area, and the other, on the west slope of the Cascades, includes the remaining three-fourths." The general width of the valley is approximately 40 miles and it is about 140 miles in length. The approximate total area is some 2,750 square miles.

The climate of this section of Oregon is best described as being mild. The United States Weather Bureau gives the mean annual temperature as 51.5°

Fahrenheit, with a mean temperature for the winter months of 40.1° Fahrenheit. The average growing season is 182 days, with a mean yearly rainfall of 45.6 inches. The rains come intermittently during the fall and winter months. Snowstorms are infrequent, the snow covering the ground for but a short period when present.

Agricultural pursuits predominate over the entire valley. The leading crops are grain, hay, grasses for seed, fruit and truck garden crops. Dairying, poultry and livestock enterprises are quite common throughout the area.

The characteristic cover found within the valley is primarily evergreen and deciduous trees and shrubs. Abundance of bird cover is found along the fence rows, in numerous swales and in woodlots. Outside of the great variety of weeds, many areas are covered with Rosa spp. and Rubus spp.

The Willamette Valley is noted, from a game bird standpoint, as being the place where the first successful introduction of Chinese ring-necked pheasants was made in the United States. In 1880 Judge O. N. Denny, then United States Consul General at Shanghai, shipped Chinese pheasants to Oregon but this shipment did not establish themselves. Two years

later, according to Simpson (9), Judge Denny sent another shipment of 18 female and 10 male pheasants, which were released in Linn County, and the birds established themselves at once. Simpson states that ten years after this release, in one year, over 30,000 were killed in one county during the first hunting season.

### Review of Literature

When a search of the published material regarding the domestic cat is made it is very evident that there has been but little study in the past years of the habits of the domestic cat as a predator of upland game and song birds. Only two publications were found that dealt with the study of the domestic cat as a predator.

Edward Howe Forbush (4) in 1916, then State Ornithologist for Massachusetts, wrote his bulletin, "The Domestic Cat", which was the first comprehensive study ever given to the cat within the United States. It is regarded by many as a classic, and points out in great detail the early history, domestication, character peculiarities, food habits, economic value, and legislation and means of controlling the cat. His

generalizations were based on many years of accurate observations, as well as the observations of over four hundred and fifty additional persons. The following statements are taken from his conclusions:

"The cat, an introduced animal, is not needed here outside of buildings. It has disturbed the biological balance and has become a destructive force among native birds and mammals . . . . Cats, selected for their rat-killing propensities, are useful if kept in their proper place in and around buildings, but the species is so destructive to game and to valuable wild life that it should not be allowed to roam, particularly in the country. . . . The utility of the cat in destroying rats and mice has been both over-rated and understated. . . . Apparently the cat has few legal rights. In most countries the law seems to regard it as a predatory animal which any person may destroy when found doing damage on his premises. In Massachusetts and some other states the laws protect it from cruelty and abuse. . . . The cat is more widely kept and distributed than any other domestic animal, and is under less control and restraint than any other. . . . It readily abandons its owner, and often abandoned by him returns to the wild. Incalculable numbers of wild or stray house cats now roam the woods and fields of New England. These wild cats attract others from their homes."

In 1937 Bennitt and Nagel (1), in their "Survey of the Resident Game and Furbearers of Missouri", touched upon the status of the cat with keen insight into the problem's many ramifications.

Both of the above studies have been extensively drawn upon in the present study. They were

complete with the exception of stomach and scat analysis, which is greatly needed to ascertain whether or not the general condemnation of the cat is justified.

### Fecundity of the Cat

No study of the predatory animal is complete without information concerning its breeding habits and potential annual increase. To learn more of the cat's breeding habits, questionnaires were sent to over four hundred 4-H Club boys and girls in Oregon. Additional information and facts were secured from Mr. Cyrus E. Armstrong, owner of the Black Satin Cattery, Portland, Oregon, who has kept records of cat matings for the past ten years. The following information about the cat's fecundity comes from the above mentioned sources.

#### Breeding Habits

Like most species of the family Felidae, the domestic cat, Felis domestica, is polygamous. The caterwauling, or the cat's serenade, which is familiar to all, always is heard during his courtships.

#### Gestation Period

Mr. Armstrong states that the average gestation period is normally sixty to sixty-three days. His records show several cases of fifty-three and one extreme case of sixty-nine days; however, in this

latter case the ten kittens which were born lived but a few hours.

#### Breeding and Whelping Season

The common belief is that the cat may breed any time during the year but data gathered sets the usual breeding months at August and January. This means that kittens are being nursed during the two critical periods in the lives of upland game birds, spring with its nesting and brooding activities, and fall with its shrinkage of cover and an increase in the concentration of birds.

#### Weaning Time

The kittens are born blind and their eyes usually open in from five to nine days. At eight to ten weeks the young kittens are usually weaned.

#### Minimum Breeding Age

Data to determine whether or not female cats bear young their first or their second year was insufficient for actual proof.

#### Maximum Breeding Age

Domesticated cats seldom live to be fifteen years old. Usually their teeth are practically all gone, or they are in very poor concition, by the time they are eight to ten years old. That their fecundity is not impaired by the advance of years is known by

all cat owners. To fully illustrate this fact, the following two records are related: A female cat named "Babe", owned by Mr. Frank S. Church, Saco, Maine, is twenty-eight years old and has had two litters of kittens each year until but a few years ago. Mr. Peter Oseng, proprietor of the Pastime Tavern, located in Hoquiam, Washington, states that a female cat took up residence at his place fourteen years ago, made herself at home, and to date has had 158 kittens.

#### Number of Litters Each Year

Forbush (4) states in his bulletin that cats are known to have from two to four broods annually. To check this figure, tabulations were made from information received through a direct census of 416 farms and from questionnaires filled out by 425 Oregon 4-H Club boys and girls. The combined data showed that the female cat found on farms throughout the Willamette Valley has an annual average of 2.03 litters.

#### Number of Young in Each Litter

From the above data the average number of young in each of the 2.03 litters was estimated at 4.85. This means that in all probability each adult female cat on farms throughout the Willamette Valley would give birth to 9.8 kittens, or approximately 10 young, annually. Forbush (4) gives five to nine as

being the number of young in each litter. To those interested in wildlife management the main issue of the cat problem is, what happens to all these kittens? Do they all reach maturity and scatter to the fields and forests? From the total of 416 farmers questioned, 78 per cent reported that all unwanted kittens were killed, while the remaining 22 per cent were not as specific in stating what action was taken as to the disposal of their unwanted kittens. Practically everyone having a female cat admitted raising from one to two kittens annually.

#### Breeding in the Wild

Both Bennitt (1) and Leopold (7) report that cases of kittens born in places remote from human habitation are rare indeed. Not in a single instance during this study were kittens seen in areas that might indicate their being born in the wild. Several half-grown kittens were observed and trapped but this does not prove that they were born in the wild. In all probability they were abandoned.

Thirty-eight abandoned barns and 22 abandoned houses yielded not a single cat. It is doubtful that feral cats would take up headquarters in abandoned buildings. To do so would mean, in many cases, living in close proximity to the skunks, of



the Genus Mephitis, which probably have some claim to priority rights under abandoned buildings.

### Numbers of Cats

#### Farm Cats

In order to ascertain the average number of rural cats throughout the Willamette Valley a cat census was carried out by a farm to farm inquiry. In addition, 425 questionnaires were filled out by Oregon 4-H Club boys and girls for the purpose of acquiring additional information as to cat abundance on Oregon farms, and for the purpose of learning approximate sex ratio of farm cats. Data secured from the combined sources of 416 farms and 425 questionnaires gave an average of 2.85 cats per farm. The sex ratio of female to male cats was 1:.9, or practically a 1:1 ratio. Some farms had as many as 16 cats, and a few had lost count of increases. Forty-two out of the 841 farms did not have cats. According to the 1935 United States Census, the Willamette Valley had a total of 35,016 farms. Deducting 1791 from 35,016, to eliminate those farms probably not having cats, a total of 33,225 farms with 94,691 cats is obtained. With a sex ratio of 1:1, and figuring that each adult female cat has two litters of five per litter, a

potential annual crop of 946,910 kittens could be expected. That these figures are on the conservative side is realized when one sees that all cities and towns within the ten counties that make up the Willamette Valley have been omitted in these estimates.

### Feral Cats

The similarity between the true feral and a non-feral cat makes it very difficult to determine a fairly accurate estimate of their numbers. The feral cat, as the name signifies, is very wild and secretive. An attempt was made to find some distinguishing characteristics between the two as they were observed in the field or caught in traps. The data so obtained is too meager from which to draw any conclusions. It is included, however, for comparative purposes in possible future domestic cat studies.

There was a slight difference in density of fur of cats suspected of being feral and those that were non-feral. This, of course, could have been caused by several other factors. A marked difference in the expression on the features of the cats was observed, leading to the belief that perhaps here was some characteristic which might be used as a basis of distinguishing between the feral and non-feral cat. A farm cat which has a home and is reasonably cared

for does not show the wild look of the cat that must be on its guard at all times.

A noticeable difference in behavior of cats caught in steel traps was observed. Those which were suspected of being farm cats invariably seemed relieved to see a person as trap was approached, while the feral cat always showed fight. This fact, of course, must be studied more. In many cases of trapped coyotes some are defiant and ready to fight and others are docile and resigned to what is to come.

In order to check on the noticeable habit of some cats of looking back when they run away on being approached in the field and others hurrying away without doing so, over two dozen cats which were caught in box traps were released. Invariably, those which were believed to be farm cats stopped and looked back. The feral cats were away in an instant, headed for the heaviest cover. In one instance the cat plunged into a swamp, and in another, swam across a swollen creek.

Correlating these four characteristics, together with the distance from farm dwellings at which cats were trapped (Table I), a feral to rural ratio of 5:40 was established for the Willamette Valley.

Weights were not taken on all trapped

individuals, and it is doubtful that a weight correlation between the two types could be found. The heaviest cat caught during the investigation was a male feral cat which weighed nineteen and one-quarter pounds (Figure 4).

Table I. Distinguishing Characteristics of Rural and Feral Cats as Observed in Field and Trap.

Factors of Difference:	Rural Cat	Feral Cat
1. Pelage	Somewhat thinner than feral cat	Somewhat thicker in density than rural cat
2. Features	Frightened but lacks wild look	Definitely a wild and hunted look
3. Behavior in trap	If not injured may mew and appears relieved to see man; seldom shows the spirit of feral cat	Is defiant and shows fight when trap is approached
4. Behavior on release from trap	Slower on getaway and looks back	Is away in an instant and does not look back

Estimated Number of Farm and Feral Cats

A total of 11,710 feral cats is estimated for the Willamette Valley when the ratio of 5 feral to 40 farm cats is used. Adding the estimated number of farm cats (94,691) and the estimated number of feral cats (11,710) a total of 106,401 adult cats is obtained. This total is exclusive of the numbers in towns and cities. It can be said conservatively that there are probably over 100,000 adult cats which have free range through the Willamette Valley.



Figure 3. This farm cat made a record catch of over 150 rodents from July 1938 to July 1939.



Figure 4. A feral cat which weighed nineteen and one-quarter pounds and measured thirty-four inches from tip of nose to the end of tail.

## Surplus Cats and Kittens

### Abandoning Practices

No domestic cat study is quite adequate without a discussion of the practice of abandoning unwanted cats and kittens by their owners, who are reluctant to kill them. This investigation lacks sufficient evidence from which to bear out the common belief of abandoning practices, so a few of the authorities who have studied this phase in greater detail will be quoted.

Bennitt and Nagel (1) give a splendid insight into this particular problem, which merits repetition here. They say:

"Of all the malpractices performed in the name of kindness, the custom of 'dumping' unwanted cats and kittens on the countryside is one of the most difficult to condone. It is seldom done in the spirit of wanton cruelty. The person who does it has usually one or both of two ideas in mind: (1) He does not wish to put the cat or kitten to death or to have this done by someone else. (2) He believes that if they are left out in the country they will be adopted or will find a living for themselves. This point of view is too well known to need comment.

"Public aversion to killing cats, even when they are not wanted, amounts, at times, almost to a superstition. It is well illustrated by the following episode, which occurred in a southwestern Missouri town less than five years ago: A group of sportsmen, realizing the damage that cats

were doing to quail and other wildlife, arranged with a local veterinarian to chloroform any cats and kittens brought to him by their owners, for a small fee to be paid by the sportsmen's organization. There was neither compulsion nor any suggestion of payment by or to the owners. The plan was offered to cat owners simply as a means of getting rid of unwanted cats in order to avoid scattering them over the countryside. This offer was printed in the local paper, and the response was immediate and emphatic. The sportsmen were accused of many things, including wanton cruelty, and the agitation became so great that the project was hastily abandoned. Clearly, in that community it was considered 'cruel' to chloroform an unwanted cat or her kitten but perfectly humane to abandon them.

"To the person who abandons cats and kittens it seems to be a case of 'out of sight, out of mind'. Until he can be made to see the results of this shoddy practice, the cities and towns will continue to be a major source of country cats. One interesting result of this practice is that in some sections of Missouri the farmers now retaliate by 'dumping' their surplus cats and kittens in the towns."

Dumping of cats in the country is not confined solely to persons living in the cities. Information was secured which pointed conclusively to three farmers dumping their unwanted kittens in the neighbor's woodlot.

Those farmers who make no effort to reduce the number of cats on their farms by allowing kittens they do not need to grow to maturity are just as guilty as persons wilfully abandoning cats or kittens



along a country road.

That towns and cities fall within the same category can be best described by quoting from a letter received from the secretary of the Oregon Humane Society, who writes:

"The Oregon Humane Society, from necessity, puts over 1,000 cats to sleep every month in Portland. We find homes for 30 or 40 cats a month, on an average throughout the year. We have a monoxide chamber which we find to be the most humane way. Some of the cats are brought to us but we pick up hundreds each month."

Forbush (4) says:

"Thousands of families go into the country or to the seaside in summer, taking cats or kittens with them, and leave their pets on their return to the city, not knowing, perhaps, that such cruelty is forbidden by law. Miss Winslow asserts that at Old Orchard Beach, Maine, at the close of one summer, forty deserted cats were seen, and that sometimes as many as one hundred have been abandoned in a similar way at Nantasket Beach, near Boston. A report from Mr. Orrin C. Bourne, chief deputy fish and game commissioner of Massachusetts, asserts that one man killed thirteen cats that were deserted at Brant Rock at the end of the summer of 1914. Mr. Walter A. Larkin of Andover says that cats are left at summer camps in the woods when people leave them in the fall. He saw seven in one wooded tract in one day. Mr. Wm. H. Jones of Nantucket says that one hunter killed twenty-seven abandoned cats there last fall (1914). Many correspondents and people from all parts of New England report many cats abandoned by 'summer people'. Several persons note abandoned cats left uncared for in the city while their owners are away for the summer.

"Many kindly people will not kill superfluous kittens, but cruelly leave them in the woods or by the wayside, in the hope, often a vain one, that some one will pick them up. One gentleman informs me that six were left at his door within a month; another that a kitten was left at his doorstep several times, but he refused to adopt it. Many such waifs either 'go back to nature' or get their living from garbage cans, rubbish heaps, manure heaps and pigpens, killing whatever living things they can catch during the summer. Their tracks may be found on the first snows of winter as they wander, footsore and ravenous. A few of the weaker may succumb to storm and stress, but the hardy survive, to procreate their kind. This evil has gone so far that there is now no place where birds and game can be safe from their nocturnal enemy. Thirty-nine correspondents tell of people abandoning cats; 14 assert that they see many cat tracks on the snow; 46 that they often see stray cats in fields and woods; 51 that they see such in cities and towns; and 42 that they shoot them when known to be strays or seen far from houses in the woods.

"It is difficult in many cases to determine whether or not cats are ownerless or merely astray from villages and cities. Cats continually radiate from centers of population. Many of them are homeless, others mere nocturnal wanderers, but most of them are destructive to bird life.

"There are many other ways in which cats revert to a wild state. Cats are not all alike in disposition; occasionally one will leave its home and its master, walk out into the night and disappear, perhaps to return after months, perhaps never. Many leave good homes in the spring and take to the woods and fields, returning only when approach of winter drives them to a nest in the haymow or to the master's fireside, but the most prolific cause of the return of cats to the feral state is not the fault of the animal, but that of man,--abandonment

by their owners."

### The Cat as a Predator

#### The Patience of the Cat

In hunting the cat is proverbially as "quiet as a mouse", and has the patience that would have tried Job himself. While driving during the early morning of April 11, 1940, two miles south of Independence, a steel-gray colored cat was seen near the hole of a grey digger squirrel, Citellus douglasii (Richardson). This rodent is found in great numbers throughout the Willamette Valley. Secreting myself behind a rose bush thicket approximately eighty yards from the cat, I sat down and watched the cat at point. Periodically he was observed through a pair of 8x30 Zeiss binoculars. It was 7:40 a. m. when observation began and the cat did not give up until 10:25 a. m., two hours and forty-five minutes without the prey being caught. How long the cat had been sitting near the hole before observation was begun of course could not be determined.

More than two dozen similar observations were made on other cats watching at burrows of grey diggers and gophers, Thomomys bulbivorous (Richardson). The time on these observations ranged from twenty-six

minutes to approximately two hours. Of this number, nine were successful in making captures.

#### Method of Attack

In catching a gopher or grey digger, the cats observed invariably tossed the rodent away from the burrow, sometimes over their backs, and then by constant batting with paws and maneuvering finally made the kill by biting the prey through the neck just below the base of the head.

Many rodents are capable of inflicting considerable injury upon the cat, and a cat which has had experience in killing rodents can generally be identified by the skillful maneuvering it does to escape the large incisors of many rodents.

At no time was an attack upon a quail observed but several observations were made of cats stalking and killing pheasants. On June 11, at approximately 4:30 p. m., while driving along a country road one mile southeast of Wells, Oregon, I stopped to watch a pheasant hen and cock that had a brood of twelve, three-weeks old pheasants. The procession, with the hen and young in front and the cock a few yards in the rear, followed along the edge of a wheat field which recently had two swaths cut around its outer edge. Suddenly, from behind a shock of

grain, a black and white cat leaped out toward the pheasants. The hen and her young disappeared into the grain field but the cock was not so quick and bore the brunt of the attack. The cat drove him to the ground, and amidst a few flying feathers and a flutter of wings, it was quickly over. The method of attack is best described by saying that the bird is pounced upon and rolled over as a football player falls on the ball, and in this rolling the cat bites the bird in the head, usually killing it instantly. At times a cat will not kill its prey at once but plays with it and tortures it in a sadistic manner.

Mr. H. Ross Newcomb, a graduate student in the Oregon State College, Fish and Game Department, while stationed on Protection Island, Washington, recorded an observation of a cat kill as follows:

"5/28/39. Saw two males and one female pheasant jumping around and making an infernal racket. I thought the male might be bothering chicks of the female. Upon investigation I found a cat (same as seen yesterday) with its teeth in the neck of one of the males. Cat ran away. Bird was dead."

At various times in November 1938, several coveys of valley quail, Lophortyx californica vallicola (Ridgway), were trapped for the purpose of redistribution in untenanted areas on the Soap Creek Demonstration Area. One trapping station was

located adjacent to a garage in which a female cat was nursing three kittens. This cat was well fed by the owner. During the period of twelve days, in which twenty-three quail had been captured in the quail trap, the female cat caught and ate three members of the same covey, which she had captured nearby.

Mr. Arthur S. Einarsen, Leader of the Oregon Cooperative Wildlife Research Unit, reported that during July 1936, he observed, on the Oregon State College east farm, a house cat training four kittens to hunt. In one day they killed three Oregon brush rabbits, one male valley quail, and two pocket gophers.

#### Food Capacity of the Cat

What comprises a complete meal for a cat depends upon the following three factors: first, the size of the cat; second, the extent of hunger; and third, the availability of suitable prey and its palatability. To obtain some idea of what constituted a full meal for an adult cat, several box traps containing freshly killed rodents and birds were set out at various locations. In the following six cases the bait was weighed before being placed in the box trap and when a cat was caught it was killed and

weighed. Then the weight of parts of bait not eaten was subtracted from the original weight to obtain amount and weight of parts eaten. Stomach contents were removed for study purposes and the cat weighed.

In Case Number 1, one pound and one ounce of an Oregon brush rabbit, Sylvilagus bachmani ubericolor (Miller), which weighed one pound and twelve ounces, was eaten by a male cat. The uneaten parts were the head, front and hind legs and scattered bits of fur.

In Case Number 2, a black-tailed jackrabbit, Lepus californicus (Gray), was eaten, except the head, back, front and hind legs, bits of fur, and large and small intestines, which weighed one pound and eleven ounces. The weight of the parts eaten was one pound and nine ounces, and total weight three pounds and four ounces.

A Camas pocket gopher, Thomomys bulbivorous (Richardson), in Case Number 3, weighing nine and one-half ounces was eaten entirely except for two ounces, by a female cat.

In Case Number 4, a Douglas ground squirrel, or grey digger, as it is commonly called, Citellus douglasii (Richardson), weighing one pound and twelve ounces, was all eaten by a male cat, except the head,

tail, and feet, which weighed nine ounces.

An adult ring-necked pheasant, Phasianus colchicus torquatus (Gmelin), weighing two pounds and nine ounces, in Case Number 5, was all consumed by a large male cat, except for seven ounces. The head, wings, feet, tail and other feathers were not ingested.

In Case Number 6, eleven out of sixteen one-day old ring-necked pheasants were eaten. Although many in number, their combined weight totaled only one pound and seven ounces, of which all but five were eaten by a male cat. These young pheasants were obtained from the Oregon State Commission Game Farm near Lewisburg and were culls from an incubator hatch.

A more detailed description showing amounts by weights, parts eaten, parts not eaten, of the above six cases are shown in Table II. Other examples of items comprising complete meals for adult cats may be seen throughout the Appendix.



Table II. Summary, Showing Amounts by Weight, Parts Eaten, Parts Not Eaten, of Four Rodents, One Adult and Sixteen Young Pheasants, by Six Individual Cats.

Case No.	Bait Used	Sex	Total Weight	Parts not Eaten	Weight	Weight of Bait Eaten	Sex of Cat	Weight of Cat Minus Bait
1	Oregon brush rabbit, <u>Sylvilagus ubericolor</u>	Adult Male	1 lb. 12 oz.	Head, front and hind legs and bits of fur	11 oz.	1 lb. 1 oz.	Male	9 lb. 1 oz.
2	Black-tailed jack rabbit, <u>Lepus californicus</u>	Young Male	3 lbs. 4 oz.	Head, back, front and hind legs, large and small intestines and fur	1 lb. 11 oz.	1 lb. 9 oz.	Male	8 lbs. 5 oz.
3	Camas pocket gopher, <u>Thomomys bulbivorus</u>	Adult Male	9½ oz.	Head	2 oz.	7½ oz.	Female	7 lbs.

Table II (continued)

Case No.	Bait Used	Sex	Total Weight	Parts not Eaten	Weight	Weight of Bait Eaten	Sex of Cat	Weight of Cat Minus Bait
4	Douglas ground squirrel, <u>Citellus douglasii</u>	Adult Male	1 lb. 12 oz.	Head, tail and feet	9 oz.	1 lb. 3 oz.	Male	8 lbs. 6 oz.
5	Ring-necked pheasant, <u>Phasianus torquatus</u>	Adult Male	2 lbs. 9 oz.	Head, wings, feet, tail and other feathers	7 oz.	2 lbs. 2 oz.	Male	11 lbs. 10 oz.
6	Sixteen ring-necked pheasants	One day old	1 lb. 7 oz.	*Eaten entirely	6 oz.	1 lb. 1 oz.	Male	10 lbs. 4 oz.

\*Only eleven out of the sixteen day-old pheasants were eaten. On examination, the cat's stomach in this case contained parts of a red-winged blackbird.

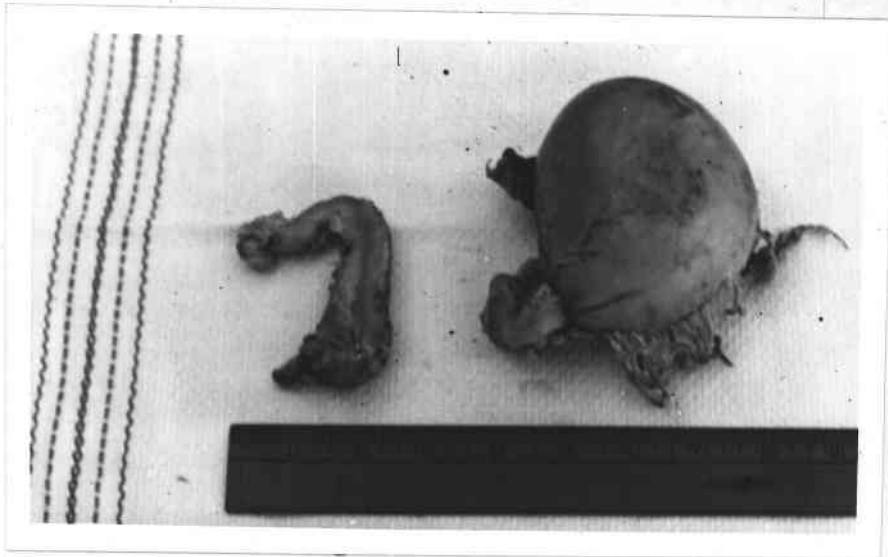


Figure 1-- An empty cat's stomach compared with a full one.



Figure 2--Interior view of full stomach  
containing two valley quail.  
Note one head intact, also the  
muscular walls of empty stomach.

On the morning of November 19, 1938, a large male cat was found in a quail trap, which had feathers scattered throughout. A towhee, Pipilo maculatus oregonus (Bell), with head missing, lay on the hardware cloth floor. The cat made an easy target as it was released from the trap. Its belly actually touched the ground as it tried to bound away. The stomach when examined contained three entire valley quail, with the missing head of the towhee found in the trap.

On February 12, 1939, a large yellow male cat was caught in a steel trap in Yamhill County, with a stomach crammed full. On examination two entire valley quail were found (Figures 1 and 2).

Quail are generally eaten entire. In mature pheasants, the head, wings and feet are usually uneaten (Figure 5). Frequently the backbone is also left. In eating a gopher, grey digger or rabbit the heads are not eaten, apparently on account of the large incisor teeth found in these rodents. In the larger rodents the feet are not relished, whereas in the smaller rodents they are usually consumed.

#### Egg Eating Habit

That some individual cats at times acquire the egg eating habit was recorded by Crawford (2),

who reported:

"Nest No. 11 Bobwhite quail

On May 18, 1938, at 4:00 p. m., female not on nest; 2 eggs have been smashed and eaten. 8:00 p. m., observed house cat smashing and sucking eggs--set steel trap. May 19, 6:00 a. m., all eggs and nest destroyed--cat caught."

At no time during the present study was a cat observed eating eggs.

#### Number of Birds Killed by Cats

There is an insufficient number of kill records by cats of game and non-game birds in the region studied to warrant a satisfactory estimate of the amount of actual damage done.

Forbush (4) makes a conservative estimate of 10 birds per cat per year, with two cats per farm. On this basis he figured that in 1913 the farm cats of Massachusetts killed about 7000,000 birds. Using Forbush's estimated bird kills per cat, the total kill by farm cats in the Willamette Valley would be 940,691 birds, and 110,710 by feral cats, making a total of 1,051,401 game and non-game birds killed by farm and feral cats in a year.

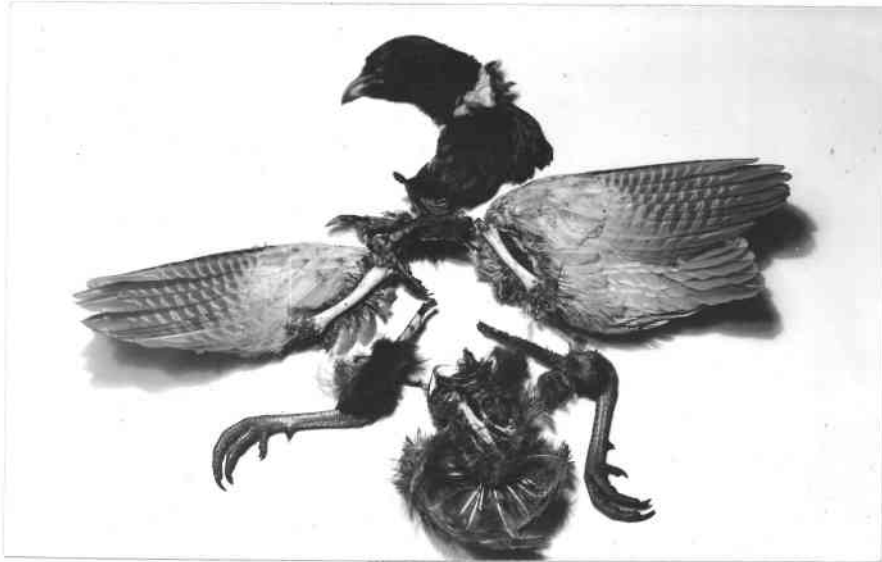


Figure 5--Remains of a pheasant cat kill. Note tooth marks on humeri bones.



Figure 6--A fresh pheasant cat kill placed on post to show bare patch on back of head where bird was bitten and chewed.

### Evaluation of the Rural Cat

Two hundred farmers were asked to make monetary evaluations of their cats. The estimated values ranged from \$10.00 to \$50.00 annually.

According to an article published in 1939 in the magazine section of the Sunday Oregonian, entitled "Our \$189,000,000-a-Year Thief" by Professor Elery R. Becker of the Zoology Department, Iowa State College, the government investigators have estimated that every year each rat in this country costs the United States between \$1.00 and \$3.00, for damage to property and produce, safeguarding health, research and other activities in educating the public against rats. At these figures a good cat would easily earn its keep by catching a dozen or two of these rodents. Rats are comparatively numerous throughout the Willamette Valley but were not recorded in stomach analyses. Only two traces of rats, Rattus norvegicus (Erxleben), were found in scat analysis study.

Forbush (4) quotes Dr. A. K. Fisher, who was in charge of the economic investigations of the Bureau of Biological Survey thirty-two years ago, as saying:

"It is impossible at present to obtain correct figures on the subject, but it is safe to say



that few persons in a normal lifetime run across more than half a dozen cats that habitually attack rats. Occasionally a hunter cat is found, which seems to delight in catching rats, gophers or ground squirrels. It has been the common experience of the writer to find premises that were well supplied with cats overrun with rats and mice. At a certain ranch house in the west he trapped twelve mice in his bedroom in a week, although eight cats had access to the place."

There are few records of the annual kill of small mammals and birds by cats in Oregon. Most records are for only a few weeks period.

An exceptionally fine hunting cat is owned by Mrs. William Reddekopp, who lives near Dallas, Oregon. Noticing the unusual prowess of her cat, Fuzztail, (Figure 3), a female Persian, Mrs. Reddekopp decided to keep a record of the catch as brought in. Her cat caught 130 pocket gophers, 27 rats, several blackbirds, an undetermined number of mice, and three ring-necked pheasants, from July 1938 to July 1939. Fifty-four of the gophers were caught from June 29, 1938 to July 29, 1938. Surely this cat earned its keep even though three pheasants were included in its diet.

#### Cover Importance

In the Willamette Valley practically all the wheat crop is planted during the fall. This practice,

although supplying succulent feed for game birds, decreases a large area of cover which is lost when the wheat stubble of the past season is plowed for reseeding.

During this study opportunities for seasonal observation of cover types have shown that additional shrinkage of good cover for birds is slowly taking place each year. Old fences are being replaced by new ones, which means a loss of food and cover that once grew there. Woodlots and swales are cut clean to make way for additional crop lands. This gradual decrease of cover each year makes for greater availability of the upland game to predators.

Forbush (4) goes into considerable detail in discussing how cats have completely destroyed bird-life on islands. The Oregon Wildlife Research Unit is conducting studies on pheasants, valley quail and ruffed grouse on Protection Island, Washington. This island, with an area of 350 acres, is located in the Straits of Juan de Fuca, several miles west of Port Townsend, Washington. In May 1937, ten pheasant hens and two cocks were liberated on the island. Two of the hens were killed almost immediately by predators. About the same time someone inadvertently released

two cats, one of which is still present and active as a predator.

A pheasant census of the island on October 12 and 13, 1939, showed a tremendous increase of pheasants resulting from three nesting seasons. The census figures of October were 220 males, 180 females, and 30 of undetermined sex, a total of 430 pheasants from a start of two males and eight hens. An abundance of available food and cover is found on the island, and the presence of one cat has affected the natural increase very little. Perhaps there would have been a different story had there been a female cat in addition to the male cat now present. Although wildlife studies on islands are not entirely applicable to wildlife problems on the mainland, the factor of an almost complete laboratory control can give splendid insight into various phases that would otherwise remain hidden elsewhere.

#### Cruising Range

On December 23, 1938, a large, blue tomocat was caught near an abandoned schoolhouse two miles west of Suver, Benton County, and recognized as a cat which was caught a few days before in another box trap half a mile distant. He had a short white stocking on

his left hind foot. At this time a daub of white paint was placed on his back to better identify him if caught again. He was then released. Ten days later this same cat was caught in a steel trap a good three miles from where he was marked with paint and released. He was again released, but at no time afterwards was he seen.

No conclusive evidence was recorded to determine the distance traveled by feral or farm cats. Based on scattered observations in the field and data shown by sex ratio of cats which were trapped, it might be said with some reservation that feral cats travel at least twice as far as farm cats, and that male farm cats travel twice as far as female farm cats.

#### Sex Ratio of Trapped Cats

Bennitt and Nagel (1) and Leopold (7) believe that the feral population is made up mainly of males. From the total of 147 cats trapped during this investigation, 114, or 77.55 per cent were males, while 33, or 22.45 per cent were females. Although not too conclusive, these figures do prove to a certain extent that a female feral cat is a rarity and that female farm cats do not range as far as male farm cats.

## Food Habits Study

In the past, all attention to the cat problem has been too exclusively observational, therefore in this study emphasis has been placed on the stomach analysis in an attempt to prove whether or not the general condemnation of the cat as a game bird predator is well founded.

### Methods of collection

Box and steel traps, baited with fish oil, catnip and small bits of fish were used. A .22 rifle and a small bore shotgun supplemented the traps. At times traps were set twenty to thirty miles from headquarters, and in several cases resulted directly in stomachs showing emptiness. A killing type of trap would be more practical as it would insure stomach contents of trapped animal to be intact in case the trap could not be visited for several hours. All traps were set no closer than one-half mile from a farmhouse, unless it was abandoned. The majority of cats trapped and those shot were obtained beyond a mile from farmhouses, for only the larger farms and areas were worked upon. Woodlots, swales and creek and river bottoms yielded many good specimens.

If trained hounds for trailing and treeing

cats had been available, a great deal more could have been accomplished in the way of obtaining facts about the numbers and habits of cats, and also would have resulted in a greater number of stomachs suitable for analyzation than the trapping and hunting method.

#### Methods of Study

The following three methods were used in gathering data on food habits of the cat: (1) scat analyses, (2) identifying cat kills in the field, and (3) stomach analyses.

#### Scat Analysis

In order to supplement the stomach analyses, an attempt was made to gather a number of cat scats for food identification. Only 63 were collected during the period from February 1, 1939, to March 1, 1940, and it appears that the conspicuous absence of cat scats in the field may be largely due to the habit of many cats of covering them. More data is necessary but there seems to be some evidence which indicates that the true feral cat does not follow this common practice.

The fur, feathers and bones of the cat's prey show very little effect from the digestive processes, thus making it possible to secure fairly

accurate results from scat analysis. The volumetric system was not used in the analysis of the 63 collected scats, all food items being recorded only when more than a trace of the prey species could be identified through the hair, feathers and bones.

The food items in their order of highest occurrence as found were: Rodents, 55.6 per cent; non-game birds, 22.2 per cent; game birds, 6.3 per cent, and unidentified material due to lack of convincing proof, 15.9 per cent (see figure 9). Field mice, Microtus spp., were identified 15 times, comprising 23.8 per cent of the total items identified; Douglas ground squirrel, Citellus douglasii (Richardson), seven times and comprised 11.11 per cent; the pocket gopher, Thomomys spp., was found in four scats, 6.34 per cent; and the brown rat, Rattus norvegicus (Erxleben), was found in two scats, making 2.1 per cent of the total. The black-tailed jackrabbit, Lepus californicus (Gray), was identified once, 1.58 per cent; and the Oregon brush rabbit, Sylvilagus bachmani ubericolor (Miller), was found in six scats, comprising 9.52 per cent.

The group comprising the non-game birds figured in 22.2 per cent of the food and included the

following species: one western robin, Turdus migratorius propinquus (Ridgway), two western meadow larks, Sturrella neglecta (Audubon), three black-birds, Euphagus spp., one bluejay, Cyanocitta spp., five Oregon towhees, Pipilo maculatus oregonus (Bell), and two sparrows, Melospiza spp.

Game bird feathers found in scats indicated that the cats had eaten one bobwhite, Colinus virginianus spp., one ruffed grouse, Bonasa umbellus sabini (Douglas) and two Chinese ring-necked pheasants, Phasianus colchicus torquatus (Gmelin).

Ten of the scats had insufficient amounts of recognizable material and amounted to 15.9 per cent of the total items identified.

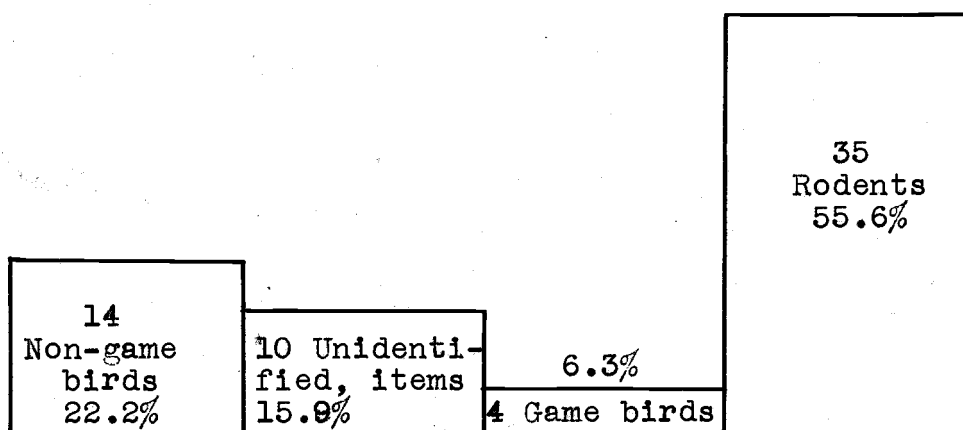


Figure 9. Summary of occurrence of food items found in 63 cat scats.



### Identification of Cat Kills

Data from identifying kills in the field are not likely to be of any great value in quantitative studies because the remains of a fresh kill of small mammals or birds disappear within a few days. It has been observed in many cases that parts of carcasses not eaten by the cat are covered very thinly with grasses and other available debris and revisited within a period of twenty-four hours. Small birds, up to and including the quail in size, are eaten entirely. The stomach of the average mature cat has ample room for two adult quail or practically three-fourths of a mature pheasant, and in the case of the quail almost no clues are left at kill. With the pheasant it is somewhat different. After the bird has been killed, by a bite at the base of the head, and eaten, the head, wings, feet, and quite often the vertebrae and tail head are left, (see Figures 5 and 6 and detailed discussion of typical kills under chapter entitled "The Cat as a Predator").

### Stomach Analysis

The stomach material was obtained from January 1, 1939, to March, 1940, and came from eight of the ten counties in the Willamette Valley, as

follows: Benton, 40; Marion, 6; Yamhill, 6; Polk, 10; Linn, 8; Lane, 2; Clackamas, 6; and Washington, 9.

One stomach was obtained from Tillamook, a county along the coast and located outside the Valley. From a total of 147 cat stomachs, 86 or 59.50 per cent, contained amounts suitable for food analysis. 61 stomachs, or 41.50 per cent, held insufficient quantities of food, or were entirely empty upon examination. The average amount of material contained in those stomachs analyzed was approximately three-fourths or 75 per cent of the stomach capacity.

Eighty-one stomachs were examined by Mr. Charles C. Sperry, Associate Biologist of the Denver Laboratory, Bureau of Biological Survey, and 67 of these contained sufficient amounts for food analysis. Nineteen stomachs were analyzed by the writer. The individual stomach analyses and records of percentages are included in the appendix.

The food of the individuals collected consisted almost entirely of small mammals, birds, carrion and garbage. Mammals comprised 61.77 per cent by volume and occurred in 72 stomachs, while birds formed approximately 18.88 per cent and were found in 26 of the 86 stomachs. One frog and

miscellaneous items accounted for the remaining 18.96 per cent. See Table III, showing identification of items of food, with percentage by occurrence and by volume.

Mice, Microtus spp., were found in 26 stomachs (22.85 per cent); Oregon brush rabbit, Sylvilagus bachmani ubericolor (Miller), made up the next highest in the small mammal group, with 12.12 per cent, and was found in 11 stomachs. White-footed mice, Peromyscus spp., occurred in eight stomachs.

The Douglas ground squirrel, Citellus douglasii (Richardson), was found in seven stomachs (6.36 per cent); the pocket gopher, Thomomys spp., followed in order of volume and was found in five stomachs (5.65 per cent). The shrew, Sorex vagrans (Merriam), was found in six stomachs but totaled only 1.30 per cent. Douglas red squirrel, Sciurus douglasii (Bachman), was found in two stomachs (1.18 per cent). Rabbits other than the Oregon brush rabbit were the black-tailed jackrabbit, Lepus californicus (Gray), 1.97 per cent, and the snowshoe rabbit, Lepus americanus washingtonii (Baird), 1.10 per cent, were found in four and in one stomach respectively. The mole, Scapanus spp., was found in

two stomachs (1.49 per cent).

Game birds were recorded only twice in the stomach analyses. California valley quail, Lophortyx californica vallicola (Ridgway) was found in two stomachs (3.14 per cent), while the western mourning dove, Zenaidura macroura marginella (Woodhouse), occurred only once (.23 per cent).

There were several different species of non-game birds, with the flicker, Colaptes spp., topping the list by percentage of volume (3.14 per cent), although it was third in the number of stomachs in which non-game birds were found. The song sparrow, Melospiza spp., was found in four stomachs, and the Oregon towhee, Pipilo maculatus oregonus (Bell), horned lark, Octocoris spp., woodpecker, Dryobates villosus harrisi (Audubon), bluebird, Sialia spp., varied thrush, Ixoreus naevius (Gmelin), marsh wren, Telmatodytes spp., were all found but once. Unidentified birds were recorded three times.

A frog, Rana spp., was found once.

In the miscellaneous items are listed carrion, which gave 10.70 per cent from a total of 12 stomachs; garbage, 6.29 per cent, and cereal, 1.97 per cent, were found in five and two stomachs,

respectively.

It is interesting to note here that from the total of 147 stomachs which were examined only four showed signs of having been fed at home, indicating that the majority of rural cats must supplement part, or obtain all, of their food by hunting in the fields or woods.

#### Food Predilections of the Wildcat and the Domestic Cat

There is considerable similarity between the food predilections of the wildcat, Lynx rufus spp., in California, as shown by Dixon (3), and the domestic cat, as revealed by this investigation. From 32 wildcat stomachs that were examined in the laboratory and an additional 186 examined in the field, Dixon concluded that 63 per cent of its food is of beneficial significance from the human standpoint, with 27 per cent harmful and 10 per cent neutral (Figure 7).

All of the rodents listed in Table III, including the black-tailed jackrabbit and Oregon brush rabbit, are considered destructive by various agriculturists throughout the Willamette Valley. From this viewpoint, in assembling data for a summary diagram of food predilections of the domestic cat (Figure 8), it would appear that the cat could easily

Table III. Items of Food Identified in the Stomachs of 86 Domestic Cats and the Number of Stomachs in Which Found, with Percentage by Occurrence and by Volume.

Kinds of Food	Number of Stomachs in Which Found	% by Occurrence	% by Volume
<u>Order Rodentia</u>			
Field mice-- <u>Microtus</u> spp.	26	22.03	22.85
White-footed mice-- <u>Peromyscus</u> spp.	8	6.78	7.75
Shrew-- <u>Sorex vagrans</u> --	6	5.09	1.30
Pocket gopher-- <u>Thomomys</u> spp.	5	4.24	5.65
Squirrels-- <u>Citellus douglasii</u>	7	5.93	6.36
<u>Sciurus douglasii</u>	2	1.69	1.18
	<u>54</u>	<u>45.76</u>	<u>45.09</u>
<u>Order Lagormorpha</u>			
Black-tailed jackrabbit-- <u>Lepus californicus</u>	4	3.39	1.97
Oregon brush rabbit-- <u>Sylvilagus ubericolor</u>	11	9.32	12.12
Snowshoe rabbit-- <u>Lepus americanus washingtonii</u>	1	.85	1.10
	<u>16</u>	<u>13.56</u>	<u>15.19</u>
<u>Order Insectivora</u>			
Mole-- <u>Scapanus</u> spp.	<u>2</u>	<u>1.69</u>	<u>1.49</u>

Table III. (continued)

Kinds of Food	Number of Stomachs in Which Found	% by Occurrence	% by Volume
<u>Order Galliformes</u>			
California quail-- <u>Lophortyx cal-</u> <u>ifornica</u>	2	1.69	3.14
Domestic chicken	8	6.78	6.21
	10	8.47	9.35
<u>Order Columbiformes</u>			
Western mourning dove-- <u>Zenaidura</u> <u>macroura marginella</u>	1	.85	.23
<u>Order Piciformes</u>			
Flicker-- <u>Colaptes</u> spp.	2	1.69	3.14
Woodpecker-- <u>Dryobates harrisi</u>	1	.85	.12
	3	2.54	3.26
<u>Order Passeriformes</u>			
Towhee-- <u>Pipilo oregonus</u>	1	.85	1.18
Song sparrow-- <u>Melospiza</u> spp.	4	3.39	1.28
Horned lark-- <u>Octocoris</u> spp.	1	.85	.39
Blue bird-- <u>Sialia</u> spp.	1	.85	.20
Varied thrush-- <u>Ixoreus naevius</u>	1	.85	.63
Marsh wren-- <u>Telmatodytes</u> spp.	1	.85	.39
Unidentified birds	3	2.54	1.97
	12	10.18	6.04

Table III. (continued)

Kinds of Food	Number of Stomachs in which Found	% by Occurrence	% by Volume
<u>Order Salientia</u>			
Frog-- <u>Rana spp.</u>	<u>1</u>	<u>.85</u>	<u>.39</u>
<u>Miscellaneous</u>			
Carriion	12	10.17	10.70
Garbage	5	4.24	6.29
Cereal	<u>2</u>	<u>1.69</u>	<u>1.97</u>
	19	16.10	18.96
Total Percentages		100.00	100.00



be given a beneficial rating of 61.77 per cent; however, on account of the low population numbers in the Valley, of the Douglas red squirrel, black-tailed jackrabbit, the Oregon brush rabbit and the snowshoe rabbit (which was caught outside of the investigational area), these will be considered as neutral, which lowers the beneficial percentage from 61.77 to 45.40 per cent.

That the domestic cat will take carrion is clearly shown by the figure of 10.70 per cent carrion by volume of total food taken. There are those who would question the cat's eating carrion or garbage but one has only to visit a municipal dumping ground in the evening or early morning to be convinced that such a practice is quite common. The carrion found in stomachs during this study invariably showed skunk or rabbit. The skunk is made available when trappers skin their catches in the field. Several cats have been seen along highways eating carcasses of rabbits and game birds that had been struck by high-speed traffic. It would appear therefore that even though the domestic cat is encroaching upon the niche of other smaller mammals in consuming carrion in the wild, the fact remains that the consumption of carrion

is considered beneficial by most biologists. This adds 10.70 to 45.50 per cent, making a total of 56.10 per cent for the beneficial aspect by volume percentages.

To make a distinction of the harmfulness of the domestic cat, as shown by the stomach analyses, is considerably easier than that required for the beneficial aspect. In this group are the game birds, non-game birds, poultry and the frog, which gives a total of 19.27 per cent.

This leaves for the neutral rating the rabbits, the Douglas squirrel, garbage and cereal, a total of 24.63 per cent.

In many parts of the country the jackrabbit and the cottontail are hunted intensively as game, but it is seldom that they are sought as game throughout the Willamette Valley. One reason why the cottontail, or the Oregon brush rabbit has not increased in the Valley in numbers to warrant hunting might be the heavy predation by the domestic cat as shown by this study.

Harmful 27%
Neutral, 10%
Beneficial 63%

Figure 7. Final summary, showing 63 per cent of the wildcat's food is of beneficial significance, from the human standpoint.

Harmful, 19.27%
Neutral, 24.63%
Beneficial 56.10%

Figure 8. Final summary showing 56.10 per cent of the feral and non-feral cat's food, as brought out by this study, is of beneficial significance.

## Legal Status of the Cat

The Oregon Code contains no law which recognizes the domestic cat as personal property. In the search for such material there wasn't any evidence which would indicate that the other forty-seven states have such a law.

Forbush (4) states:

"In America the owners of domesticated animals have their rights defined by law, but the status of the cat seems to have been determined largely by the opinion of the presiding justice, who may regard it as domesticated or as a wild animal."

He also mentions that in Europe the situation is reversed in that the higher courts see no reason why cats should be given the privilege of roaming when all other domestic stock must be kept under control.

Hibschman (6) in "The Cat and the Law" shows that the cat is evidently in good standing under the law in the United States. Quoting to some extent from his article we read:

"For a dog to chase, frighten, annoy and worry a cat", said the highest court of the State of Connecticut in 1901, "is to do the cat a mischief". The legal status of the cat has had a varied history. We find that there was a time under the common law when to steal a cat was larceny, for the reason that a cat was not considered to have any intrinsic value. This was true also of the dog, and resulted in an analogous situation: A man might be prosecuted for stealing the

skin of a dead cat or dog, though he would go scot free if he stole the live animal.

The law among the ancient Britons recognized cats as the "guardian of the King's granary", and provided that any person who killed one of them should be punished by having to deliver to the King an amount of wheat measured by the size of the cat, or at least by its length. To determine this amount the law provided "Let the cat be hung up by the tip of its tail with its head touching the floor, and let grains of wheat be poured upon it until the extremity of its tail be covered with the wheat". The amount of wheat required to do that was the amount that the offender had to deliver as a penalty.

The law came to be changed by the courts, so the authorities say, when larceny was made punishable with death and the judges tried to mitigate the severities of the law. In later years it was changed again, both in England and in most of the states of this country, either by statutes or by judicial decision, so that now cats are looked upon, as the Supreme Judicial Court of Maine said some years ago, as "things of value" and the subject of larceny.

The Supreme Court of Georgia expressed it a number of years ago as follows: "The ancient idea that animals which do not serve for food, and which therefore the law holds to have no intrinsic value were not subject to larceny, has passed away. Now the stomach is not the only criterion of value".

Cats are classified technically as animals mansuetae naturae, as opposed to animals ferae naturae, that is to say, as animals tame by nature or animals that "come to the hand", as distinguished from animals wild by nature. That the cat, speaking of course of the domestic cat, is properly placed in the first of these two classes

is evident from its long and respectable history, as well as from common experience.

As the Supreme Judicial Court of Maine expressed it, "The time of its domestication is lost in the midst of time, but it is apparent that the cat was a domestic animal among the early Egyptians, by whom it came to be regarded as sacred, as evidenced by the device of Camlyses during his invasion of Egypt, B. C. 525 or 527, which scarcely could be feasible if the animal had been wild. From that day to this it has been a dweller in the houses of men. In no other animal has affection for home been more strongly developed, and in none, when absent from home, can the animus revertendi be more surely assumed to exist".

One of the earliest cat cases reported in our American books of the law was the old traditional one of the cat and the canary, which was brought before a Pennsylvania court for decision more than fifty years ago.

The plaintiff in that case alleged and undertook to prove that the defendant was the owner of a cat which, on a certain day wandered off the home grounds in search of adventure, invaded the premises of the plaintiff, and then and there pounced upon and caught, killed, and carried away one canary of great value belonging to the plaintiff, to his damage in a sum not mentioned in the report of the case. The basis of the court's decision and the court's conclusion are shown in the following quotation, which it will be noted reveals a considerable amount of judicial knowledge of cats: "Cats attach themselves to places rather than persons and are rather harbored than owned. They are not subject to direction like dogs, nor can they be put under the same restraint as other domestic animals. To some extent they may be regarded as still undomesticated and their predatory habits as but

a remnant of their wild nature. The depredations which they commit in their wanderings are to be ascribed to this and may be compared to the damage done by other animals of a partially wild nature . . . . . The record shows no cause of action against the defendant".

An English court reached precisely the same conclusion a few years ago in a case involving numerous feline raids on a pigeon roost, holding that the owner of the cat found guilty of committing the dastardly acts was not liable under the law for the value of the pigeons taken unless he had notice of what was going on.

It was a negligence, the court held, to permit a cat to follow its natural bent to prowl, nor was the owner liable as a matter of course simply because the cat was a trespasser upon the property of another.

Hibschman sums up his article by saying:

The cat is in perfectly good standing under the law in our day as a domestic animal, an animal mansuetae naturae, a thing of value, and the subject of larceny; that unless there is evidence of the known vicious disposition of a particular cat its owner is not liable for its trespass upon the premises of another nor for the injuries inflicted by it, either upon feathered victims or persons; and that while the law recognizes a dog's right of self-defense, ordinarily the owner of a cat has a legal right to protect his cat against a dog, with such force as may be adequate to the circumstances, even to the extent of taking the dog's life.

In Oregon (Code of 1930) the dog is recognized by law as personal property. Every person owning or keeping any dog over the age of eight months must procure a license from the county clerk of the

county in which said person resides.

Dog owners are liable to livestock owners for damages done by their dogs, and any dog is considered running at large when it is off the owner's premises without a muzzle, or when not under the control of the owner or keeper.

Information received from officials of the towns of Stavely and High River, Alberta, Canada, tells of considerable success in dealing with the surplus cat problem. The laws enacted by these two towns in licensing cats distinguishes the pet from the stray by giving definite rights as to ownership of the pet, and each licensed cat is required to wear a small bell attached to a collar.



## General Discussion and Conclusions

The purposes of this study have been an attempt to contribute to the knowledge of the food habits of the domestic cat, feral or non-feral, in the Willamette Valley, Oregon; to add to the data now available from other sections throughout the United States; to suggest primary management practices in dealing with the cat and small farm game, and give to the public a clearer picture of the age-old cat problem.

Little investigation has been made anywhere in the United States of the food habits of the domestic cat when hunting afield. The present study is the first investigation of any length on the food habits of the domestic cat in Oregon, or any other state, so far as known.

Examination of 63 cat scats showed that 55.6 per cent of the material was principally of rodent origin. Fifteen field mice, Microtus spp. were identified out of a total of 35 rodents, rabbits included. From a total of 18 traces of birds, four proved to be game birds (6.3 per cent), one bobwhite, one ruffed grouse and two adult ring-necked pheasants. The remaining 10, which made 22.2 per cent, were

non-game birds, five of which were Oregon towhees.

The food items found from stomach analysis of 86 cats were principally confined to the Order Rodentia, in which five species made up by volume 45.09 per cent of the total food examined. Field mice, Microtus spp. were found in twenty-six stomachs (22.85 per cent). The Oregon brush rabbit, Sylvilagus bachmani ubericolor (Miller), was found in eleven stomachs (12.12 per cent). Only two California quail, Lophortyx californica vallicola (Ridgway), and one western mourning dove, Zenaidura macroura marginella (Woodhouse), was found, making 3.37 per cent the total volume for game birds.

The most important general conclusion reached in this investigation is that the stomach analyses of the feral and rural cat do not bear out the contention that the domestic cat in the Willamette Valley is a confirmed game bird consumer. Results point to the factor of the availability of food as being the key to the cat's diet. In this case it was found that the cat, if dependent on its hunting for food, will take rodents, birds, carrion and other food that it may happen upon. From the standpoint of the cat it would seem that the palatability factor of mice

and other rodents is as high, or higher, than game birds. This may be due partly to the larger number of rodents which appear to be acting as "buffers", (Leopold (7)).

All through the course of this investigation, data gathered and observations made have indicated that the cat's instinct for hunting is probably as highly developed today as when first taken from the wild. Within a few minutes time a tame cat may be both a highly prized pet and a vicious predator of small mammals and birds. In other words, the urban and rural cat, through no fault of its own, is actually a "Dr. Jekyll and Mr. Hyde". The feral cat is a confirmed "Mr. Hyde".

As Bennitt and Nagel (1) so aptly put it, "The majority of those interested in wildlife have no quarrel with the pet cat which is well fed, which is kept in at night, and whose surplus kittens are disposed of in a humane manner. These are the conditions under which cats are least likely to become a menace to bird life and most likely to justify general esteem as mousers and pets."

There appear to be two perpetual sources of feral cats: (1) The rural cat and its undestroyed offsprings; and (2) The unwanted cats and kittens

abandoned by many urban cat owners. This somewhat illustrates how the general public has a part to play in wildlife problems. Surely this is true of the cat problem when viewed in its entirety.

There are many who advocate the passing of a law which would give the cat its rightful status of ownership. This in turn would lead to the licensing of all wanted cats. Such a law, however, must have the support of the general public or it probably will fail completely. There are others who would do away with all cats, believing that this would in itself increase the number of small game. Suppose that it were possible to remove all cats from our uplands. Would this be followed by a great increase in numbers of upland game? Hardly so, for it is the carrying capacity, food and cover of the land that basically determines the numbers of quail, pheasants, grouse and cottontails to be found.

Bennitt and Nagel (1) advocated several management practices to cope with the cat problem, a few of which are incorporated in the following four factors which are suggested as a sensible approach to the cat problem:

1. Acquaint the farmer and "urbanite" with necessary information on both sides of the cat problem.
2. Make the willful abandonment of cats or kittens a misdemeanor.
3. Create some means in each community for the disposal of surplus cats and kittens, as practiced by humane societies.
4. Provide and maintain adequate and available food and cover for the upland game species throughout the Willamette Valley.

In conclusion it must be pointed out that, due to the lack of a sufficient number of samples, all of the figures relative to the food habits of the domestic cat should be considered inconclusive. It is quite obvious that these investigations should be continued for a longer period and in such a manner that specimens are collected during every month of the year, especially during the summer and fall months.

## A P P E N D I X

### Individual Stomach Analysis Records of Cats Examined

In the following summarizations are listed the results of the individual stomach analyses. In these forms the name of county where cat was taken is given, the date collected, sex of cat, the condition of the stomach as to whether it is full or partially full, the percentage of the contents by bulk, name of collector, collector's number, and name of the person examining the stomach contents.

Note: Several of the stomachs sent to the Denver laboratory were reported empty, showing only a few nematodes or trap debris. These have been omitted, thereby causing a break here and there in the numerical order.

#### Domestic Cat

Locality: Benton County	No.: 1
Sex: Male	Collector: N. N. Nilsson
Date: December 3, 1938	Examined by: C. C. Sperry
Stomach: Full	
Percentage: Animal matter - 100	
Contents: <u>Sorex vagrans</u> - trace; 2 <u>Microtus</u> (1 adult and 1 immature), 75%; long-billed marsh wren, 25%.	

Locality: Benton County	No.: 2
Sex: Male	Collector: N. N. Nilsson
Date: December 20, 1938	Examined by: C. C. Sperry
Stomach: $\frac{1}{4}$ full	
Percentage: Animal matter - 100	
Contents: 1 <u>Sorex vagrans</u> , 100%	
Specimen entire except for crushed head	

Locality: Benton County                      No.: 3  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 20, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter - 100  
 Contents: Sylvilagus, 100%

Locality: Marion County                      No.: 4  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 26, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100; vegetable --; sticks, 2  
 Contents: Sylvilagus, 96%; fungus (tough woody type),  
 4 %.

Locality: Benton County                      No.: 5  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: February 2, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100; vegetable --; dead grass,  
 trace.  
 Contents: Microtus, 98%, white chicken, 2%.

Locality: Yamhill County                      No.: 6  
 Sex: Male                                      Collector: J. E. Rodgers  
 Date: February 12, 1939                      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: 2 California quail, 100%

Locality: Benton County                      No.: 7  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: February 26, 1939                      Examined by C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Sylvilagus, 75%; 1 Sorex, 20%; Peromyscus,  
 5%; bird (towhee--Pipilo), trace.

Locality: Yamhill County                      No.: 8  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: February 27, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100%  
 Contents: Song sparrow, 100%

Locality: Yamhill County                      No.: 9  
 Sex: Male    Collector: N. N. Nilsson  
 Date: February 27, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Chicken (white), 96%; small non-game bird  
                   (probably song sparrow), 4%.

Locality: Yamhill County                      No.: 10  
 Sex: Male    Collector: N. N. Nilsson  
 Date: February 27, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100.  
 Contents: Sylvilagus, 100%

Locality: Polk County                              No.: 11  
 Sex: Female     Collector: N. N. Nilsson  
 Date: March 15, 1939                           Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Small frog (Rana), 100%

Locality: Linn County                              No.: 12  
 Sex: Female     Collector: N. N. Nilsson  
 Date: May 16, 1939                              Examined by: C. C. Sperry  
 Stomach: Very full  
 Percentage: Animal matter, 100  
 Contents: Scapanus, 80%; small non-game bird (black  
                   nestling), 20%.

Locality: Benton County                          No.: 13  
 Sex: Female     Collector: N. N. Nilsson  
 Date: June 5, 1939                              Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Citellus douglasii, 10%; 6 Microtus, 90%; few  
                   feathers of a towhee (Pipilo), trace.

Locality: Lane County                              No.: 14  
 Sex: Female     Collector: N. N. Nilsson  
 Date: July 19, 1939                              Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: 2 Microtus, 100%



Locality: Polk County                      No.: 15  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: July 26, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Vegetable matter, 100  
 Contents: Garbage (potato), 100%

Locality: Benton County                      No.: 16  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: July 22, 1939                      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: 2 Microtus, 15%; Sylvilagus, 65%; 1 mourning  
               dove, 15%; 1 sparrow, 5%.

Locality: Benton County                      No.: 17  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: July 7, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100; vegetable --; cat hair,  
               50.  
 Contents: Microtus (hair only), 100%.

Locality: Clackamas County                      No.: 18  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: November 27, 1939                      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: 1 Sorex vagrans, 3%; 9 Microtus (3 of them  
               entire and 5 others torn into but 2 or 3 pieces), 97%.

Locality: Benton County                      No.: 19  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 16, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 15%; vegetable, 85%  
 Contents: Sylvilagus, 15%; potato, 85%

Locality: Marion County                      No.: 20  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 24, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Carrion (rabbit, station), 100%.

Locality: Marion County                      No.: 21  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: December 1, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Microtus (hair), 100%

Locality: Benton County                      No.: 22  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: November 13, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: 5 mice (Peromyscus maniculatus), 100%.

Locality: Benton County                      No.: 23  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: November 17, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Remains of a small shrew (Sorex, young), 10%,  
           2 Peromyscus (1 entire), 90%.

Locality: Benton County                      No.: 24  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 6, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Turkey (or black chicken), 100%.

Locality: Benton County                      No.: 25  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 20, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100; vegetable--; dead  
           grass, 2%.  
 Contents: Thomomys, 100%

Locality: Benton County                      No.: 26  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: November 30, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: 2 Microtus, 100%

Locality: Benton County                      No.: 27  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 19, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Remains (feathers) of a small non-game bird,  
                  probably horned lark, 100%.

Locality: Benton County                      No.: 28  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: November 17, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, trace; vegetable, 100.  
 Contents: Mouse (Peromyscus), trace; potato, 100%

Locality: Benton County                      No.: 30  
 Sex: Female                                    Collector: N. N. Nilsson  
 Date: November 12, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Vegetable, 100  
 Contents: Cracked wheat (probably cooked cereal).

Locality: Benton County                      No.: 32  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: December 26, 1939                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal, 100  
 Contents: Microtus

Locality: Washington County                  No.: 33  
 Sex: Male                                      Collector: August Metlibeke  
 Date: December 1, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal, 100  
 Contents: Remains of 2 shrews (Sorex), 5%; rabbit  
                  (large mass of hair), 75%; fish (few vertebrae of a  
                  large fish--salmon?), 5%; carrion (skunk--trap lure),  
                  15%.

Locality: Washington County                  No.: 34  
 Sex: Female                                    Collector: N. N. Nilsson  
 Date: December 27, 1939                      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Sylvilagus, 100%

Locality: Washington County      No.: 35  
 Sex: Female      Collector: August Metlibeke  
 Date: December 31, 1939      Examined by: C. C. Sperry  
 Stomach: Less than  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Carrion (Fish--trap lure), 100%

Locality: Washington County      No.: 37  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 17, 1939      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: 2 Microtus, 100%

Locality: Washington County      No.: 40  
 Sex: Male      Collector: N. N. Nilsson  
 Date: January 5, 1940      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 100%

Locality: Benton County      No.: 41  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 22, 1939      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Sylvilagus, 100%

Locality: Clackamas County      No.: 43  
 Sex: Female      Collector: N. N. Nilsson  
 Date: November 10, 1939      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 20; animal and vegetable, 80  
 Contents: Shrew (Sorex), 20%; garbage (cooked meat and potatoes), 80%

Locality: Clackamas County      No.: 44  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 11, 1939      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Skunk, 100%

Locality: Clackamas County      No.: 45  
 Sex: Male      Collector: N. N. Nilsson  
 Date: November 16, 1939      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Carrion (rabbit--trap lure), 100%

Locality: Benton County      No.: 46  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 3, 1939      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Carrion (Sylvilagus), 100%

Locality: Benton County      No.: 47  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 28, 1939      Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Skunk (Mephitis), 100%

Locality: Benton County      No.: 48  
 Sex: Male      Collector: N. N. Nilsson  
 Date: January 8, 1940      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Rabbit, 20%, bird (chicken ?), 80%

Locality: Benton County      No.: 49  
 Sex: Male      Collector: N. N. Nilsson  
 Date: December 4, 1939      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 100%; bird (fragments of a few  
 feather shafts), trace.

Locality: Benton County      No.: 50  
 Sex: Male      Collector: N. N. Nilsson  
 Date: January 6, 1940      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 100%

Locality: Yamhill County                      No.: 51  
Sex: Male                                      Collector: N. N. Nilsson  
Date: November 25, 1939                      Examined by: C. C. Sperry  
Stomach: Nearly empty  
Percentage: Animal matter, 100  
Contents: Carrion (muskrat--trap lure), 100%

Locality: Benton County                      No.: 52  
Sex: Female                                      Collector: N. N. Nilsson  
Date: December 5, 1939                      Examined by: C. C. Sperry  
Stomach:  $\frac{1}{4}$  full  
Percentage: Animal matter, 100  
Contents: Microtus, 50%; carrion (rabbit--trap lure), 50%.

Locality: Linn County                      No.: 53  
Sex: Female                                      Collector: N. N. Nilsson  
Date: November 18, 1939                      Examined by: C. C. Sperry  
Stomach:  $\frac{1}{2}$  full  
Percentage: Animal matter, 100  
Contents: Microtus, 100%

Locality: Benton County                      No.: 54  
Sex: Female                                      Collector: N. N. Nilsson  
Date: December 14, 1939                      Examined by: C. C. Sperry  
Stomach:  $\frac{1}{4}$  full  
Percentage: Animal matter, 100  
Contents: Peromyscus, 100%

Locality: Benton County                      No.: 56  
Sex: Male                                      Collector: N. N. Nilsson  
Date: January 6, 1940                      Examined by: C. C. Sperry  
Stomach: Crammed full  
Percentage: Animal matter, 100  
Contents: Thomomys, 100%

Locality: Benton County                      No.: 57  
Sex: Male                                      Collector: N. N. Nilsson  
Date: December 23, 1939                      Examined by: C. C. Sperry  
Stomach:  $\frac{1}{4}$  full  
Contents: Rabbit, 100%

Locality: Polk County                      No.: 58  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 8, 1940                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: 2 Microtus, 100%

Locality: Washington County              No.: 59  
 Sex: Female                                   Collector: N. N. Nilsson  
 Date: December 10, 1939                   Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 65; animal and vegetable, 35  
 Contents: 1 Peromyscus, 35%; 1 Microtus, 30%; garbage  
           (potatoes, chicken toes, charcoal, etc.), 35%

Locality: Washington County              No.: 60  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: December 10, 1939                   Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: White chicken, neck feathers only (probably  
           carriion), 100%

Locality: Washington County              No.: 61  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: December 8, 1939                   Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: White chicken, 100%

Locality: Benton County                    No.: 63  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: December 17, 1939                   Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Citellus douglasii, 100%

Locality: Benton County                    No.: 64  
 Sex: Male                                      Collector: Charles Glender  
 Date: January 25, 1940                      Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Woodpecker (Dryobates villosus), 15%;  
           carriion (rabbit--trap lure), 85%

Locality: Polk County No.: 65  
 Sex: Male Collector: N. N. Nilsson  
 Date: December 28, 1939 Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Rabbit, 5%; Thomomys, trace; chicken  
 (probably carrion, intestines and neck feathers  
 only), 95%

Locality: Benton County No.: 66  
 Sex: Male Collector: N. N. Nilsson  
 Date: December 12, 1939 Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Flicker, 100%

Locality: Polk County No.: 67  
 Sex: Male Collector: N. N. Nilsson  
 Date: February 13, 1940 Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal and vegetable matter.  
 Contents: Quail (head and crop, incl. wheat), 100%

Locality: Linn County No.: 68  
 Sex: Female Collector: N. N. Nilsson  
 Date: January 16, 1940 Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100%  
 Contents: Microtus, 25%; Peromyscus, 75%

Locality: Polk County No.: 70  
 Sex: Male Collector: N. N. Nilsson  
 Date: February 17, 1940 Examined by: C. C. Sperry  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Sciurus douglasii, 100%

Locality: Benton County No.: 71  
 Sex: Male Collector: Loyd Williamson  
 Date: January 12, 1940 Examined by: C. C. Sperry  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Sciurus douglasii, 50%; white chicken, 10%;  
 varied thrush (Itoreus naevius), 40%



Locality: Benton County                      No.: 72  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 12, 1940                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: White chicken, 100%

Locality: Polk County                        No.: 73  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 23, 1940                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Peromyscus, 100%

Locality: Polk County                        No.: 74  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 23, 1940                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Scapanus, 15%; white chicken (fragments of  
                  feathers and gizzard), 10%; towhee (Pipilo), 75%.

Locality: Tillamook County                  No.: 77  
 Sex: Male                                      Collector: H. R. Kieper  
 Date: November 22, 1939                      Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 30%; snowshoe rabbit, 70%

Locality: Clackamas County                  No.: 81  
 Sex: Female                                    Collector: N. N. Nilsson  
 Date: January 8, 1940                        Examined by: C. C. Sperry  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Carrion (Sylvilagus, trap lure), 100%

Locality: Benton County                      No.: 0-1  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 5, 1939                        Examined by: N. N. Nilsson  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Citellus douglasii, 100%

Locality: Benton County                      No.: 0-2  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: January 29, 1939                      Examined by: N. N. Nilsson  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Vegetable matter, 100  
 Contents: Cereal, bread and milk, 100%

Locality: Benton County                      No.: 0-3  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: February 12, 1939                      Examined by: N. N. Nilsson  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Thomomys, 100%

Locality: Linn County                      No.: 0-4  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: February 22, 1939                      Examined by: N. N. Nilsson  
 Stomach:  $\frac{3}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Sylvilagus, 100%

Locality: Linn County                      No.: 0-5  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: March 4, 1939                      Examined by: N. N. Nilsson  
 Stomach:  $\frac{1}{4}$  full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 100%

Locality: Polk County                      No.: 0-6  
 Sex: Female                                      Collector: N. N. Nilsson  
 Date: March 11, 1939                      Examined by: N. N. Nilsson  
 Stomach: Full  
 Percentage: Animal matter, 100  
 Contents: Citellus douglasii, 100%

Locality: Benton County                      No.: 0-7  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: April 21, 1939                      Examined by: N. N. Nilsson  
 Stomach: Crammed full  
 Percentage: Animal matter, 100  
 Contents: Sylvilagus, 95%; Microtus, 5%

Locality: Marion County                      No.: 0-8  
 Sex: Male                                      Collector: N. N. Nilsson  
 Date: April 24, 1939                      Examined by: N. N. Nilsson  
 Stomach:  $\frac{1}{2}$  full  
 Percentage: Animal matter, 100  
 Contents: Microtus, 75%; bluebird (Sialia spp.), 25%

Locality: Marion County                      No.: O-9  
Sex: Male                                      Collector: N. N. Nilsson  
Date: April 27, 1939                      Examined by: N. N. Nilsson  
Stomach: Full  
Percentage: Animal matter, 100  
Contents: Citellus douglasii, 70%; Microtus, 30%

Locality: Polk County                      No.: O-10  
Sex: Male                                      Collector: N. N. Nilsson  
Date: May 3, 1939                      Examined by: N. N. Nilsson  
Stomach: 3/4 full  
Percentage: Animal matter, 100  
Contents: Citellus douglasii, 100%

Locality: Benton County                      No.: O-11  
Sex: Male                                      Collector: N. N. Nilsson  
Date: May 8, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{1}{4}$  full  
Percentage: Animal matter, 100  
Contents: Sylvilagus, 100%

Locality: Linn County                      No.: O-12  
Sex: Male                                      Collector: N. N. Nilsson  
Date: May 11, 1939                      Examined by: N. N. Nilsson  
Stomach: Full  
Percentage: Animal matter, 100  
Contents: Thomomys, 100%

Locality: Lane County                      No.: O-13  
Sex: Male                                      Collector: N. N. Nilsson  
Date: May 14, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{1}{2}$  full  
Percentage: Animal matter, 100  
Contents: 1 young Citellus douglasii, 100%

Locality: Linn County                      No.: O-14  
Sex: Male                                      Collector: N. N. Nilsson  
Date: May 26, 1939                      Examined by: N. N. Nilsson  
Stomach: Full  
Percentage: Animal matter, 80; vegetable, 20  
Contents: 2 Microtus, 80%; unidentified cereal, 20%

Locality: Linn County                      No.: O-15  
Sex: Male                                      Collector: N. N. Nilsson  
Date: June 12, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{1}{4}$  full  
Percentage: Animal matter, 100  
Contents: Unidentified sparrow, 100%

Locality: Benton County                      No.: O-16  
Sex: Male                                      Collector: N. N. Nilsson  
Date: June 19, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{1}{4}$  full  
Percentage: Animal matter, 100  
Contents: Unidentified bird, 100%

Locality: Washington County                      No.: O-17  
Sex: Female                                      Collector: N. N. Nilsson  
Date: June 24, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{3}{4}$  full  
Percentage: Animal matter, 100  
Contents: Microtus, 20%; Thomomys ?, 80%

Locality: Yamhill County                      No.: O-18  
Sex: Male                                      Collector: N. N. Nilsson  
Date: July 18, 1939                      Examined by: N. N. Nilsson  
Stomach: Full  
Percentage: Animal matter, 100  
Contents: Colaptes, 100%

Locality: Marion County                      No.: O-19  
Sex: Male                                      Collector: N. N. Nilsson  
Date: July 24, 1939                      Examined by: N. N. Nilsson  
Stomach:  $\frac{1}{2}$  full  
Percentage: Animal matter, 100  
Contents: Thomomys, 100%

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