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# A STUDY OF STURNUS VULGARIS VULGARIS IN CHEBOYGAN COUNTY

The starling, now so abundant in the United States, has its origin in New York City somewhat after the English sparrow. Of the various attempts to introduce the starling into this country the importations of 1890 and 1891 appear to be the ones from which the bird originated. The spread of the starling from this meager beginning has reached such proportions that many people condemn the bird without ever being familiar with it. The bird will ultimately probably extend its range to every state east of the Rockies with the continental divide acting as a natural boundary. The start of the spread was at first very slow but since then has gained momentum with each new breeding season. With such an extension of range it is important that we have a better understanding of the bird.

For some time the starling has been foremost in my mind due to the universal dislike for the bird. It has aroused much interest because of its increase in numbers. In choosing a subject for the summer's research it seemed to me that some of the general beliefs about the bird should be settled for my own satisfaction. The wariness of the bird and the possibility of being able to hunt some of them intrigued me to some extent too. The general dislike for the bird due to its aggression against native-hole nesting species, its depredations on corn, cherries, apples, and other crops, and its objectionable roosting habits have caused the people to condemn it. Is the starling justly condemned?

## DESCRIPTION

The adult is about 8 to 8 1/2 inches long. The tail is short lending a chunky hump-backed appearance to the bird. In many respects it

reminds me of the meadowlark. The bill is rather long and is yellow in Spring. After the breeding molt it darkens. The adult has a handsome winter plumage when viewed at close range. The young are of a uniform brownish color streaked with lighter markings on the breast. The juvenal molt occurs about the time of the adult molt. The throat is white or buffy on the young bird. The feathers on the sides of the breast or ventral tract, the flanks or humeral tract, and center of the back or spinal tract change first. These observations were made from a study of several skins which were made up. The bird presents some very good instances to show the coming in of the adult plumage.

## NESTS AND NESTING HABITS

During the course of the summer 16 starling nests were found. In no case did it seem as though the bird seemed very particular about the location of the nest. The nests were found as follows:

3 in hollow fence posts
1 in peak of roof of abandoned house
1 in hole of apple tree branch
11 in behind boards of boarded up windows of an abandoned house

A great variation was shown in the height of the nests. One nest found in a fence post about 16 inches from the ground. The highest nest (in peak of roof) was 20 feet from the ground.

An analysis of the actual construction of the nest showed that the starling uses grasses, string, and straw for bulk and usually several feathers for lining. In several cases the bird merely used or reconstructed the previous years nest. (Possibly the bird may have 2 or 3 broods per year and may have used the same nest for each brood). This was determined by the amount of excreta that was found throughout the

nest. The bird has very unsanitary nesting habits and fails to remove the voided excreta of the young from the nest. The openings to the nest varied in size from 1 5/8 inches to 2 1/2 inches in diameter. The inside diameter of the nest varied from 2 $\frac{3}{4}$ inches to 3 3/8 inches. Some nests showed no definite form or construction on the outside. It seems to be very slovenly made in most cases.

The eggs are pale blue in color. The length is 1 1/5 inches ~~long~~ and 5/6 of an inch wide. One nest was found with two eggs and another with four. Other nests contained only two young while three contained five young each. The number thus varies between two and five. No studies were made of the length of the incubation period. From general observations it seems that the young probably remain in the nest two to three weeks.

## ROOSTING HABITS

Several observations were made of the roosts of the starling. The day roosts were found most often in a small clump of high trees, usually elm, and around abandoned farm buildings. Some attraction was shown for orchards, an old stump fence, and dead trees. In all cases these roosts were found in territories located in the approximate vicinity of easy food sources. Never were these roosts found in clumps of trees covering any amount of territory. No night roosts were found in the vicinity of the day roosts. Only one attempt was made to determine the vicinity of the night roosts.

The number of birds found in most of these roosts would make the bird decidedly objectionable and unpleasing. The amount of noise produced by these flocks is also objectionable. In no case was a song heard which

might have been classified as a song which could have any aesthetic value for myself. Several abandoned buildings were found with no evidences of the birds presence. This was probably due to the fact that some of them were located in wooded tracts some distance from farms. It seems to me that the starling likes to follow the line of least resistance.

## CAPTIVITY OF THE BIRD

It was found very difficult to keep the starling confined to the limits of a small cage. The investigation was carried out with only eight birds. In every instance the birds lost weight, seemed frightened, and fluttered against the cage whenever a person was near the cage. The bird fights captivity and fails to eat which adds greatly to the possibility of failing to keep the bird alive. Five birds died within four days after being put in captivity. One was kept alive for 9 days and was beginning to take its own food; however it still possessed the same fear instincts. No evidence was ever shown of this being lessened.

Observations showed that it is best to feed the captive bird a good deal of grit, coarse food made up of animal matter, and no water. It seemed best to keep the sides of the cage covered to some extent.

## FOOD HABITS OF THE STARLING IN CHEBOYGAN COUNTY, MICHIGAN

An analysis of 22 stomachs was made to determine the economic status of the starling. Some attention was given to observation in the field although this did not yield any results. The adult bird in feeding the young does bring a great deal of animal matter, mainly insects, to the nest. In several hours observation it was found that the bird

brought food to the nest on an average of 8 and 1/2 minutes every. The food was picked up in a mowed hayfield some 500 yards distant. An examination of the young in the nest showed the presence of five birds. These observations were made of a nest at Riggsville Corners.

The examination of the animal matter showed it ~~of~~ to consist of insects; mainly ground beetles (carabids), carrion beetles (scarabaeids) grasshoppers (locustidae), weevils (curculionids), and leaf beetles (chrysomelids). This was determined by a study of the elytra, femurs, heads, and in the case of the weevils the whole insect. In several cases a count was taken of the number of mandibles. This varied greatly but in one instance 29 mandibles were found in one stomach. The presence of 9 almost complete heads of grasshoppers in one stomach gives some estimation as to the amount of animal matter consumed. In another stomach was found a total of 27 of the small curculionid weevils. It was found that the birds utilizing the coarse food material contained less of the gritty material.

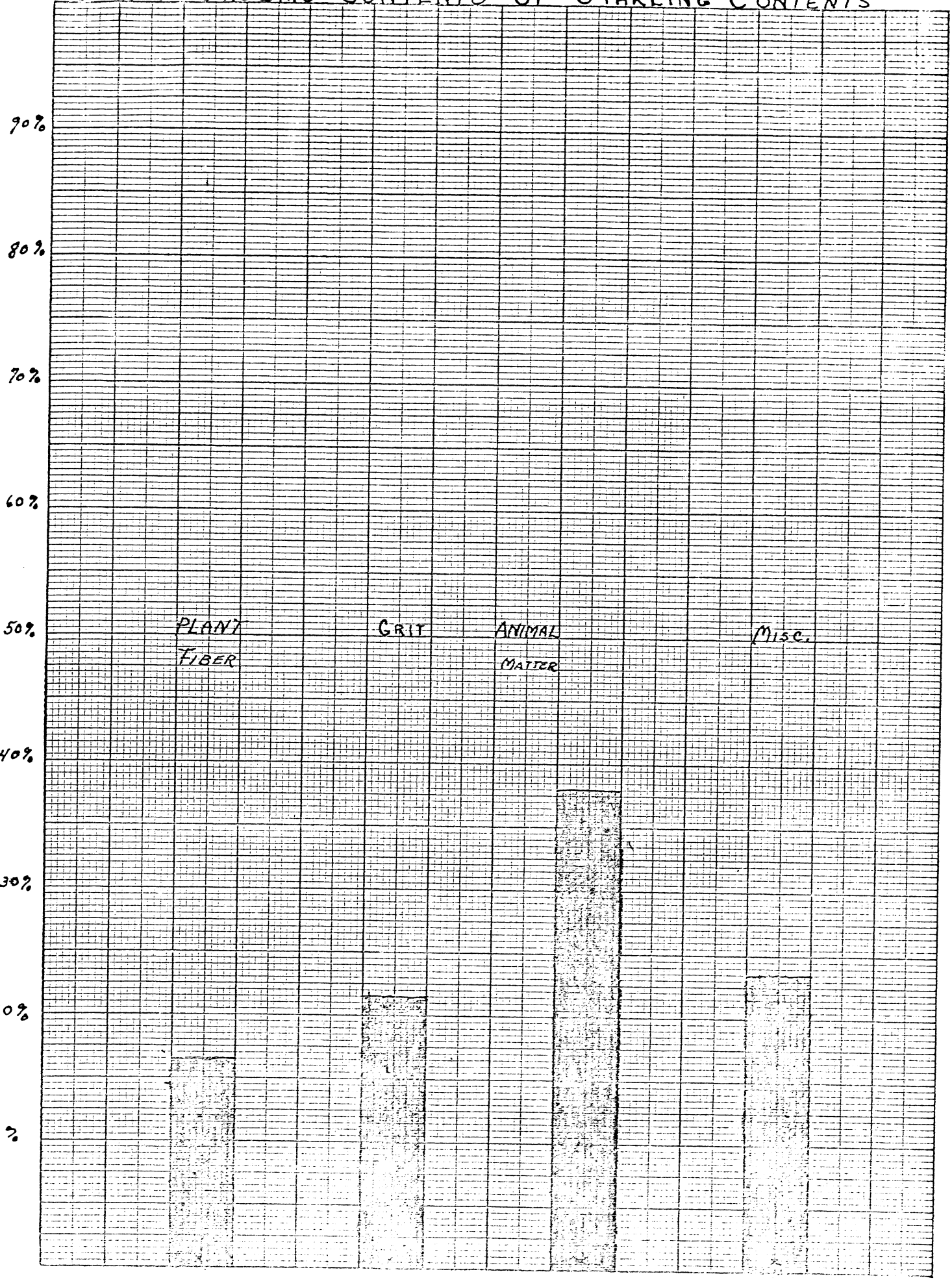
In making an analysis of the plant material it was necessary to have assistance in its identification. Miss Beardsly of the Botany department identified such material as grass leaves, grass stems and seeds of the genus Prunus. Several small seeds belonging to the weed order were not identified. Some of the material was determined as spider webbing. This was subjected to a series of tests and reacted in the same manner as that of spider webbing. (It is my opinion that this material could have been the material of insect larvae cocoons as one instance of insect larvae was found in the stomach analysis while there was no evidence of spider material.

The grit consisted of small pebbles, bone material, sand, snails, and oyster shell which could have been picked up around farm houses. In some instances a single piece of grit weighted as high as .16 of a gram.

CHART INDICATING THE VARIOUS WEIGHTS OF THE STOMACH CONTENTS

| Number of stomach | Animal matter | Plant fiber | Grit | Miscellanious | Total |
|---|---|---|---|---|---|
| 1 | .09 | 1.01 | .09 | 1.02 | 2.21 |
| 2 | 1.25 | .70 | .30 | .50 | 2.75 |
| 3 | .34 | .27 | .11 | .09 | .81 |
| 4 | .27 | .18 | .06 | | .51 |
| 5 | .27 | .06 | .09 | .10 | .52 |
| 6 | .27 | .05 | .39 | .22 | .93 |
| 7 | .33 | .07 | .93 | .44 | 1.77 |
| 8 | .21 | .04 | .53 | | .78 |
| 9 | .38 | .07 | .20 | .21 | .86 |
| 10 | .61 | .11 | .12 | .23 | 1.07 |
| 11 | .53 | .11 | .51 | .17 | 1.32 |
| 12 | .53 | .15 | .19 | .33 | 1.20 |
| 13 | .09 | .05 | .37 | .15 | .66 |
| 14 | .21 | .04 | .03 | .33 | .61 |
| 15 | .08 | .03 | .03 | .09 | .23 |
| 16 | .31 | .04 | .05 | .17 | .57 |
| 17 | .14 | .02 | .02 | .06 | .24 |
| 18 | .37 | .00 | .02 | .07 | .46 |
| 19 | .52 | .00 | .03 | .09 | .64 |
| 20 | .17 | .01 | .02 | .09 | .29 |
| 21 | .23 | .01 | .02 | .06 | .32 |
| 22 | .12 | .11 | .02 | .07 | .32 |
| Totals | 7.32 | 3.13 | 4.13 | 4.49 | 19.07 |
| Percentages | 39% | 17% | 21% | 23% | |

# GRAFT SHOWING CONTENTS OF STARLING CONTENTS



In all of the stomachs examined grit was found to be present.

In only two instances were the birds found to be frugivorous. Animal matter was always present while in some instances there was an absence of the plant material.

## PARASITES OF THE STARLING IN CHEBOYGAN COUNTY

A number of the birds were taken to the parasitology laboratory and examined for parasites. As reported it appears that some of the young birds are parasite free as are most of the adult birds. The largest number of parasites were found in the young birds which were just beginning to show evidences of the adult plumage coming in on the ventral and femoral feather tracts. The investigation was not carried out to any great length and so data on the probable infestation is not complete. All birds examinged were taken during July. The number of parasites varied from none to as high as thirty in one bird. Because of the superficial number of birds examined, no definite conclusions concerning cestode and Acanthocephla infestation can be made at this time. There is definite evidence at hand however, which indicates what may be expected in the starling. Following is a summary of the birds examined.

| Examined by | Parasitized | Non-parasitized | % per examination OF PARASITIZED |
|---|---|---|---|
| Bauman | 1 | 4 | 20 |
| Gow | 3 | 1 | 75 |
| Feldman | 3 | 0 | 100 |
| Harry | 0 | 1 | 00 |

The birds were hosts to the cestode Hymenolepis farciminosa and Acanthocephala: Mediorhynchus grandis.

## CONCLUSIONS

Analysis of stomach contents bears out the fact that the starling's habits are either beneficial to man or are of an economically neutral character. Field observation has established the fact that the starling is most often seen feeding in grass stubble and hayfields. As a destroyer of weevils and grasshoppers we can be sure that it is very energetic. It is necessary that it be mentioned that this study is based on the feeding habits during July and August only. The most obvious harm is done by its objectionable nesting and roosting habits. There is no question that the influence of the starling is definitly beneficial. It can be said however, that the starling has a potential (dormant or very slightly prominent in the county) tendency for harm due to its flocking habits. The factor of overabundance of any species of bird would produce the same results. The farmer has little to fear from the starling as a menace to small grains, garden truck, and fruit as this material was never found in the stomach analysis.

The bird seems to be somewhat lazy and slothful when an examination of the nest is made. Also in its feeding habits, this would hold in almost every instance, as the bird is very seldom found in areas where food cannot easily be gotten.

The study of the nests and roost indicates that the bird is very unsanitary in its life habits.

The evidence of parasites will mean that this problem must be worked out more fully as there is a possibility of the starling being a transmitter of the cestode of our domestic fowl from one flock of birds to another.

## BIBLIOGRAPHY

European starling in the United States
U. S. Department of Agriculture, Bulletin No. 1571

The Auk
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