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## FOOD HABITS OF MINNESOTA PHEASANTS

*by Earl D. Kopischke and Stanley W. Harris*

Ring-necked Pheasant crops were collected by Division of Game and Fish personnel incidental to other duties from 1957 through 1962. A total of 533 crops from adult pheasants and 26 crops from juvenile pheasants were obtained which contained food items. Identification and volumetric measurements of foods found in the crops were done by students under the direction of Dr. Stanley Harris at Humboldt State University, Arcata, California. The data were separated into four time periods; spring (March-May), summer (June-August), fall (September-November), and winter (December-February).

### RESULTS

**Annual Diet of Adults.** Although 57 different items were identified in 533 crops, 83.9 percent of the total volume of food was made up of only four items; corn, oats, soybeans, and wheat (Table 1). Corn alone made up 61.9 percent of the volume and was present in 75.0 percent of the crops. Thus, agricultural crops were the major food items of adult pheasants throughout the year. Similar findings were reported by Dalke (1937) in Michigan, Fried (1940) in Minnesota, Munroe (1940) in North Dakota, Hiatt (1946) in Montana, Mohler (1949) and Swenk (1930) in Nebraska, Trautman (1952) and Severin (1933) in South Dakota, Stollberg and Hine (1952) in Wisconsin, and Korschgen (1964) in Missouri.

Wild plant materials, mostly seeds, made up about 8.2 percent of the volume. Grass, chaff, and vegetation fragments made up 3.0 percent of the

volume and appeared in 27.4 percent of the crops checked. The most prevalent plants by volume were yellow foxtail (3.0 percent in 27.4 percent of crops), green foxtail (0.7 percent in 17.8 percent of crops), wolfberry (1.2 percent in 1.9 percent of crops), and ragweed (0.5 percent in 9.0 percent of crops). Only six other plants (*Prunus* sp., *Polygonum* spp., acorns, millet, rose hips, and burdock) individually constituted 0.1 percent or more of the volume. In addition, at least 28 other wild plants occurred in amounts less than 0.1 percent of the total volume.

Animal matter made up only about 1.5 percent of the volume. The animal matter consisted largely of grasshoppers (1.4 percent of volume in 9.9 percent of crops) and snails (0.1 percent of crops) while beetles, spiders, and miscellaneous unidentified insects constituted less than 0.1 percent of the volume.

**Seasonal Diet of Adults.** Corn was the most prevalent food during all seasons (Table 2); the percent by volume ranged from 58.4 in summer to 65.7 in winter. Agricultural crops were least used in fall and most used in spring but always comprised over 80 percent by volume.

The utilization of weed seeds (wild plants) was highest in the fall reflecting their greater availability during fall. The most prevalent wild plant seeds found in the crops during summer and fall was foxtail (*Setaria* spp.). As might be expected, animal matter was also most prevalent during the summer and fall seasons.

The volume of grit remained at 0.5 during all seasons. Earlier studies on grit consumption by pheasants (Kopischke 1966) indicated that female pheasants ingest a greater volume of grit during the egg-laying months of May and June. Thus, grit in crops of pheasants does not appear to be a good measurement of total grit consumption.

**Summer Diet of Juveniles.** Only 26 crops from juvenile pheasants (collected during June, July, and August) were analyzed for food items. Fifteen

different items were identified (Table 3). Oats, yellow foxtail, and corn comprised 83.7 percent of the volume. Other plants made up 13.4 percent of the volume. Animal matter (beetles, grasshoppers, and snails) constituted the remaining 2.9 percent. This small percentage differs from that found by Dalke (1935) who reported that animal matter made up 24 percent of the food of juvenile pheasants, decreasing from 90 percent for one-week old pheasants to about 2 percent for 12-week-olds.

Table 3. Foods of juvenile pheasants in Minnesota based on 26 crops collected during June, July, and August

FOOD ITEMS	PERCENT OF OCCURRENCE	PERCENT OF VOLUME
Yellow foxtail ( <u>Setaria glauca</u> )	61.5	27.2
Oats ( <u>Avena sativa</u> )	34.6	29.5
Corn ( <u>Zea mays</u> )	26.9	27.0
Grass & chaff	30.8	1.0
Green foxtail ( <u>Setaria viridis</u> )	23.1	1.3
Wheat ( <u>Triticum aestivum</u> )	15.3	3.0
Soybeans ( <u>Glycine max</u> )	3.8	2.7
Field dodder ( <u>Cuscuta pentagona</u> )	3.8	tr
Canary grass ( <u>Phalaris</u> sp.)	3.8	4.6
Barley ( <u>Hordeum vulgare</u> )	3.8	0.4
Crowfoot ( <u>Ranunculus</u> sp.)	3.8	tr
Spike-rush ( <u>Eleocharis</u> sp.)	3.8	tr
Beetles ( <u>Coleoptera</u> )	38.5	1.3
Grasshoppers ( <u>Orthoptera</u> )	19.2	1.0
Snails ( <u>Gastropoda</u> )	15.4	0.6

Table 2. Comparison of foods found in the crops of adult pheasants in Minnesota, by season of year

FOOD ITEMS	SPRING (198 crops)			SUMMER (48 crops)			FALL (155 crops)			WINTER (132 crops)		
	Percent Occurrence	Percent	Volume	Percent Occurrence	Percent	Volume	Percent Occurrence	Percent	Volume	Percent Occurrence	Percent	Volume
<u>Agricultural Crops</u>												
Corn	75.2	89.5	60.5	60.4	86.4	58.4	74.2	81.1	81.1	88.2	81.1	65.7
Oats	35.9	9.6	9.6	31.2	11.2	11.2	14.2	60.1	28.0	6.8	28.0	6.8
Soybeans	34.3	9.2	9.2	20.8	3.0	3.0	25.8	8.8	31.8	9.3	31.8	9.3
Wheat	23.2	7.2	7.2	14.6	10.3	10.3	2.6	0.5	20.4	3.9	20.4	3.9
Barley	15.7	1.5	1.5	14.6	3.5	3.5	3.2	1.9	14.4	3.0	14.4	3.0
Other	8.5	1.5	1.5	--	--	--	7.7	0.6	12.3	0.2	12.3	0.2
<u>Wild Plants</u>												
Yellow foxtail	14.6	5.8	0.5	18.8	7.7	5.2	60.6	13.1	10.6	3.6	10.6	0.2
Green foxtail	4.5	tr	tr	12.5	2.5	2.5	44.5	9.0	8.3	0.4	8.3	0.4
Ragweed	7.1	0.3	0.3	--	--	--	16.8	1.1	6.1	0.2	6.1	0.2
Wolfberry	3.5	2.7	2.7	--	--	--	--	--	2.3	0.8	2.3	0.8
Other (31 spp.)	24.1	2.3	2.3	6.3	tr	tr	59.6	1.5	26.7	2.0	26.7	2.0
<u>Animal Matter</u>												
Grasshoppers	4.5	0.8	0.3	12.5	4.1	3.9	24.5	3.9	--	tr	--	--
Beetles	3.5	0.1	0.1	8.3	tr	tr	0.6	tr	--	--	--	--
Snails	6.6	0.4	0.4	8.3	0.2	0.2	2.5	tr	0.8	tr	0.8	tr
Other	7.1	tr	tr	6.3	tr	tr	1.2	tr	--	--	--	--
<u>Miscellaneous</u>												
Chaff, grass, etc.	33.8	3.7	3.2	31.2	1.7	1.7	27.7	1.6	22.7	7.4	22.7	6.9
Grit	20.2	0.5	0.5	10.4	0.5	0.5	7.7	0.5	11.4	0.5	11.4	0.5

Table 1. Principal foods found in the crops of 533 adult pheasants in Minnesota

ITEM	% OCCURRENCE	% VOLUME
Corn ( <u>Zea mays</u> )	75.0	61.9
Oats ( <u>Avena sativa</u> )	27.2	8.7
Soybeans ( <u>Glycine max</u> )	30.0	8.8
Wheat ( <u>Triticum aestivum</u> )	15.8	4.5
Barley ( <u>Hordeum vulgare</u> )	11.6	2.2
Clover ( <u>Melilotus</u> sp.)	3.2	tr
Alfalfa ( <u>Medicago</u> sp.)	0.9	0.4
Flax ( <u>Linum usitatissimum</u> )	2.2	0.1
Grass, chaff, & vegetation fragments	29.1	3.7
Grit	13.5	0.5
Green foxtail ( <u>Setaria viridis</u> )	17.8	0.7
Yellow foxtail ( <u>Setaria glauca</u> )	27.4	3.0
Unidentified weed seeds	4.5	0.6
Buckwheat ( <u>Fagopyrum sagittatum</u> )	0.2	tr
<u>Prunus</u> spp.	0.8	0.2
<u>Polygonum</u> spp.	8.8	0.3
Ragweed ( <u>Ambrosia</u> spp.)	9.0	0.5
Oak acorns ( <u>Quercus</u> sp.)	0.8	0.2
Millet ( <u>Panicum</u> sp.)	0.8	0.2
Wolfberry ( <u>Symphoricarpos</u> sp.)	1.9	1.2
Rose hip ( <u>Rosa</u> sp.)	0.9	0.1
Burdock ( <u>Arctium</u> sp.)	0.8	0.3
Nightshade ( <u>Solanum</u> spp.)	2.4	tr
Unidentified legume	0.2	tr
Beggar tick ( <u>Bidens</u> sp.)	1.3	tr
Vetch ( <u>Vicia</u> sp.)	0.9	tr
Thistle ( <u>Cirsium</u> sp.)	0.4	tr
Dodder ( <u>Cuscuta</u> sp.)	0.8	tr
Pigweed ( <u>Amaranthus</u> spp.)	1.3	tr
Grape ( <u>Vitis</u> sp.)	0.8	tr
Lamb's Quarters ( <u>Chenopodium</u> sp.)	2.1	tr
Barnyard grass ( <u>Echinochloa crusgalli</u> )	1.3	tr
Avens ( <u>Geum</u> sp.)	1.5	tr
Sunflower ( <u>Helianthus</u> sp.)	0.8	tr
Hog-peanut ( <u>Amphicarpa</u> sp.)	0.2	tr
Dock ( <u>Rumex</u> sp.)	0.4	tr
Tick-trefoil ( <u>Desmodium</u> sp.)	0.2	tr
Crowfoot ( <u>Ranunculus</u> sp.)	0.2	tr
Scouring rush ( <u>Equisetum</u> sp.)	0.2	tr
Russian thistle ( <u>Salsola pestifera</u> )	0.2	tr
Spike-rush ( <u>Eleocharis</u> sp.)	0.2	tr
Catnip ( <u>Nepeta</u> sp.)	0.2	tr
Stickseed ( <u>Lappula</u> sp.)	0.6	tr
Locust ( <u>Robinia</u> sp.)	0.2	tr
Canary grass ( <u>Phalaris</u> sp.)	0.2	tr
Mustard ( <u>Brassica</u> sp.)	0.4	tr
Cane ( <u>Sorgum vulgare</u> )	0.6	tr
Rye ( <u>Secale cereale</u> )	0.4	tr
Vervain ( <u>Verbena</u> sp.)	0.2	tr
Grasshoppers ( <u>Orthoptera</u> )	9.9	1.4
Bettles ( <u>Coleoptera</u> )	2.2	tr
Misc. insects, unidentified	2.8	tr
Snails ( <u>Gastropoda</u> )	4.1	0.1
Spider ( <u>Arachnida</u> )	0.2	tr
Unidentified worm	0.2	tr
Bone	0.2	tr
Egg shell	0.2	tr

## SUMMARY

Corn, oats, soybeans, and wheat were the major foods found in the crops of 533 adult Minnesota pheasants obtained from 1957 through 1962 even though 57 different food items made up the annual diet. The four major foods, by volume, made up 83.9 percent of the total annual diet. Wild plant materials made up 8.2 percent of the volume and were most prevalent during summer and fall. Animal matter made up 1.5 percent of the annual diet, being most prevalent in summer and fall which reflects the greater availability during these periods. The major foods found in the crops of 26 juvenile pheasants were corn, yellow foxtail, and oats.

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