

## A NOTE ON THE FOOD OF THE HUNGARIAN PARTRIDGE.

BY LEON KELSO.

ALTHOUGH brought into the United States as early as the eighteenth century, little has been written concerning the food habits of the Hungarian Partridge (*Perdix perdix perdix*) in this country. The contents of eighty crops and gizzards of these partridges have been examined in the Division of Food Habits Research, Bureau of Biological Survey, U. S. Department of Agriculture, one by E. R. Kalmbach, the rest by the writer. Sixty-one of the birds were collected in central and northeastern States, the others near Pullman, Washington. Their distribution as to months is as follows: January, 1; February, 11; March, 3; April, 5; May, 2; June, 5; July, 1; August, 3; September, 3; October, 14; November, 26; December, 3; and 3 on unknown dates.

Seeds and green herbage gleaned from the fields made up the major portion of their food. The Hungarian Partridge seems to be more exclusively a gleaner than any other of our game birds. Among uncultivated plants a decided preference was shown for ragweed (*Ambrosia*) and smartweeds (*Polygonum*), especially *P. convolvulus*, the black bindweed.

Vegetable matter comprised 94 per cent and animal matter only 6 per cent of the food. Gravel constituted 28.2 per cent of the gross stomach contents. The following is a tabulation of the vegetable and animal foods.

| <i>Vegetable matter</i>  | <i>Number of<br/>stomachs in<br/>which found</i> | <i>Percentage by<br/>bulk of the<br/>food</i> |
|--|--|---|
| Wheat ( <i>Triticum sativum</i> and other species) ...                     | 27   | 20.6  |
| Leaves of cultivated cereals (Poaceae).....                                | 32   | 16.8  |
| Corn ( <i>Zea mays</i> ).....  | 19   | 14.9  |
| Ragweed ( <i>Ambrosia artemisiaefolia</i> and <i>A.<br/>elatior</i> )..... | 35   | 7.4   |
| Barley ( <i>Hordeum vulgare</i> ).....                                     | 17   | 6.4   |
| Green foxtail-grass ( <i>Chaetochloa viridis</i> ).....                    | 17   | 4.7   |
| Oats ( <i>Avena sativa</i> ).....  | 9  | 4.0   |

| Vegetable matter                                     | Number of<br>stomachs in<br>which found | Percentage by<br>bulk of the<br>food |
|--|---|--------------------------------------|
| Black bindweed ( <i>Polygonum convolvulus</i> )..... | 24                                      | 3.7                                  |
| Yellow foxtail ( <i>Chaetochloa glauca</i> ).....    | 17                                      | 2.8                                  |
| Vegetable debris.....                                | 5                                       | 2.5                                  |
| Buckwheat ( <i>Fagopyrum fagopyrum</i> ).....        | 2                                       | 2.0                                  |
| Tarweed ( <i>Madia racemosa</i> ).....               | 4                                       | 1.8                                  |
| Alfalfa, leaves ( <i>Medicago sativa</i> ).....      | 6                                       | 1.1                                  |

The remaining 5.3 per cent of the vegetable food was composed of fractional percentages of the following items, many occurring as mere traces:

Juniper (*Juniperus communis*); spruce (*Picea* sp.), leaf; witch-grass (*Panicum capillare*); spreading witch-grass (*Panicum dichotomiflorum*); barnyard-grass (*Echinochloa crus-galli*); finger-grass (*Syntherisma sanguinalis*); slender finger-grass (*Syntherisma villosa*); smartweed (*Polygonum pennsylvanicum*); lady's thumb (*Polygonum persicaria*); water smartweed (*Polygonum punctatum*); knotgrass (*Polygonum aviculare*); Douglas' knotweed (*Polygonum Douglasii*); pigweed (*Chenopodium album*); tumble weed (*Amaranthus graecizans*); elm (*Ulmus americana*); smooth-leaved crowfoot (*Ranunculus abortivus*); mouse-ear chickweed (*Cerastium viscosum*); cinquefoil (*Potentilla* sp.); upright yellow wood-sorrel (*Oxalis stricta*); yellow procumbent wood-sorrel (*Oxalis corniculata*); hop-clover (*Medicago lupulina*); clover (*Trifolium* sp., *T. repens*, *T. pratense*) (the last five items occurring as leaves); wahoo (*Eunonymus atropurpureus*); spotted spurge (*Euphorbia maculata*); amsinckia (*Amsinckia intermedia*); goose-grass (*Galium Aparine*); rib-grass (*Plantago lanceolata*); tickseed (*Bidens comosa*); thistle (*Cirsium* sp.); wild lettuce (*Lactuca integrata*); dandelion (*Taraxacum officinale*); leaves; and snowberry (*Symphoricarpos* sp.). The plant items were present as seeds or akenes unless otherwise noted.

Animal matter, also occurring as small or fractional percentages or traces:

Grasshoppers and crickets (Orthoptera: *Trimerotropis* sp., *Encoptolophus sordidus*, *Melanoplus* sp., *M. femur-rubrum*), *Gryllus assimilis*, Oedipodinae; bugs (Hemiptera: *Nabis fesus*, *Lygaeus kalmii*, Miridae, *Lygus pratensis*, *Ligyrocoris* sp., *Blissus leucop-*

*terus*, *Nysius* sp., Cicadellidae, *Agallia sanguinolenta*, Aphididae); beetles (Coleoptera: *Systema taeniata*, *Longitarsus* sp., *Anthicus cervinus*, *Hypnoidus obliquatus*, *Sitona hispidulus*, *Calligrapha similis*, *Hypera punctata*, *Smicronyx* sp., Anthicidae, Carabidae *Phytonomus nigrirostris*); caddice-fly (Trichoptera); butterflies (Lepidoptera: Pyralididae); flies (Diptera: *Syrphus* sp., *Mesogramma* sp., *Tipula* sp., Sarcophagidae); Wasps (Hymenoptera: Proctotrupidae, Bethyilidae); ants (Formicidae: *Formica* sp., *F. fusca*, *Lasius* sp., *L. niger americanus*, *L. claviger*, *Myrmica* sp.); millipeds (Diplopoda: Julidae); centiped (Chilopoda: *Lithobius* sp.); Phalangida.

Miss A. M. Swords assisted in determining the Coleoptera; W. L. McAtee, the Hemiptera, and J. R. Malloch, the Diptera and Hymenoptera.

Like other game birds, the young for the most part eat insects and other animal matter. The stomach of one contained eighteen kinds of insects, these constituting approximately one hundred per cent of the contents, plants being represented by only a trace of grass and legume leaves. This bird had eaten fifty-seven individuals of a small beetle, the clover-root curculio (*Sitona hispidulus*), four of the lesser clover-leaf weevil (*Phytonomus nigrirostris*), and two of the large clover-leaf weevil (*Hypera punctata*). All three are more or less injurious.

Data from ninety-six crops and gizzards collected in Washington and examined by students of the Washington State College were given to the department by J. Paul Miller. Of these stomachs, 79 were collected in October, 6 in November, 2 in January, 3 in February, and 6 on unknown dates. *Triticum sativum* and perhaps other species of wheat constituted sixty-two per cent of the contents; seeds of *Polygonum convolvulus*, eleven per cent; vegetable debris, mostly from wheat and other cereals, twenty-four per cent; and grains of *Avena fatua*, 1.7 per cent. The remaining plant material included traces of *Lappula* sp., *Lycopodium* sp., *Trifolium* sp., *Madia racemosa*, *Bromus brizaeformis*, *Symphoricarpos alba*, *Sanguisorba annua*, *Medicago* sp., *Navarretia intertexta*, *Amaranthus retroflexus*, *A. graecizans*, *A. blitoides*, *Cirsium lanceolatum*, and moss. At this time of the year the birds took only 0.89 per cent of animal matter. A grasshopper, *Melanoplus* sp.,

however, comprised 40 per cent of the contents of one stomach, and a coulee cricket, *Peranabrus* sp., 85 per cent of another. Other items of animal food included bugs (Lygaeidae) and ants (Formicidae). Gravel comprised 40 per cent of the total contents, one crop containing 90 per cent of grinding material.

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