birds were found to be parasitized by *Lynchia americana*, and one specimen of *Lynchia albipennis* was collected from a Black-crowned Night Heron. Hippoboscids were found to be most prevalent on the Cowbirds. Both adult and young birds are infested. The flies are most abundant during late July and the month of August. It is suggested that the hippoboscids thrive best in a dry atmosphere.

Mallophaga were observed on only one hippoboscid of a great many examined. It is therefore concluded that phoresy as a means of dissemination of ectoparasites of birds by hippoboscids is not an important factor on Cape Cod. Parasitic sarcoptid mites of the subfamily *Myialgesinæ* are reported from *Ornithoica confluenta* and *Ornithomyia anchineuria*.

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WEIGHTS OF SOME BIRDS OF PREY OF WESTERN KANSAS

By RALPH H. IMLER

Introduction

LOCALITY. The following weight records of 112 birds from Rooks County, Kansas, were obtained during fall and winter months from September, 1935, to February, 1937. Most of the data are from live birds that were trapped for banding but some records are from specimens collected for study skins or found dead along the roadside by students of the Stockton (Kansas) High School. Dead birds were weighed only if in fresh condition.

TECHNIQUE. Spring balance scales of 2000 gram capacity were used for taking most of the weights. The eagles and the largest hawks were weighed on a Chatillon milk scale which was read to the nearest one-twentieth pound, and the readings were computed in grams. Sparrow Hawks and small owls were weighed on platform balances. All scales used were regularly tested for accuracy.

Notation was made of the weight of crop and stomach contents of dead birds when it exceeded five grams. Live birds' crops were examined externally, and estimates are given of the weight of the contents of those that contained noticeable food. Ability to make these estimates fairly accurate was developed by practicing on dead birds. Since the live birds were usually in the traps for some time before they were weighed, there were few that had discernible food in the crop. One American Rough-legged Hawk was observed feeding on the dead rabbit used as bait while it was caught by one foot. It is believed, however, that birds of prey seldom feed while held by a trap because the crops of those taken in this study were usually empty, even when plenty of food was within easy reach.

Sex of live birds is given when plumage or measurement made determination reasonably accurate. It is omitted in the live records of the American Rough-legged Hawk.

WEIGHTS

Turkey Vulture (*Cathartes aura septentrionalis*).
Two live birds: Sept. 21, 1936, 1670 gm.; Sept. 22, 1612 gm.

Eastern Red-tailed Hawk. (*Buteo borealis borealis*).
Live male, Oct. 2, 1935, 820 gm.
Three live females: Oct. 14, 1935, 1235 gm.; Oct. 19, 1936, 1451 gm. (crop contents estimated 50 gm.); Nov. 9, 1936, 1433 gm.
Two immatures: Oct. 8, 1935, 909 gm.; Oct. 1, 1936, 865 gm.
Dead female, Oct. 30, 1935, 1147 gm. (crop contents estimated 80 gm.).
Average weight of seven birds is 1123 gm.

Harlan's Hawk. (*Buteo borealis harlani*).
Live female, Nov. 24, 1936, 1629 gm.

Swainson's Hawk. (*Buteo swainsoni*).
Live male: Sept. 30. 1936, 710 gm.
Two live females: Sept. 29, 1936, 1055 gm.; 1145 gm.
Three live birds (sex undertermined): April 28, 1936, 1015 gm. Sept. 23, 1937, 1120 gm.
Three dead males: Sept. 29, 1935. 1060 gm. (crop and stomach contained 56 gm. of grasshoppers); 1062 gm. (crop and stomach contained 53 gm. of grasshoppers); April 15, 1936, 892 gm. (stomach contained 36 gm. of food).
Dead females: Sept. 29, 1935, 1067 gm. (immature); May 1, 1936, 1245 gm.
Average weight of 10 birds is 1037 gm.

American Rough-legged Hawk. (*Buteo lagopus s. johannis*).
Live birds: Nov. 12, 1935, 885 gm. (immature); Nov. 25, 1130 gm.; 8 birds Dec. 7 to 28, 1935, 910 gm. (immature); 1205 gm.; 1245 gm.; 1420 gm. (dark phase); 1420 gm. (estimated 90 grams of food in crop); 1062 gm.; 1270 gm.; 1065 gm.; 6 birds Jan. 3 to 27, 1936, 1245 gm.; 1065 gm.; 890 gm. (immature); 1290 gm.; 1495 gm. (estimated 70 grams of food in crop); 1320 gm.; Oct. 19, 1301 gm.; 5 birds Nov. 5, to 25, 1936, 1274 gm.; 956 gm.; 1188 gm.; 1347 gm.; 1269 gm.; Dec. 11, 1936, 1333 gm.; Dec. 14, 1192 gm.
Dead male, Oct. 28, 1935, 1023 gm.
Dead female, Nov. 25, 1935, 1432 gm. (crop and stomach contained 212 gm. of rabbit, 31 gm. of grasshoppers, and 6 gm. of the remains of a Lapland Longspur.
Average weight of 26 birds is 1200 gm.

Ferruginous Roughleg (*Buteo regalis*).
Live males: Nov. 16, 1935, 1332 gm.; Nov. 10, 1936, 1142 gm.
Live females: Nov. 16, 1935, 1816 gm.; Jan. 20, 1936, 1961 gm.
Live birds (of intermediate measurements): Nov. 16, 1935, 1475 gm. (when recaught Nov. 6, 1936, this bird weighed 1447 gm.); Jan. 3, 1936, 1415 gm.
Dead female, Jan. 27, 1936, 2172 gm. (very fat).
Average weight of seven birds is 1619 gm.

Golden Eagle (*Aquila chrysaetos canadensis*).
Live male weighed 4323 gm. two days after being shot and crippled by a farmer, Oct. 29, 1935. The wound healed in captivity, and two months later the bird weighted 4664 gm.

Bald Eagle (*Haliæetus leucocephalus leucocephalus*).
Live immature, Dec. 17, 1935, 4550 gm.
Two dead males: Jan. 20, 1936, 5970 gm.; Jan. 15, 1937, 5715 gm.
Two dead females: Feb. 15, 1934, 6143 gm.; Jan. 1933, 6484 gm. (crop and stomach contained 364 gm. of rabbit).
Average weight of five birds, 5772 gn.

Marsh hawk (*Circus hudsonius*).
Five live males: Oct. 27, 1935, 401 gm.; Dec. 10, 1935, 365 gm.; Dec. 19, 385 gm.; Nov. 6, 1936, 423 gm.; Dec. 24, 441 gm.
Twelve live females: Dec. 1, 1935, 510 g.; 4 birds Jan. 6 to 27, 1936, 605 gm.; 590 gm.; 505 gm.; 525 gm.; Oct. 27, 1936, 551 gm.; Oct. 30, 605 gm.; 3 birds Nov. 10 to 24, 1936, 614 gm.; 601 gm.; 587 gm.; Dec. 14, 1936, 569 gm.; 601 gm.
Three immature birds (sex not determined): Sept. 22, 1936, 465 gm.; Nov. 5, 1936, 537 gm.; Dec. 21, 1936, 528 gm.;
Average weight of twenty birds, 520 gm.

Prairie Falcon (*Falco mexicanus*).
Live female, Dec. 11, 1935, 885 gm.
Dead female, Feb. 22, 1936, 680 gm. (poor condition).

Sparrow Hawk (*Falco sparverius sparverius*).
Two live males: April 28, 1936, 109 gm.; Nov. 22, 1936, 124 gm.
Two dead males: Sept. 24, 1935, 106 gm.; Oct. 3, 1935, 127 gm.
Dead female, May 20, 1935, 140 gm.
Average weight of four males is 117 gm.

Barn Owl (*Tyto alba pratincola.*)
Live bird, Sept. 30, 1936, 475 gm.

Screech Owl (*Otus asio subsp.*).
Dead female, Dec. 24, 1936, 189 gm. (very fat, crop contained 11 gm. of food).
Three dead bird' (not sexed): Feb. 17 to 27, 1936, 146 gm.; 126 gm. (poor condition); 145 gm.
Average weight of 4 birds, 152 gm.

Great Horned Owl (*Bubo virginianus subsp.*).
Three live males: Oct. 15, 1935, 1360 gm.; Mar. 10, 1936, 1230 gm.; Oct. 16, 1936, 1256 gm.
Seven live females: Oct. 2, 1935, 1543 gm.; Nov. 26, 1935, 1610 gm. Nov. 16, 1936, 1519 gm.; four birds Dec. 9 to 17, 1936, 1551 gm.; 1505 gm.; 1529 gm.; 1652 gm.
Dead male, Feb. 22, 1936, 1230 gm.
Two dead females: Nov. 17, 1935, 1544 gm.; Mar. 23, 1936, 1580 gm. (contained 23 gm. of food in stomach).
Average weight of 13 birds, 1470 gm.

Burrowing Owl (*Speotyto cunicularia hypogæa.*)
Five live birds: Aug. 19, 1935, 161 gm.; Sept. 30, 1935, 148 gm.; Oct. 1, 1935, 171 gm.; 155 gm.; Oct. 6, 1936, 114 gm.
Two dead males: Sept. 27, 1935, 148 gm.; Sept. 30, 1936, 148 gm.
Average weight of seven birds is 149 gm.

Short-eared Owl (*Asio flammeus flammeus*).
Dead bird (not sexed), Nov. 7, 1935, 270 gm.

CONCLUSIONS

Three of the seven Burrowing Owl weights were identical, but those of the remaining four varied from 114 to 171 grams. The Great Horned Owl showed a fairly uniform weight for each sex, with a difference of 145 grams between the heaviest male and the lightest female. This apparently could be used as a means for the separation of sexes of this species. However, this characteristic was not observed in hawks, which showed a wide variation in weights of apparently normal birds of the same sex and species. One male Swainson's Hawk weighed 710 grams, and another, which contained 53 grams of food, weighed 1062 grams. The greatest proportional difference in extreme weights of opposite sexes within a species was in the Ferruginous Roughleg. One male in good condition weighed 1142 grams. A fat female, with crop and stomach empty, except for a few grams of rabbit remains, weighed 2172 grams—nearly twice as much as the male.

The question has been raised whether trapped birds weigh less than birds collected by shooting. The average weight of the live birds was found to be about the same as the average weight of the dead less the weight of their food contents. From this fact it is apparent that the loss of weight while the bird is in the trap is not great if the traps are visited night and morning or oftener.

There were not enough data obtained in this study to give a definite conclusion as to what the average food contents of a species in this area will weigh. One American Rough-legged Hawk weighing 1432 grams had 249 grams of food in its crop and stomach, or 21 percent of the body weight! Two male Swainson's Hawks with stomachs gorged with grasshoppers contained food equal to about 5 percent of their body weight, and even this percentage is above average for food contents of winter-taken birds of prey in Western Kansas.

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