

*ruticilla*; red-eyed and yellow-throated vireos, *Virio olivaceus*; and *V. flavifrons*; woodpeckers, PICIDÆ; blue bird, *Sialia sialis*; cat-bird, *Galeoscoptes Carolinensis*; brown thrush, *Harporhynchus rufus*; sparrows, FRINGILLIDÆ; cuckoos, COCCIDÆ; nuthatch, *Sitta Carolinensis*; chickadee, *Parus africanus*; kinglets, SYLVIDÆ; meadow-lark, *Sturnella magna*; Baltimore oriole, *Icterus Baltimore*; wren, *Troglodytes aedon*; blackbirds, ICTERIDÆ; and especially the Robin, (*Turdus migratorius*) as a great fruit thief, destroying a far greater quantity than it would eat, therefore, should not be protected by legislation. I trust the above extract will induce readers of the *Canadian Sportsman and Naturalist* to give their experience respecting the usefulness of Insectivorous birds to farmers, fruit-growers, and gardeners.

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The above-named birds are all insectivorous, but the question regarding their being beneficial to agriculture is a matter which we have always contended, was overstretched. Mr. S. A. Forbes, an American naturalist, has examined the stomachs of 150 birds of the Thrush family, with quite unexpected results. "Forty-one of these were Robins; thirty-seven Cat-birds; twenty-eight Brown Thrushes; eight Alice's Thrushes; six Swainson's Thrushes, and one Wilson's Thrush. They were shot in various months from March to September and during four successive years. The number of specimens is, of course, too small to allow conclusive generalization; but as no equal number of specimens has been previously studied with equal care, it will probably be fair to state some of the result as hypotheses, more or less probable, but requiring verification by further study. The most fruitful peculiarity of the method used was the careful estimate, for each specimen (after a critical microscopical examination of the contents of the stomach), of the relative amounts of all the elements of the food, and the subsequent averaging of these ratios for the species. By this means I determined the hitherto unsuspected fact that the family is inordinately destructive to predaceous beetles (HARPALEINI), seven per cent of the food of the 150 specimens consisting of these highly beneficial insects. When we remember that one predaceous insect must destroy many times its own bulk of other insects during its life, we see the importance of this fact in respect to the economical value of these birds. Between the TURPIDÆ,

and other families, I can make only the following crude comparison. Of the 150 Thrushes examined, forty-six per cent. had taken CARABIDÆ, while of 194 birds of other families in whose stomachs insects were found, less than five per cent. had eaten these Coleoptera. The worst sinner in this respect was the Hermit thrush; while the Alice thrush and the Wood thrush had eaten comparatively few. Curiously the ratio of CARABIDÆ continued undiminished during the fruit season when the total of insect food fell away very rapidly. -For example, the Cat-birds ate in May, June and July, eighty-seven per cent., sixty-four per cent., and eighteen per cent., respectively, of insect food while the CARABIDÆ for those months averaged seven per cent., six per cent., and ten per cent. the corresponding fruit record standing nothing, thirty per cent. and seventy one per cent. The following genera were distinguished among the CARABIDÆ *Scarites*, *Dyschirius*, *Platynus*, *Ecarthus*, *Pterostichus*, *Amara*, *Brachylobus*, *Geopinus*, *Agonoderus*, *Anisodactylus*, *Bradycellus*, *Harpalus*, and *Stenolophus*. The absence of all, or nearly all, the specially protected genera is noticeable (unless the obscure colour of many is reckoned a special protection.) A single *Cicindela* (*C. lecontei*) was found in the stomach of a Cat-bird. It is further interesting to notice the apparent specific difference in the food of allied species, occupying the same ground at the same time and drawing their food from the same sources of supply. The Robin and the Cat-bird differed materially in the number of ants and myriopods destroyed, the former eating very few of either (one per cent. and two per cent. respectively). The Brown thrush departs from all the other members of his family in his fondness (?) perhaps it is stern necessity which forces him to this miserable shift, for insects and fragments of grain picked from the droppings of stock. Twenty-eight per cent. of the food of those shot in April was derived from this source, and another eight per cent. consisted of carrion beetles (SILPHIDÆ). This bird was further distinguished from the Robin (as is the Cat-bird also), by the absence of the larva of *Bibo albipennis* Say which made over half the food of the Robin in March. It is important to recall, as throwing light on the question of fixity of food habits over large areas, that Professor Jenks, now of Brown University, found nine tenths of the food of a large number of Robins whose stomachs were examined by him in Massachusetts, in March and April, 1858, to consist of this same larva."