

THE FOOD OF BIRDS FROM SOUTH-WESTERN NEW SOUTH WALES.

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THIS paper contains the results of a detailed examination of the stomachs and crops of one hundred and eighteen birds of sixty-two species collected in south-western New South Wales during the months of September and October, 1932. The skins of the birds are, in most cases, preserved in the Australian Museum.

The fact that entomological collections were made in the same localities and seasons in which the birds were shot has greatly facilitated the work of investigation, since it has enabled fairly definite identifications to be made, in many cases, from quite small insect fragments. Where any doubt has existed with reference to any identification, such determinations are queried. In most of the stomachs of insectivorous birds examined there was usually a considerable quantity of very finely comminuted insect remains. These it was impossible to allocate to their particular orders, excepting beetle fragments, which, resisting the action of the digestive juices better than those of other groups, were usually quite recognizable as such, although too fragmentary for identification even of the family to which they belong. The large number of stomachs listed as containing miscellaneous Coleoptera is due mainly to this, but, while it is practically certain that insects of other orders were represented, it was impossible to indicate them in the classified lists of foods.

Throughout the investigation it became increasingly apparent that to obtain an adequate knowledge of the food of any bird, a large series of stomachs is necessary, since single stomachs may give a possibly erroneous idea of the food. This is instanced by a comparison of specimens procured from the same locality and at the same time. Of three Straw-necked Ibis (*Threskiornis spinicollis*) from Springfield Station, Euroolie, and all obtained at the same time, one contained a centipede, spider, mole cricket, Lepidopterous remains, Coleoptera and grasshoppers; the second, a large quantity of young grasshoppers only, while the third was entirely empty, with the exception of one small beetle elytron. In the case of two Boobook Owls (*Ninox boobook*) shot near the Agricultural High School, Yanco, at 9.30 on the same night and within a few yards of one another, one contained a large number of mature Bugong Moths (*Agrotis infusa*), while the other was full of cutworms and a longicorn beetle.

There can be no doubt that in economically assessing the value of any individual species of bird, it is necessary to examine the stomachs of a large number of specimens, preferably several hundred, in detail. To enable later investigators to add their results to the existing data and to compare them critically, it is necessary that the stomach contents of individual birds should be set out in detail, since a summary of the food of a species will not necessarily indicate the proclivity of individuals of that species to feed on any particular food or foods.

Birds shot in the vicinity of cultivation will naturally contain a greater proportion of food of economic importance to the farmer and orchardist, those in timbered country to the forester, and those taken in open grass-land to the pastoralist. Much, again, will depend upon the food available at any particular season; and the relative accessibility of any particular food at the time the bird

was shot must always be taken into consideration in any investigation of the stomach contents and the food of a bird. The time of day is also a factor to be considered, since birds usually feed mainly in the early morning and evening.

In listing the stomach contents it has been found preferable to give full details of the foods found, since any attempt to state them as percentages of the whole tends to give an erroneous impression, as one specimen of a large insect may form a large percentage of the total bulk as against a similar percentage made up of numerous individuals of some small insect.

A field examination of the stomach contents of birds will frequently give very different results to one carried out under laboratory conditions, and has in many instances to be qualified by such a later detailed examination. It will, therefore, be seen that any hasty examination of the contents of a bird's stomach, by farmers and others unqualified or unequipped for the work, will produce quite erroneous results. In the case of observations in the field, unsupported by a *post mortem*, unless under exceptional conditions, with the aid of field glasses, it is quite impossible to obtain any sound data as to what a bird is feeding upon, and such observations are usually quite valueless. An observer may be quite definite that he has seen a bird eat a certain food, but a careful examination of its stomach contents will frequently prove such a food to be completely absent.

For convenience of reference it may be mentioned that the following species of birds from south-western New South Wales are dealt with by Cleland¹ :—

Cacatua roseicapilla, Yanco, four specimens, 19th December, 1914, page 48.

Barnardius barnardi, Wilbriggie, 7th October, 1912, page 50.

Acanthiza pyropyga, Wilbriggie, 7th October, 1912, page 62.

Pachycephala rufiventris, Wilbriggie, 7th October, 1912, page 71.

Aphelocephala leucopsis, Wilbriggie, 7th October, 1912, page 73.

Corvus coronoides, Yanco, 19th December, 1914, page 91.

I have included in this paper details of the stomach contents of seven specimens of the imported Starling (*Sturnus vulgaris*) collected in and around orchards on the Yanco Irrigation Area during 1927.

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NOTES ON INSECTS, Etc., OF ECONOMIC IMPORTANCE EATEN BY BIRDS.

Psyllidæ.—These small insects infest the leaves of the eucalypts, sucking up the sap and discharging the surplus and forming it into protective shields, or lerp-scales of sugary matter. W. W. Froggatt, in "Forest Insects of Australia, (1923)," page 9, states: "When these insects are numerous large areas of forest, particularly eucalypts, are so badly infested that all the foliage becomes discoloured through the sap being sucked up, the leaves dry up and fall, and thousands of trees

¹ Cleland and others.—N.S.W. Agricultural Department, Science Bulletin, 15 July, 1918.