

link, but is quickly up-slurred, giving it a definite "w" or "wh" sound, and is enunciated with greater emphasis. Like the "chichy" call, it is given singly or in groups of notes. No other finch has a note at all similar.

In learning to identify winter finches and grosbeaks in flight, the most important factor is field experience with them.

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FOOD HABITS OF THE CROW

JOHN B. BELKNAP

The Common Crow (*Corvus brachyrhynchos*), adaptable and aggressive, has flourished in the United States since the coming of civilized man. Called a maize thief by early settlers it has long been condemned and persecuted for its damage to crops. In the absence of legal protection the crow, wary and intelligent, is able to hold its own. It is known to almost everyone, and may well be called the "All American Bird."

Dietary habits are in part responsible for the success of the crow. It is omnivorous and anything edible whether animal or vegetable in origin is considered food. Studies of the stomach contents of over two thousand crows reveal that no less than 650 different items of food are eaten. Add to this a strong, all-purpose bill and a rugged digestion and the elements of survival are present.

Food habits studies of the crow have been made for many years, often to gain information on economic status. Three methods are used: visual observation in the field, examination of stomach contents, and a study of pellets, since the crow ejects inedible material in the same manner as hawks and owls. One winter more than a hundred years ago Thoreau collected crow pellets at Concord and examined them under a microscope. In his words "they consisted of seeds and skins and other indigestible parts of red cedar berries and some barberries." A more recent study showed that in severe winter weather, when food is scarce, pellets contain no digestible material.

Although the crow is naturally carnivorous, being fond of meat and fish, animal food normally comprises less than one-third of the total intake. Large amounts of vegetable matter are eaten when animal food is not readily obtainable. Stomach analysis has revealed the presence of considerable mineral matter, particularly in cold weather. Although it does not possess a true crop, the crow utilizes sand and gravel as needed to break down hard grain and seeds with hard outer shells.

A New York State study has been made of specimens collected throughout an entire year (Paul E. Hering, *Auk* 51:470-476, 1934). Four hundred and sixty-five crows were taken in five counties covering approximately a radius of fifty miles from Ithaca and stomach contents

analyzed. It was found that buckwheat constituted a larger share of the grain eaten than did corn. This is another illustration of the adaptability of the crow, since buckwheat was, at the time, widely cultivated in central New York. The study showed that crows partake freely of food items that are abundant at any particular time. For example, May beetles constituted more than one-half of the food consumed in the month of May and wild fruit was a major item in July and August. In this connection it may be mentioned that under primeval conditions wild fruits probably formed over one-half of the annual food of the crow. Today the importance of this source is greatly reduced.

Whenever available, quantities of insects are eaten. Many of these are grasshoppers, beetles, cutworms and caterpillars. Other animal food includes reptiles, fish, crustaceans, eggs and young of other birds, amphibia, and small mammals. That the crow is a scavenger is well known, and carrion is not neglected. There have been numerous observations of crows resorting to the seashore to feed on dead fish cast up by the waves.

Carrion is eaten at all times of year, and may be an important food source during the colder months. It is difficult to judge accurately the amount of this type of food since crows kill and eat small mammals, young rabbits, mice, as well as nestling birds. The extent to which nestlings are eaten is hard to assess by stomach analysis, because the remains lose their identity rapidly once inside a crow's stomach. In this connection visual observation is of value.

In this day of high speed vehicular traffic, many small animals, both wild and domestic are killed on our highways. Crows find this a ready source of carrion, one more example of resourcefulness and adaptability. Some years ago an ornithologist travelling in the mid-south noted crows feeding on traffic-killed animals, including dogs, cats, chickens, rabbits and skunks. In northern New York crows return in numbers in March, at a time when food is scarce. At this season I have often seen them feeding on the remains of traffic killed animals.

92 Clinton Street, Gouverneur, N.Y. 13642

20th ANNUAL MEETING
NEW YORK STATE FEDERATION OF BIRD CLUBS, INC.
DEPOSIT, N. Y. JUNE 2-4, 1967

The 20th Annual Meeting of the Federation of N.Y.S. Bird Clubs, Inc. was held at Hanson's on Lake Oquaga, co-sponsored by the Naturalists' Club of Binghamton, Inc. and the Tioga Bird Club. The meeting was called to order at 9 a.m. by Federation President, Dr. Allen H. Benton, and a quorum was declared with 23 member clubs represented.

The minutes of the 19th Annual Meeting were approved as published in the July, 1966 *Kingbird*.

In the absence of Mr. Dort Cameron, the Treasurer's Report was read by Dr. Neil S. Moon: