

A PRELIMINARY FOOD STUDY OF RED-WINGED BLACKBIRD

NESTLINGS, Agelaius phoeniceus, AT ROBERT'S FIELD,

JEFFERSON COUNTY, ALABAMA

Dan C. Holliman

This study represents a segment of an extensive research program under the direction of Dr. Gordon H. Orians, of the University of Washington, on the ecology of Red-winged Blackbirds, Agelaius phoeniceus, and Yellow-headed Blackbirds, Xanthocephalus xanthocephalus, during their breeding season. In an effort to observe both Red-winged and Yellow-headed Blackbirds in a wide range of environmental conditions, study areas were established in the humid belt west of the Cascade Mountains, the Sagebrush Deserts of Central Washington, the Ponderosa Pine Parklands of Eastern Washington, several areas in Southern British Columbia and one in Northcentral Alabama. In this Alabama study, attention was specifically directed to the food brought to the nestlings. Additional data were gathered relative to habitat composition and nestling activity during the study period, April 19 to June 15, 1964.

Financial support for this work was provided by a faculty research grant from Birmingham-Southern College and by funds from a National Science Foundation grant to Dr. Gordon H. Orians of the University of Washington, Department of Zoology, Seattle, Washington. I would like to thank Dr. Orians for the help I received in the identification of insect specimens and for his permission to use the data accumulated during the period of this research.

The Study Area

Early in 1964 a convenient study area was selected three miles from Birmingham-Southern College. Local banding and a bird population study (Snead, Idalene F., 1958. Resident Bird-Population of an Abandoned Airfield in Birmingham, Alabama. Unpublished M. A. Thesis, Birmingham-Southern College.) represents the only other work done on this abandoned airport. The field is located in the western section of the industrial center of Birmingham (Robert's Field: Section 32, T 17 S, R 3 W; elevation 535 feet; Birmingham Quadrangle). Geologically, it is situated in Opossum Valley, which is underlain by Ketona dolomite and faulted Pennsylvanian sandstone. Robert's field is nearly flat and gradually slopes upward towards the northeast. At the extreme southwest end of the field a five-acre marsh was formed by a natural sink area which collected and held surface water much of the year. Prior to the time of this writing the marsh had been destroyed by industrial expansion. This habitat supported a significant breeding population of Red-winged Blackbirds as well as other components of a viable marshland fauna.

The flora of the marsh was characterized by the following dominant representatives: Buttonbush, Cephalanthus occidentalis; Alder, Alnus sp.; Black Willow, Salix nigra; and Cat-tail, Typha latifolia. Plants growing in the fields that surrounded the marsh include the following:

Bermuda Grass, Cynodon dactylon; Little Barley, Hordeum pusillum; Tickle Grass, Panicum sp.; Meadow Fox-tail, Alopecurus pratensis; Broom-sedge, Andropogon virginicus; Needlegrass, Aristida sp.; Dallisgrass, Paspalum dilatatum; Crowfoot Grass, Dactyloctenium aegyptium; Rescue Grass, Bromus catharticus; White Clover, Trifolium repens; Red Clover, Trifolium pratense; Hop Clover, Trifolium agrarium; Sweet Clover, Melilotus sp.; Vetch, Vicia sp.; Bull Thistle, Carduus pumilum; Common Plantain, Plantago major; and Johnson-grass, Sorghum halepense.

Rainfall during the beginning of the study period was approximately 3.13 inches and decreased noticeably in occurrence by May 15. Temperature ranged during the day from 75 to 95 degrees and from 53 to 73 degrees at night. Cloud cover was variable, with many days hot and clear. During the middle of May the waterline of the marsh began receding and continued to do so until the marsh was completely devoid of water. It remained waterless throughout the remaining portion of the study period.

Sampling Procedures and Techniques

In late May and early April, breeding territories were mapped and nests located in the marsh and the surrounding fields. Daily checks were made to determine hatching dates and nesting progress. Food samples were then gathered by placing segments of pipe cleaners around the neck of nestlings 3 - 6 days old. These collars were fitted tightly enough to prevent the passage of food but loosely enough to permit breathing. Normally, neck bands were allowed to remain on the young birds one hour to one hour and 15 minutes. On the average, parents would bring food to the nestlings 5 - 6 times each hour. A bolus of food, composed of insect bodies, would accumulate during this time in the bottom of the buccal cavity. The insects were then collected with forceps and the band removed. This made it possible to collect food from a given nestling many times. Attempts were made to keep sampling periods one hour in duration and to distribute sampling throughout the day. However, no single nest was sampled more than twice in any given day. A single food sample consisted of the total amount of food taken from all of the nestlings of a single nest.

Results

Insect specimens contained in the food samples were identified as indicated in Table I. Some specimens were damaged by the parents so that Family determination was impossible and their presence was noted by using a question mark.

The resultant observational nesting data, that were compiled during the entire study period, are summarized and listed in Table II.

Discussion

Weather played an important role in this study. The loss of water in the marsh, due to scanty rainfall, apparently explains the scarcity of aquatic insects in the samples. An abundance of adult odonates was

Table I
Summary of Food Data

Class	Order	Family	Number of Specimens			Total	
			Larvae	Pupae	Adults		
Insecta	Odonata	Libellulidae			3	3	
		Orthoptera	Unidentified	4		2	6
		Homoptera	Cercopidae	8		10	27
			Cidadellidae			3	
			Unidentified	6			
		Lepidoptera	Noctuidae	10			19
			Geometridae	2			
			Unidentified	1	3	3	
		Collembola				1	1
	Arachnoidea	Araneida			1		1
Gastropoda	Pulmonata			2		2	
			Grand Total			59	

Table II
Nesting Summary

Total number of nests located in the study area	19
Old nests (last year's nests)	3
Deserted nests	4
Nests destroyed by predators	3
Total number of eggs in all nests	36
Total number of eggs that did not hatch	8
Total number of nestlings observed in all nests	27
Average number of eggs per nest	4.5
Average number of nestlings per nest	4
Number of nests sampled	9
Total number of nestling hours	
(number of nestlings collared x one hour)	51
Number of food samples taken	14
Mortality of nestlings:	
Killed by parents	3
Killed by predators (unknown)	5
Unaccounted-for deaths	3
Number of runts in nests	0

observed at the beginning of this study; however, their numbers quickly dropped as the marsh dried. Additional collection of samples is needed in order to determine possible diurnal food variations. It is interesting to note that small insects, such as leaf-hoppers, were brought to nestlings three to four days old, whereas larger lepidopterans made up most of the food samples from older nestlings. Out of a total of 51 nestling hours, four were unproductive. This could be due to neck bands that were applied too loosely. If the neck bands were left on longer than one hour the nestlings had a tendency to cough up food and the adults reduced their feeding rate. Nestlings older than six days had a tendency to leave the nest when approached, so every attempt was made to work with birds only three to six days old. Second broods were not noticed in the study area. Foraging adults were active throughout the daylight hours in the fields bordering the marsh. Generally, adults would not fly great distances to secure food.

It is hoped that this preliminary study and others to follow will contribute to a better understanding of this species in its range.

Birmingham-Southern College
Birmingham, Alabama 35204