

BRIEF NOTE

BLUE WINGED WARBLER: MID-SEASON DIET AND FEEDING BEHAVIOR.¹

Two observations of blue winged warbler (*Vermivora pinus*) feeding were made. Attention was specifically directed toward determining the identity of diet elements, determining the identities of host plants, and determining the nature of feeding behavior. The observations were enhanced by three facts: they were made during the fledgling-dependent period when adult warblers are relatively inconspicuous and difficult to study, they concurred with a mid-season shift in diet, and they provided new information on diet elements and at least one prey host plant species. Published references to the diet of the blue winged warbler (and other Parulidae species) are few, and consist only of a categorical list of probable diet elements (Bent, 1953; Griscom, *et al.*, 1957). Ficken and Ficken (1968) described the feeding methods of the blue winged warbler and noted the seasonal variation in foraging methods employed. My observations corroborate their findings regarding July feeding methods.

During the early evening of 6 July 1974, an adult warbler was observed feeding in an abandoned sheep pasture located about five miles southeast of Newark, Licking County, Ohio. Two adult and one dependent juvenile warblers were observed feeding in this same area during the evening of 11 July 1974. These observations were in typical blue winged warbler habitat, generally defined as an open, comparatively moist sere with scattered pioneer trees and a bordering woodland (Berger, 1958; Ficken and Ficken, 1968).

The adults fed primarily by "gleaning" small insects from the upper lateral foliage of black walnut (*Juglans nigra*), the lateral foliage of apple (*Malus* sp.) and, briefly, from umbel foci of water hemlock (*Cicuta maculata*). The juvenile was being fed larvae gathered by one

adult from "webs" located throughout the external foliage of honey locust (*Gleditsia triacanthos*). Larvae for the juvenile were being gathered by both "gleaning" and "hanging back downward" methods. One adult "probed", intermittently and without success, into folded, dying apple leaves recently abandoned by larval parasites (which were, apparently, diet elements earlier in the season).

Specimens of those insects concluded to be diet elements were collected and identified. The larvae fed to the juvenile were clearly visible from the time of seizure by the adult until being swallowed by the juvenile. These were identified as recently developed larvae of the mimosa webworm (*Homadaula anisocentra*), a prey not available earlier in the season. The nature and rate of observed adult "gleaning" behavior (i.e., frequent and regular seizure, from a relatively stationary position) suggested a gregarious prey. Examination of the apple and walnut foliage in the vicinity where the individuals were feeding revealed substantial populations of aphids and bugs, respectively. The apple parasite was identified as an *Aphis* sp. (probably *A. pomi*, the apple aphid) and the walnut parasite as *Corythucha* sp. nymphs (lace bugs). Prey taken from the water hemlock could not be positively identified because a few individuals of many different insect species were present.

Presumably, the blue winged's diet and foraging methods vary during the season and from place to place within its range, according to changing behavior, nutrition needs, and prey accessibility, but any understanding of the nature of this diet variability, and the relationship of foraging methods to it, must await the compilation of additional data.

Acknowledgments.—Assistance in identifying the insect specimens was provided by Walter Ebeling, Department of Entomology, UCLA, and staff of the Systematic Entomology Laboratory, USDA Agricultural Research Center, Beltsville, Maryland.

—JERRY N. McDONALD. *Department of Geography, University of California, Los Angeles, California 90024.*

¹Note received August 28, 1975 (#75-53).

LITERATURE CITED

- Bent, A. C. 1953. Life histories of North American wood warblers. U.S. Govt. Printing Office, Washington, D.C. (Bull. U.S. Nat. Mus. Publ. #203). 734 pp.
- Berger, A. J. 1958. The golden-winged-blue-winged warbler complex in Michigan and the Great Lakes area. *Jack-Pine Warbler* 36: 37-71.
- Ficken, M. S. and R. W. Ficken. 1968. Ecology of blue-winged warblers, golden-winged warblers and some other Vermivora. *Amer. Midl. Nat.* 79: 311-319.
- Griscom, L., A. Sprunt, Jr., *et al.* 1957. *The Warblers of America*. Devin-Adair, New York. 356 pp.