

Current Status of the Blue Wasp, *Chalybion zimmermanni*

Dahlbom, in Southeastern Indiana

GERTRUDE L. WARD and PAUL ODE

Joseph Moore Museum

Earlham College, Richmond, Indiana 47374

ABSTRACT

It has been 15 years since the first recorded observation (1968) of *Chalybion zimmermanni* Dahlbom (Hymenoptera:Sphecidae) in Indiana and it seems appropriate to report its current status in the state. In the summer of 1983 *Chalybion z. zimmermanni* was found in five counties, for a total of 29 counties. All of these are south of the 40th parallel and within a band extending across the southern part of the state, reaching approximately 75 miles north of the Ohio river. Of 57 active nests found, 48 (84%) were in wood and 9 (16%) were in other holes. These included four in a plastic electric outlet, three in deserted nests of *Sceliphron caementarium* (Drury), and two in deserted nests of *Trypargilum politum* (Say). An aggregation of *Chalybion* sp. was found near Cedar Grove, Franklin county, on the south and west sides of a wellhouse. Cleptoparasitism at a *C. zimmermanni* nest was observed at the Franklin county site on 26 July.

Introduction

It has been 15 years since the blue wasp, *Chalybion z. zimmermanni* Dahlbom (Hymenoptera:Sphecidae) was first recorded in Indiana (1), and it seems appropriate to report its current status in the state. Previous observations have found this wasp in 23 counties (1, 2). Nests of this sphecid wasp are characterized by an inner, counter-sunk plug of mud taken from the nests of mud-carrying wasps such as *Sceliphron caementarium* (Drury) and *Trypargilum politum* (Say) and covered by a plug of uric acid gathered from the fecal matter (droppings) of birds or reptiles (1). All nests have been in man-made structures, and are provisioned with spider prey.

Another behavioral feature of the genus *Chalybion* is the formation of nighttime or inclement weather aggregations (3). These usually have been on the west sides of buildings or in protected places. In addition, the taking of prey previously captured by other insects, cleptoparasitism, has been reported for several genera in the Sphecidae, including the blue water-carrier, *Chalybion californicum* (Saussure) (4), but has not been reported for *C. zimmermanni*.

Methods

Observations were begun on 16 June 1983 and ended on 13 August 1983. The strategy was to drive through a county searching for older wooden barns, especially those near a water source such as a stream or farm pond. When such a barn was located, we asked permission of the owner or tenant to examine the interior for the characteristic uric acid plug of the *C. zimmermanni* nest. If these were found, the timber, post or other site was photographed and/or sketched. An ink mark was made on the uric acid as an aid in determining at a later date whether or not a nest had been opened.

Possible sites for aggregations were also sought and observations were made of active nests as they were being filled with spiders and plugged.

Results and Discussion

Chalybion z. zimmermanni nest sites were in five counties, Jackson, Jefferson,

Jennings, Scott and Shelby. A previously unpublished observation in Fayette county, plus earlier accounts (1, 2) brings the total to 29 counties. These are all south of the 40th parallel and within a band extending across the southern part of the state, and reaching approximately 75 miles north of the Ohio river. A total of 57 active nests was found with 48 (84%) in wood, and 9 (16%) in other holes. These included four in a plastic electric outlet, three in deserted nests of *Sceliphron caementarium* (Drury) and two in deserted nests of *Trypargilum politum* (Say). This compares with 80% in wood and 20% in other sites reported in 1971 (2). Equal time spent searching for nests north of U.S. Route 40 in Wayne county failed to reveal any nests. It seems that this wasp is not moving northward with any rapidity.

During observations at a farm near Cedar Grove, Franklin county, several *Chalybion*-type blue wasps were seen at an overhanging roof on a wellhouse. The wasps started to gather on the west and southfacing sides on a cloudy afternoon (16 June), and on the evening of 21 July a total of 40 wasps was counted at the same site.

Several active nests near Cedar Grove were under surveillance for several days, and female wasps were timed as they brought spider prey to their nests. The nests were in a wooden timber in holes approximately one inch in diameter. These were holes used for securing a piece of farm machinery with a metal pin. As one wasp brought a series of spiders to the nest, a second wasp took the spiders out of the nest, one by one. This occurred on 26 July, and on 27 July the cell had been refilled with spiders by 2:05 p.m., closed with the inner seal of mud by 2:12, and sealed with seven loads of uric acid by 4:09 p.m.

Conclusions

1. *Chalybion z. zimmermanni* has been found in 29 Indiana counties since it was first observed in the state in 1968, all below the 40th parallel and in a band approximately 75 miles north of the Ohio river. It seems to be staying within that band and not moving northwards.
2. Of 57 active nests recorded, 84% were found in wood and 16% in other materials, including four in a plastic electric outlet, and five in deserted nests of other wasps.
3. An aggregation of 40 *Chalybion* sp. was found on the south and west sides of a wellhouse near Cedar Grove, Franklin county.
4. Cleptoparasitism was observed at a *Chalybion zimmermanni* nest in a barn near Cedar Grove, Franklin county.

Acknowledgments

The assistance of a grant from the Earlham College professional development fund is gratefully acknowledged. Aid from the Toms Fund of the Joseph Moore Museum is appreciated.

Literature Cited

1. WARD, G. L. 1970. The occurrence of *Chalybion zimmermanni* Dahlbom (Sphecidae) in Indiana. Proc. Indiana Acad. Sci. 79:231-233.
2. _____. 1971. Nest site preference of *Chalybion zimmermanni* Dahlbom (Hymenoptera, Sphecidae). Proc. Indiana Acad. Sci. 80:264-266.
3. _____. 1972. Aggregations of *Chalybion californicum* (Saussure) (Hymenoptera:Sphecidae) near Centerville, Wayne County, Indiana. Proc. Indiana Acad. Sci. 81:177-181.
4. _____. 1974. Prey-taking among some Indiana solitary wasps (Hymenoptera: Sphecidae). Proc. Indiana Acad. Sci. 83:220-222.