The Great Lakes Entomologist

Volume 16
Number 4 - Winter 1983 *Number 4 - Winter 1983*
Article 12

December 1983

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A NOTE ON THE NESTING OF *MIMESA LUTARIA* (HYMENOPTERA: SPHECIDAE)

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ABSTRACT

Five nests of *Mimesa lutaria* (Fabricius) were excavated and studied at Cranberry Lake, St. Lawrence County, NY. The nests were shallower than those of other species previously studied, yet the tumuli were large and conspicuous. An average of about 11 adult and nymphal cicadellids were stored in a cell, except for one cell that held five *Delphacodes* sp. (Delphacidae).

The genus *Mimesa* is, biologically speaking, one of the most poorly studied genera of Nearctic Sphecidae (Finnamore 1983). Nesting behavior information is available for only three of the 36 American species: *M. lutaria* (Fabricius) (= *M. basirufa* Packard) (Spooner 1948, Krombein 1961, Kurczewski and Lane 1974); *M. cressonii* Packard (Kurczewski and Lane 1974); and, *M. ezra* (Pate) (Williams 1913). Only *M. cressonii* has been studied in detail. Much of the information on *M. lutaria* is scant. Spooner (1948) noted three genera of cicadellid prey in Great Britain. Krombein (1961) collected two females with prey in Maryland. Kurczewski and Lane (1974) presented data from 21 fully provisioned cells of five nests in central New York. The data we have gathered in our recent study of *M. lutaria* are so different from those of previous studies that we have decided to record this information as part of the picture of the ethology of species in the genus *Mimesa*.

Our study of *M. lutaria* was made on a sandy road and a sandy-clay path at the Cranberry Lake Biological Station of the College of Environmental Science & Forestry in St. Lawrence County, NY during 21–25 July 1980 (see O'Brien and Kurczewski [1979, 1980, 1982] for further description of habitat). Females of *M. lutaria* were nesting at the periphery of a much larger nesting aggregation of *Alysson conicus* Provancher.

We excavated five nests of *M. lutaria*, including an old, 10-celled one and a recent, 7-celled one. Based upon the contents of the former nest this species must have been nesting actively at this locality in early or mid-July. The nest entrances and burrow diameters averaged about 3 mm. Tumuli surrounding the entrances of active nests measured 1.6–2.0 cm wide and 3.5-4.2 cm high; smaller tumuli surrounded the entrances of burrows under construction. Completed burrows proceeded vertically for a short distance and then coursed obliquely downward at a 45° angle or less to the surface or nearly horizontally; two such completed burrows were 15 and 19 cm long. The cells were located along the burrows or near the burrow termini at depths of from 3.6 to 6.8 ($\bar{x}$ = 5.4, n = 18) cm beneath the surface. They averaged about 6 by 8 mm in height and length, respectively.

From 5 to 18 ($\bar{x}$ = 10.9, n = 7) prey were found in the fully-provisioned, individual cells of one nest. Most of the prey in the cells were placed head inward and many were ventral side upward but some were dorsal side upward. The egg-bearing prey was laid head inward, usually venter up, at the end of the cell. The egg was affixed to one of the prey in the genus typical position (see Kurczewski and Lane 1974).

Prey collected from the provisioning females or their cells consisted of adult and nymphal Cicadellidae as follows: *Oncopsis variabilis* (Fitch), six; *Empoa albicans* Walsh,

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40. We recorded five Delphacidae (*Delphacodes* sp.) from one cell. Prey from individual cells tended to belong to a single species. One cell in a 7-celled nest contained a larval sarcophagid (Miltogrammini) among the prey.

DISCUSSION

Kurczewski and Lane (1974) observed *M. lutaria* (as *M. basirufa*) nesting from late June to late July at Selkirk Shores State Park, Oswego County, NY, in the vertical bank of a sandpit. They thought it would be "enlightening" to know whether or not this species constructs a turret around its entrance, as does *M. cressonii*, when nesting in flat sand. Not only is there a turret surrounding the entrance to the nest of *M. lutaria* in flat sand but it is larger and more conspicuous than that of *M. cressonii* which constructs much deeper nests.

It is virtually impossible to compare the nest architecture and dimensions of our population of *M. lutaria* with those from Kurczewski and Lane's (1974) study because of the diversity in study areas (flat sand vs. sand cliff). The cells of this species from our study were much shallower than those of *M. cressonii* (see Kurczewski and Lane 1974). Nests of another sphecid nesting at Cranberry Lake, *Crabro advena* Smith, were also considerably shallower than nests of *C. advena* from other areas (O'Brien and Kurczewski 1980). In both *M. lutaria* and *C. advena* the shallower nests at Cranberry Lake may be related to a compacted organic soil layer, 3–10 cm beneath the sand surface.

Kurczewski and Lane (1974) found fully provisioned cells of *M. lutaria* to contain from two to six prey per cell, whereas we noted from five to 18 smaller prey per cell at Cranberry Lake in cells of approximately the same size. Had Kurczewski and Lane's (1974) study not been made two or three weeks earlier than ours we might have been able to associate this difference with the later growing season in the Adirondacks.

Habitat differences seem to be largely responsible for the different species and genera of cicadellid prey reported for *M. lutaria*. Spooner (1948) noted *Macropsis virescens* (Fabricius), *Oncopsis flavicollis* (Linnaeus), *O. rufusculus* Fieber, and *Empoasca smaragdula* (Fallen) in Great Britain; Krombein (1961), *Macropsis viridis* (Fitch) and *Idiocerus* sp. in Maryland; and, Kurczewski and Lane (1974), *Oncopsis variabilis* (Fitch), *O. sorbrius* (Walker), and *Idiocerus* sp. in Oswego County, NY. Both *M. lutaria* and an unrelated sphecid, *Alysson conicus*, nesting at Cranberry Lake, were capturing and storing *Empoa albicans* in their cells.

ACKNOWLEDGMENTS

We thank A. T. Finnamore, MacDonald Campus, McGill University, for identifying *Mimesa lutaria*; and J. P. Kramer, Systematic Entomology Lab., USDA, Washington, DC, for naming the prey Cicadellidae.

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