

April 2000

## First Record of *Tachysphex Pechumani* (Hymenoptera: Sphecidae) From Indiana

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### Recommended Citation

Kurczewski, Frank E. 2000. "First Record of *Tachysphex Pechumani* (Hymenoptera: Sphecidae) From Indiana," *The Great Lakes Entomologist*, vol 33 (1)

Available at: <https://scholar.valpo.edu/tgle/vol33/iss1/8>

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FIRST RECORD OF *TACHYSPHEX PECHUMANI*  
(HYMENOPTERA: SPHECIDAE) FROM INDIANA

Frank E. Kurczewski

## ABSTRACT

A nesting population of *Tachysphex pechumani* is recorded from near Indiana Dunes National Lakeshore, Porter County, Indiana. This record is a western extension of the known range of this uncommon species. Nesting biology of *T. pechumani* at this locality was similar to previously published observations on this species.

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*Tachysphex pechumani* Krombein is unusual from the standpoint of adult morphology, nesting behavior, ecology, and seasonal and geographic distribution (Kurczewski 1987, Kurczewski and Elliott 1978, Kurczewski et al. 1970). It has a disjunct range in sections of the Lower Peninsula of Michigan, extreme northwestern Indiana, extreme northwestern Ohio, southwestern Ontario, and the New Jersey Pinelands National Reserve (Fig. 1). This species was previously unknown from Indiana (Pulawski 1988, M. F. O'Brien 1994 pers. comm., R. Grundel 1999 pers. comm.).

*Tachysphex pechumani* is an excellent indicator of ancestral oak savanna (Kurczewski 2000). Northwestern Indiana was considered to be prime area for this species at the time of Euro-American settlement because of the abundance of oak savanna, extent of appropriate sandy soils, historical climate, and likelihood of periodic fires (Kurczewski 1998).

A population of *T. pechumani* was located in the Township of Pine, Porter County, Indiana, on 21 June 1999 (Fig. 1). The site was on private property, just south of the Indiana Dunes National Lakeshore but north of U. S. Route 20. It consisted of exposed barrens, oak savanna, and oak-deciduous woodland situated on Oakville fine sand. *Tachysphex pechumani* nests in Oakville fine sand in the Oak Openings Preserve Metropark, Lucas County, Ohio and the Allegan State Game Area, Allegan County, Michigan (F. E. Kurczewski pers. obs.). In Indiana the wasps nested in sandy openings in oak savanna at the edge of oak-deciduous woodland.

Two aggregations of wasps were separated by 91 m. A NE site, compacted by deer repose, contained two females. Their nest entrances were 24 cm apart. A SW site, compacted by occasional off-road vehicular use, held five females and 16 nests. Nests at the SW site were segregated into five clusters (probably one for each wasp) of 2, 3, 3, 4, and 4 nests. Individual wasps tend to excavate consecutive burrows close together in clusters (F. E. Kurczewski pers. obs.). Distances between the five clusters ranged from 78 cm to 5.7 m. Distances between entrances within a cluster averaged 14.4 cm (Range = 3–32 cm, N = 12).

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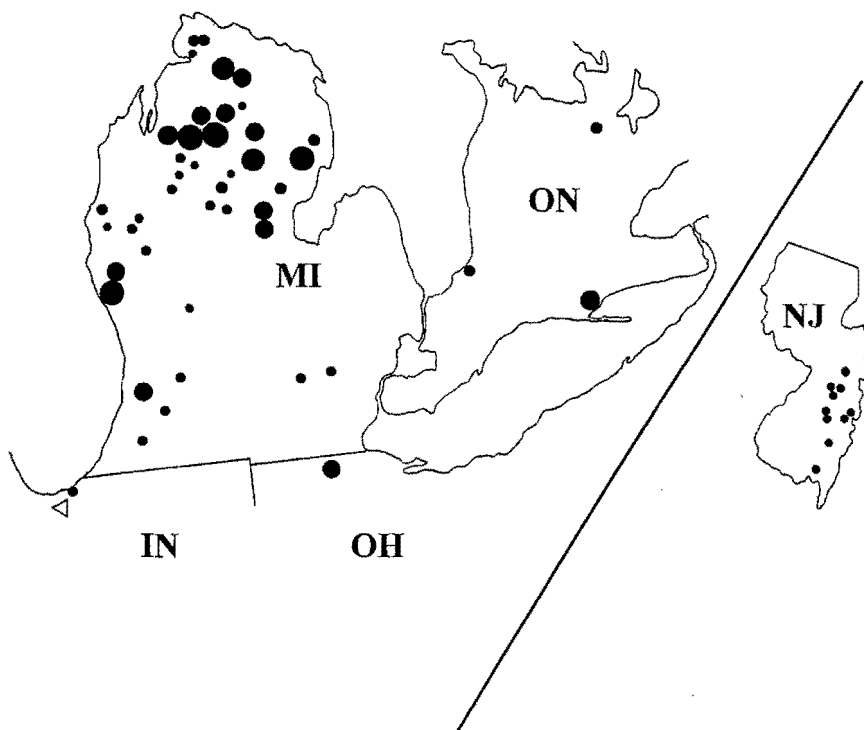


Figure 1. Present-day (1991–1999) geographic distribution of *Tachysphex pechumani*. Indiana record is shown by open arrow point. Sizes of closed circles reflect abundance and extent of subpopulations. Individual localities can be obtained by writing author.

Two entrances at the SW site were 8 and 7 mm in diameter. Tailings from five wasp burrow excavations, one from each cluster at this site, averaged 80.0 mm (Range = 65–90 mm) long and 60.0 mm (Range = 55–70 mm) wide. The five burrows averaged 53.4 mm (Range = 44–62 mm) long, including cell length, and 31.6 mm (Range = 26–38 mm) deep, including cell depth (Fig. 2). The five cells averaged 16.0 mm long (Range = 15–17 mm), 6.0 mm high (Range = 6 mm), and 6.5 mm wide (Range = 6–7 mm).

Each of the five cells contained a single, paralyzed prey grasshopper placed head inward and ventral side upward. Each grasshopper bore a slightly curved, sausage-shaped wasp egg, 2.0–2.5 mm long, affixed by the distal end to the soft intersegmental membrane (corium) surrounding the base of a procoxa, the egg lying transversely across the prey behind the front legs. Three such eggs were affixed to the left and two were attached to the right forecoxal coria. The grasshoppers were identified as late instar, nymphal *Melanoplus* spp. (Acrididae). They weighed (wet) 111 to 178 mg (Mean = 128.8 mg, N = 5). One female, collected as a voucher specimen and

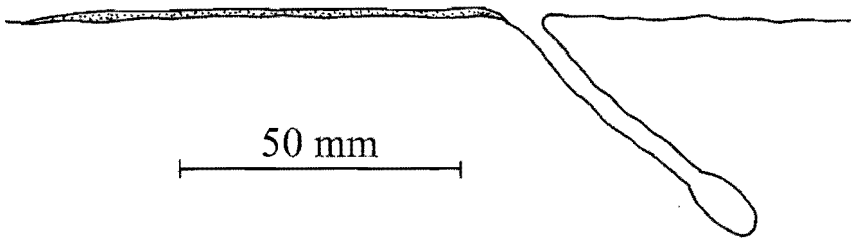


Figure 2. Burrow and cell design of *Tachysphex pechumani* nest, as seen from side. Burrow excavation tailings are stippled.

deposited at Cornell University, weighed (wet) 33 mg. Two cells in one SW cluster contained small red ants [*Acanthomyops claviger* (Roger)] in the process of amputating and carrying off pieces of the prey.

#### ACKNOWLEDGMENTS

Ralph Grundel provided me with maps of the area, searched unsuccessfully for *T. pechumani* in the Indiana Dunes National Lakeshore insect collection, directed me to the location of Indiana Dunes National Lakeshore Malaise trap samples (which did not contain the wasp), and read a first draft of the manuscript. Mark O'Brien gave me information on his collecting efforts in the Indiana Dunes.

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