

INHABITANTS OF THREE NESTS OF THE THIRTEEN-LINED GROUND SQUIRREL, *ICTIDOMYS* (FORMERLY *SPERMOPHILUS*) *TRIDECIMLINEATUS* (MITCHILL), FROM INDIANA

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ABSTRACT. The fauna was examined from three nests of the thirteen-lined ground squirrel, *Ictidomys tridecemlineatus*, from Terre Haute, Vigo County, Indiana. The most abundant mite was *Sertitympanum separationis*, mostly females. Immature and male individuals of this species were also found, both for the first time. *Androlaelaps fahrenheitsi* was the second most abundant mite. Thirty-eight mites including at least three new species of the genus *Bakerdania* were present. In small numbers were mites of the species *Macrocheles mesochthonius* (Krantz & Whitaker 1988). The most abundant insects in the nests were larvae and adults of the flea *Opisocrostis bruneri*, and an unidentified staphylinid beetle, *Atheta* sp. Other species of invertebrates occurred in lower numbers.

Keywords: Nest fauna, ground squirrel, invertebrates, Indiana, *Ictidomys tridecemlineatus*

INTRODUCTION

Most publications on ectoparasites of *Ictidomys tridecemlineatus* (Mitchill, 1821) involve information concerning the ectoparasites found on the host. The ectoparasites of this host have been studied in Indiana (Whitaker 1972). Little is known about the inhabitants of the nest community. We were particularly interested in the presence or absence of several organisms, as follows. In 1969 a staphylinid beetle, *Atheta* sp., was found living on a few specimens of *I. tridecemlineatus* captured on September 20 and 22 in Vigo County, Indiana. Members of this genus have parasitic or at least commensal relationships with Central and South American rodents, thus its relationship to this host was of particular interest. The ameroseiid mite *Sertitympanum separationis* was described by Elsen & Whitaker (1985), primarily from *I. tridecemlineatus* from the present study area. Previously only females had been described of this mite, and little is known of the biology of the species. *Macrocheles* sp. was reported on this host from Indiana by Mumford & Whitaker (1982), and has been described as *M. mesochthonius* by Krantz & Whitaker (1988). Hypopi (deutonymphs of As-

tigmata) associated with mammals either are simply phoretic, e.g., *Xenoryctes latiporus* and “*Dermacarus*” *reticulosus*; or they are parasites, e.g. *Aplodontopus micronyx*. These examples have all been found on this host from Indiana. Adults of hypopi presumably occur in the nests, but adults have not been found for any of these species.

There is no previous study of mites from the nests of *I. tridecemlineatus*, although Hendricks (1967) previously reported other organisms from the nests of this host, including fleas *Opisocrostis bruneri*, *Ctenophthalmus pseudagyrtis*, and *Oropsylla arctomys*; the tick *Ixodes sculptus*; flea larvae; larvae of the dipteran family Anthomyiidae; pupae of the moth *Pseudaletia unipuncta*; and dipluran adults of the family Japygidae.

The objectives of this study were to look for the species mentioned above and to determine other inhabitants of the nest community of *I. tridecemlineatus*, in Terre Haute, Vigo County, Indiana.

METHODS AND MATERIALS

A reconnaissance of burrows in Terre Haute, Vigo County, Indiana sought to determine which might contain nests. Suspect burrows were excavated, and three nests were located in three separate burrows on 5 June 1988. The nests were removed and immediately taken to the lab in plastic bags. Invertebrates, mostly mites, were

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Table 1.—Inhabitants of three nests of the Thirteen-lined Ground Squirrel, *Ictidos tridecemlineatus*, from Terre Haute, Vigo County, Indiana.

Organism	Number nests occurrence	Total number	Notes
MITES (ACARINA)			
<i>Sertitympanum separationis</i>	3	159	110 females, 16 males, 33 immatures
<i>Androlaelaps fahrenheitzi</i>	3	105	49 females, 24 males, 32 immatures
<i>Bakerdania</i> sp.	2	38	apparently at least 3 new species
<i>Stratiolaelaps scimitus</i>	2	13	2 females, 3 males, 8 immatures
<i>Alloparasitus</i> n.sp.	1	5	4 females, 1 male
<i>Macrocheles mesochthonius</i>	3	5	5 females
<i>Proctolaelaps pygmaeus</i>	1	3	3 immatures
<i>Cheyletus eruditus</i>	1	2	2 immatures
<i>Dendrolaelaps</i> sp.	1	4	4 immatures
Chigger	1	1	
Oribatid mites	3	24	24 immatures
Glycyphagids	2	24	24 immatures
FLEAS (SIPHONAPTERA)			
<i>Opisocrostitis bruneri</i>	3	68	5 adults, 63 immatures
INSECTS AND SPIDERS			
Staphylinidae, rove beetles, <i>Atheta</i> sp.	2	5	5 adults
Formicidae, ants	3	10	10 adults
Collembola, springtails	2	3	3 adults
Beetle, unidentified	1	1	1 adult
Spider	1	1	

collected from the nest material by means of a Berlese funnel. They were preserved in alcohol or were stained in Nesbitt's solution containing acid fuchsin, mounted in Hoyer's solution, and coverslips were ringed with euparal. Large numbers of mites were removed from each of the three nests and smaller subsamples were taken from each.

RESULTS AND DISCUSSION

Seventeen categories of nest fauna were included in the sample, totaling 447 invertebrates. Of these, 360 were mites, 68 were fleas, mostly larvae, and 21 were miscellaneous invertebrates (Table 1). The most abundant nest inhabitant was the mite *Sertitympanum separationis*. In addition to 110 females, 33 immatures and 16 males were found; this was the first report of males and immatures from this genus (Elsen et al. 1992). The three types were present in all three nests. The second most abundant inhabitant was *Androlaelaps fahrenheitzi* (Laelapidae) (49 females, 24 males, and 32 immatures), a common ectoparasite of many different hosts. The third most abundant species was the flea, *Opisocrostitis bruneri* (68, mostly larvae). Three species of mites of the genus *Bakerdania*, totalling 38 individuals and likely

including at least 3 new species, were the third most abundant type of mite. Twenty-four nymphs and larvae of oribatid (soil) mites were found. Twenty-four glycyphagid protonymphs were observed, but were badly macerated and could not be identified. There were 13 individuals of *Stratiolaelaps scimitus* (Womersley). Five individuals of *Macrocheles mesochthonius*, a species described by Krantz & Whitaker (1988), were identified. Other mites included were *Alloparasitus* n.sp., *Dendrolaelaps* sp., *Proctolaelaps pygmaeus*, *Cheyletus eruditus*, and a chigger (unidentified).

Hypoaspis is a difficult and poorly known genus. Many species have been described, but many were later put in separate genera, including *Alloparasitus* and *Stratiolaelaps*. Evans & Till (1966) provided a key that we used to identify the subgenera (now all recognized as full genera) and other details on the *Hypoaspis* group. One that we had called *Hypoaspis* sp. was sent to E. E. Lindquist, who said it was "a distinctive new species," but it turned out to be in the genus *Alloparasitus*.

Other than mites, the flea *Opisocrostitis bruneri* was the only other important species, and was the third most abundant nest inhabitant. Ten ants

and a staphylinid beetle, *Atheta* sp., were present, along with a few springtails, a spider, and an unidentified beetle. The other insects and spider were not identified.

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