DESCRIPTION OF THE MALE OF *GEOMYDOECUS SCLERITUS* (MALLOPHAGA: TRICHODECTIDAE) FROM THE SOUTHEASTERN POCKET GOPHER[1]

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ABSTRACT

This represents the first record for the male of *Geomydoecus scleritus* McGregor, the chewing louse found on pocket gophers in the southeastern United States. The male is described and illustrated from two adult specimens off *Geomys pinetis*. *Geomydoecus scleritus* was found to reproduce throughout the entire year in central Florida. Males were found in March, May, and December and all three instars and adult females were found every month of the year.

Key Words: *Geomydoecus, Geomys,* lice, Mallophaga, parthenogenesis, pocket gopher

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McGregor (1917) described *Geomydoecus scleritus* on the basis of "numerous females and immature individuals" obtained from the southeastern pocket gopher, *Geomys pinetis floridanus* (Audubon and Bachman). Although many series of specimens of *Geomydoecus scleritus* are available from throughout its range, and from all four species of pocket gophers of the *Geomys pinetis* complex (*Geomys colonus* Bangs, *G. cumberlandius* Bangs, *G. fontanelus* Sherman, and *G. pinetis* Rafinesque), no males have been found previously (see Hopkins 1949; Price and Emerson 1971; Price 1975). Absence of males led Price (1975) to postulate that the species is parthenogenetic with males being rare or absent. Hopkins (1949) discussed parthenogenesis in lice and noted that the number of females exceeded the number of males in most Mallophaga by a slight to considerable degree, with males either unknown or occurring in very small percentages in a few instances.

Recently, we obtained a large series (including one late 3rd-instar and two adult males) of *Geomydoecus scleritus* by brushing skins of *Geomys pinetis austrinus* Bangs that had been collected at Tampa, Florida, throughout the year. The previously unknown male of *Geomydoecus scleritus* is described and illustrated here and the known data on reproduction are summarized. All lice of this series are deposited in the collection of the University of Minnesota.

In the following description, all measurements are in millimeters. Only the

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specific values observed are given, without mean or standard deviation, since each character state was observable on only one or two individuals. Character definitions may be found in Price and Hellenthal (1975).

Description of Male

As in Fig. 1. Temple width 0.405-0.420; head length 0.300-0.335; submarginal and marginal temple setae 0.035 and 0.025 long, respectively, with submarginal seta situated between blunt spiniform inner marginal seta and slender pointed outer seta. Antennal scape length 0.160, medial width 0.105, distal width 0.110. Prothorax width 0.315. Tergal setae: I, 2; II, 11-13; III, 17-18; IV, 20-22; V, 14-17; VI, 10-13; tergal and pleural setae on VII, 19. Sternal setae: II, 8; III, 8-9; IV, 11; V, 6-8; VI, 4-6; VII, 4-6; VIII, 6. Total length 1.175-1.265. Genitalia as in Fig. 2, sac with six prominent spines; parameral arch width 0.140-0.150, with blunt apical trifurcation; endomeral plate width 0.075-0.085, length 0.105-0.110, triangular, with apical cleft to depth of 0.045-0.050.

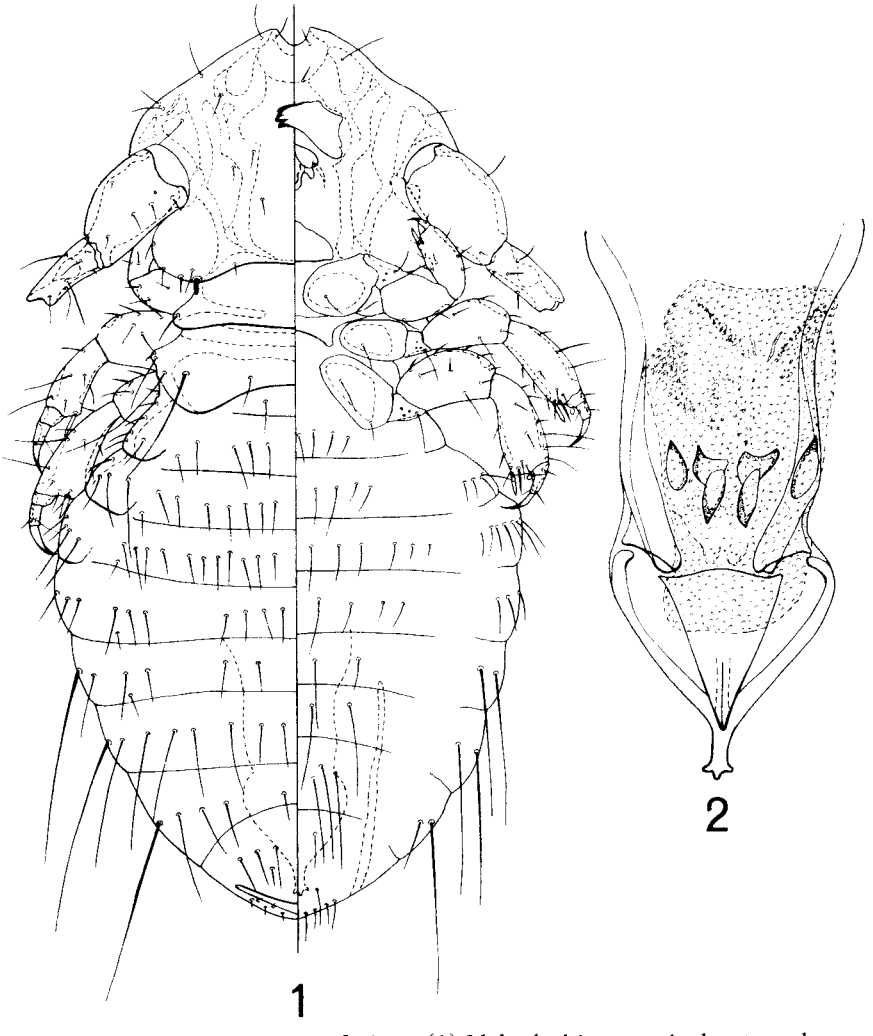
The male of *G. scleritus* is unique for the genus because of the trifurcated apical portion of its genitalic parameral arch (Fig. 2); males of all other recognized species of *Geomydoecus* either have a flattened, evenly rounded, or pointed medioposterior region of this structure. This genitalic feature, together with the absence of a process on the posterior scape margin and the presence of a single short blunt spiniform marginal temple seta on each side, enables the male to be keyed to couplet 15 in the key of Price and Emerson (1971). It will not go beyond couplet 15 and may be identified there by its parameral arch structure.

Seasonal Distribution and Reproduction

Data on the seasonal distribution of *Geomydoecus scleritus* were obtained from lice off a series of *Geomys pinetis austrinus* collected at Tampa, Hillsborough Co., Florida, by Dr. L. N. Brown and associates. These gophers were trapped throughout a 12-month period from May 1968 through April 1969 as part of a study on the breeding biology of southeastern pocket gophers (Brown 1971). We obtained lice from five to nine pocket gophers trapped in each of the 12 consecutive months, with a total of 76 gophers, 39 males and 37 females, represented.

Of the approximately 500 adult and late 3rd-instar lice examined, there were only three males. The sex of 1st, 2nd, and most 3rd instars could not be determined. A single adult male was found on 9 May, a newly-molted adult male on 10 March, and a late 3rd-instar male on 16 December. Adult females and all stages of immatures were found every month of the year. In addition to these specimens, we have examined over 500 more adults of *G. scleritus* from throughout its range and found no other males; Hopkins (1949) reported examining "about three hundred adults and many hundred nymphs" without finding a single male.

Seasonal louse population fluctuations, if present, could not be determined since we do not have data on absolute numbers of lice on the host



Figs. 1-2. – *Geomydoecus scleritus*: (1) Male, lacking terminal antennal segment; (2) Male genitalia.

individuals. However, if the developmental period of the egg and all three nymphal instars approximates that of 10 days each, as found by Rust (1974) for *Geomydoecus oregonus* Price and Emerson, then we can say that reproduction of *G. scleritus* occurs throughout the entire year. All three instars of lice were found every month of the year in approximately equal numbers (N=789; *t*-test, no significant difference). Male and female pocket gophers were not significantly different in either the total number of lice or in the number of adult females, 1st, 2nd, or 3rd instars present (*t*-test). Brown (1971) also found that reproduction occurred throughout the year in the host population of pocket gophers. Similar results were found in studies in the

Sacramento Valley, California, in that continuous reproduction during the year was noted by Rust (1974) for *Geomydoecus oregonus* and by Miller (1946) for the host pocket gopher, *Thomomys bottae* (Eydoux and Gervais).

Thus, *Geomydoecus scleritus* and its sister species, *G. mobilensis* Price, are unique among the 59 taxa in the genus *Geomydoecus* in that the primary method of reproduction is by parthenogenesis. In most other species of *Geomydoecus*, the sex ratio of adults is approximately 1 to 1.

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