

4. three quarter hours of weather or meteorology
5. six quarter hours from two or more of the following areas:
 - a. Soils Science
 - b. Oceanography
 - c. Conservation of natural resources
 - d. Cartography"

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IMMATURE STAGES OF SOME EASTERN NEARCTIC TABANIDAE (DIPTERA). V. *STENOTABANUS (AEGIALOMYIA) MAGNICALLUS* (STONE)

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ABSTRACT

The larvae and pupae of the psammophilic species *Stenotabanus (Aegialomyia) magnicallus* (Stone) are described and figured allowing for the first time a comparison of this subgenus with known juveniles of Tabanidae.

INTRODUCTION

Sixteen of the 18 recognized species of the subgenus *Aegialomyia* Philip are restricted to the Neotropics. One species is Nearctic, restricted to the Atlantic Coast of Florida and Georgia, and one species ranges along the Gulf Coast from western Florida west and south into Mexico. All species appear to be coastal inhabitants (and almost all are restricted to the Atlantic and Gulf Coasts).

Other than distributional and taxonomic accounts of the adults, little information is available on these species. Blickle (1958), in his discussion of *S. (A.) psammophilus* (Osten Sacken) gave accounts of some adult flight habits and furnished the only descriptive data on the immature stages known. However, the descriptions are insufficient for taxonomic purposes.

COLLECTION

During May of 1970-1972, I collected adults of *S. (A.) magnicallus* (Stone) at three locations in western Florida: Santa Rosa Island (near Navarre Beach), Santa Rosa Co., May 19-20; near Laguna Beach, Bay Co., May 20-21; and St. Josephs Island State Park, Gulf Park, Gulf Co., May 21-23. The beaches at these locations are exposed to considerable tidal and wave action and are wide, exceeding thirty-five yards at low tide. Repeated attempts to collect larvae or pupae at these locations in March and April, 1971-1973, were failures. However, in April, 1973, I was fortunate to find nearly

thirty larvae of this species along the inland coast of Santa Rosa Island. In this area tide and wave action is minimal, and the beach seldom exceeds ten yards in width. Using a square sieve with a 1/8" screen bottom, samples of sand were washed and sifted in the ocean water to expose the larvae. Numerous samples of sand, taken at intervals from the water's edge to the beginning of the grass-belt above the high-tide line, were searched. However, all larvae were taken only from the upper four inches of damp sand composing a flat strip approximately two feet wide and twenty yards long. The strip began just above the high-tide line and extended inland to the edge of the grass-belt. It was devoid of other macroscopic fauna, except for numerous amphipods and a few oligochaete worms.

Below are figures and descriptions of the larva and pupa of *S. (A.) magnicallus*. The reader is referred to Part I of this series (Goodwin, 1972) or to Teskey (1969) for figures explaining the terminology utilized.

DESCRIPTION

Stenotabanus (Aegialomyia) magnicallus (Stone)

Larva

Mature larva (See Fig. 1) 19-22 mm long; whitish with pale yellow-brown pubescent markings; very slender, widest near middle, maximum diameter 2.2 mm., moderately tapered anteriorly, broadly rounded posteriorly. Head capsule slender, dark brown, 2.3 mm long, 0.5 mm wide. Anal segment 0.8 mm long, about equal to basal diameter and evidently less than half the length of the preanal segment which slightly exceeds 2.0 mm in length. Respiratory siphon only 0.12 mm long, less than half its basal diameter. Dorsal tracheae sinuous, about 0.13 mm in diameter in anal segment, tapering gradually, but slightly anteriorly. Striations on all aspects of all segments, finely and evenly spaced at intervals of approximately 0.02 mm. Four pairs of pseudopodia present on each of the first 7 abdominal segments; pseudopodia lacking spines. Anterior pubescence encircles the thoracic and first abdominal segments is sparsely and irregularly present on next 2 or 3 abdominal

segments, absent from remainder; prothoracic annulus with paired lateral posterior extensions, meso- and metathoracic annuli lacking extensions. Pseudopodial pubescence encircles all pseudopodial segments and is united with anterior annulus dorsolaterally and ventro-laterally on first abdominal segment. Posterior pubescence encircles the last four (including anal segment) segments; faintly and irregularly present also on abdominal segments II or III-IV. Pubescence covers anal ridge and anal lobes. Midlateral pubescence absent from anal segment.



FIG. 1: Larva of *S. (A.) magnicallus*

Pupa

Pupa (See Figure 2) 13.5-15 mm long, nearly uniformly light yellow-brown. Callus tubercles nearly cylindrical, slightly tapered to truncate apex, laterally divergent, elevated 0.27 mm, bisetose. Antennal ridges partially divided into median and lateral portions by a shallow notch (more obvious in male); median portion ridged apically, rounded in anterior view, about 0.09 mm high and wide; lateral portions about same width as median, drawn out into an elongate thorn-like projection that is elevated 0.18 mm. Antennal sheaths slightly curved

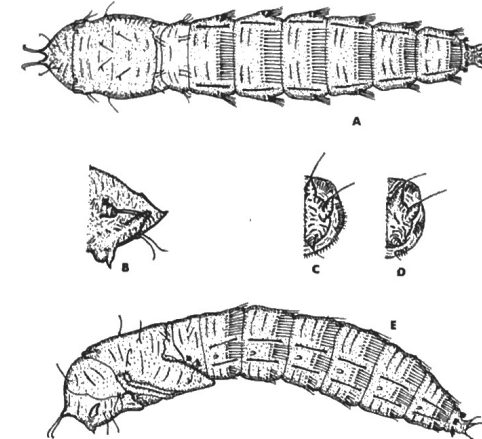


FIG. 2: Pupa of *S. (A.) magnicallus*: A. lateral view, B. left half of frontal plate, anterior view, C. right half of male aster, posterior view, D. right half of female aster, posterior view, E. dorsal view

posterodorsally, about 0.32 mm long and 0.21 mm wide, not reaching epicranial suture in either sex. All orbital and vertical tubercles conical. All setae of head region strong and elongate, exceeding 0.65 mm in length. Thoracic spiracle small, 0.2 mm long, nearly linear in dorsal view, bent sharply toward center at anterior end in lateral view. Spiracular prominence low, irregularly truncate anteriorly, not exceeding the anterodorsal margin of thorax. Mesothoracic setae on low conical tubercles, the setae about same length as those on head but a little more slender. Metathoracic setae about 1/2 length of those of the mesothorax and not tuberculate. Setae of abdominal segment I on low tubercles. Abdominal segments II-VII with biseriate fringes; anterior series reduced on anterior segments; both series reduced on venter. Spines of posterior series slightly overhang anterior edge of segment posterior to their bases, the lengths not noticeably increasing on posterior segments. Dorsolateral, lateral, and ventral or ventrolateral preanal combs present and composed of 6-8, 3-6, and 16-18 or 5-7 spines respectively. Dorsal, lateral, and ventral tubercles of aster 0.62, 0.48, and 0.55 mm long, respectively. All tubercles broad basally, sharply constricted over basal fourth to third so that apical 2/5 - 3/4 is spine-like.

DISCUSSION

Larvae of *magnicallus* would key to *Leucotabanus* Lutz in the generic keys furnished by Teskey (1969) and Goodwin (1972). They may be distinguished as follows: larvae of *magnicallus* bear paired caudal projections laterally from the anterior prothoracic annulus, the anal segment is less than half the length of the preanal segment, and the larvae inhabit damp sand along the coast whereas larvae of *Leucotabanus* have a single short caudal projection, or none, from the anterior prothoracic annulus, the anal segment is 2/3 the length of the preanal segment, and the larvae inhabit decaying wood and treeholes. Pupae would not readily key in either of the generic keys noted. They, along with pupae of *Chrysops* Meigen, are unique among known Nearctic Tabanidae in that the callus tubercles are bisetose. They can be separated from those of *Chrysops* as follows: pupae of *magnicallus* possess dorsolateral, lateral, and ventral or ventrolateral preanal combs and the spinous fringes of abdominal segments II-VII are biseriate whereas pupae of *Chrysops* lack dorsal and lateral preanal combs and spinous fringes are uniseriate.

It should be noted, however, that the single Neotropical species of the subgenus *Stenotabanus* Lutz for which the pupa is known (*S. (S.) maculifrons* Hine) also has the characters noted in the preceding paragraph *S. (A.) magnicallus* which suggests that the Nearctic species for the two subgenera may be difficult to distinguish morphologically.

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