


It is my pleasure to name this colorful species for Dr. D. A. Crossley, Jr. who has been a friend and confidant for many years.

TYPES: Holotype (♀), Allotype (♂) and 19 paratypes in alcohol, 6 paratypes on slides. Georgia, Habersham Co., Tallulah Falls, Tallulah Gorge, leaf litter, "March 1, 1981," D. Yehling, collector; "March 7, 1981," R. J. Snider, collector. South Carolina, Aiken County, Savannah River Plant, Road F near rail bridge, low mixed deciduous woods, marshy area, sweeping, "October 27, 1983; litter and black soil, same as above; Road 4 near junction of Road E, leaf litter, "October 27, 1983"; Road F near junction of Road 4, dry Turkey Oak and Sugar Maple forest, litter, "November 18, 1983"; Barnwell County, Road B at junction of Road C, grass next to roadside ditch, sweeping, "March 2, 1984", W. Hargrove, collector.

Special thanks are extended to the Savannah River Ecology Laboratory of the University of Georgia for support provided by contract EY-76-C-09-0819, NERP Program of the U.S. Department of Energy. This manuscript was reviewed by Dr. Kenneth A. Christiansen of Grinnell College, Dr. Peter F. Bellinger of California State University, Northridge and Dr. D. L. Wray of the Plant Protection Div., North Carolina Dept. of Agriculture. Their comments are very much appreciated.

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SMINTHURUS BIVITTATUS, NEW SPECIES FROM THE SOUTHEASTERN UNITED STATES (COLLEMBOLA: SMINTHURIDAE)

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ABSTRACT

A new species, *Sminthurus (Sminthurus) bivittatus* Snider, is described from the Savannah River Plant, Aiken, South Carolina, Florida and central Georgia. The species is closely related to *Sminthurus butcheri* Snider, *Sminthurus fitchi* Folsom and *Sminthurus packardi* Folsom. It can be separated from those three species on the basis of color pattern, position of colophore seta, presence of outer mucronal teeth, absence of subapical papilla on ANT.IV, and smooth, normal P seta of bothriotrix D complex. This species is commonly taken with *Sminthurus carolinensis* Snider in grass sweepings. The type locality is Barnwell County, South Carolina.

RESUMEN

Se describe una nueva especie de *Sminthurus* (*Sminthurus*) *bivittatus* Snider de la región de Savannah River Plant, en Aiken, Carolina del Sur, Florida y la zona central de Georgia. Esta especie se encuentra estrechamente relacionada con *Sminthurus butcheri* Snider, *Sminthurus fitchi* Folsom y *Sminthurus packardi* Folsom. Se puede separar de estas tres especies en base al patrón de color, la posición de las cerdas colóforas, la presencia de dientes externos mucronales, la ausencia de papilas subapicales en ANT. IV, y de cerdas P suaves y normales del complejo "bothriotrex D". Esta especie puede ser fácilmente coleccionada conjunto con *Sminthurus carolinensis* Snider en recogidas sobre yerba. La localidad tipo es el condado de Barnwell, Carolina del Sur.

During 1983 collections were made at the Savannah River Plant as part of a project to document the Collembola fauna. Many new species have been taken in the process. Here a new sminthurid is described from samples taken by sweeping grass with a shallow enamel pan.

Sminthurus bivittatus, NEW SPECIES

COLOR AND PATTERN (♀): Background creamy white to light olive. Dark pigments of green to blackish-purple laid down in dense polygons. Head with slightly rubiginous vertex, sometimes with a whitish center; gena with dark green polygons forming rosettes; setal sockets white to olive, otherwise green with scattered black-purple polygons. Antennal segments I, II and III with green and blackish polygons, segment IV uniformly dark. Body with rubiginous, olive and dark purple polygons forming a light mid-dorsal area, becoming darker ventrally; occasionally with white maculae near thoracic region; posterior half of great abdomen with a pair of olive to white stripes formed by pigment polygons; anal papilla very dark. Legs and furcula lighter, flecked with dark purple (Fig. 1-2).

HEAD: Eyes 8 + 8 with dark pigment; ocellus D $\frac{2}{3}$ diameter of B, ocellus C slightly larger than D, all others subequal (Fig. 3). Mean antennal ratio (♀) 1:2:2.75:6, (♂) 1:2:2.75:7, ANT IV with 17-18 subsegments (Fig. 4) double apical bulb present, subapical papilla absent (Fig. 5); subsegments with either 1 or 2 setulae as follows: I with none; II-IV with 1; VI-XVI with 2; XVII with 1 (Fig. 4); ANT III with 9 outstanding setae (Fig. 6), subapical sensillae in deep invagination, accessory seta short, lanceolate and lying in shallow depression (Fig. 7); ANT II with 4 ventral setulae (Fig. 8); ANT I with 2 ventral distal setae and 4 dorsal setae (Fig. 9). Interocular cephalic setae A-G typical of genus, seta D at least equal to diameter of nearest ocellus. Frons with 2 oval organs near antennal base, 1 close to D seta, other in line with A seta, 3 posterior oval organs forming right triangle on lower gena (Fig. 10). Maxilla with 3 galeal teeth, 4 lacineal lamellae (Fig. 11). FORELEG: Coxa with 1 seta, no oval organ (Fig. 12); trochanter with 3 anterior and 2 posterior setae (Fig. 13); femur with 9 anterior and 8 posterior setae, oval organ anterior (Fig. 14); anterior surface of tibiotarsus with 1 subapical oval organ, AE file with 9 setae, AL and AI files with 8 setae (Fig. 15); posterior surface with 4 oval organs near external edge, setae L3, L4, and L6 missing, tenent hair acuminate (Fig. 16); pretarsus with anterior and posterior setulae; unguis with tunica and serrate anterior and posterior pseudonychia, large inner tooth; unguiculus lacks corner tooth, tapering to subapical filament, subequal in length to filament (Fig. 17). MESOLEG: Coxa with 3 setae and oval organ (Fig. 18); femur with 12-13 anterior and 6 posterior setae, 1 posterior oval organ (Fig. 20); anterior surface of

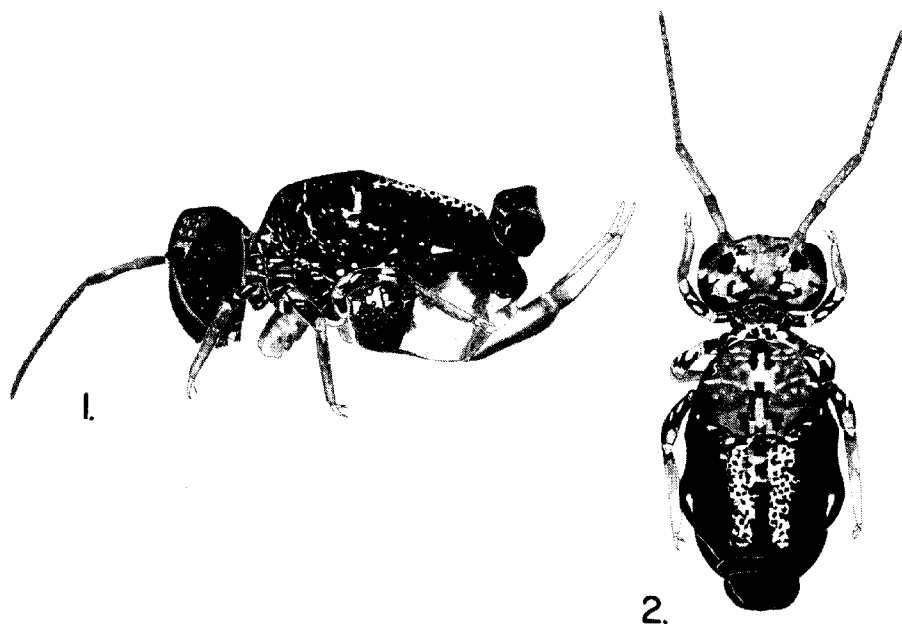


Fig. 1. *Smyinthurus bivittatus* n.sp. Habitus, lateral view. 2. Habitus, dorsal view.

tibiotarsus with 1 subapical oval organ, all setal files typical of genus (Fig. 21); posterior surface with 4 oval organs near external edge, L4 and L6 missing, otherwise typical of genus (Fig. 22); pretarsus with anterior and posterior setulae; unguis with tunica and serrate anterior and posterior pseudonychia, large inner tooth, unguiculus with strong corner tooth, lanceolate, ca. 1.70 times as long as filament (Fig. 23). METALEG: Coxa with 4 setae and oval organ (Fig. 24); trochanter with 5 anterior setae, 1 posterior setula, and 2 oval organs (Fig. 25); femur with 14 anterior setae, 3 posterior setae, 2 setulae and oval organ (Fig. 26); anterior surface of tibiotarsus with 7E, 9AE, AL and AI setae, 1 subapical oval organ (Fig. 27); posterior surface with 4 oval organs near external edge, 7PE, 8PL, 9PI setae and with L5 missing (Fig. 28); pretarsus with anterior and posterior setulae; unguis with tunica and anterior and posterior pseudonychia, large inner tooth; unguiculus with strong corner tooth (sometimes 2 (Fig. 29)), lanceolate, ca. 1.50 times as long as filament (Fig. 30). GREAT ABDOMEN: Collophore with 1 + 1 subapical setae (Fig. 31); sacs warty. Corpus of tenaculum with 4 setulae, ramus with 3 teeth (Fig. 32). Manubrium with 8 + 8 dorsal setae, 1 + 1 ventral (Fig. 33). Dens with ID accessory seta missing, sometimes V_{e8} present, otherwise typical of genus (Fig. 34-35). Mucro with toothed outer and inner edges, ca. 2.70 times length of its seta (Fig. 36). Female circumanal setae Ao-3, P and Q typical of genus (Fig. 37); subanal appendage acuminate and curved in lateral view, thick, bent ventrally (Fig. 38-39). Bothriotrix D complex typical, P seta smooth, acuminate (Fig. 40). Body setae long, slender, curving. Length up to 2 mm.

DIAGNOSIS: *Sminthurus bivittatus* Snider keys out in Stach (1956) nearest to *Sminthurus marginatus* Schott and *Sminthurus echinatus* Stach which have palmate female subanal appendages. In Christiansen and Bellinger (1981), *S. bivittatus* keys out to the *Sminthurus butcheri* Snider, *Sminthurus fitchi* Folsom, *Sminthurus packardi* Folsom complex. The following characteristics will separate *S. bivittatus* from those species.

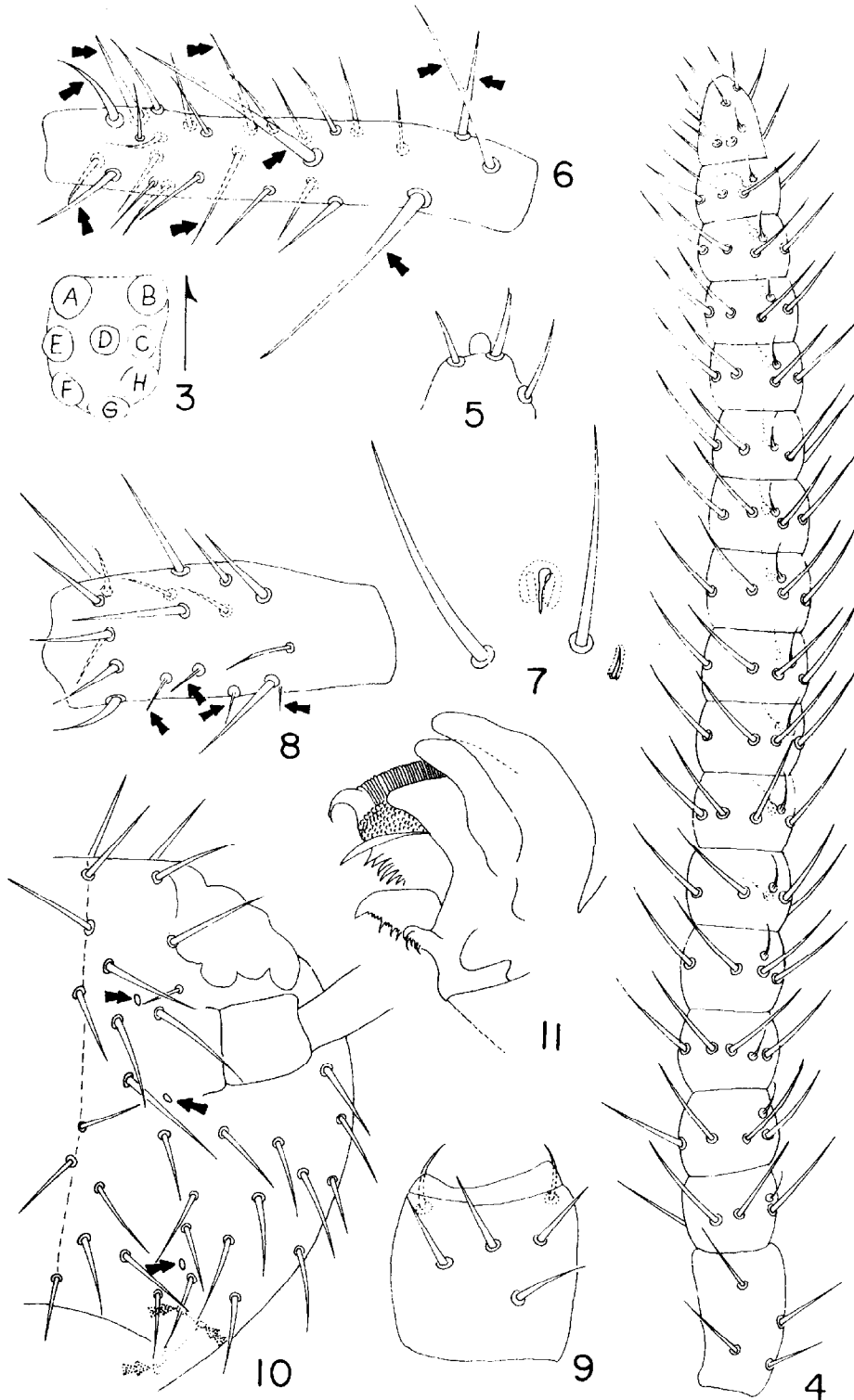


Fig. 3. *Sminthurus bivittatus* n.sp. left eye patch. 4. ANT IV; 5. ANT IV, apical bulb; 6. ANT III (arrows indicate stout setae); 7. ANT III, sense organ and accessory seta; 8. ANT II, (arrows indicate 4 setulae); 9. ANT I; 10. detail of frons (arrows indicate oval organs); 11. detail of maxilla.

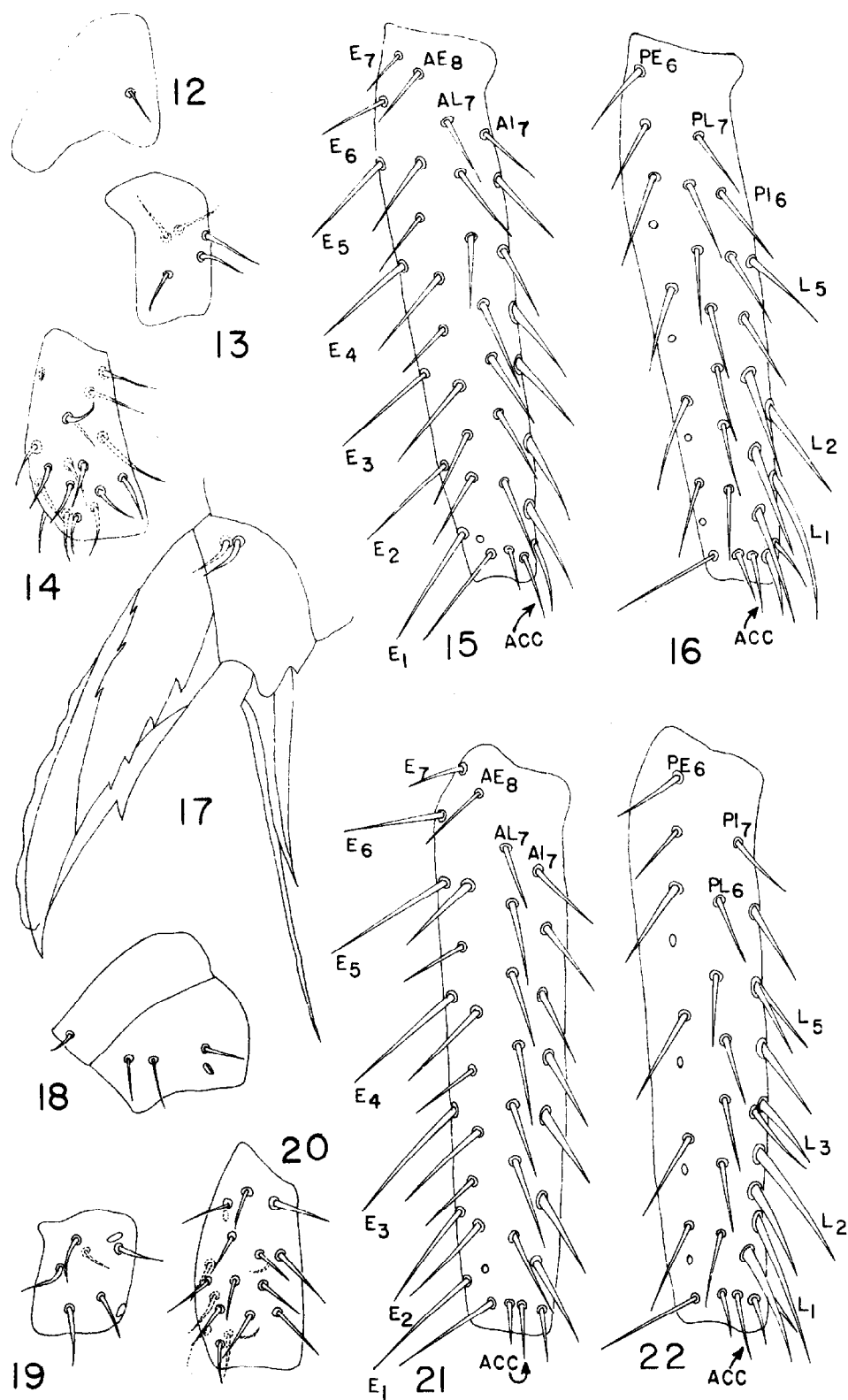


Fig. 12. *Sminthurus bivittatus* n.sp. forecoxa; 13. trochanter; 14. forefemur; 15. foretibia, anterior surface; 16. foretibia, posterior surface; 17. foreleg, claw; 18. mesoprecoxa and coxa; 19. mesotrochanter; 20. mesofemur; 21. mesotibia, anterior surface; 22. mesotibia, posterior surface.

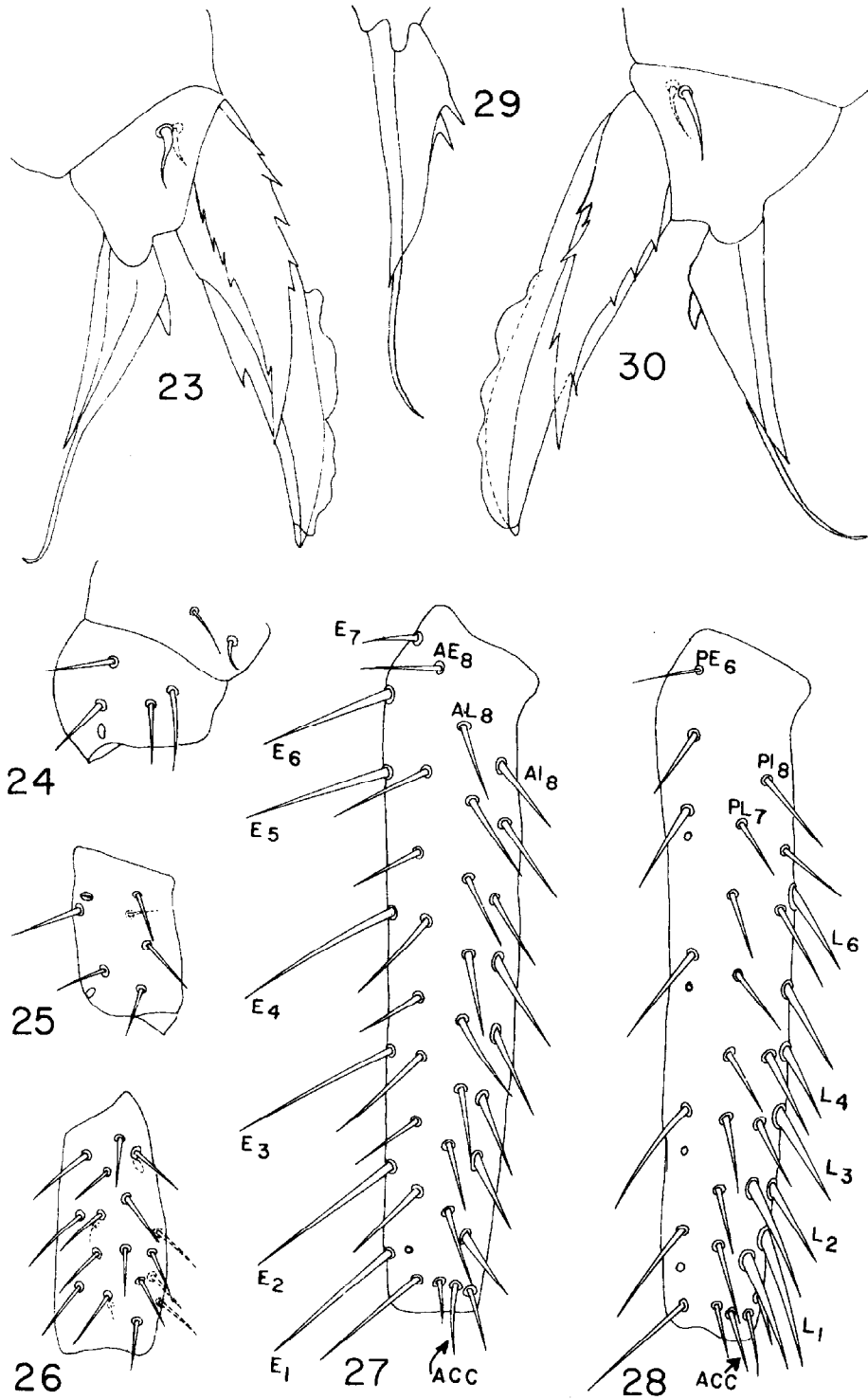


Fig. 23. *Sminthurus bivittatus* n.sp. mesoleg, claw; 24. metaprecoxa and coxa; 25. metatrochanter; 26. metafemur; 27. metatibiotarsus, anterior surface; 28. metatibiotarsus, posterior surface; 29. metaleg, unguiculus, 2 inner teeth; 30. metaleg, claw.

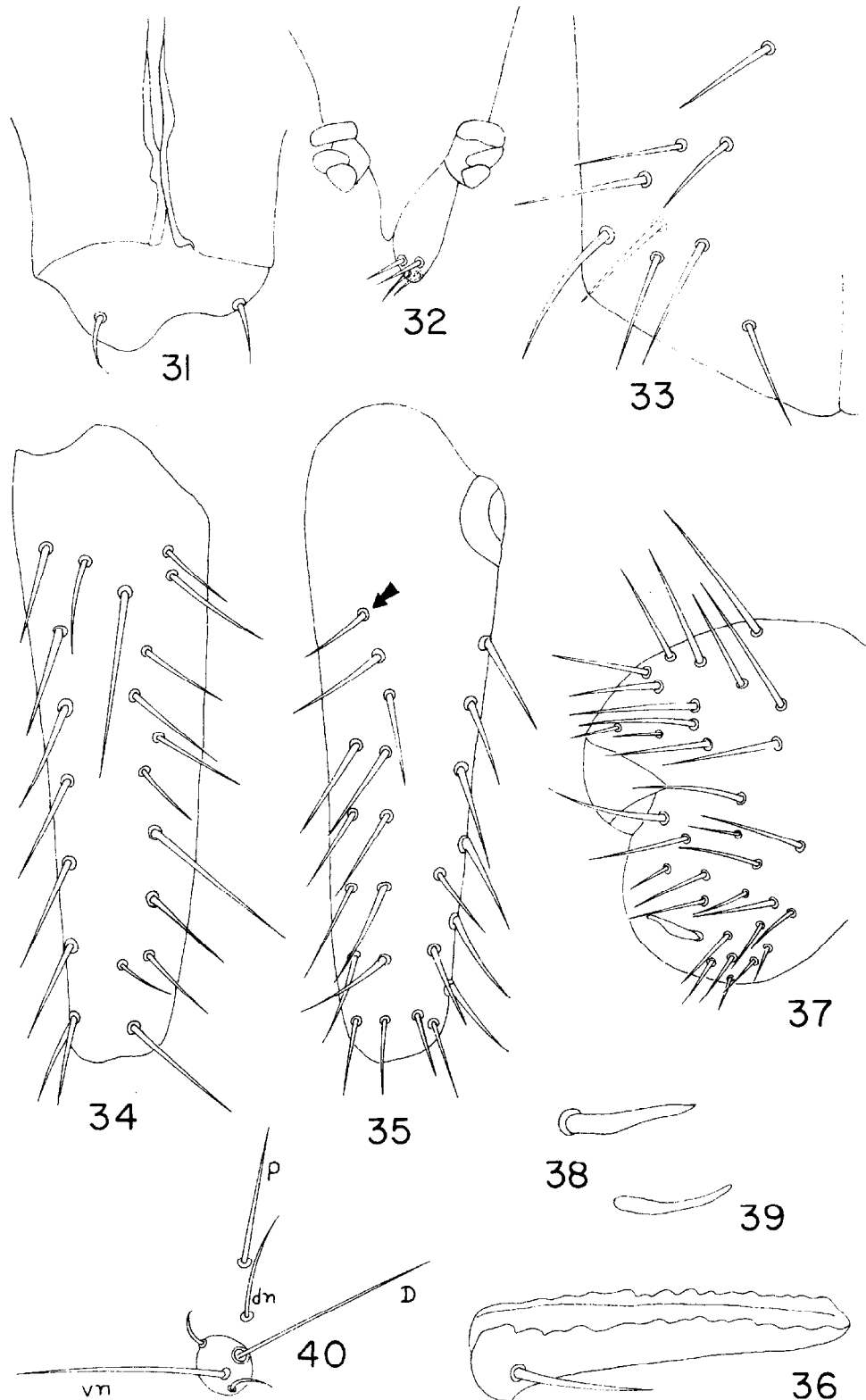


Fig. 31. *Sminthurus bivittatus* n.sp. collophore; 32. retinaculum; 33. manubrial setae; 34. dens, dorsal view; 35. dens, ventral view; 36. mucro; 37. female papilla; 38. female subanal appendage, dorsal view; 39. female subanal appendage, lateral view; 40. bothriotrix D complex.

<i>S. bivittatus</i>	<i>S. butcheri</i>	<i>S. fitchi</i>	<i>S. packardi</i>
Collophore without 1 + 1 lateral setae	with 1 + 1	with 1 + 1	with 1 + 1
Outer mucronal teeth present	absent	absent	sometimes
ANT IV apical papilla absent	present	present	present
Bothriotrix D, seta P smooth	ciliated	ciliated	ciliated

An additional species, *Sminthurus carolinensis* Snider (1981), could be confused with *S. bivittatus*. In general, both species are of equal size, have predominantly dark color patterns and occur in the same habitat. In the field, the white dorsal stripes of *S. bivittatus* will help distinguish it from *S. carolinensis*. Slide-mounted material can be separated quickly by comparing the mucrones. In *S. bivittatus* the mucronal edges are abundantly toothed, while *S. carolinensis* has 2-3 outer and 3-5 inner teeth.

Types: Holotype (♀) and 459 paratypes in alcohol; 8 paratypes mounted in CMCP-9 on slides. Holotype and 526 paratypes deposited in the Entomology Museum, Michigan State University; 20 paratypes in alcohol deposited in the Entomology Museum, the University of Georgia at Athens. Collection data: South Carolina, Aiken County, Savannah River Plant, Road 2, Power line cut, grass sweeping, "March 10, 1982"; Barnwell County, Savannah River Plant, Road F, grass sweeping, "March 10, 1981"; intersection of Roads A and B, roadside grass, Road A, roadside grass; near controlled stream on Road A, grass; junction of Road 9 and B6.2, short grass; Roads 9 and B, grass; Roads F and B (Dunbarton), grass around old concrete foundation; median at junction of Roads 7 and F, grass (type locality); junction of Road H and 7, grass; end of Road H at Par Pond, grass, "April 14, 1981", W. Hargrove, collector. Florida, Alachua Co., Gainesville, University of Florida campus, grass, "March 23, 1984", F. J. Calandrino, collector. Georgia, Putnam County, Oconee National Forest, Lake Sinclair, park site, grass sweeping, "May 25, 1982", R. J. Snider, collector.

Special thanks are extended to Dr. J. Whitfield Gibbons of the Savannah River Ecology Laboratory of the University of Georgia for his constant help in making field studies run smoothly. To Dr. D. A. Crossley, Jr. for providing equipment and laboratory space at the University of Georgia at Athens in the Department of Entomology. To William Hargrove, UGA graduate student, who has diligently collected the terrain of the Savannah River Plant for the last year. Without his help this new species would remain unknown. This study was supported by contract EY-76-C-09-0819, NERP program, between the U. S. Department of Energy and the Savannah River Ecology Laboratory.

This manuscript was reviewed by Dr. Kenneth A. Christiansen of Grinnell College, Dr. Peter F. Bellinger of California State University, Northridge and Dr. D. L. Wray of the Pesticide and Plant Protection Div., North Carolina Dept. of Agriculture. For their comments and help, many thanks.

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**DICYRTOMA (PTENOTHRIX) CASTANEA, NEW SPECIES
FROM THE SAVANNAH RIVER PLANT
(COLLEMBOLA: DICYRTOMINAE)**

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ABSTRACT

A new species, *Dicyrtoma (Ptenothrix) castanea* Snider, is described from South Carolina. It shares morphological characteristics with *Dicyrtoma (Ptenothrix) vittata* (Folsom) and *Dicyrtoma (Ptenothrix) renateae* n.sp. (Snider 1985). Separation of *D. castanea* from those species is accomplished by color pattern and presence of clavate subapical filaments on the unguiculi. The type locality is Aiken County, South Carolina, litter in low, mixed hardwood forest.

RESUMEN

Se describe una nueva especie, *Dicyrtoma (Ptenothrix) castanea* Snider, de Carolina del Sur. La misma comparte características morfológicas con *Dicyrtoma (Ptenothrix) vittata* (Folsom) y *Dicyrtoma (Ptenothrix) renateae* n.sp. (Snider 1985). *D. castanea* puede separarse de las especies anteriores mediante su patrón de coloración y la presencia de filamentos subapicales en forma de clavo en la unguícula. La localidad tipo es el condado de Aiken en Carolina del Sur, donde se encuentran en la hajarasca de bosques bajos y mixtos de madera dura.

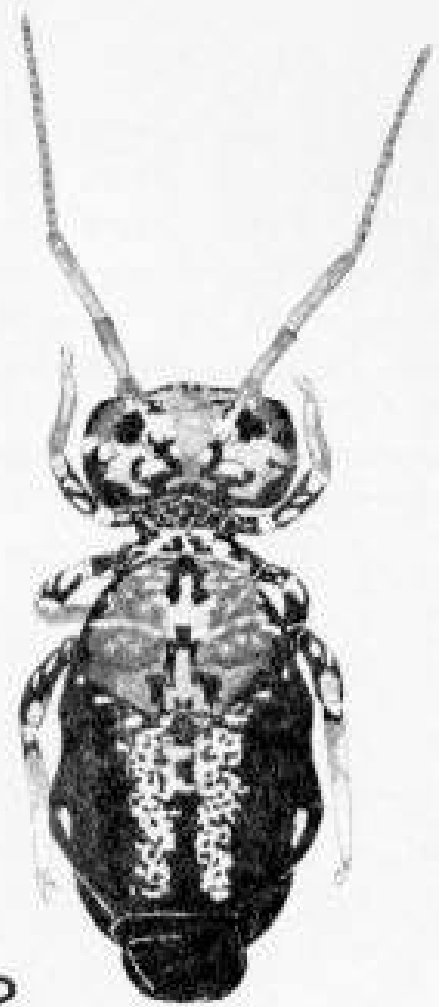
This paper is another in a series describing Collembola from the Savannah River Plant, Aiken, South Carolina. Since 1980 I have examined collections taken at the SRP for new distribution records. Many range extensions have been discovered and will be reported elsewhere. Here my purpose is to describe a new species of *Dicyrtoma*.

Dicyrtoma (Ptenothrix) castanea, NEW SPECIES

COLOR AND PATTERN (♀): Background creamy white with purple, tan and olive polygons of pigment. Head from between bases of antennae to vertex with light bluish, broken line; frons with black double macula between bases of antennae, polygons of olive-purple below antennal bases, lower frons with light dusting of olive; gena with light bluish dusting, becoming intense posteriorly. Body thoracic area with light dusting of bluish-purple, dorsum light purple, irregular, becoming light tan posteriorly; abdomen with lateral polygons of light tan, 3 broad areas lacking pigment; abdominal segment VI light tan-yellow bordered with purple; papilla of bothriothrix A dark purple; legs with light dusting of olive-purple; furcula colorless (Fig. 1 & 2).



1.



2.