Muchmore, W. B. 1980. A new species of *Apochthonius* with paedomorphic tendencies (Pseudoscorpionida, Chthoniidae). J. Arachnol., 8: 87-90.

A NEW SPECIES OF *APOCHTHONIUS* WITH PAEDOMORPHIC TENDENCIES (PSEUDOSCORPIONIDA, CHTHONIIDAE)

William B. Muchmore

Department of Biology
University of Rochester
Rochester, New York 14627

ABSTRACT

A new species, *Apochthonius knowltoni*, is described from southwestern Wyoming. It is apparently unique among pseudoscorpions in having some individuals intermediate in sexual characters between tritonymphs and adults.

INTRODUCTION

For many years Prof. George F. Knowlton, of Utah State University, has collected soil animals in the general area of northeastern Utah, southeastern Idaho and southwestern Wyoming. He has sent most of his pseudoscorpion specimens to me for study and for this I am most grateful. Of the five hundred collections of pseudoscorpions received from him, only one has contained members of the genus *Apochthonius*. These have been found to represent an unusual new species and are described below.

Apochthonius knowltoni, new species
Figs. 1-5

Material.–Holotype male (WM 3812.01001) and 5 paratypes (1 female, 1 tritonymph and 3 intermediate between tritonymph and adult) separated from litter of lodgepole pine and fir 10 miles SE of Smoot, Lincoln County, Wyoming, 7 August 1974, by G. F. Knowlton. Types are in the Florida State Collection of Arthropods, Gainesville.

Diagnosis.–An epigean species of *Apochthonius* generally similar to *A. occidentalis* but larger, carapace length 0.5-0.6 mm; base of coxal spines with well developed anterior spurs; and some individuals intermediate in morphology between tritonymphs and adults.

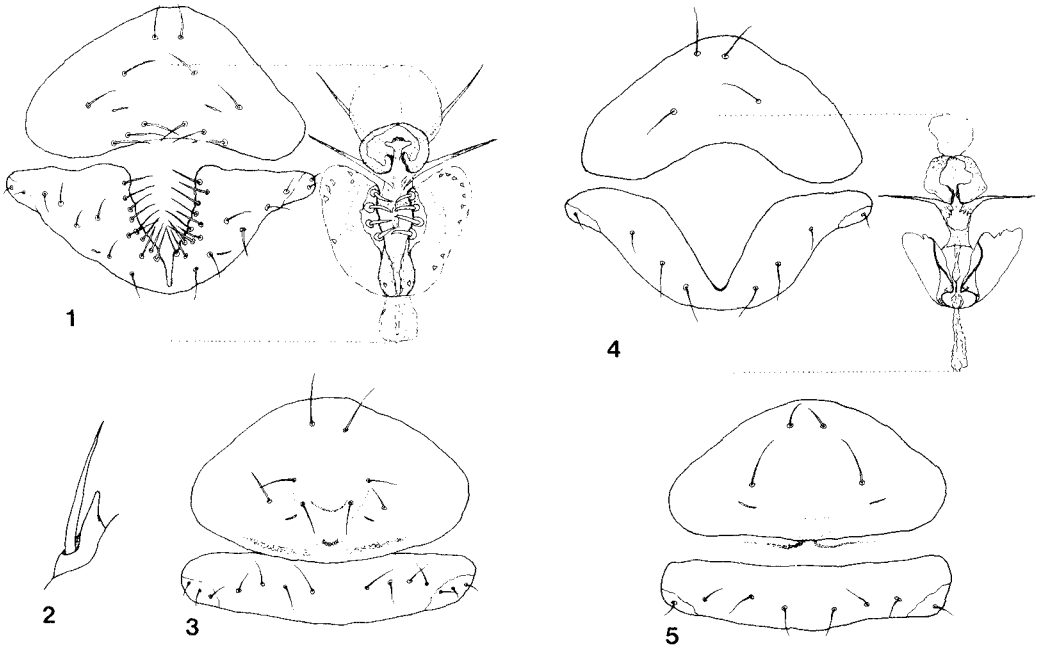
Description of male.–With the general features of the genus (see Muchmore and Benedict 1976). All sclerotized parts light tan. Carapace about as long as broad anteriorly,

narrowed toward posterior margin; with small, dentate epistome; four corneate eyes; chaetotaxy 8-4-4-2-4=22. Abdomen typical of the genus; tergal chaetotaxy 4:4:7:7:9:11:10:11:T2T2T2T:9:1T2T1:0: sternal chaetotaxy 12:[4-4]:(2)10-11/12(2):(3)8(3):mm9mm:m12m:14:16:16:T2T2T2T:0:2; internal genitalia as illustrated (Fig. 1). Coxal chaetotaxy 2-2-1:3-0-CS:2-3:2-3:2-3; each coxa I with three spinelike setae of the usual kind, their bases having well developed anterior spurs (Fig. 2); no intercoxal tubercle.

Chelicera 0.85 as long as carapace; hand with seven setae; flagellum of eight pinnate setae, the most distal one set far apart from the others; each finger with six or seven teeth, decreasing in size basally; no galea evident.

Palp typical; with femur 1.05 and chela 1.55 times as long as carapace; femur 4.85, tibia 2.1, and chela 4.85 times as long as broad; hand 1.65 times as long as deep; movable finger 2.1 times as long as hand. Trichobothria in usual positions. Fixed finger with 65 marginal teeth, all cusped except the basal four; movable finger with 58 teeth, only those in distal half cusped; no teeth conspicuously larger than adjacent ones. Movable finger with rounded sensillum on external surface midway between levels of trichobothria *st* and *sb*.

Legs typical; leg IV with entire femur 2.45 and tibia 4.0 times as long as deep; a long tactile seta on tibia and each tarsal segment of leg IV.



Figs. 1-5.–*Apochthonius knowltoni*, new species: 1, male genital opercula and internal genitalia; 2, a coxal spine showing anterior projection of base; 3, female genital opercula and genitalia; 4, genital opercula and internal genital structures of male intermediate form; 5, genital opercula and internal genital structures of female intermediate form.

Female.–Similar to male but slightly larger and more robust. Chaetotaxy of genital opercula and internal genitalia as illustrated (Fig. 3). Movable finger of chelicera with very low galea. Palp stouter than that of male: femur 4.4, tibia 1.9 and chela 4.5 times as long as broad.

Tritonymph.–Similar to adults but smaller and with reduced numbers of setae on some structures. Carapace with adult number of 22 setae. Tergal chaetotaxy 4:4:6:7:9:9:9:9:- ; sternal chaetotaxy 4:(1)6(1):(2)5(2):m7m:m7m:10:11:- . Movable finger of chelicera with a small but distinct galeal elevation. Only two coxal spines on each coxa I. Trichobothria *isb* and *sb* missing from fixed and movable fingers, respectively, as is usual. Fixed finger with 51 and movable finger with 44 marginal teeth; sensillum somewhat proximal to level of *st*.

Intermediate forms.–Similar to tritonymph in most respects, including size and proportions, possession of only two coxal spines on each side, possession of distinct galea, lack of trichobothria *isb* and *sb*, and number of teeth on chelal fingers. Differ from tritonymph and approach adults in development of internal genital apparatus, with distinctly male or female characteristics (Fig. 4 and 5).

Measurements (mm).–Adults (figures given first for holotype male, followed in parentheses by those for female). Body length 1.77(1.83). Carapace length 0.55(0.605). Chelicera 0.465(0.55) by 0.24(0.28). Palpal femur 0.58(0.615) by 0.12(0.14); tibia 0.295(0.30) by 0.14(0.16); chela 0.85(0.895) by 0.175(0.20); hand 0.28(0.31) by 0.17(0.205); movable finger 0.585(0.62) long. Leg IV: entire femur 0.54(0.58) by 0.22(0.235); tibia 0.40(0.42) by 0.10(0.105).

Juveniles (figures given first for tritonymph followed in parentheses by ranges for the three intermediates). Body length 1.47(1.26-1.46). Carapace 0.43(0.41-0.445). Chelicera 0.37(0.355-0.36) long. Palpal femur 0.41(0.38-0.40) by 0.105(0.095); tibia 0.22(0.215-0.22) by 0.12(0.115-0.125); chela 0.60(0.585-0.615) by 0.14(0.13-0.14); hand 0.21(0.19-0.215) by 0.14(0.13); movable finger 0.42(0.39-0.43) long. Leg IV: entire femur 0.37(0.36-0.385) by 0.15(0.15-0.155).

Etymology.–The species is named *knowltoni* in acknowledgement of George F. Knowlton's great contributions to biology in the Great Basin.

Remarks.–The partial development of sexual characters in these otherwise proper tritonymphs is apparently unique among pseudoscorpions although somewhat similar situations are known. Perhaps analogous but carried to the extreme is the condition in *Microbisium* Chamberlin, where mature males (rare) and females are generally tritonymphal in size and morphology (see Nelson, 1975). Also, Benedict and Malcolm (1978) report a somewhat similar situation in *Pseudogarypus bicornis* (Banks), where two specimens with adult genitalia are smaller than normal and have only three trichobothria on the movable chelal finger.

It is, of course, not known how widely spread through the present species are the paedomorphic tendencies. Only future collecting and study can show whether it is general or only a local aberration.

ACKNOWLEDGEMENTS

I am very grateful to George F. Knowlton for collecting and sending the specimens, and to Charlotte H. Alteri for preparing the illustrations.

LITERATURE CITED

Benedict, E. M. and D. R. Malcolm. 1978. The family Pseudogarypidae (Pseudoscorpionida) in North America with comments on the genus *Neopseudogarypus* Morris from Tasmania. J. Arachnol., 6: 81-104.

Muchmore, W. B. and E. M. Benedict. 1976. Redescription of *Apochthonius moestus* (Banks), type of the genus *Apochthonius* Chamberlin (Pseudoscorpionida, Chthoniidae). J. New York Entomol. Soc., 84: 67-74.

Nelson, S. Jr. 1975. A systematic study of Michigan Pseudoscorpionida (Arachnida). Amer. Midl. Nat., 93: 257-301.

Manuscript received May 1979, revised July 1979.