Pacific Insects Vol. 20, no. 1: 53-58 30 January 1979

A REVIEW OF THE GENUS *UCHIDANURA* WITH DESCRIPTION OF A NEW SPECIES (COLLEMBOLA: NEANURIDAE)

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Abstract: The taxonomic status of *Uchidanura esakii*, the genus *Uchidanura*, and the family Uchidanuridae is reviewed based on material from the type locality of *U. esakii*, type-species of *Uchidanura*. A new species of *Uchidanura* is described and *U. esakii* is redescribed. A key to the species of *Uchidanura* is given. *Uchidanura* is placed in the subfamily Pseudachorutinae (it was previously placed in the Neanurinae) and Uchidanuridae is considered a junior subjective synonym of Neanuridae.

The genus *Uchidanura* was erected by Yosii (1954) for the Micronesian *Achorutes esakii* Uchida, 1944. The genus, placed by Yosii (1954) in the Neanurini (i.e., Neanurinae sensu Massoud, 1967—species with the last abdominal segment apically bilobed) was briefly characterized by: 1) the presence of styliform mandibles and maxillae and 2) the presence of lateral finger-like projections (=paratergal lobes or elongations) on the head and body, with the exception of the first thoracic and last abdominal segments. It is important to note here that Yosii apparently did not examine types or additional material of Uchida's species and erected the genus based on the original description.

Salmon (1964), using Yosii's diagnosis and Uchida's original description, created the family Uchidanuridae for the genera *Uchidanura* (type-genus), *Prospinanura* Wray, 1952, and *Wrayella* Salmon, 1956.

Massoud (1967) in his monograph of the Neanuridae (i.e., Poduromorph Collembola with "sucking"-type mouthparts in which the mandibles lack the molar plate characteristic of the other Poduromorpha) regarded *Uchidanura, Prospinanura,* and *Wrayella* as insufficiently known taxa and excluded them from his treatment of the Neanurinae. In the same work, Massoud referred to the Uchidanuridae in the following way: "En plus, des familles telles que...ou Uchidanuridae basees sur des genres non valides, n'offrent aucun interet et sont depourves de sens."

I have recently had the opportunity to study some Collembola from Micronesia among which were 4 specimens of a species that evidently is *U. esakii* and 10 specimens of another closely related species described herein as new.

A detailed study of this material has resulted in the following conclusions regarding the taxonomic status of *U. esakii, Uchidanura,* and the family Uchidanuridae: 1) the genus *Uchidanura* should be regarded as valid but must be redefined because its original diagnosis was based on a misconception in Uchida's description; 2) since *Uchidanura* is here regarded as belonging to the family Neanuridae (a senior name), the name Uchidanuridae is con-

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sidered a junior synonym of Neanuridae; 3) *Uchidanura* is not a member of the subfamily Neanurinae but belongs to the Pseudachorutinae, because the last abdominal segment is not apically bilobed.

The evidence upon which these conclusions are based will be discussed in detail under the redescriptions of *Uchidanura* and *U. esakii*.

Morphological abbreviations used in this paper are as follows: Ant. 1, Th. 1, Abd. 1, etc.=1st antennal segment, 1st thoracic segment, etc; PAO=postantennal organ.

The specimens of *U. esakii* are in the collection of the Illinois Natural History Survey (INHS), and the types of *U. bellingeri*, n. sp. are deposited in the U. S. National Museum of Natural History (USNM), the Field Museum of Natural History (FMNH), Bishop Museum (BISHOP), and INHS.

GENUS **Uchidanura** Yosii

Uchidanura Yosii, 1954: 790; 1959: 17.—Salmon, 1964: 119, 296.—Massoud, 1967: 276, 346.

Type-species: *Achorutes esakii* Uchida, 1944: 3, by original designation by Yosii, 1954: 790.

Redescription: Pseudachorutinae, Pseudachorutini; Abd. 6 not bilobed apically. Antennae 4-segmented. Ant. 3-4 fused dorsally but more or less separated ventrally. Ant. 4 about 1.5 × longer than Ant. 3. Head with 3 darkly pigmented eyes on each side. PAO absent. Mandibles with 4 or 5 well developed teeth, maxillae styliform. Body with lateral elongations on at least Abd. 5. Furcula and tenaculum absent.

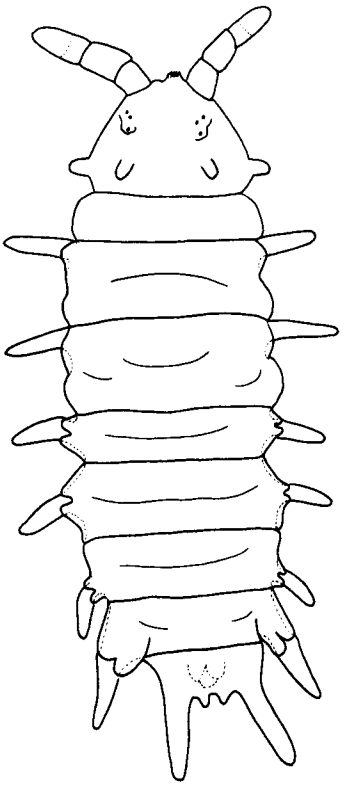
REMARKS. This description differs from that of Yosii (1954) and Salmon (1964) in several respects. The mandibles of my specimens of *U. esakii* are not styliform but bear 5 teeth, 4 of which are well defined (FIG. 9). Uchida apparently mistook the mandibles for some other inner structure of the buccal cone. This could easily have happened if he tried to study the mouthparts by focusing through the mouth cone instead of by dissection.

The postantennal organ is missing in all my specimens and the number of eyes is 3 + 3. Uchida states that the PAO is present and that the number of eyes is 2 + 2. I am convinced that Uchida mistook the first of the eyes for a postantennal organ. This is not difficult to do when one considers that the anterior pair of eyes is located on the anterior slope of the anterior cephalic lobe, and if the lobe is folded over the anterior eye, the latter could appear to be a postantennal organ. This would also explain Uchida's statement that the postantennal organ is equal in diameter to the anterior eye.

Uchidanura is very close to *Denisimeria* Massoud, 1964. The 2 genera can be separated by the following characters given in key form, which may be substituted for couplet 21, p. 153, of the key to the genera of Pseudachorutini in Massoud's monograph (1967).

21. Abd. 6 very elongated apically, forming a characteristic "tail;" mandibles with many teeth (ca 24-41); Ant. 4 about 4 × longer than Ant. 3; body (in alcohol) with abundant dark pigment....Malaysia, South Vietnam ..... **Denisimeria** Massoud

Abd. 6 not elongated; mandibles with few teeth (ca 4-5); Ant. 4 about 1.5 × longer than Ant. 3; color of body (in alcohol) cream-yellow....Micronesia (Ponape) ..... **Uchidanura** Yosii



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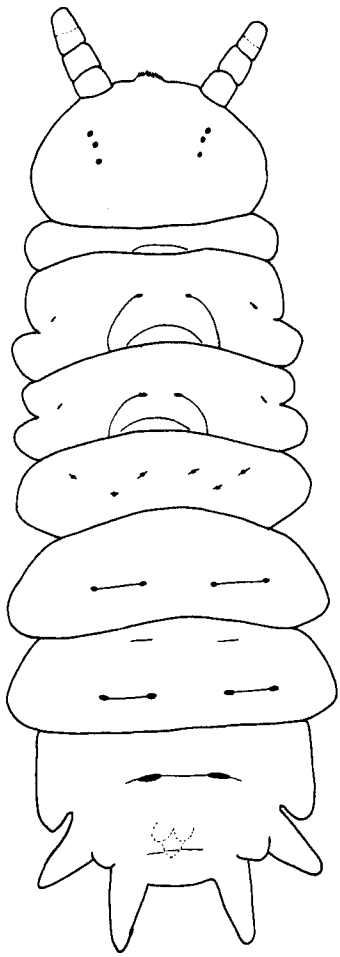

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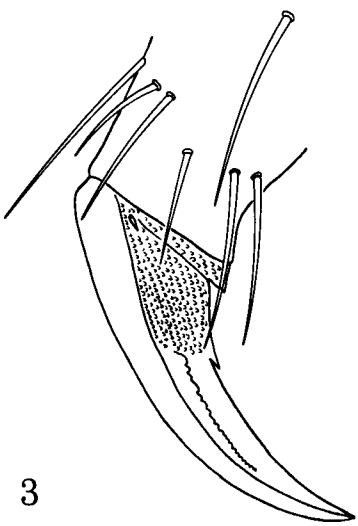

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FIG. 1-3. 1. *Uchidanura esakii*, habitus (setae present on body and lateral projections omitted). 2. *Uchidanura bellingeri*, n. sp., habitus. 3. *U. esakii*, structure of claw.

KEY TO SPECIES OF UCHIDANURA

1. Th. 2-Abd. 4 with lateral lobes (FIG. 1); mandibles with 5 teeth (FIG. 9); body length up to 4.0 mm; Ant. 4 somewhat apically pointed . . . . . **esakii** (Uchida)
   Lobes present only on Abd. 5 (FIG. 2); mandibles with 4 teeth (FIG. 6); body length up to 8.0 mm; Ant. 4 apically rounded . . . . . **bellingeri,** n. sp.

Uchidanura esakii (Uchida, 1944) FIG. 1, 3-4, 8-9

Achorutes esakii Uchida, 1944: 3.

Uchidanura esakii: Yosii, 1954: 790; 1959: 17. – Salmon, 1964: 296. – Massoud, 1967: 346.

Length: Body length exclusive of antennae, up to 4.0 mm.

Coloration: Specimens preserved in alcohol are cream-yellow throughout. No trace of dark pigment except for the ocelli, which are black. According to Uchida's original description, live specimens are bright red except for the eyes.

Habitus: General body facies as in FIG. 1 (see also Uchida 1944). Cuticle of body and appendages heavily secondarily granulated. Head bearing 2 pairs of lobes dorsally. Th. 1 lacks lobes. Th. 2-3 each with a pair of dorsolateral lobes. Abd. 1-4 each bear 1 pair of small dorsal lobes per side; a much longer lateral lobe beneath the small lobes. Abd. 5 with 2 pairs of long projections, outer pair much longer than inner pair. Abd. 6 hidden under Abd. 5, not bilobed, and bears no projections.

Antennae 4-segmented. Ant. 3-4 are fused dorsally but border between segments can be seen ventrally. Ant. 4 about 1.5 × longer than Ant. 3, with an obscure apical tri-lobed papilla. Dorsally, Ant. 4 has about 18 long smooth setae and 1 pair of smooth setae near base of segment. Ventrally, Ant. 4 has numerous smooth setae shorter than those on the dorsal side; ventral setae becoming even shorter towards apex of segment. Ant. 3 sense organ not located. *Head:* Head with 3 black eyes on each side, hindmost eyes located on top of front pair of cephalic lobes; front pair of eyes on each side placed close together and located on anterior slope of same lobe. PAO absent. Apical structure of mandibles and maxillae as in FIG. 8 and 9; outer tooth of the mandible very small. *Legs:* Legs short, sparingly clothed with long smooth setae. Unguis (FIG. 3) without outer or lateral teeth but with a well developed inner tooth which is shorter on prothoracic ungues. Unguiculus and tenent hair absent. Pretarsal setae present. *Abdominal appendages:* Furcula and tenaculum absent. *Chaetotaxy:* Dorsal body chaetotaxy as in FIG. 4. No setae were seen on the intersegmental areas.

MATERIAL EXAMINED. MICRONESIA: Ponape I: 4, Nett Distr, Nanpil, 25.II.1948, H. S. Dybas. Specimens in INHS.

REMARKS. Under the description of the genus above I mentioned 2 differences between the original description and my specimens; viz., the structure of the mandibles and the presence or absence of the postantennal organ. A 3rd difference should be discussed here. Uchida (1944, p. 3, fig. 2) illustrates a bilobed Abd. 6. My observations indicate that Abd. 6 is not bilobed and that the short lobes indicated in the referred figure are really the 2 short ventral lobes of Abd. 5. Hence, Abd. 5 bears 2 pairs of lobes, 1 dorsal and 1 ventral, and Abd. 6 is apically simple (see my FIG. 1). *U. bellingeri,* n. sp., described below, also bears 4 lobes on Abd. 5. See the key to the species of this genus for the diagnosis of this species.

Uchidanura bellingeri Mari Mutt, new species FIG. 2, 5-7

Length: Body length, exclusive of antennae, up to 8.0 mm.

Coloration: Body coloration in alcohol cream-yellow throughout, eyes black.

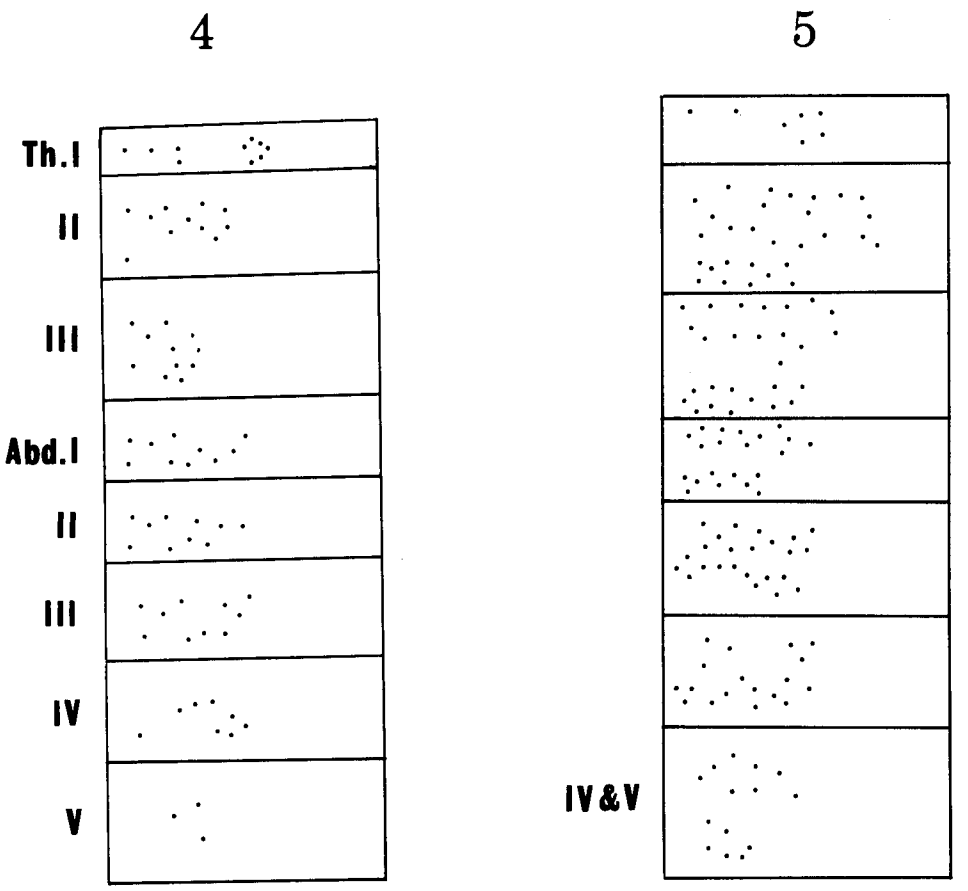

FIG. 4-5. 4. *U. esakii*, body chaetotaxy. Each dot represents a seta; setae of lateral lobes omitted. 5. *U. bellingeri*, n. sp., body chaetotaxy. Segment numbers as in FIG. 4 except as indicated.

Habitus: General body facies as in FIG. 2. Lobes homologous to those in *U. esakii* present only distally on Abd. 5, where there are 4, subequal in size. Abd. 6 hidden under Abd. 5, without projections.

Antennae 4-segmented. Ant. 3-4 fused to a larger extent than *U. esakii*, border between the 2 segments can barely be seen ventrally. Ant. 4 about 1.5 × longer than Ant. 3. Ant. 4 has many long smooth setae dorsally; setae shorter ventrally, especially very short and tightly packed towards apex of segment. Ant. 4 rounded apically. *Head* with 3 eyes on each side, none located atop lobes. Apical portions of mandibles and maxillae as in FIG. 6 and 7. Apparently mandibles are, at least apically, made up of 2 tightly pressed lamellae. Lateral tooth of mandible very well developed. *Legs:* Structure of the claws basically identical to *U. esakii*, inner tooth on the unguis is very well developed. *Abdominal appendages:* Furcula and tenaculum absent. *Chaetotaxy:* Dorsal body chaetotaxy as in FIG. 5, setae smaller than those in *U. esakii*. No setae seen on intersegmental areas.

Holotype (USNM), MICRONESIA: Ponape I: Mt Tamatansakir, 460 m, 23.III.1948, H. S. Dybas; paratypes: 4, same data as holotype (FMNH, INHS, BISHOP, USNM); 3, Mt Kupuriso, 330-460 m, 11.III.1948, Dybas (FMNH, INHS, BISHOP); 2, U Distr, Awakpa, 2.III.1948, Dybas (FMNH, INHS).

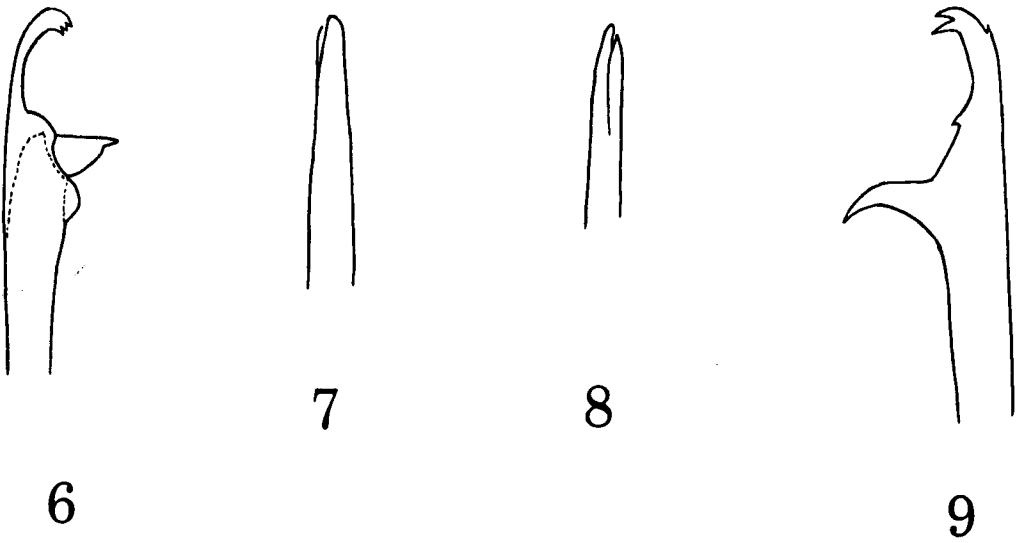

FIG. 6-9. 6-7. *U. bellingeri*, n. sp.: 6, apex of mandible; 7, apex of maxilla. 8-9. *U. esakii*: *8, apex of maxilla; 9, apex of mandible (note the small outer tooth).*

REMARKS. For a diagnosis of this species, see the included key. The exact boundaries of the body segments in both species treated here are difficult to determine precisely. For this reason, the chaetotaxic patterns presented should be regarded as tentative.

Uchidanura bellingeri is sincerely dedicated to Dr Peter F. Bellinger, a leading specialist on the Collembola. Dr Bellinger kindly studied some of the specimens upon which this study is based and offered many helpful comments.

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