

## REASSIGNMENT OF *ISOTOMA LOUISIANA* (COLLEMBOLA: ISOTOMIDAE)<sup>1</sup>

R.D. Waltz<sup>2</sup>

**ABSTRACT:** The holotype specimen of *Isotoma louisiana* was examined and found to be assignable to the genus *Isotomurus*. The species is distinct among all Nearctic species based on the tuberculate dentes, mucro with a unique ventral tooth, and a unique chaetotaxy. Comparisons and contrasts with other selected isotomid genera are made justifying its inclusion in *Isotomurus*.

The cosmopolitan hydrophilic genus *Isotomurus* Börner is readily distinguished among other Isotomidae by the combination of a quadridentate mucro, presence of long, specialized sensory setae known as bothriotricha, greater than ten ventral manubrial setae, and a characteristic maxillary outer lobe. The genus in North America is comprised of eight nominal species (Christiansen and Bellinger 1980), including this present species, and several species to be described in forthcoming work. In preparation for a review of Nearctic *Isotomurus*, I reviewed the holotype of *Isotoma louisiana* Scott and found it to be assignable to *Isotomurus*. The species is herein redescribed and newly combined as *Isotomurus louisiana* (Scott), n.comb. Some illustrations of the species were provided by Scott (1962); further comparative illustrations will be presented in the forthcoming revision of the Collembola of North America, north of the Rio Grande, by Christiansen and Bellinger (in press) and a review of Nearctic *Isotomurus* species (Waltz, MS). This species is unique among all Nearctic species based on its possession of tuberculate dentes and a strongly excavate ventrobasal projection ("ventral tooth") of the mucro.

### *Isotomurus louisiana* (Scott), NEW COMBINATION

**Description:** Yellow or green body color in most specimens, with or without strongly contrasting color patterns. Color pattern, when present, with medial and lateral longitudinal stripes and with or without banded posterior abdominal terga. Prominently patterned individuals may also possess a distinct ventral stripe medially on the ventral abdominal segments extending to Th II.

The holotype specimen possesses purple stripes, posterior abdominal bands and a ventral purple stripe medially on a yellow body. Specimens studied from Arizona are light green and without contrasting pattern. Specimens studied from Kansas are very similar to the type material but lack the ventral purple stripe.

Head: PAO less than or subequal to nearest eye. Eyes G and H smaller than remaining eyes. Outer lobe of maxilla with palp bifurcate and with four sublobal setae.

Thorax: Unguiculus without inner tooth. Unguis elongate, without teeth. Tibiotarsi of metathoracic legs without long, outstanding, exterior setae.

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<sup>2</sup> IDNR, Division of Entomology and Plant Pathology, 402 West Washington, Room W-290, Indianapolis, IN 46204.



Abdomen: ABD. V-VI without coarse ciliate macrochaetae; common body setae numerous and non-ciliate; bothriotricha of Abd. II-Abd. IV as 3+3+1 pairs; Abd. V S setae (terminology after Deharveng and Lek 1993): *accp 1* is absent, *accp 2*, *accp 3*, *accp 4*, and *accp 5* present, *as 1* and *as 2* are present and a third seta here designated as *as X* is present anterior to *as 1* and *2*; ventral tube with 12-22 lateral distal setae; tenaculum quadridentate (not as illustrated by Scott 1962: Fig. 2) with 12-25 setae; dentes tuberculate; mucro with mucronal basal seta and lamella, ventral mucronal tooth present, i.e., with excavate ventromucronal base.

**Known distribution:** Arizona, Kansas, Louisiana.

**Material examined:** (Academy of Natural Sciences, Philadelphia) Holotype (#107), on slide, "taken on water, shore of Lake Pontchartrain, approximately 15 feet above mean sea level, Norco, St. Charles Parish, Louisiana, 29-iii-1960, J.H. Eslinger." Label affixed ventrally: *Isotomurus louisiana* (Scott) n. comb. Det: R.D. Waltz 5/97. Additional material examined (Presently in the collection of K.A. Christiansen): AZ: NE of Parker, puddle at edge of Colorado River, 28-x-1986, P. Bellinger (7051). AZ: Pima Co., Santa Rita Mtns, Florida Saddle, SE Tuscon, 7-iii-1989, Olson (7193). KS: Leavenworth Co., 1 mile N Eudora, Kansas River, 8-ix-1988, (52-1-7,12), D.S. Hammer and L.C. Ferrington. KS: Douglas Co., (7072).

**Remarks:** This species, first described by Scott (1962), was deposited at the Collection of the Academy of Natural Sciences of Philadelphia (Scott 1962; Roback 1981). Bellinger (1985) reviewed the holotype specimen and reported the species as similar to "*Agrenia* (tuberculate dentes) and *Isotomurus* (abdominal bothriotricha)" but commented that it did not fit into any known genus. The location of the remainder of the paratype material cited by Scott (1962) is unknown.

This review of this "striking species" (Bellinger 1985) has resulted in reassignment of this species within *Isotomurus* rather than *Agrenia* Börner or another genus due to the following symmorph characters shared with *Isotomurus* species: 1) maxillary outer lobe possesses a bifurcate palp and four sublobal hairs (versus bifurcate palp and no sublobal hairs in *Agrenia*) (see Fjellberg 1984); 2) dentes lack the distal elongate setae found in all *Agrenia* species (see Fjellberg 1986, 1988); 3) presence of abdominal bothriotricha (found also in *Hydroisotoma* Stach, *Archisotoma* Linnaniemi, and other Isotomidae but not reported in *Agrenia*); 4) the characteristic *Isotomurus* quadridentate mucro (quite distinct from the mucro of *Agrenia*, *Archisotoma*, and *Hydroisotoma*); 5) claws that lack the distinct tunica of the unguis (present only in *Agrenia*); and 6) a manubrium with many ventral setae (few only in *Archisotoma*). That *I. louisiana* belongs in *Isotomurus* is strongly indicated by the above characters which are uniquely symmorph with *Isotomurus* and not shared in combination with other known genera characterized by the possession of abdominal bothriotricha (especially *Archisotoma* and *Hydroisotoma*) or with tuberculate dentes (*Agrenia*). As noted by Bellinger (*op cit*) *Isotomurus louisiana* differs from other previously described species in the genus by the tuberculate dentes (most *Isotomurus* species bear crenulate dentes; some bear only partially tuberculate dentes).



The combination of tuberculate dentes, the excavate ventral base of the mucro, and the Abd. V chaetotaxy is unique among European (see Deharveng and Lek 1993) and Nearctic *Isotomurus* species and provides the basis for diagnosis of this species.

Partially tuberculate dentes have been reported in at least one Palearctic species, *I. ciliatus* Stach. Several new species are pending description in the Nearctic including species with fully tuberculate dentes and partially tuberculate dentes.

Differences in dental structure have been found to be useful historically in justifying generic or subgeneric status (e.g., subgenera of *Proisotoma* Börner). For the present, elevation of this species and putatively related species bearing tuberculate or partially tuberculate dentes to a subgenus grouping appears to be clearly countered by the existence of intermediate dental types, and an absence of clearly autapomorphic chaetotactic states or other morphology relative to the type species of the genus, *I. palustris* (Müller).

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