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**The milliped family Trichopetalidae,
Part 2: The genera *Trichopetalum*, *Zygonopus* and *Scoterpes*
(Diplopoda: Chordeumatida, Cleidogonoidea)**

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Abstract

The genera *Trichopetalum* Harger, 1872, *Zygonopus* Ryder, 1881 and *Scoterpes* Cope, 1872 are revised. Illustrations are provided for all but one species, and distributions are mapped. The first known authentic chordeumatidan spermatophores are described for *Trichopetalum dux* (Chamberlin), 1940. The production of a sticky secretion from the bases of the segmental setae, possibly defensive in function, is also described. The **new subfamily Mexiterpetinae** is established for the genus *Mexiterpes* Causey, 1963; the remaining genera of Trichopetalidae are grouped in subfamily Trichopetalinae Verhoeff, 1914 (tribe Scoterpetini Causey, 1969, **n. syn.**). *Trichopetalum* consists of seven species, all surface-dwelling or troglomorphic: *lunatum* Harger, 1872, *uncum* Cook & Collins, 1895, *dux* (Chamberlin), 1940, *montis* Chamberlin, 1951, *stannardi* (Causey), 1951, ***dickbrucei* n. sp. and *jerryblatti* n. sp.** *Zygonopus* is resurrected from synonymy with *Trichopetalum*; it contains four troglomorphic species: *whitei* Ryder, 1881 (for which a **neotype** specimen is designated), *krekeri* Causey, 1960, *packardi* Causey, 1960 and *weyeriensis* Causey, 1960. *Scoterpes* likewise is made up entirely of troglomorphic species, including *copei* (Packard), 1881, *austrinus* Loomis, 1943, *nudus* Chamberlin, 1946, *ventus* Shear, 1972, *syntheticus* (Shear), 1972, *sollmani* Lewis, 2000, and the following new species: ***alabama*, *hesperus*, *jackdanieli*, *musicarustica*, *stewartpecki*, *tombarrri*, *tricornis* and *willreevesi***. It is likely that at least *S. copei* and *S. ventus* are “superspecies,” consisting of numerous genetically isolated populations, which await study with molecular and/or morphometric methods.

Key words: troglomorphosis, caves, karst, troglomorphy

Introduction

The milliped family Trichopetalidae, endemic to the eastern United States, eastern Canada, and northeastern Mexico, was redescribed in the first paper in this series (Shear 2003). That paper covered the genera *Trigenotyla* Causey, 1951, *Nannopetalum* Shear, 2003, and *Causeyella* Shear, 2003. The present and final installment treats the remaining genera in the family, *Trichopetalum* Harger, 1872, *Scoterpes* Cope, 1872, and *Zygonopus* Ryder, 1881.

Trichopetalum includes seven species of litter-dwelling millipeds that are sometimes collected in caves as troglomorphs or troglomorphs. The individual species may have surprisingly wide ranges, considering that the animals are small and intolerant of deviations from their apparent preferred physical conditions of 100% humidity and cool temperatures. *Trichopetalum lunatum* Harger ranges farther to the north from its southernmost records in West Virginia and Indiana than any other native milliped in eastern North America, except *Underwoodia iuloides* (Harger), 1972 (Caseyidae), with which it co-occurs, and few millipeds at all are found north of its stations in Newfoundland (Palmén 1952). *Trichopetalum uncum* Cook & Collins, on the other hand, reaches as far south as southern Mississippi, and west to the fringes of the Great Plains. Two new species, evidently with more restricted ranges, are named and described below.

The genus *Zygonopus* is here restored to independent status for reasons stated below. It had been considered (Shear 1972) a synonym of *Trichopetalum*. The four included species are highly adapted troglomorphs occurring in caves in Virginia and West Virginia.

Scoterpes also consists entirely of troglomorphic species; five have previously been described and nine new ones are named below. Species of *Scoterpes* are most common in the interior karst regions of Kentucky, Tennessee, and Alabama. To the north, their range crosses the Ohio River into southern Indiana, and at the southern end of the generic range, some species have made an “end run” around the southernmost ridges of the Appalachian Ridge and Valley Province and are found in Georgia and the Great Smoky Mountains National Park (Tennessee). Distribution of individual species of *Scoterpes* is highly variable. In the interior basins, where flat-lying limestone strata extend over considerable distances, *Scoterpes* species seem to be widespread, while those that have invaded the Ridge and Valley Province, where limestone strata are highly folded, and may be separated from each other by noncavernous rocks, have small ranges. It is possible (even likely) that the widespread species are in fact each complexes of cryptic species, an issue that can only be resolved by