

BRIEF NOTE

Some Exotic Terrestrial Isopods (Oniscoidea) from the Columbus Zoo Exploration Center, Powell, Ohio: Two New State Records¹

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ABSTRACT. Two species records for Oniscoidea in Ohio were noted during a survey of the isopod fauna of the Columbus Zoo Exploration Center. These were *Venezillo evergladensis* Schultz (Armadillidae) and *Trichorbina tomentosa* (Budde-Lund) (Squamiferidae).

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INTRODUCTION

On 28 March 1987, The Columbus Zoo Exploration Center was initially surveyed to determine the species of terrestrial isopods present. The Exploration Center, containing a public walk-through conservatory greenhouse designed to resemble a South American rainforest, at times houses small primates and exotic birds. The Exploration Center has two waterfalls, a fish pool, and an elevated wooden walkway. A variety of tropical and subtropical plants are planted directly into the ground. There are large (ca. 30-50 cm) stepping stones and a large rotting log on the lowest level. There is minimal plant debris on the open floor, but leaf litter and wood fragments lie under the elevated walkway. In many areas, low vegetation forms dense cover, effectively increasing humidity. The plants are watered on a daily basis. The result is a favorable habitat for various species of isopods and other soil arthropods.

MATERIALS AND METHODS

The present survey of the Exploration Center was conducted by sorting through litter and soil, especially that found under stones, pots, and logs. Seven species representing six families of Oniscoidea were collected. Before this survey, six families were known to occur in Ohio. Two of the species collected represent two new families for Ohio, bringing that total to eight. Four of the species are common isopods of European origin that can overwinter outdoors and are well established in Ohio. These were *Porcellio scaber* Latreille (Porcellionidae), *Cylisticus convexus* (DeGeer) (Cylistidae), *Armadillium vulgare* (Latreille) and *A. nasatum* Budde-Lund (Armadillidae). Identification of the isopods was based upon the use of references by Hatchett (1947), Eberly (1954), and Anonymous (1964).

RESULTS AND DISCUSSION

Three other species were known to occur on the zoo grounds, but not in the Exploration Center. These were *Trichoniscus pusillus* Brandt (Trichoniscidae), *Haplophthalmus danicus* Budde-Lund (Trichoniscidae) and *Trachelipus rathkei* (Brandt) (Porcellionidae). These species were recovered from the surrounding woodlands.

Also recovered was *Miktoniscus ohioensis* Muchmore (Trichoniscidae), which was first described from Congress Run, Hamilton County, OH (Muchmore 1964), and thus is probably cold hardy. This species was found in the Center's rainforest near the splash zone of one of the waterfalls and along its stream. Members of this genus typically inhabit moist to very wet habitats. This genus, along with the *Ligidium* spp. (Ligiidae), are considered endemic to Ohio.

The two remaining species are of tropical or subtropical American origin and are first records for Ohio. These are *Venezillo evergladensis* Schultz (Armadillidae) (Fig. 1a) and *Trichorbina tomentosa* (Budde-Lund) (Squamiferidae) (Fig. 1b).

Venezillo evergladensis was first described from South Florida (Schultz 1963). The members of this genus are among the best adapted of all isopods for rolling into the shape of a ball. It can be readily distinguished from the *Armadillidium* spp. by the structure of the telson and the uropods (Fig. 2). In *Venezillo*, the telson is broadly truncated and somewhat constricted in width near the middle (Fig. 2a). The basal segments of the uropods are broad and fill the spaces between the telson and the fifth pleonal segment. The endopodites are small and short, visible only in a ventral view of the body (Fig. 2b). The exopodites are rudimentary, sometimes very minute. In the *Armadillidium* spp., the basal uropodal segments are completely visible only from a ventral view (Fig. 2d). The exopodites are broad and fill the spaces between the telson and the fifth pleonal segment. The telson is somewhat triangular, tapering from base to a narrowly truncated apex (Fig. 2c). All five pair of pleopods have pseudotracheae in *Venezillo*, whereas in *Armadillidium* only the first two pair of pleopods are furnished with pseudotracheae. Mature *V. evergladensis* individuals are approximately 4-5 mm in length, about one-third to one-half the size of a mature *Armadillidium*. *Venezillo evergladensis* belongs to Group IIa of Van Name (1936), since it has a coxopodal sulcus which extends from one-quarter to one-third the length of the lateral margin of the first perionite. The species of *Venezillo* have comparatively weak limbs and poor powers of locomotion. Thus, most species tend to be locally distributed unless disseminated by some external factor, such as accidental introduction on plant stock, which doubtless is the case in this instance.

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Venezillo evergladensis was found in the drier soils under logs and stones of the conservatory. Sixteen individuals of various sizes were collected on the initial survey. Twenty-seven individuals were collected one month later on a subsequent visit.

Trichorbina tomentosa (Budde-Lund) of the family Squamiferidae belongs to a "most difficult group" (Van Name 1936). Their minute size, with an absence of striking characteristics, small differences of form between species, soft integument, and distortion in alcohol combine to make study difficult. To the casual observer, *Trichorbina* adults may be mistaken for the immatures of other species of Oniscoidea. Mature individuals are about 3-4 mm in length. *Trichorbina tomentosa* is uniformly white to yellowish-white in color, except for the gut, which is apparent through the translucent integument. The eyes consist of a single ocellus, and the flagellum of the antenna has two articles.

Trichorbina tomentosa was found in a wider range of soil moisture gradients than either *M. ohioensis* or *V. evergladensis*. Thirty-seven individuals were collected on the initial survey. It is doubtful either *T. tomentosa* or *V. evergladensis* could survive Ohio winters outdoors, and thus are probably restricted to greenhouses and similar

situations in this climatic zone. *Trichorbina tomentosa* is thought to have its origins in tropical South America (Van Name 1936).

After examination, the specimens of *M. ohioensis*, *V. evergladensis*, and *T. tomentosa* were cultured and at this date (January 1990) the colonies are well established. The Exploration Center has been surveyed several times subsequent to the initial investigation, but the author has failed to discover any other species of Oniscoidea present.

Other species of tropical and subtropical Oniscoidea probably exist in greenhouses in Ohio, but have yet to be discovered. Some isopods are synanthropic, thriving in disturbed habitats and man-made structures. Sutton (1980) lists exotic isopod species for Great Britain that have been found only in greenhouses such as at Kew Gardens. A few species have been described from those found initially in greenhouses, e.g. *Miktoniscus medcofi* (Van Name 1940). They are likely to be transported on plants and soil. Many may have been missed because of their small size and from a lack of interested parties.

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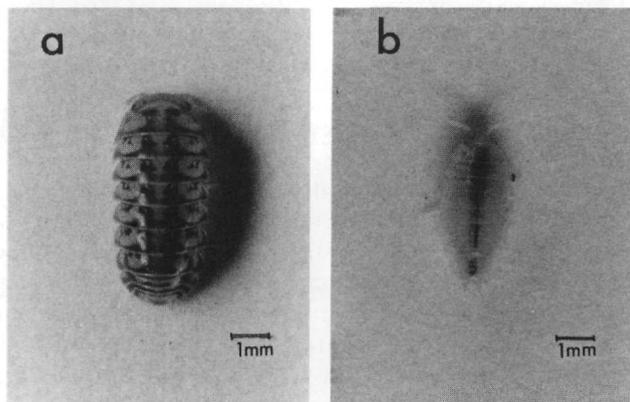


FIGURE 1. (a) Dorsal view of *Venezillo evergladensis* adult. (b) Dorsal view of *Trichorbina tomentosa* adult.

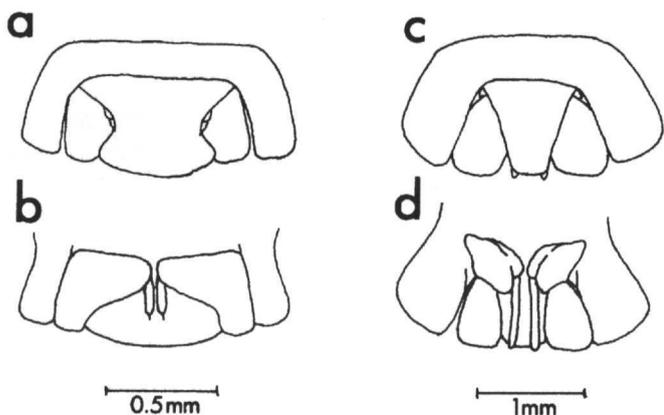


FIGURE 2. (a) Dorsal view of telson and uropods of *Venezillo evergladensis* (Armadillidae). (b) Ventral view of 2a. (c) Dorsal view of telson and uropods of *Armadillidium nasatum* (Armadillidae). (d) Ventral view of 2c.