

MYRIAPODOLOGICA



Virginia Museum of Natural History

Vol. 4, No. 5

ISSN 0163-5395

June 15, 1996

THE IDENTITY OF SCOLOPENDRA MARGINATA SAY (CHILOPODA: SCOLOPENDROMORPHA: SCOLOPENDRIDAE)

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ABSTRACT

Recent sampling at Picolata, St. Johns County, Florida, the probable type locality of *Scolopendra marginata* Say, produced specimens of the large scolopendromorph, *Hemiscolopendra punctiventris* (Newport) (Scolopendridae), with a "marginated" color pattern similar to that reported in the original description of *S. marginata*. Accordingly, we resurrect this name from the synonymy of *S. morsitans* L. and propose *Hemiscolopendra marginata* (Say), n. comb., as a senior subjective synonym for *S. punctiventris* Newport, syn. nov.! A neotype is designated for *S. marginata* and deposited in the invertebrate collection at the Virginia Museum of Natural History. A full synonymy is provided for *H. marginata*, along with a review of its nomenclatorial history and distribution.

A major difficulty attending the study of North American myriapods involves the identities of the older names. While true for many binomials proposed before 1900, the problem is particularly acute for those antedating the era of H. C. Wood, who published on these arthropods from 1861-1867 and whose monographs of Nearctic centipedes (1862) and myriapods collectively (1865) were the first comprehensive studies of this fauna. The latter was also the first illustrated work, with "wood cut" drawings of milliped gonopods and centipede legs and segments supporting the text. The exclusively verbal accounts in older publications typically contain few clues to a species' identity, and without anatomical illustrations, are useless for practical purposes. Compounding these difficulties are the frequent loss of type specimens and imprecise type localities, so it is virtually impossible to collect authentic topotypes. Many older names thus languish indefinitely as *nomina dubia* or *nomina inquirenda* until a flash of insight or an unexpected discovery enables resolution or determination of a precise type locality.

The most problematical name for North American scolopendromorph centipedes is *Scolopendra marginata*, proposed by Thomas Say in 1821 for specimens collected in Georgia and east Florida. The first representative of the Scolopendridae described by Say, *S. marginata* is the fourth oldest name for a North American scolopendrid, behind *S. morsitans* L., 1758, and *S. alternans* and *S. subspinipes*, both authored by Leach, 1815. *S. morsitans* and *subspinipes* are cosmopolitan, pantropical species and are not native to North America, although they are occasionally imported accidentally through commerce. While examining scolopendrids in museum collections, the second author has discovered a specimen of

morsitans captured in Pennsylvania and others of *subspinipes* from California, Texas, Florida, Pennsylvania, New York, and the District of Columbia, most carrying labels like "in mail sack from China," "in packing from the West Indies," and "from Venezuela in case of orchids." *Scolopendra alternans*, abundant in the Bahamas and northern Caribbean Islands, is common and presumably native in Dade and Monroe counties in south Florida. Consequently, *S. marginata* is the second oldest name for an endemic North American scolopendrid and therefore holds priority over all other Say names and those proposed by subsequent authors. Settling its identity and deducing junior synonyms thus become mandatory to advance the taxonomy of North American scolopendrids. The only meaningful identification clue in the original description is a reference to the tergal pigmentation pattern, which Say described as being "margined with dark green" and "margined each side and behind."

Unlike many older Nearctic myriapod names, the history of *S. marginata* is stable because of obscurity; most authors considered it a synonym of *S. morsitans*. After Say's publication of the name, Lucas (1840), Brandt (1841), and Gervais (1847) recognized *S. marginata*. However, Newport (1844, 1856) placed the name in synonymy under *S. morsitans*, action that was subsequently accepted by Wood (1862, 1865), Kohlrausch (1881), Bollman (1893), Kraepelin (1903), Attems (1930), and Bücherl (1942). The name appears to have been forgotten in recent years, and it is noteworthy that Crabill (1960) does not mention *S. marginata*, possibly indicating tacit acceptance of Newport's action.

The key factor in deducing the identity of *S. marginata* was inferring a precise type locality to enable collection of authentic topotypes. The original specimen(s) was/were collected in the winter of 1818 during a trip to Georgia and Florida by Say and others at the Academy of Natural Sciences, Philadelphia (Weiss & Ziegler 1931). The group traveled by carriage from Philadelphia to Charleston, then by boat to Savannah, and then by another boat through the "sea islands" of Georgia and into Florida. The expedition stopped at many islands in Georgia, spending 3-4 days on Cumberland Island while the boat was repaired. The naturalists then ascended the St. Johns River, Florida, to Fort Picolata, where they disembarked and traveled by foot to St. Augustine to present their passports to the Spanish Governor. He advised against further travel in Florida because of an Indian uprising, so they spent a few more days in the vicinity of Fort Picolata then left Florida, stopping briefly at Amelia Island. Consequently, only three definite localities are documented for this trip: Cumberland Island, Georgia, and Fort Picolata and Amelia Island, Florida. The type of *S. marginata* could have been taken elsewhere, but the greater time spent at these sites argues for one of them as the type locality, and a more informed decision is impossible today, 178 years later. The expedition seems to have spent more time in the St. Johns River/Picolata area (the fort no longer exists), which circumstantially may be considered a plausible site for selection as the type locality. It is also the best one to reinvestigate today, as Cumberland Island is only accessible by boat and is chiefly owned and managed by the National Park Service as a National Seashore, and Amelia Island is highly developed and urbanized. Picolata is on the St. Johns River along state highway 13 at the intersection of St. Johns county highway 208, about 25.6 km (16 mi) west of St. Augustine. Presently it is represented by several small houses and a historical marker.

Suspecting that the name *marginata* might have been based on a well-known, later-described southeastern centipeded, the first author began to collect at Picolata as early as 1958 in the hope of obtaining specimens matching the original account. These occasional visits were uniformly unproductive because search was directed to leaf litter rather than subcortical habitats, later discovered to be the biotope preferred by the species. With the benefit of this knowledge, a visit to Picolata on February 21, 1994 (around the same time of year that Say's party was there) was immediately successful. By looking under loose bark of downed trees and fallen limbs at riverfront access sites and slightly eastward, several specimens of the common southeastern scolopendrid currently known as *Hemiscolopendra punctiventris* (New-

port) were found and two were captured; a subsequent visit by the second author in December 1995 secured an additional specimen. In life, these individuals were light olive gray dorsally with broad bands of darker, slaty-gray pigmentation along the lateral and caudal tergal margins (Fig. 1); the pattern darkened considerably after a few hours in alcohol, the dorsum becoming uniformly dark greenish-gray without evident margination. The specimens are typical of *H. punctiventris* as traditionally defined, particularly in lacking the distoventral spur on the proximotarsi (Fig. 2), the key diagnostic generic feature distinguishing *Hemiscolopendra* from *Scolopendra*, which possesses the spur (Fig. 4). However, since the original margined color pattern conformed closely to Say's characterization of *S. marginata*, we believe the specimens are conspecific with those described by Say and qualify for designation as topotypes. Consequently, we propose *Scolopendra marginata* Say, 1821, as a senior subjective synonym for *Scolopendra punctiventris* Newport, 1844 (syn. nov.).

According to Bollman (1893), the type of *S. marginata* was sent by Say to Leach and deposited in the British Museum (Natural History), London, now known simply as The Natural History Museum¹. However, a thorough search by the curator in both the pinned and wet collections failed to produce the centipede, nor did he discover an individual from Florida mislabeled as "*S. morsitans*" that could represent Say's original type. To the best of our joint knowledge, no specimen of *marginata* has survived the loss of Say's collections to exist inconspicuously among some relictual pinned insects. In the absence of any known type material, we herewith designate one of our specimens as the neotype of *S. marginata* Say and deposit it in the invertebrate collection at the Virginia Museum of Natural History (VMNH).

The accompanying illustrations of the neotype show the general margined pattern of four midbody tergites (Fig. 1), a midbody leg lacking the ventrodiscal proximotarsal spur (Fig. 2), the caudal legs showing the ventral prefemoral teeth (Fig. 3), and a midbody leg, possessing the spur of *S. viridis* Say, described immediately after *S. marginata* (Fig. 4).

SYNONYMY

Hemiscolopendra marginata (Say), comb. nov.

Scolopendra marginata Say, 1821, Journ. Acad. Nat. Sci. Philadelphia, 2: 100. Type locality: "Southern States" without further details; Picolata, St. John's Co., Florida, here designated.

Type specimen: Say's material not known to exist; neotype (VMNH) from Picolata collected 21 February 1994 by R. L. Hoffman.

Scolopendra punctiventris Newport, 1844, Ann. & Mag. Nat. Hist., (1) 13: 100. Type locality: "Florida" without further details; "St. John's Bluff" suggested as possible provenance; holotype (BMNH). Pocock, 1895, Biol. Centr.-Amer., Chilopoda: 17. Syn. nov.!

Scolopendra inaequidens [nec Gervais 1847] Wood, 1863, Journ. Acad. Nat. Sci. Philadelphia, 5: 24 (specimens labeled "Illinois"); 1865, Trans. Amer. Philos. Soc., 12: 162. Syn. nov.!

Scolopendra woodi Meinert, 1886, Proc. American Philos. Soc., 21: 198. - Bollman, 1893, Bull. U. S. Nat. Mus., 46: 174. Syn. nov.!

Hemiscolopendra punctiventris: Kraepelin, 1903, Mitt. Naturh. Mus. Hamburg, 20: 217, et auct. seq.

The present resurrection of the name *marginata* as a senior synonym of *Hemiscolopendra*

¹ It is true that some Say specimens were donated or exchanged with Leach, but not even all of these were actual types. We refer to the ostensible types of *Julus lactarius* and *Geophilus rubens*, which, as the extant specimens show clearly, are not conspecific with the animals described by Say.

punctiventris provides an opportunity for a historical summary and justification of new synonymy resulting from this change.

Revisionary studies on Nearctic Scolopendromorpha being conducted by the second author have established that only three species of Scolopendridae are indigenous to the United States east of the Mississippi River, these being *Scolopendra alternans* Leach, which is restricted to southernmost Florida; *S. viridis* Say, ranging from eastern North Carolina to the south Florida Keys and westward to southern Nevada and southward to Panama (Attems, 1930; Chamberlin, 1921, plus unpublished records of the second author); and *H. marginata*, which is widespread in the Gulf Coast states from Florida to western Texas and extends northward to central Virginia and southern Indiana. This information permits the association of various names based on eastern scolopendrids with their correct senior synonym with some degree of confidence.

As noted above, the history of the name *marginata* is simple as the result of having been considered to be a junior synonym of *Scolopendra morsitans* by Newport (1844). Since these two species are so generally dissimilar, it is difficult to comprehend why somebody as familiar with chilopods as Newport might have united them. Even though Bollman (1893: 147) stated that the type of *marginata* "was sent to Dr. Leach and is now in the British Museum" there is reason to suspect that both this assertion and Newport's synonymy were both purely conjectural. Possibly Newport was influenced by Say's statement that *marginata* "is also found in the West Indies" (on what knowledge this statement was based we cannot surmise).

The unlikely combination of *marginata* and *morsitans* by Newport and the absence of any material of the former in the British Museum (confirmed by the failure of other museum staff members to mention *marginata* in any context) circumstantially support the idea that Newport worked only with Say's original description. Neither Gray (1844) nor Pocock (1895: 13 et seq.) referred to *marginata* in any context, the latter in particular being a careful student of American scolopendrids. It is also curious, that in studying the type material of his *Scolopendra punctiventris*, Newport did not see the relevance of Say's brief but diagnostic remarks about coloration of *marginata*, particularly since the holotype of *punctiventris* also came from Florida. While it is not possible to establish its exact provenance, large quantities of natural history material were sent to the British Museum in the early 1800s by Edward Doubleday, who labeled many of his specimens "St. John's Bluff". There is no way to determine the location of this bluff on the St. Johns, but the town of East Palatka is so situated on the eastern bank of the river in Putnam County. A specimen of *marginata* (California Academy of Sciences, San Francisco) was taken in East Palatka on 16 July 1953 by E. S. Ross. If E. Doubleday could be confirmed as collector of the type of *punctiventris*, the proximity of the type localities of the two names under discussion (32 km/20 mi) would provide still another reason for considering them as synonymous.

For unknown reasons, Gervais (1847: 277) did not accept Newport's disposition of *marginata* and retained it as a valid species. In 1842, he had visited the British Museum to study myriapod material, and perhaps, failing to find anything labeled *marginata* (even mixed in with specimens of *morsitans*) made his own evaluation of Say's description. This perceptive treatment was not generally followed, and the Newportian concept was perpetuated in, e.g., works by Wood (1862); Bollman (1893), and Kraepelin (1903). The name *marginata* was not mentioned by Pocock in the *Biologia* (1895) nor in a brief review of North American scolopendromorphs by Crabill (1960). Considering that *S. morsitans* has never established a viable population following accidental introduction into American port cities, it is curious that nobody questioned its presence (as *marginata*!) in a remote part of Florida and at a time long before the introduction of tropical animals by commerce became commonplace. Wood (1865: 161) touched on this point in his remark "I have quite a number of *Scolopendrae* from George and East Florida, but there is not a specimen of *S. morsitans* among them". He

did not however resurrect *marginata* from its synonymy.

The name *Scolopendra inaequidens* Gervais (1847: 277) was inadvertently involved with *marginata* by Wood (1865: 162) who considered specimens from "Illinois" and "Massachusetts" to conform to Gervais' description despite the vast difference in size. Meinert (1886: 198) restudied Wood's material and, finding it to be different from *inaequidens* (which in turn he considered to be a synonym of *S. alternans*), proposed the new name *Scolopendra woodi*.

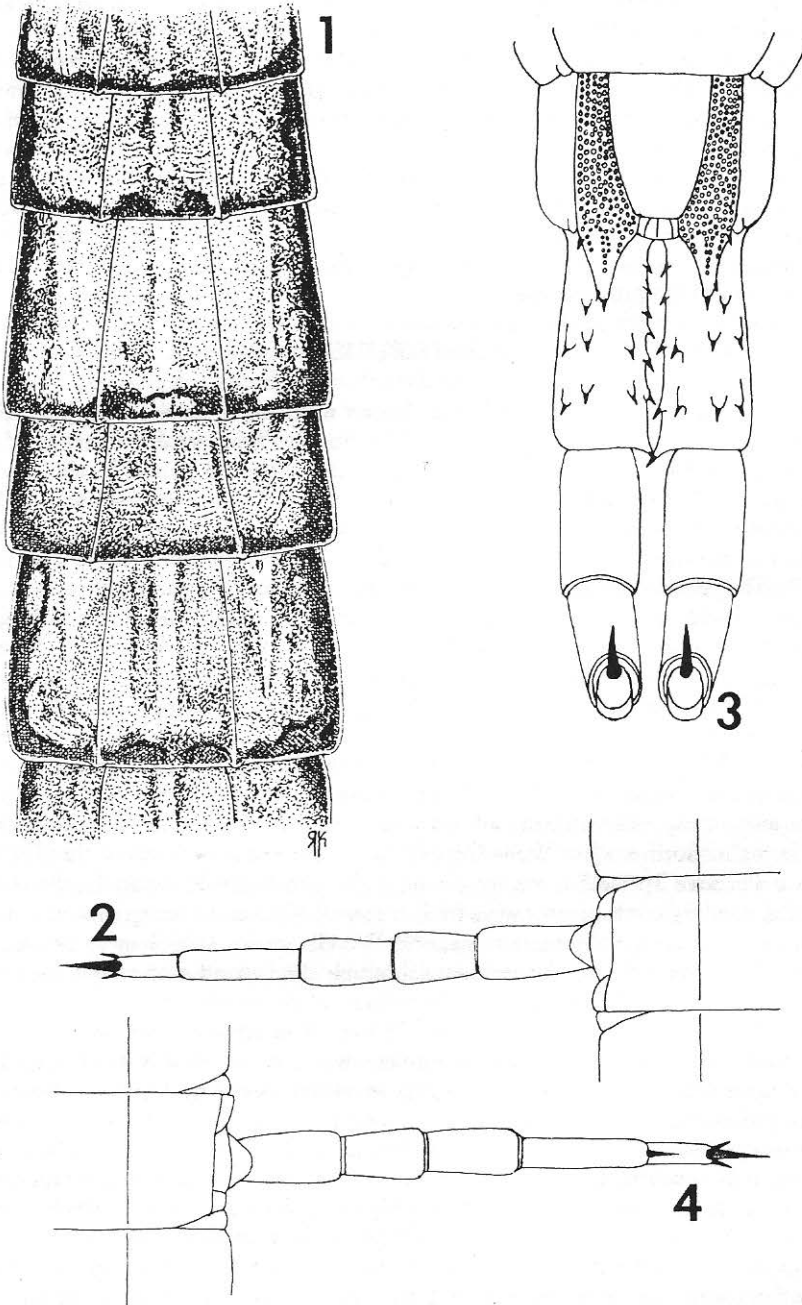
Wood (1865: 160) believed that *S. punctiventris* was a synonym of Say's *S. viridis*, in which he was uncritically followed by both Meinert and Bollman. Pocock (1895: 17) developed a different concept of *viridis* and restored *punctiventris* to specific rank as the senior synonym of *woodi*. This status and synonymy became universally accepted and has persisted down to the present time.

DISTRIBUTION

Hemiscolopendra marginata is widespread over much of unglaciated forested region of southeastern United States except for the Blue Ridge Physiographic Province. It occurs statewide in Florida, although it has not been recorded from the south Florida Keys (Shelley & Edwards, 1987), in the Piedmont Plateau and Coastal Plain of North Carolina (Shelley, 1987), in the Cumberland Mountains and south of the James River in the Piedmont and Coastal Plain of Virginia (Hoffman, 1994), and in the southern tip of Illinois (Summers et al., 1980). The general northern range limits are the James River in central Virginia, just north of the Ohio River in southern Ohio, Indiana, and Illinois, and the northern periphery of Arkansas; the northernmost locality is Bloomington, Monroe County, Indiana. Westward it extends onto the Edwards Plateau and the eastern part of the Chihuahuan Desert in central and western Texas, where it inhabits forests at high elevations, as opposed to the arid desert floor. The westernmost record is in Persidio County, west of Big Bend National Park (Shelley, unpublished data); we have not seen any specimens from Mexico, but Pocock (1895) cites the species from Tamaulipas (Tampico) and Guerrero (Omiteme). These localities are incompatible with the known distribution in Texas (the southernmost known locality being in northern Jim Wells County ca 200 km/125 mi north of the Rio Grande) and since Pocock's specimens no longer exist the ostensible Mexican localities must be discounted pending confirmation with fresh material. Neither *H. marginata* nor the family Scolopendridae occurs in Massachusetts, and Wood's record (1865) must be based either on a mislabeled or introduced specimen (although the second author has seen no such centiped in any American repository).

In parts of the Atlantic and Gulf Coastal Plains, *H. marginata* is sympatric and syntopic with *S. viridis*, and living specimens of the former are easily recognized by their sluggish habits, as they remain stationary or move only slowly when uncovered, and by their slaty-gray terga bordered with darker greenish-gray; *S. viridis*, however, is swift, rapidly moving to cover, and is subuniformly green dorsally in color. The behavior of the two when exposed are more striking than their colors. Collectors discovering *H. marginata* typically have time to open a jar and reach for forceps, but they must be ready in advance for *S. viridis*, which flashes away the instant it is revealed. Both species occur preferentially under the loose bark of downed pines, but *H. marginata* also frequently invades human habitations and bites the occupants.

Color varies geographically in both centipeds, but it is nevertheless a reliable determinant in all areas except central and western Texas, where both species and *S. polymorpha* Wood (which is also sympatric in this state) exhibit yellowish terga with darker, bluish to grayish bands along the caudal tergal margins. In Virginia and North Carolina, the legs, antennae, and tergal margins of living *H. marginata* are almost invariably either subuniformly blue or gray with a distinctly blue tint, whereas Floridian individuals exhibit dull gray and green pigmen-



Figs. 1-3, *Scolopendra marginata*, neotype. 1, pigmentation pattern of tergites 9-12, dorsal view. 2, midbody leg and sternite, ventral view. 3, ultimate legs and sternite, ventral view. Fig. 4, *Scolopendra viridis* from Monroe County, Florida, midbody leg and sternite, ventral view.

tations. *Scolopendra viridis* in these areas is a brighter and deeper green dorsally, and at the northern range extremity in southeastern North Carolina, most specimens possess a lighter, yellowish, dorsolateral stripe. Discolored, preserved specimens of *H. marginata* are readily distinguished by the absence of the ventral spur on the proximotarsi that is present in all species of *Scolopendra* (compare Figures 2 and 4).

GENERIC POSITION

Hemiscolopendra was proposed for five species including *punctiventris*, no type species was indicated and apparently the first designation was by Attems, 1929, who selected *punctiventris*. Although the information given in Kraepelin's treatment suggests that the genus is monophyletic, the biogeographic incongruity of one species endemic in southeastern United States and four others in southern South America is so remarkable as to invite a re-examination of their relationships. In the case of eventual partition, the generic name would still remain with *marginata*, denominating a monotypic Nearctic genus.

ACKNOWLEDGEMENTS

We thank Paul Hillyard, for searching for the type of *S. marginata* in The Natural History Museum, London, and Renaldo G. Kuhler, scientific illustrator at the North Carolina State Museum of Natural Sciences, who prepared figures 1-4.

LITERATURE CITED

- Attems, Carl G. 1930. Myriapoda 2. Scolopendromorpha. Das Tierreich, 54: 1-308.
- Bollman, Charles H. 1893. The Myriapoda of North America. Bull. No. 46, U. S. Natl. Mus., 210 pp.
- Brandt, J.-F. 1841. Observations sur les espèces qui composent le genre *Scolopendra* suivies des caractères des espèces qui se trouvent dans le Museum Zoologique de l'Académie des Sciences de St.-Petersbourg, et quelques coups d'oeil sur leur distribution géographique. Bulletin Scientifique Academie Impériale des Sciences de St.-Petersbourg, 5: 53-70.
- Bücherl, Wolfgang. 1942. Catalogo dos Quilopodos da Zona Neotropica. Mem. Inst. Butantan, 15: 251-372.
- Crabill, Ralph E. 1960. A new American genus of cryptopid centipede, with an annotated key to the scolopendromorph genera from America north of Mexico. Proc. U. S. Natl. Mus., 111: 1-15.
- Gervais, Paul. 1847. Myriapodes. In: M. Le Baron Walckenaer and P. Gervais, eds., Histoire naturelle des Insectes. Aptères (Suites a Buffon). Roret, Paris. 4: 1-333, 577-599; Atlas Plates 37-45.
- Gray, John Edward. 1844. List of the specimens of Myriapoda in the collections of the British Museum. Printed by order of the trustees, London. 15 pp.
- Hoffman, Richard L. 1994. The centipeds (Chilopoda) of Virginia: a first list. Banisteria, 5: 20-32.
- Kohlrausch, E. 1881. Gattungen und Arten der Scolopendriden. Arch. Naturg., 47: 50-132.
- Kraepelin, Karl. 1903. Revision der Scolopendriden. Mitt. Natur. Mus. Hamburg, 20: 1-276.
- Leach, William E. 1815. A tabular view of the external characters of four classes of animals which Linné arranged under Insecta; with the distribution of the genera composing three of these classes into orders, etc. and descriptions of several new genera and species. Trans. Linn. Soc. London, Ser. I, 11: 306-400.
- Linnaeus, Carl. 1758. *Systema naturae*, Vol. I, ed. 10, 824 pp.

- Lucas, M. 1840. *Histoire Naturelle des Crustacés, des Arachnides, et des Myriapodes*. P. Dumenil, ed., Paris, 600 pp.
- Meinert, F. 1886. Myriapoda musei Cantabrigensis. Part I. Chilopoda. Proc. Amer. Philos. Soc., 21: 161-233.
- Newport, George. 1844. Monograph of the Class Myriapoda, Order Chilopoda; with observations on the general arrangement of the Articularia, Parts 1 and 2. Trans. Linn. Soc. London (1844), 19: 265-302, 349-439.
- 1856. Catalogue of the Myriapoda in the collection of the British Museum, Part I. Chilopoda. British Museum (Natural History), London, 96 pp.
- Pocock, R. I. 1895-1910. Chilopoda & Diplopoda, in: *Biologia Centrali-Americana*. Taylor & Francis, London, 217 pp.
- Say, Thomas. 1821. Descriptions of the Myriapodae of the United States. J. Acad. Nat. Sci. Philadelphia, 2: 102-114.
- Shelley, Rowland M. 1987. The scolopendromorph centipedes of North Carolina, with a taxonomic assessment of *Scolocryptops gracilis peregrinator* (Crabill) (Chilopoda: Scolopendromorpha). Florida Entom., 70: 498-512.
- Shelley, Rowland M. & G. B. Edwards. 1987. The scolopendromorph centipedes of Florida, with an introduction to the common myriapodous arthropods. Fla. Dept. Agric. Cons. Serv. Circ. No. 300, 4 pp.
- Summers, Gerald, J. A. Beatty, and Nanette Magnuson. 1980. A checklist of Illinois centipedes (Chilopoda). Great Lakes Entom., 13: 241-257.
- Weiss, Harry B. & Grace M. Ziegler. 1931. *Thomas Say, Early American Naturalist*. Charles C. Thomas Co., Baltimore, 260 pp.
- Wood, Horatio. C. 1862. On the Chilopoda of North America, with a catalogue of all the specimens in the collection of the Smithsonian Institution. J. Acad. Nat. Sci. Philadelphia, Ser. 2, 5:2-52.
- . 1865. The Myriapoda of North America. Trans. American Philosoph. Soc., 13:137-248.

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