

University of Queensland, for the use of laboratory facilities and encouragement in many ways; to Dr. John Pearson, Reader in Parasitology, for furnishing laboratory-reared snails and help in many other ways; and to Jim Davie for assistance in collecting fish.

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A New Leech, *Macrobdella diplotertia* sp. n. (Hirudinea: Hirudinidae), from Missouri

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ABSTRACT: *Macrobdella diplotertia* sp. n. from Missouri is described. It differs chiefly from the other three species in the genus by having the copulatory gland pores in three rows of two each.

Seven poorly preserved and somewhat contracted specimens, representing an undescribed species of *Macrobdella*, were received together with brief penciled notes from the late J. Percy Moore. While the entire sample consists of only seven specimens (one immature), the species is so distinct that its description is warranted. The species has been known for many years, but attempts by both Moore and me to obtain additional specimens have been unsuccessful.

The genus *Macrobdella* Verrill, 1872, contains three species, all endemic to North America. The species are *M. decora* (Say, 1824), widely distributed, from Colorado east into Maine and the Maritime Provinces and from Mexico deep into Canada; *M. sestertia* Whitman, 1886, known only from the vicinity of Cambridge, Mass., and not reported since its original description; and *M. ditetra* Moore, 1936, from the southern coastal-plain states, from Texas east into Florida and north into North Carolina.

Unlike the case of *M. ditetra*, the binomen of which first appeared in the papers of other authors (in Brandt, 1936) for whom Moore had identified the species, and thus is available by indication, this has not happened with *M. diplotertia*.

DESCRIPTION (based on seven specimens, one of which was dissected): Body form similar to *Macrobdella decora* of similar size: stout,

broad, depressed throughout, and generally tapering anteriorly (Fig. 1). The largest specimen in moderate contraction measures (in mm) 66 in length and 14 in width. The other six vary from 44 to 50 by 7 to 16.

The basic coloration of alcoholic specimens, which are much faded and altered, is light brownish drab dorsally, with 19 paired marginally situated metameric spots usually large and conspicuous, chiefly confined to *a*2 of segments VII through XXV; also pale areas indicate the similar position of the median metamerically arranged red spots, which are faded completely. As in *M. decora*, with which *M. diplotertia* is most closely related, apparently the colors are showy in life but fade very quickly in alcohol. Ventrally the basic color is lighter and more or less blotched with irregular black spots. Sensillae may be seen occasionally but are very obscure and on many segments not visible at all. On the dorsum the head is distinctly annulated and bears the usual five pairs of eyes, which are arch-shaped in arrangement. Last pair of nephridiopores is found at the usual location, the posterior margin of *b*2 in XXIV, but anteriorly cannot be traced with certainty beyond segment X.

Male gonopore, with one exception, at *XIb*6/*XIIb*1. In the exception the male pore is in the middle of *XIIb*1, which is enlarged, rugose, and closely connected with a similar area in the middle of *XIb*6, this entire region

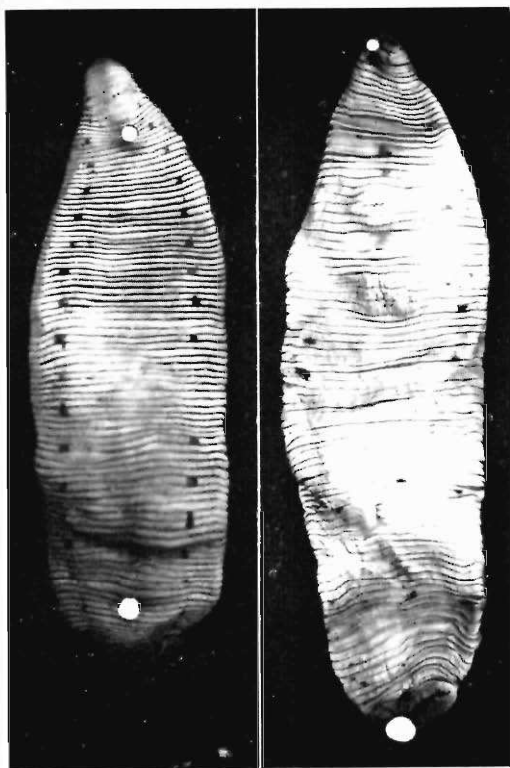


Figure 1. Photographs of *Macrobdella diploptertia* sp. n. Left, dorsal surface showing paired metameric color markings; right, ventral surface showing gonopores and copulatory gland pores. (The white spots are heads of pins.)

covering about five annuli being slightly elevated. A paratype specimen has a prominent forward-directed sugarloaf-shaped penis with truncately rounded summit and seven longitudinal furrows meeting at the pore.

Female gonopore at XIIb6/XIIIb1, elevated on a small mamilliform prominence. Copulatory gland pores are four annuli caudad of the female gonopore in three transverse rows of two each in furrows XIIIb5/b6, XIIIb6/XIVb1, and XIVb1/b2 and each of the three pores occupies contiguous halves of adjacent annuli, which are split by shallow furrows as they approach the area. Between the pores, which lie near the lateral margins of the areas, small furrows separate small squarish areas. The additional pair of pores is added anteriorly. In all specimens the copulatory gland pores are

perfectly regular, in number and position, and show none of the variations reported by Moore (1922: 10) for *M. decora*, from Ontario, and Sawyer and Pass (1972), for specimens from Georgia and South Carolina. Clitellum not apparent externally.

There is nothing peculiar about the annulation of this species to distinguish it from others of the genus. Segment I, faintly separated from II, only mesially, comprises the preocular lobe; II and III, both uniannulate, indistinctly separated from I and IV respectively, as well as from each other, have the first and second pairs of eyes; IV slightly subdivided with third pair of eyes; V large and the annuli more distinct dorsally, with the fourth pair of eyes on a_2 , ventrally forms the buccal ring; VI triannulate ($a_1 < a_2 < a_3$) dorsally, with fifth pair of eyes on a_2 , ventrally a_1 and a_2 united to form the second postoral ring; VII triannulate both dorsally and ventrally and a_3 enlarged and with first pair of large, metameric, black spots; VIII quadramnulate ($a_1 > a_2 > b_5 = b_6$); IX through XXIII quinquannulate ($b_1 = b_2 = a_2 = b_5 = b_6$); XXIV quadramnulate, $b_1 + b_2 + a_2 + a_3$, with a_3 slightly enlarged and clearly subdivided ventrally; XXV triannulate, $a_1 = a_2 = a_3$; last pair of black spots on a_2 ; XXVI biannulate ($a_1 + a_2$) a_3 , the first is only slightly larger than the second; XXVII biannulate, annuli about equal in size and much smaller than those of XXVI. Anus at XXVII/XXVIII.

The jaws, about twice as long as high, similar to those of other species of the genus. Teeth on an unpaired jaw 57, small and monostichodont. The three jaws of another specimen were removed and mounted, but the teeth were missing, either having become detached or destroyed by chemical action as a result of the long preservation. Pharynx short, reaching to about IX, followed by an even shorter esophagus. Each segment, X through XVII, is provided with two pairs of gastric ceca, which are large from XIII posteriorly. The last pair, which originates from the stomach in XIX, reaches posteriorly into XXIV or XXV. There is nothing unusual about the narrow intestine, which opens dorsally at XXVII/XXVIII.

No significant differences from that of the closely related *M. decora* can be detected in the reproductive systems (Fig. 2). The vasa deferentia are glandular, and follow sinuous

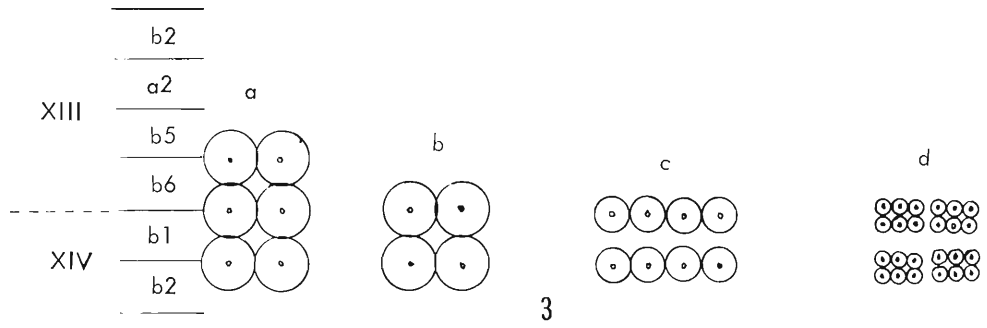
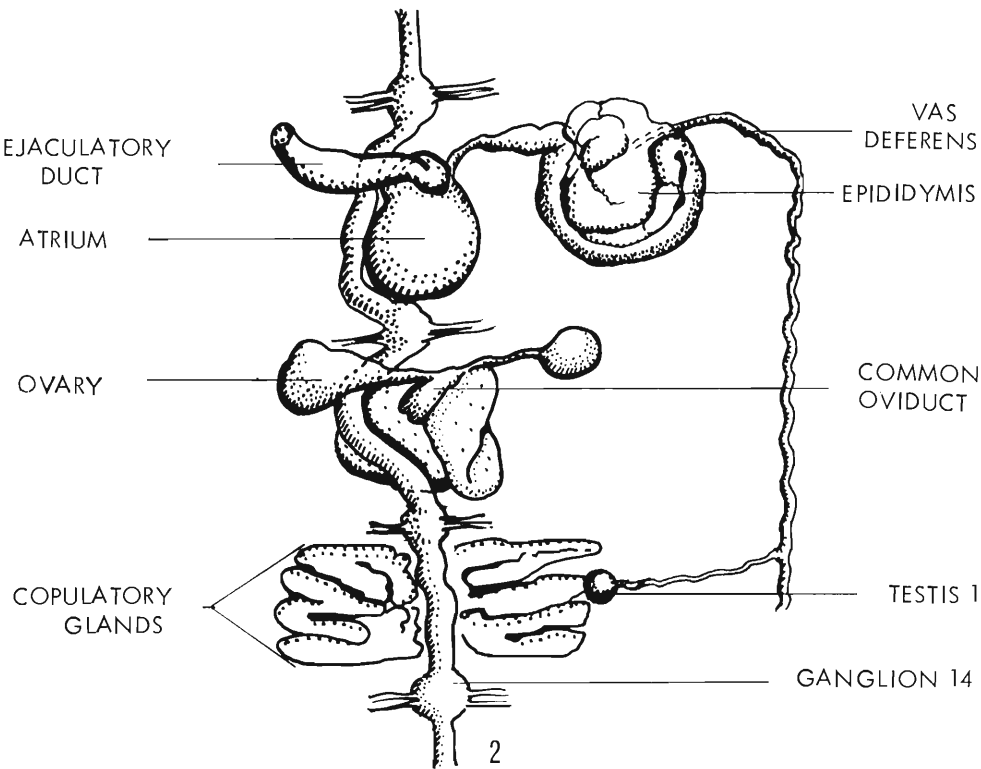


Figure 2. *Macrobdella diplotertia* sp. n. Reproductive system, dorsal view. Figure 3. Diagram of copulatory gland pores of *Macrobdella* species, with segment-annuli symbols: (a) *M. diplotertia*; (b) *M. decora*; (c) *M. ditetra*; (d) *M. sestertia*.

courses anteriorly. In segment XI they become narrow and lose their glandular coating. At the level of the 11th ganglion they turn abruptly into compact, massive, and much convoluted epididymes. From the posteromedian end of each of the latter a wide, slightly folded and

coiled ejaculatory duct leads to the terminal organ, the atrium. Just before joining the muscular wall of the latter the ducts constrict, and then form a pair of slightly enlarged sacs, which proceed upward to open together into the terminal portion of the male evagination. As seen

from above the atrium appears perfectly spherical but it is clear that the pair of ejaculatory ducts bends abruptly dorsad within the muscular sheath. The male organs lie to the right of the nerve cord.

While the female organs are similar to those of *M. decora*, both unpaired oviduct and vagina are longer and more slender than in that species. The ovaries and vagina are distinct and well separated by a narrow band and the two oviducts unite in a short common slightly folded portion as in *M. decora*. The vagina is short, ventral to the nerve cord, bent on itself, and opens to the right of the nerve cord.

The copulatory glands, the external openings of which have been described above, form a conspicuous mass occupying the posterior half of segment XIII and the anterior region of the floor of XIV.

Nothing is known of *M. diplotertia*'s host preference(s) but *M. ditetra*, according to Moore (1953: 9), has a predilection for frogs and *M. decora*, for frogs, their eggs, and fish, also feeds on oligochaetes and other aquatic invertebrates (Moore, 1923: 24). Rupp and Meyer (1954) reported fish attacked by *M. decora* succumbed to their infestations.

In summarization, the more prominent characters available for distinguishing *Macrobdella diplotertia* from other species of the genus are (Fig. 3): first pair of copulatory gland pores is situated four annuli caudad to the female gonopore, pores in three transverse rows of two each (6), hence the specific appellation *diplotertia*; in *M. decora* the first pair of gland pores is five annuli posterior to the female gonopore, pores in two transverse rows of two each (4); and in *M. ditetra* the first pair of gland pores is five annuli behind the female gonopore, pores in two transverse rows of four each (8). Normally five annuli separate the gonopores in

both *M. diplotertia* and *M. decora*; in *M. ditetra* and *M. sestertia* they are separated by 2 and 2.5 annuli, respectively.

REMARKS: Seven specimens available, from the Osage River, Osage County, Missouri, without further localization. Holotype (dissected) deposited U. S. National Museum Helminthological Collection, No. 51789. Paratypes (6) also in the USNMH Collection, No. 51790.

Acknowledgments

Grateful appreciation is due Albert A. Barden, Jr., whose critical reading of the manuscript contributed to its improvement, and Richard R. Eakin, who assisted with the illustrations.

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