

B R E V I O R A

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NEW SPECIES OF EARTHWORMS FROM THE ARNOLD ARBORETUM, BOSTON

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I.

From *Allolobophora caliginosa* (Savigny) 1826 there have recently been split off: *A. nocturna* Evans 1946, and *A. iowana* Evans 1948. The new species were thought to be distinguished by differences in location of first dorsal pore, extent of male porophores, etc., and especially by number of segments. These characteristics had not previously been given such weight in lumbricid taxonomy, may be subject to variation and, as in the case of segment number, may be tedious to use when dealing with large numbers of worms.

While working on collections from the Arnold Arboretum and other localities near Boston, it was found that material with characteristic *caliginosa* tubercula pubertates could be rapidly sorted into two groups according to the presence or absence of genital tumescences on segment xxxiii. Further study showed that those specimens with tumescences on xxxiii were referable to *caliginosa* as apparently restricted by Evans after breeding the worms in the laboratory. The worms with no tumescences on xxxiii were found to be consistently distinguishable from *caliginosa* by the same sort of characteristics as in the case of *nocturna* and *iowana* and, as well as those species, worthy of specific status.

ALLOLOBOPHORA ARNOLDI n. sp.

Type. Museum of Comparative Zoology, cat. no. 4441.

Length, 55–100 mm., diameter, 4–6 mm. Segments, 152–194 (normal specimens). Unpigmented and almost white, or of greyish appearance or, especially in older worms of second season, with a brownish coloration. First dorsal pore, on 10/11, 11/12, or 12/13. Clitellum, on xxvii, $\frac{1}{2}$ xxvii, or xxviii to xxxiv or $\frac{1}{2}$ xxxv. Tubercula

pubertates of double origin, on xxxi-xxxiii. Genital tumescences, including *a* and *b* setae, on ix-xi, xxx, xxxii, xxxiv, and occasionally also on xxvi.

Spermathecal pores, on 9/10-10/11 on *c* lines, setae, male porophores, calciferous sacs, calciferous glands, typhlosole and last hearts, etc., as in *caliginosa*.

Type locality. Arnold Arboretum, Boston, Mass.

Distribution. Known at present only from Boston and vicinity.

Remarks. *A. arnoldi* is distinguished from *caliginosa* by the constant absence of genital tumescences on xxxiii, occasional presence of tumescences on xxvi (instead of xxvii), slightly greater anterior extent of the clitellum (xxvii or xxviii instead of $\frac{1}{2}$ xxviii or xxix), greater number of segments, and perhaps by a slightly more anterior first dorsal pore.

From *iowana*, *arnoldi* is distinguished by the constant presence of genital tumescences on xxxiv, constant absence of those tumescences on xxxiii, by the two-part tuberculum about as in *caliginosa*, possibly also by a slightly more posterior first dorsal pore, greater number of segments and absence or slighter development of pigmentation (not dark reddish brown).

From *nocturna*, *arnoldi* is distinguished by the constant absence of tumescences on xxxiii and xii, smaller size, fewer segments, less restricted male porophores, and possibly by a more posterior first dorsal pore.

Data as to variation in both *caliginosa* and *arnoldi* in the Boston area will be presented, if possible, in another contribution.

II.

In lumbricid taxonomy considerable weight has been given in the past to rather small differences in the tubercula pubertates. Thus, for instance, the species in the following pairs have been distinguished from each other by a one-segment homoeosis of the tubercula: *Octolasion cyaneum* (Savigny) 1826 and *O. lacteum* (Örley) 1881, xxx-xxxiii and xxxi-xxxiv; *Lumbricus rubellus* Hoffmeister 1843 and *L. castaneus* (Savigny) 1826, xxviii-xxxi and xxix-xxxii. Further, *Dendrobaena rubida* (Savigny) 1826 has been distinguished from *D. subrubicunda* (Eisen) 1874, by a one segment difference in length of the tubercula, xxix-xxx and xxviii-xxx. Genital tumescences, as indicated above, may also be of considerable value in lumbricid taxonomy.

Accordingly, it seems advisable to treat a worm distinguishable at present from the *caliginosa*-complex only by differences in tubercula

and tumescences as specifically distinct.

ALLOLOBOPHORA MOLITA n. sp?

Type. Museum of Comparative Zoology, cat. no. 4442.

Length, 81 (+ ?) mm., diameter, 5 mm. Segments, 140 (+ ? posterior amputee?). Pigmentation lacking. First dorsal pore in ?12/13. Clitellum on xxviii-xxxiv, possibly reaching slightly onto xxvii. Tubercula pubertates, longitudinally placed bands in *bc*, extending across entire lengths of xxx-xxxiii; with lateral margins nearly smooth, but median margins (quite definitely lateral to *b* lines) slightly indented by 30/31, 31/32, 32/33. Genital tumescences, including *a* and *b* setae, present on ix-xi, xxxii and xxxiii (feebly developed).

Spermathecal pores, male porophores, setae, calciferous sacs and glands, typhlosole, last hearts, as in *caliginosa*.

In the clitellum intersegmental furrows are obliterated and dorsal pores are occluded but the epidermal thickening is slight. Spermathecae (in x and xi) are iridescent and presumably contain spermatozoa obtained from a copulatory partner. Male funnels are iridescent, also indicating sexual maturity in spite of the feeble development of the clitellum.

Remarks. *A. molita* is distinguished from all of the *caliginosa*-complex: *caliginosa*, *nocturna*, *iowana* and *arnoldi*, by the four-segment tubercula pubertates. Further distinction may be provided by an apparent restriction of genital tumescences in clitellar region to xxxii-xxxiii. From all of the complex, except possibly *iowana*, *molita* is also distinguished by the quadripartite (instead of double) origin of the tubercula. In *iowana*, tubercula are band-like but nothing was said as to origin.

Type locality. Arnold Arboretum, Boston, Mass.

Distribution. At present known only from the type locality.

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