

A New Species of *Trochochaeta* (Polychaeta, Trochochaetidae) from Japan

By

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Abstract A new species of *Trochochaeta* of Trochochaetidae is described from off Akita, Sea of Japan and Sagami Bay, Pacific Ocean, under the name of *Trochochaeta japonica* sp. nov. The family Trochochaetidae is newly recorded from Japanese waters. The species is mainly characterized in having entire postsetal lobes and well developed reddish glandular pads in the anterior parapodia.

The family Trochochaetidae named by PETTIBONE, 1963, is a small family known for a single genus *Trochochaeta* LEVINSEN, 1884, with type species *Disoma multisetosum* OERSTED, 1843. The species of family Trochochaetidae were reviewed by PETTIBONE (1976), and the following six valid species were named: *Trochochaeta carica* (BIRULA, 1897), *T. diverapoda* (HOAGLAND, 1920), *T. kirkegaardi* PETTIBONE, 1976, *T. multisetosa* (OERSTED, 1843), *T. orissae* (FAUVEL, 1932), and *T. watsoni* PETTIBONE, 1976. Afterward, DEAN (1987) described an additional species, *Trochochaeta pettiboneae* from the Gulf of Maine. The species of the family has not been previously reported from Japanese waters.

In the faunal study on polychaetes in Japan a new species of *Trochochaeta* was found from two areas of Honshu, off Akita, Sea of Japan and Sagami Bay, Pacific Ocean (Fig. 1). Specimens were collected by dredging, all lacking posterior ends.

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Holotype and other specimens are deposited in the National Science Museum, Tokyo.

Genus *Trochochaeta* LEVINSEN, 1883

Trochochaeta japonica sp. nov.

(Figs. 2a-c, 3a-j, 4a-i, 5a-n)

Material examined. Sagami Bay: off Koyahata, 35°16.2'N, 139°12.3'E, in 30 m, V-1966 (holotype); off Chigasaki, 35°15.6'N, 139°24.8'E, in 116 m (1 specimen), 35°17.8'N, 139°22.0'E, in 50 m (1), VI-1982. Sea of Japan: off Akita, 39°47.0'N, 139°51.5'E, in 60 m, X-1981 (1); off Oga Peninsula, 39°50.4'N, 139°45.0'E-39°50.8'N,

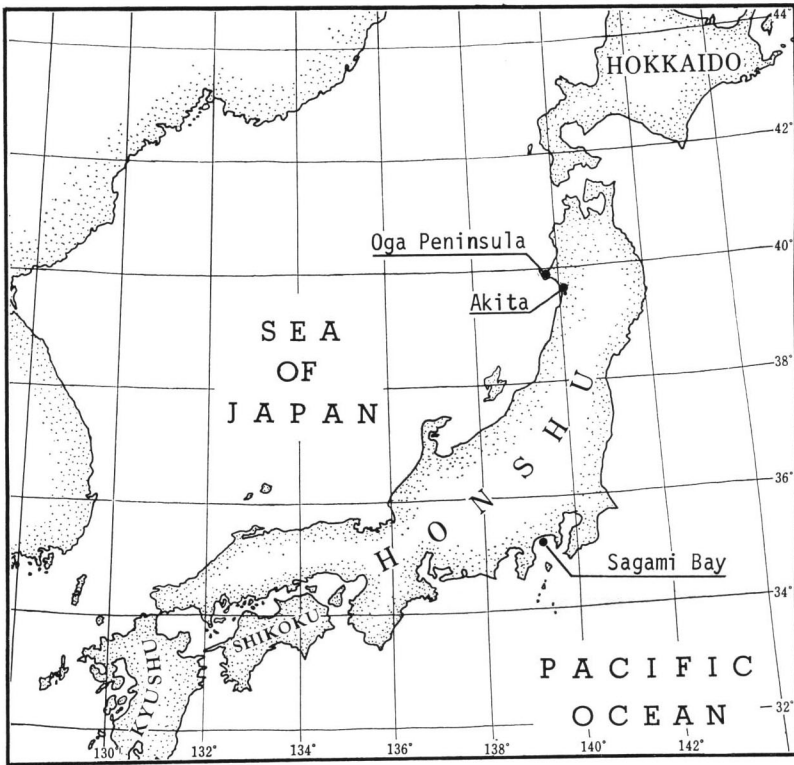


Fig. 1. Map of Japan, showing localities mentioned in the text.

139°44.7'E, in 90–89 m (4), 39°48.5'N, 139°45.4'E–39°48.9'N, 139°45.4'E, in 92–91 m (1), 39°49.8'N, 139°47.2'E–39°50.0'N, 139°47.5'E, in 70–65 m (1), VI–1983.

Description. Specimens incomplete, consisting of anterior body fragments. Holotype 16 mm in length and about 2 mm in width including parapodia, with 31 segments.

Body depressed dorso-ventrally through most of its length. Anterior region more or less sharply set off from more posterior segments. Body consisting of two regions: anterior thoracic region of 10 segments with biramous parapodia (Fig. 2a–c) (except second uniramous segment) and posterior abdominal region with uniramous parapodia (Figs. 4d, 5m, n). Third segment much longer than other segments and divided by deep triangular notch on each side from fourth segment. Segments in thoracic region subequal in length (Fig. 2a). Conspicuous thick, reddish glandular pads present below ventral edge of parapodia 5 to 16 (Figs. 2b, c, 5b, d).

Prostomium anteriorly rounded and protruding beyond anterior border of segment 1, and extending to posterior border of segment 2, with two pairs of more or less embedded minute eye spots on sides of prostomium, with keel-like caruncle on posterior half of prostomium, its anterior end digitate and arising upward from prosto-

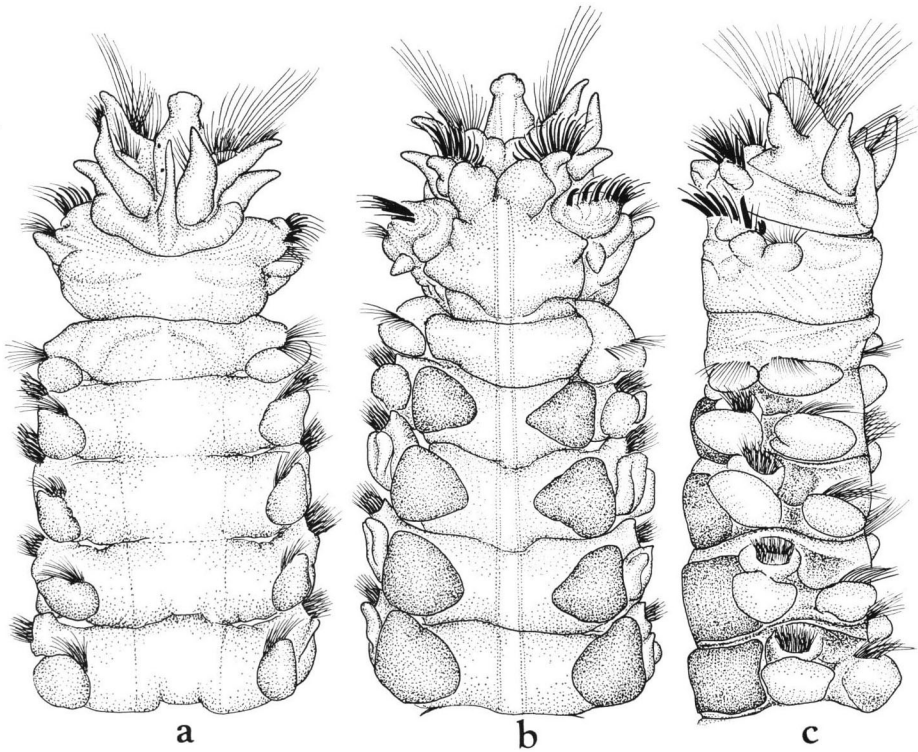


Fig. 2. *Trochochaeta japonica* sp. nov. — a, Anterior thoracic end, dorsal view, $\times 18$; b, same, ventral view, $\times 18$; c, same, lateral view, $\times 18$.

mium (Figs. 2a, 3a). Long, paired palps missing on most individuals.

Parapodia of first segment directed obliquely forward, with fleshy, lanceolate noto- and neuropodial postsetal lobes, notopodial larger than neuropodial; presetal lobes low and entire. Neuropodium with spreading bundle of short and long capillary neurosetae; notopodium with shorter and fewer capillary notosetae (Fig. 3b).

Parapodia of second segment shifted ventrally, not completely visible when viewed dorsally (Fig. 2a). Notopodial postsetal lobes fleshy and triangular, without notosetae; neuropodial postsetal lobes divided into two lobes: superior conical lobe and broadly expanded inferior one (Fig. 3c, d). Neuropodium with comblike row of 9 stout, dark acicular spines ending in sharp tips, alternating with slender, distally curved capillaries (Fig. 3c, e). Presetal lobes smooth and rounded (Fig. 3c).

Third parapodium biramous, projecting laterally from body; notopodium with triangular postsetal lobe and entire presetal lobe (Fig. 3f, i). Notosetae consisting of slender capillaries and more or less thick limbate capillaries (Fig. 3g, h). Neuropodium with postsetal lobes divided into three parts: median conical lobe and upper and lower obtuse lobes (Fig. 3j). Arrangement and general appearance of neurosetae

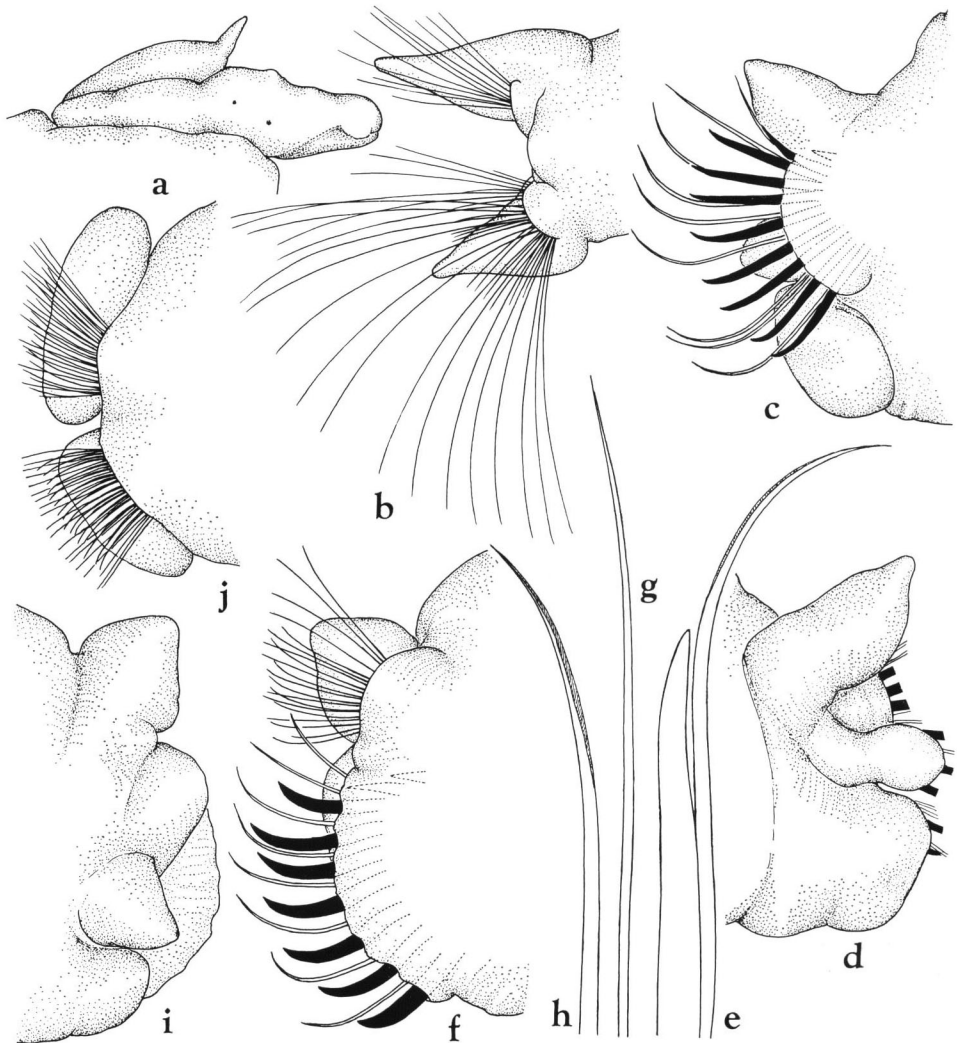


Fig. 3. *Trochochaeta japonica* sp. nov. — a, Prostomium, lateral view, $\times 36$; b, first parapodium, anterior view, $\times 44$; c, second parapodium, anterior view, $\times 54$; d, same, posterior view, distal ends of setae omitted, $\times 54$; e, neurosetae from same, $\times 82$; f, third parapodium, anterior view, $\times 54$; g, h, notosetae from same, $\times 225$; i, third parapodium, posterior view, setae omitted, $\times 54$; j, fourth parapodium, anterior view, $\times 44$.

similar to second segment, except dark acicular spines heavier, with small, partially developed acicular spines deeply embedded in dorsal part of fascicle (Fig. 3f).

Fourth parapodium with oblong, entire postsetal lobes in both noto- and neuropodia, notopodial larger than neuropodial; notosetae and neurosetae arranged in two series; more or less shorter and limbated anterior setae and slender and longer pos-

terior setae (Fig. 3j).

From fifth parapodium postsetal lobes in noto- and neuropodia lightly reddish; anterior base of neuropodial presetal lobe expanded into reddish, oblong fleshy pad (Fig. 4a, b); pads gradually developed on posterior parapodia and extending over ventral half of notopodium (Fig. 4c). Reddish glandular pads present below the ventral edges of neuropodia, well developed on segments 7 through 11, and continuing through to segment 16 (Fig. 4c, d). Notosetae arranged in two rows; anterior row of short and limbate capillaries and posterior row of long and slender capillaries (Fig. 4e, f). Neurosetae arranged in two rows; anterior row of short and limbate capillaries and posterior row of long and slender capillaries (Fig. 4g, h, i).

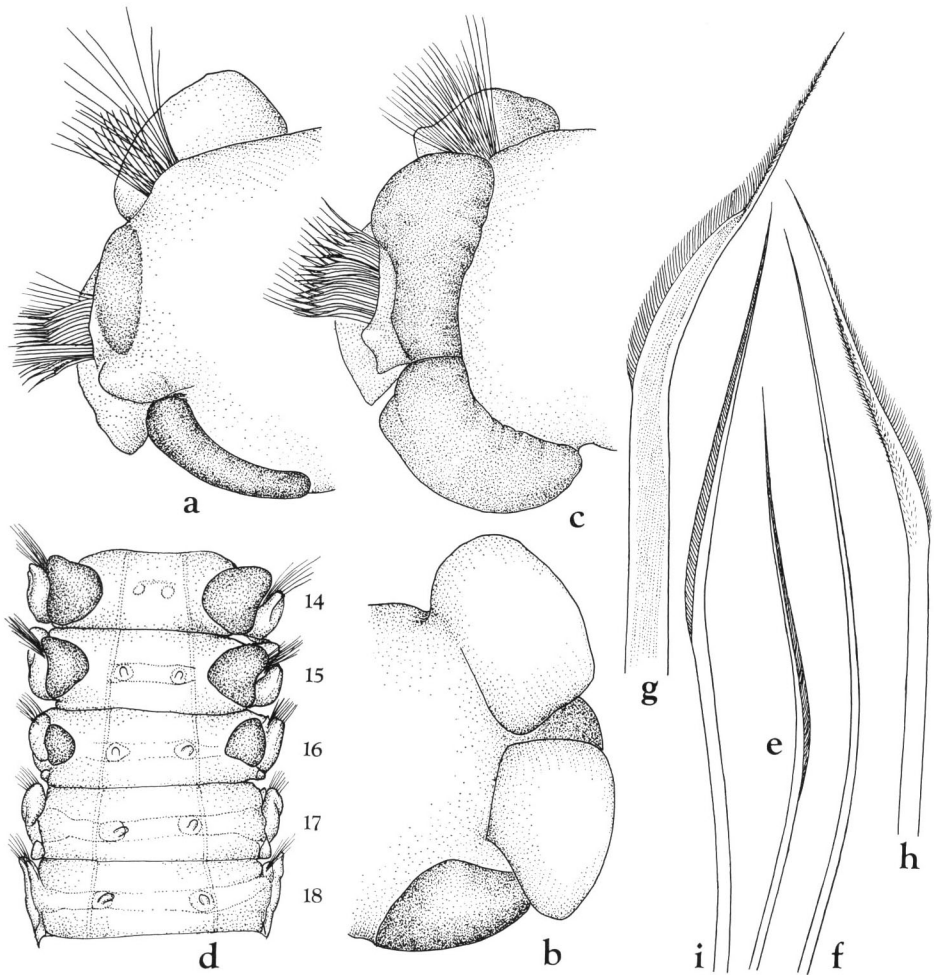


Fig. 4. *Trochochaeta japonica* sp. nov. — a, Fifth parapodium, anterior view, $\times 44$; b, same, posterior view, $\times 44$; c, 10th parapodium, anterior view, $\times 44$; d, abdominal region showing segments 14 through 18, ventral view, $\times 18$; e, f, capillary notosetae from fifth parapodium, $\times 180$; g-i, neurosetae from same, $\times 225$.

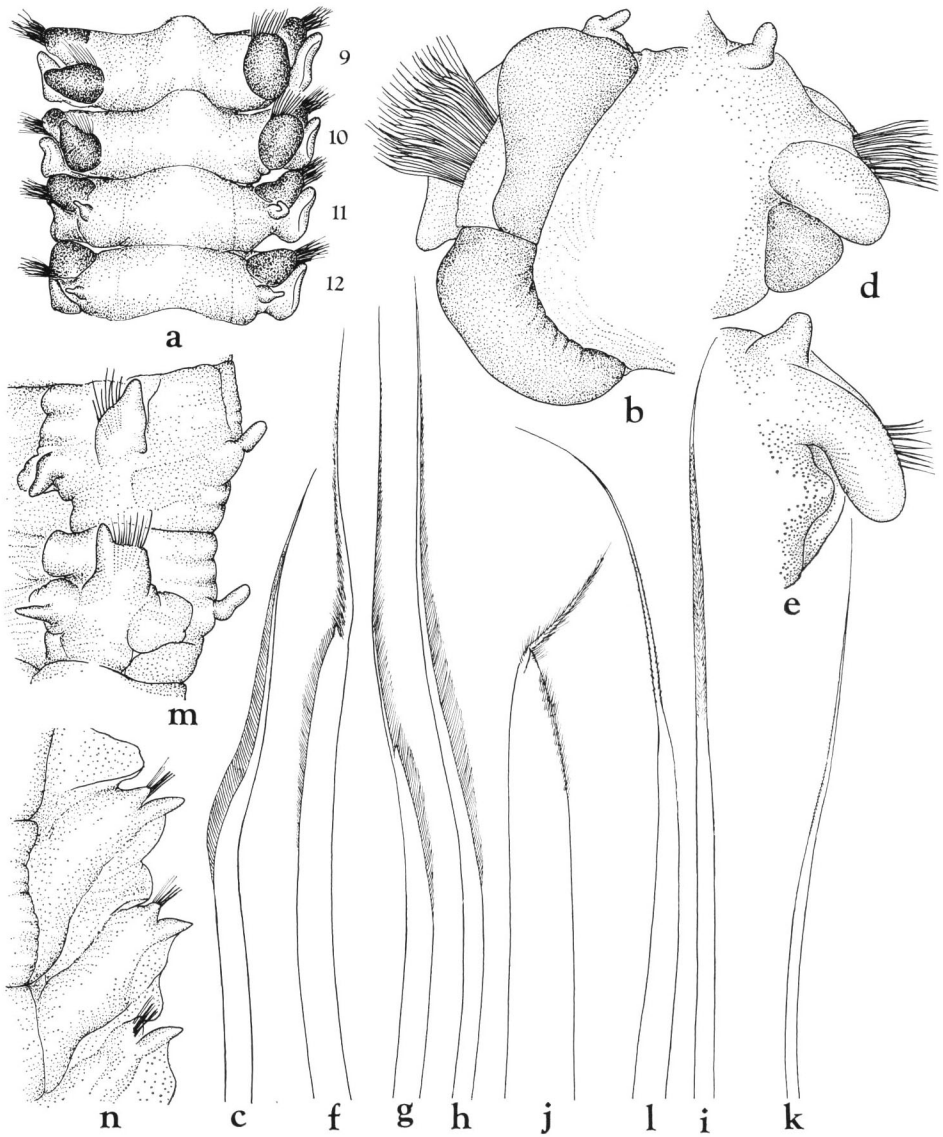


Fig. 5. *Trochochaeta japonica* sp. nov. — a, Transitional region from thorax to abdomen, showing segments 9 to 12, dorsal view, $\times 18$; b, 11th parapodium, anterior view, $\times 44$; c, neuroseta from same, $\times 225$; d, 16th parapodium, posterior view, $\times 44$; e, 17th parapodium, posterior view, $\times 44$; f, g, yellowish geniculate neurosetae from 16th parapodium, $\times 595$; h, limbate capillary neuroseta from same, $\times 595$; i, capillary neuroseta from same, $\times 308$; j, crotchet from 32nd parapodium, $\times 840$; k, l, capillary neurosetae from same, $\times 308$; m, segments 19 and 20, lateral view, showing ventral papillae, $\times 36$; n, two abdominal segments, dorsal view, showing subpodal thin membranes, $\times 36$.

(Fig. 4e, f). Neurosetae consisting of three kinds: 1) stout, blackish somewhat geniculate, with long pubescent distal tip (Fig. 4g); 2) slender, yellowish geniculate-like (Fig. 4h); 3) slender, limbate capillary (Fig. 4i).

Thoracic region changing into transitional abdominal region from segment 11, without notosetae and notopodium transforming into single digitate lobe; reddish glandular pads on neuropodial presetal lobe and ventral glandular pads broadly developed (Fig. 5a, b). Neurosetae slightly geniculate, limbate (Fig. 5c) and slender capillaries.

On 16th parapodium ventral reddish, glandular pads becoming smaller and conical (Fig. 5d) and disappearing from parapodium 17 (Fig. 5e). Neurosetae slender, yellowish geniculate (Fig. 5f, g), limbate capillary (Fig. 5h) and slender capillary (Fig. 5i). Geniculate neurosetae gradually transformed posteriorly into crotchets with hairy, short mucronate tips or aristae (Fig. 5j). Neurosetae of two kinds: slender capillaries with hairy limbate margin (Fig. 5k) and basally thick capillaries with minutely serrated fine distal tip (Fig. 5l).

On ventral side of body, on segment 13, minute paired ventral papillae appear, immediately within line forming proximal portion of neuropodia, and gradually developing into slender, short filaments, arising from low mounds (Figs. 4d, 5m). From parapodia 25 neuropodia connected with subpodal thin, slightly undulate lamellar membranes extending posteriorly to next septa (Fig. 5n).

Remarks. The known species of *Trochochaeta* may be divided into two groups: noto- and neuropodial postsetal lobes of some anterior segments serrated, and on the other hand postsetal lobes with entire border, not serrated. *Trochochaeta japonica* belongs to the second group having entire postsetal lobes. This group includes the following six species: *Trochochaeta carica* (BIRULA, 1897) from northern Europe and eastern Canada, *T. watsoni* (FAUVEL, 1916) from Nova Scotia, Canada, *T. diverapoda* (HOAGLAND, 1920) from Philippine Islands, *T. orissae* (FAUVEL, 1932) from East and southwest coasts of India, *T. kirkegaardi* PETTIBONE, 1976 from West Africa and *T. pettiboneae* DEAN, 1987 from the Gulf of Maine.

Trochochaeta japonica agrees with *T. diverapoda* (HOAGLAND), *T. orissae* (FAUVEL) and *T. kirkegaardi* PETTIBONE in having stout acicular neurosetae on segments 2 and 3, and in lacking notosetae on segment 2. However, *Trochochaeta japonica* is separated from *T. orissae* in having abdominal acicular neurosetae with aristae, instead of acicular without aristae. *Trochochaeta japonica* is distinguishable from *T. diverapoda* and *T. kirkegaardi* in lacking eyes and having thoracic parapodia with conspicuous reddish glandular pads.

Type. Holotype, NSMT-Pol. H 292.

Distribution. Northern to central Japan.

Literature Cited

BIRULA, A., 1897. Researches on biology and zoogeography, chiefly in Russian Seas. Collection

- by Dr. A. L. BOTKINE in 1895 in the Gulfs of Yenesei and Obi. *Annu. Mus. zool. Acad. imp. Sci. St. Pétersbourg*, **2** (1896): 78–116. (In Russian.)
- DEAN, D., 1987. *Trochochaeta pettiboneae*, a new species (Polychaeta: Trochochaetidae) from the Gulf of Maine with additional comments on *T. carica*. *Bull. Biol. Soc. Wash.*, (7): 46–49.
- HOAGLAND, R. A., 1920. Polychaetous annelids collected by the United States Fisheries Steamer "Albatross" during the Philippine Expedition of 1907–1909. *Bull. U.S. natn. Mus.*, **100**: 603–635.
- OERSTED, A. S., 1844. Zur Classification der Annulaten, mit Beschreibung einiger neuer oder unzulänglich bekannter Gattungen und Arten. *Arch. Naturg.*, **10**: 99–112.
- PETTIBONE, M., 1963. Marine polychaete worms of the New England region. I. Families Aphroditidae through Trochochaetidae. *Bull. U.S. natn. Mus.*, **221**: 1–356.
- 1976. Contribution to the polychaete family Trochochaetidae PETTIBONE. *Smith. Contr. Zool.*, (230): 1–21.