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# A NEW SPECIES OF *SACCOCIRRUS* (ARCHIANNELIDA) IN JAPAN[1)]

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*With Text-figures 1–4*

From a beach sand sample collected at Kashima Islet in Tanabe Bay, Wakayama Prefecture, Japan, in June 1972, the writer happened to find a lot of specimens of an archiannelid belonging to the genus *Saccocirrus* Bobretzky.

The worm, comparatively smaller than *S. major* Pierantoni which is the only species of the genus previously recorded in Japan (Uchida, 1933), seemed closely related to *S. eroticus* Gray recently described from the west coast of North America, because only these two forms had the ciliated ventral groove among the eleven species of the genus. Microscopic observations have revealed, however, that the animal in question is distinguishable from *S. eroticus* in some diagnostic characters. So the present paper is prepared to describe it as a new species.

## MATERIAL AND METHODS

A sand sample was collected by a small bucket from the surface down to 10 cm in the intertidal zone on the beach of Kashima Islet. Brought to the laboratory in vinyl sac, it was kept intact for about two weeks.

Sorting was made as follows: a litre of sand was put in a bucket filled with magnesium chloride solution (75 g/litre) for five minutes, then stirred up with a great quantity of sea water; anesthetized worms floated up in the water, and were immediately strained out by a net of 200 $\mu$ in mesh. In this way, many specimens could be obtained all alive from the sample.

Seventeen specimens were examined closely under phase contrast microscope, some anesthetized, others after fixed in Bouin's fixative and dyed with Carm-Alum.

## *Saccocirrus labilis*, n. sp.

(New Japanese name: Nihon-mukashigokai)

(Figs. 1–4)

## DIAGNOSIS

Elongated ocher-coloured worm up to 14.4 mm long and 0.25 mm wide with a

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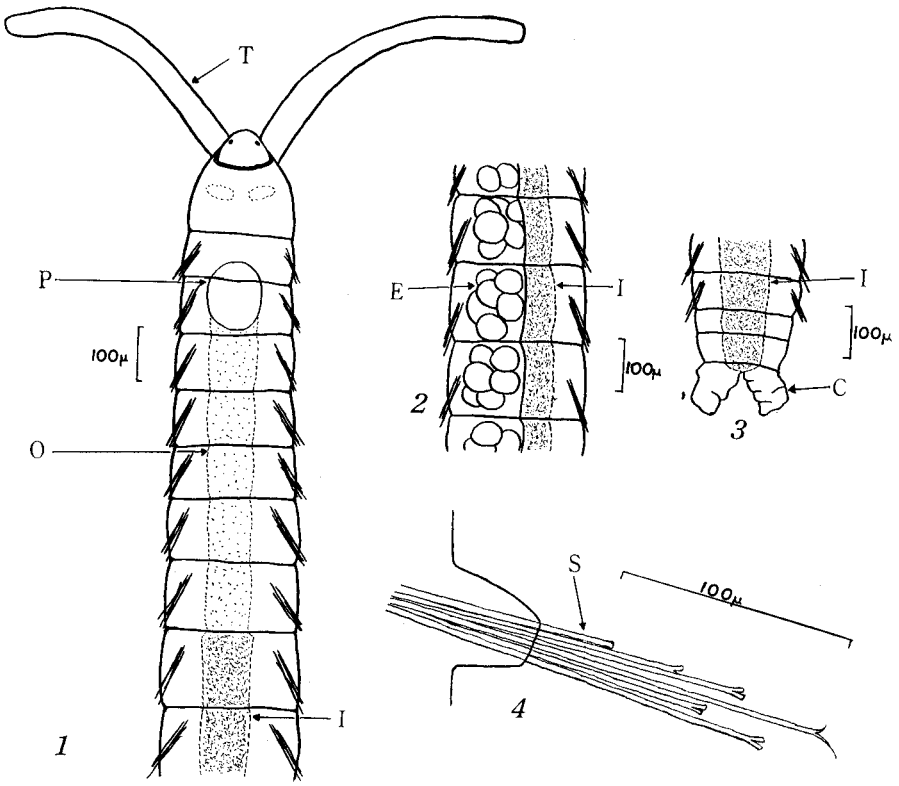
pharyngeal muscular pad. The number of body segments up to 133. Setae on each parapodium with a characteristic pattern of arrangement: one long seta with sharp unequally forked tip, four shorter ones with blunt equally forked tip, and the shortest one with blunt forkless tip. Papillate ridges on the caudal lappets number 5–9 each. A ciliated ventral groove runs from behind the mouth to segment 8 or 9. Gonads developed posterior to segments 19–24, unilaterally only on the left side, both in male and female.

DESCRIPTION

Soft elongated worms measuring up to 14.4 mm in length and 0.25 mm wide under anesthetized condition. Body with 94 to 133 segments on mature individuals, coloured ocher with intestine greenish yellow. Eggs white, male reproductive organs reddish. Two red or red-purple eyes, usually grain-like in shape, situated on the dorso-lateral side of prostomium. Nuchal organ could not be observed clearly, but




Figs. 1–4. *Saccocirrus labilis*, n. sp.

1. Dorsal view of anterior region.
2. Dorsal view of female reproductive segments.
3. Dorsal view of posterior end.
4. Parapodium with setae.

C, caudal lappets; E, eggs; I, intestine; O, oesophagus; P, pharynx; S, setae; T, tentacles.

somewhat concave structure was seen at the base of prostomium (Fig. 1). An elongated mouth situated on the ventral surface of peristomium extending from the anterior tip to the last one-third.

A ciliated ventral groove was seen to continue from just behind the posterior end of the mouth to segment 8 or 9.

Except for the head and the last several, the body segments have each a pair of parapodia dorso-lateraly. Each parapodium bears setae usually composed of one long seta with sharp unequally forked tip, four shorter ones with blunt equally forked tip, and the shortest one with blunt forkless tip (Fig. 4). This pattern of setae distinctly differs from that of *S. eroticus*.

The numberes of papillate ridges on the two caudal lappets variable, that is, from 5 to 9 on each lappet. But the more body segments, the more papillate ridges as is the case in *S. eroticus*.

The present worm has an oval pharyngeal muscular pad in segments 2–3, posterior to which continues oesophagus to segment 8 or 9. Gut extends straight to anus which opens just before caudal lappets (Figs. 1 and 3).

Unilateral gonads develop on the left side only both in male and female, extending from segments 19–24, posteriorly all the way except for the last 4–10 segments. Mature females bear 5–8 eggs in each reproductive segments (Fig. 2). Penes could be observed to protrude from male reproductive organs under light pressure of cover-glass.

The holotype female is deposited in Seto Marine Biological Laboratory collection (SMBL-Type No. 244), together with an allotype male (No. 245).

REMARKS

*Saccocirrus labilis* differs sharply from all the saccocirrid species other than *S. eroticus* in the possession of a ciliated ventral groove. The present species is distinct, however, from *S. eroticus* firstly in the pattern of setal arrangement on parapodium, and secondly in the mode of gonadal development. According to Gray (1969), *S. eroticus* has a setal arrangement such as "one long finely forked hair chaeta, five or six unequally forked chaetae, and one spatulate chaeta per parapodium", and unilateral gonads situated on the right side in male and left side in female, posterior to segment 13.

The present species was collected at the fringe of water on a protected sandy beach of Kashima Islet, where the substratum consisted of coarse sand mixed with a considerable quantity of carcareous matters. Sand grains sampled showed a mean diameter 745 $\mu$, and more than half (52%) of them were included in the range of 501–1000 $\mu$.

A few specimens of another archiannelid species, *Polygordius pacificus* Uchida, were also sorted together with many individuals of *S. labilis* from the sand sampled on June 13, 1972. But from the sample collected about two weeks later just at the same spot, none of *S. labilis* occurred. They had been replaced by a great number of *P. pacificus* and several individuals of other unidentified saccocirrid species that had no ciliary ventral groove. Such a replacement may be taken one of the phenomena connected with the unstableness of the intertidal sandy beach communities.

As mentioned above, it is only *S. eroticus* and *S. labilis* that a ciliated ventral groove is developed in *Saccocirrus*. Apparently the ciliated ventral groove is responsible to a peculiar mode of locomotion in these worms: they move using the sliding power of ciliated ventral groove, together with the longitudinal muscles. This mode of locomotion was observed in detail on *S. eroticus* by Gray (1969), and also confirmed on the new species by the writer. The specific name of the present new species is derived from this locomotion characteristic (*labilis*=sliding).

It is probable that *S. labilis* occupies almost the same ecological niche as *S. eroticus* in nature. The main morphological differences between the two species, that is, the pattern of arrangement of setae on parapodium and the mode of development of gonads, seem to have little meaning in the actual mode of life. Provided that the two species will not occur sympatrically, these differences might be referred to a geographical isolation due to the distance separating the two populations, one on the east coast and the other on the west coast of the North Pacific.

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## REFERENCES

Gray, J. S. 1969. A new species of *Saccocirrus* (Archiannelida) from the west coast of North America. Pacific Science, vol. 23, no. 2, pp. 238–251.

Jouin, C. 1971. Status of the knowledge of the systematics and ecology of Archiannelida. Proceedings of the First International Conference on Meiofauna, Smisthonian Contributions to Zoology, no. 76, pp. 47–56.

Uchida, T. 1933. On the occurrence of the archiannelid, *Saccocirrus major* Pierantoni in Japan. Proceedings of the Imperial Academy, Japan, vol. 9, no. 3, pp. 128–129.

——— 1935. Eine neue Urannelidenart, *Polygordius pacificus* n. sp. Proceedings of the Imperial Academy, Japan, vol. 11, no. 3, pp. 119–120.

——— and S. Okuda. 1953. Notes on an archiannelid, *Saccocirrus major*. Journal of Faculty of Science, Hokkaido University, ser. 6, Zool., vol. 11, pp. 175–181.