

# A review of the genus *Stylostomum* Lang, 1884 (Platyhelminthes, Polycladida) and the description of a new species

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In 1884 LANG (1) created the genus *Stylostomum* to distinguish other cotylean polyclads with forward-directed male copulatory complexes, where the mouth and the male gonopore open in common to the exterior. He described a new species, *Stylostomum variabile* and included *Planaria ellipsis* Dalyell, 1853 and *Stylochus roseus* Sars, 1878 in the new genus.

HALLEZ (2, 3) added three species to the genus and HEATH & MCGREGOR (4) another one. *S. lentum*, from the Pacific coast of North America (the *S. californicum* in the introduction and in their key to California species is an error and should read *S. lentum*). BOCK (5) placed *S. variabile*, and *S. roseum* in synonymy with *S. ellipsis*. He was uncertain about *S. sanguineum* and silent on *S. punctatum*, *S. antarcticum* and *S. lentum*. HYMAN (6) considered that there were five valid species of *Stylostomum*: *S. ellipse* Lang, 1884, *S. lentum* Heath & McGregor, 1912, *S. frigidum* Bock, 1913, *S. hozawai* Kato, 1939 and *S. maculatum* Kato, 1944. Later on, two more species were added by MARCUS (7) and by HOLLEMAN (8). Table 1 compares the major characteristics of the species now considered valid.

In his Monograph on Polyclad Turbellaria PRUDHOE (9) defined the genus *Stylostomum* to include those Cotylea that have the male apparatus directed anteriorly, with the male gonopore and mouth *either* separated or united in a common antrum, no anterior branch of the intestinal trunk over the pharynx, with marginal tentacles more or less inconspicuous. This definition combines characters of the genus *Stylostomum* with those of the genus *Acerotisa*, with the mouth close to the male gonopore, based on MARCUS' fig. 109 of *S. felinum*, which shows a thin fold of tissue separating the mouth and the male gonopore. This thin fold can, however, be considered a preservation artefact. In sagittal sections of all *Stylostomum* species a fold can be seen, separating the male antrum from the pharyngeal pocket until they form a common chamber. It appears from MARCUS' diagram that the specimen he studied could have been flattened and distorted, extending the fold of tissue so that it appears to divide the common antrum giving the appearance that the mouth and male gonopore are positioned very close together.

FAUBEL (10) maintained *Acerotisa* as a separate genus with the mouth and male gonopore separate but in close

proximity. He proposed a new genus, *Parastylostomum*, for *S. hozawai* and *S. maculatum*, lacking pronounced tentacles with a few eye-spots arranged in tentacular clusters; mouth and male gonopore in common; prostatic duct enters the ejaculatory duct postero-ventrally. The position of the prostatic vesicle, lateral or ventral, with respect to the seminal vesicle, and the entrance of the prostatic duct with the ejaculatory duct can, however, not be considered characters of generic importance; rather they are species characters.

The diagnosis of the genus *Stylostomum* is hereby amended to read:

Euryleptidae of small to moderate size and oval form; smooth dorsal surface; tentacles reduced to small stumps or wanting; cerebral and marginal eye clusters, often eyes few in number; main intestine with up to six pairs of branches, which do not anastomose; a frontal median branch of the intestine may be present; mouth and male gonopore open in common to the exterior; male copulatory apparatus arranged beneath the pharyngeal cavity; free prostatic vesicle positioned either dorsal, medial or ventral to the seminal vesicle; penis armed with a tubular pointed stylet; female apparatus with two wide elongated uteri; uterine vesicles may be present.

The species of the genus *Stylostomum* occur in boreal and temperate realms north of 36°N and south of 36°S. *S. ellipse* shows a distribution in both the eastern North Atlantic cold-temperate and the western South Atlantic cold-temperate provinces. It has been reported from Spitzbergen to the Mediterranean, Cape Town, South Africa, Falkland Islands, South Georgia and Tierra del Fuego. *S. frigidum* is the other species that shows a discontinuous distribution, occurring in the Gulf of Ancud, Chile and Observatory Bay, Kerguelen. All other species are known only from their type localities. This distribution suggests that the genus *Stylostomum* is restricted to cool or cold waters. However, this is speculative until more is known of the polyclad faunas of more regions of the world.

## *Stylostomum spanis* n. sp.

Twenty five specimens of a new *Stylostomum* species were collected on the South Island of New Zealand in

TABLE 1  
 Characteristics of the valid and the new species of the genus *Spylostomum*

Species	Color	Marginal tentacles	Marginal eyes	Cerebral eyes	Intestine	Seminal vesicle	Prostatic vesicle	Penis stylet	Uterus
<i>S. ellipse</i> Lang, 1884	Variable in translucent body	Small	Two groups of 13-16 at base and within tentacles	Two groups of 12-13, one pair anterior to the brain	4-6 pairs of lateral branches which do not anastomose	Large elliptical beneath the prostatic vesicle	Slightly elongated above the seminal vesicle	Tubular, pointed	Paired
<i>S. felinum</i> Marcus, 1954	Gray	Small blunt	Two groups of 13-16	Two groups of 6-7	Anterior median branch	Ventral, round, curves dorsal-anteriorly to form the ejaculatory duct	Elongate, oblong above the seminal vesicle	Tubular, pointed, on a small penis papilla	Paired, without uterine vesicles
<i>S. frigidum</i> Boek, 1931	Preserved slightly yellowish	Small blunt	90-100	Two groups of 36-38	Anterior median branch	Elongate	Large oblong above the seminal vesicle	Tubular, pointed, on a long slender penis papilla	Paired, on
<i>S. hozawai</i> Kato, 1939	Translucent; orangish due to ingested food	Absent	Two clusters of 7	Two groups of 4 to 5	Lateral branches that do not anastomose	Large elongate, ventral to the main intestine and posterior to the prostatic vesicle	Elliptical, below and anterior to the seminal vesicle; extracapsular glands; prostatic duct enters the ejaculatory ventrally	Pointed, in a long and deep penis sheath	Paired
<i>S. lentum</i> Heath & McGregor, 1912	Orange to lighter near the margin with minute white specks on the entire dorsal surface	Short rudimentary	Two clusters of about 80 each	Two long groups of 50 eyes each	Lateral branches that do not anastomose	Retort shaped anterior to the base of the pharynx	Spherical, immediately in front of the seminal vesicle dorsal to the ejaculatory duct	Very short penis, enclosed in a penis sheath. Lacks penis stylet	Paired
<i>S. maculatum</i> Kato, 1944	Ground color milky white with sparsely scattered large brown spots	Absent	Two groups of 3 each	Two groups of 2 eyes each with a pair of ventral eyes	Anterior median branch	Large elliptical posteriorly anterior to the base of the pharynx	Oval, lateral to the seminal vesicle. Prostatic duct enters the ejaculatory duct from below	Present	Paired, without uterine vesicles
<i>S. sanjuaniana</i> Holleman, 1972	Translucent white on the margin shading to light yellow middorsally	Absent	Two groups of 5-11	Two groups of 3-4	Lateral branches only	Oval, ventrally and at the posterior margin of the prostatic vesicle	Elliptical, dorsal and anterior to the seminal vesicle	Slender, tubular, in a moderate penis sheath	Paired, without uterine vesicles
<i>S. spanis</i> , n.sp.	Translucent with intestinal branches orangish	Absent	Two clusters of 17-36	Two clusters of 17-36	4 pairs of lateral branches; first pair immediately medial branches extend anteriorly; no anastomoses	Large, elliptical, ventral and posterior to the prostatic vesicle	Oval, above and anterior to the seminal vesicle	Small slender penis with a long stylet	Paired

1970 and 1971 intertidally under rocks and on *Macrocystis pyrifera* holdfasts.

The body is an elongate oval with the largest specimen measuring 10 mm long and 5 mm wide when moving. Marginal tentacles are wanting. The sucker is located in the middle of the ventral surface. The body is translucent white with orangish branches of the intestine, which fade upon standing. There are white maculae scattered on the dorsal surface. The cerebral eyes are in two clusters numbering between 15 and 35 in each cluster. Two small groups of cerebral eyes numbering three or four are slightly anterior to the main clusters of cerebral eyes. The marginal eye clusters contain between 17 and 36 small eyes. The digestive system is typical of the genus with the mouth located anteriorly and the cylindrical pharynx opening to the main intestine. The main intestine has four pairs of lateral branches. The posterior lateral branch is at the level of the sucker with the other three pairs originating between the sucker and the cerebral eye clusters. At the origin of the first lateral branch the main intestine divides into two branches, which extend forward. The lateral branches of the intestine do not anastomose. Sagittal sections show that the spermiducal vesicles enter into the oval seminal vesicle, which is positioned below and at the posterior ventral margin of the oval prostatic vesicle. The ejaculatory duct and the prostatic duct unite and pass into the slender, armed penis. The penis is surrounded by a penis sheath. The large male antrum opens in common with the mouth to the exterior. The female gonopore is located posterior to the base of the pharynx. The vagina ascends from a ciliated female antrum and expands into a cement pouch surrounded by cement glands. The vagina continues dorsally then turns posteriorly enlarging and dividing into the paired uteri.

The *Stylostomum spanis* differs from *S. ellipse*, *S. felinum*, *S. frigidum* and *S. lentum* in lacking tentacles. In *S. sanjuania* and the *S. spanis* the prostatic vesicle is located dorsal to the penis and seminal vesicle, whereas in *S. hozawai* the prostatic vesicle is located ventral to the seminal vesicle and in *S. maculatum* it is lateral to the

ejaculatory duct of the seminal vesicle. The elliptical prostatic vesicle of *S. sanjuania* differs from the oval prostatic vesicle of the *S. spanis*. The number of marginal and cerebral eyes of the new species differ from *S. sanjuania*, 17 to 36 versus five to 11 marginal eyes in each cluster and 15 to 35 versus three to four cerebral eyes in each cerebral cluster.

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