

A MONOGRAPH OF TURBELLARIA (ACOELA, RHABDOCOELA,
ALLOEOCOELA AND TRICLADIDA) OF JAPAN
AND ITS ADJACENT REGIONS.

By

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Introduction

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The first report on the Turbellarians of Japan and its adjacent regions was carried out by Stimpson in Loo-choo Islands in 1857. He described two new species, *Planaria badia* and *Pl. cinerea*.*

I. Ijima and T. Kaburaki reported on probursalian and maricolen Tricladids of Japan and South Saghalien in 1916 and Kaburaki on Probursalia in 1922. He also reported on terricolen Tricladids in 1923 and Polycladids in 1923. N. Nassonow in 1929 and K. Okugawa in 1930 reported upon fresh-water Rhabdocoels of Japan proper. K. Kato has studied Polycladids since 1934 and he also described some maricolen Tricladids. Some fresh-water Alloecoels were reported by Nassonow in 1929 and by Okugawa in 1930 and on parasitic Rhabdocoels, two species were described by Ozaki in 1932 and some parasitic Alloecoels were reported by Kaburaki in 1925. On marine Rhabdocoels and Alloecoels which include the most abundant forms in Turbellaria, a few species were reported by S. Bock in 1923, by F. Tozawa in 1923 and by Nassonow in 1932.

It is not too much to say that the Polycladids of Japan will be the best studied group in Turbellarians in our regions at present. But the Polycladids of our regions are excluded in this monograph.

Since R. Kenk (1930) proposed a fundamental taxonomic review on probursalian Tricladids, I revised the generic and specific names of some worms, according to his idea, as the results of my study and examination of the anatomical features of their sexual organs.

The following forms are widely distributed species in our regions and some of them are cosmopolitan.

In Rhabdocoels: *Catenula lemnae*, *Stenostomum leucops*, *Rhynchoscolex simplex*, *Microstomum lineare*, *Macrostomum appendiculatum*, *Mac. gigas*, *Dalyellia armiger*, *Rhynchomesostoma rostratum*, *Mesostoma productum*, *Bothromesostoma personalum* and *Gyratrix hermaphroditus* and in Alloecoels: *Prorhynchus stagnalis*.

In Rhabdocoels, it seems to me the following species are endemic to Japan proper; *Macrostomum saifunicum* Nassonov, 1929 (= *Mac. kawamurai* Okugawa, 1930), *Mac. japonicum*, *Dalyellia biwac*, *Dal. okugawai* Ruebush et Hayes, 1939 (= *Dal. gracilis* Okugawa, 1930), *Dal. inflata* and *Dal. japonica*.

In Probursalia, it is worthy of our notice that *Dugesia gonocephala* has the following distribution in Japan Islands.** It may be said that this animal distributes at the

* These two species are doubtful because the descriptions give only the colouration and the form of their bodies. I visited the Loo-choo Islands one by one and in search of these two species of Stimpson but found only *Dugesia gonocephala*. I think these two species of Stimpson may be identified with *Dug. gonocephala* because the external features of planarians are not so important as to determine specific value in Probursalian taxonomy at present.

** This is a question whether the Japanese form is identical with European *Dug. gonocephala*. Because some Japanese zoologist thought that our form indicated some differences from European species in the point of physiological or experimental-zoological characters. I examined several specimens of *Dug. gonocephala* of Berlin which were sent by Dr. Arndt about ten years ago but I could not find any distinct morphological differences between them. I think, therefore, it is better to leave this question for future study.

Okugawa 1953, Kyoto Gakugei Univ. Ser. B.

... org.)

- 1902 *Stenostomum leucops* Child, Arch. Entwicklmech., 15; 187, t. 5, f. 1-3; t. 6, f. 28-34 (fiss., reg.)
1909 *Stenostomum leucops* v. Graff, Brauer Süsw., 19; 68, f. 131, 138, 141
1913 *Stenostomum leucops* v. Graff, Tierreich, 35: 19, f. 36 (key)
1929 *Stenostomum leucops* Nassonov, C. R. Acad. Sci. l'URSS 1929, 424
1929 *Stenostomum leucops* Cleave, Physil. Zool., 2: 18-58 (fiss., reg.)
1930 *Stenostomum leucops* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ. ser. B, 5 (1): 76 (decript., new loc.)
1932 *Stenostomum leucops* Okugawa, Zool. Mag. Japan, 44: 266 (key)
1938 *Stenostomum leucops* Okugawa, Bot. & Zool., 3: 1858, 1860 (new loc.)
1923-33 *Stenostomum leucops* Bresslau, Kükenthal-Krumbach Handb. Zool., 2 (1-Half.): (1) 220, f. 228, 229
1940 *Stenostomum leucops* Tu, Zool. Jahrb. Syst. 73: 209 (list)
1949 *Stenostomum leucops* Okugawa, Illust. Encycl. Japan, rev. ed., 1493 f. 4208
Loc. Saghalien, Hokkaido, Japan proper, Loo-choo Islands (Yaku, Okinawa, Irinoomote-Islands), Formosa, China (Peiping), Sumatra, Europe, South Africa (Lake Victoria)

3. *Stenostomum unicolor* O. Schmidt, 1848

- 1848 *Stenostomum unicolor* O. Schmidt, Rhabd. Strudelw. Süsw., 60, t. 6, f. 19 (orig. descript., Europe)
1882 *Stenostomum unicolor* Vejdovský, Brunnenw. 54, t. 5, f. 1-12 (descript.)
1885 *Stenostomum unicolor* M. Braun, Arch. Dorpat. Gesell., ser. 2, 10: 140, t. 2, f. 3
1908 *Stenostomum unicolor* Meixner, Ver. Steiermark Graz, 231, f. 1-5 (excret. org.)
1909 *Stenostomum unicolor* v. Graff, Brauer Süsw., 19; 69, f. 143 (key)
1913 *Stenostomum unicolor* v. Graff, Tierreich, 35; 24, f. 32
1930 *Stenostomum unicolor* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ., ser. B, 5 (1): 76 (new loc.)
1932 *Stenostomum unicolor* Okugawa, Zool. Mag. Japan, 44: 266 (key)
1940 *Stenostomum unicolor* Tu, Zool. Jahrb. Syst. 73; 209 (monogr.)
Loc. Japan proper (Lake Biwa), Formosa, Sumatra, Europe

4. *Stenostomum ignavum* Vejdovský, 1880

- 1880 *Stenostomum ignavum* Vejdovský, Sitzber. Böhm. Gesell. Wiss., Math.-Naturw. Classe Prag, 505, (orig. descript. Europe)
1882 *Stenostomum ignavum* Vejdovský, Brunnenw., Prag, 55, t. 5, f. 13, 14
1929 *Stenostomum ignavum* Nassonov, C. R. Acad. Sci. l'URSS, 1929: 424 (new loc.)
1932 *Stenostomum ignavum* Okugawa, Zool. Mag. Japan, 44: 266 (key)
1940 *Stenostomum ignavum* Tu, Zool. Jahrb. Syst., 73: 209 (monogr.)
Loc. Japan proper (Echizen, Tsuruga, Lake Biwa), Europe (Prag, Kazan)

5. *Stenostomum agile japonica* Okugawa, 1930

- 1930 *Stenostomum agile japonica* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ. ser. B, 5 (1): 76 (orig. descript., Tango-Miyazu)
1932 *Stenostomum agile japonica* Okugawa, Zool. Mag. Japan 44: 266 (key)
1940 *Stenostomum agile japonica* Tu, Zool. Jahrb. Syst. 73: 209 (monogr.)
Loc. Yamashiro (Kyoto), Tango (Miyazu)

III. Genus RHYNCHOSCOLEX Leidy, 1851

Rhynchoscolex vej dovskýi Sekera

6. *Rhynchoscolex vej dovskýi* Sekera, 1889

- 1851 *Rhynchoscolex simplex* Leidy, Proc. Acad. Philadelphia, 5: 125
1889 *Rhynchoscolex vej dovskýi* Sekera, Sitzber. Bohm. Gesell., 324, 334, t. 2, f. 12-16

- (orig. descript.; Europe)
- 1898 *Rhynchoscolex simplex* Sekera, Zool. Anz., 26: 601, 607, 608
- 1913 *Rhynchoscolex vejdovskýi* v. Graff, Tierreich, 35: 30, f. 39
- 1924 *Rhynchoscolex simplex* Reisinger, Biol. Tiere Deutsch., 6 (4): 54-55, f. 31 (a d. reg.)
- 1923-33 *Rhynchoscolex simplex* Bresslau, Kükenthal-Krumbach; Handb. Zool. 2 (1 Half.): (1) 219, f. 227 (a-b)
- 1932 *Rhynchoscolex simplex* Okugawa, Zool. Mag. Japan, 44: 267
Loc. Hokkaido Isl. (Sapporo), Europe, North America
- II. Subordo **OPISTHANDROPORA**
- II. Familia **MICROSTOMIDAE**
- Microstomida v. Graff (partim), 1882
- I. Genus **MICROSTOMUM** O. Schmidt, 1848
- Microstomum lineare** (O. F. Müller)
- Planaria O. F. Müller (partim), 1776
- Derostoma A. Dugès (partim), 1828
- Microstoma Örsted (nec M. G. Cuvier 1817), 1843
- Eustomum Leidy, 1852
- Typhlomicrostomum Diesing, (partim), 1862
1. **Microstomum lineare** (O. F. Müller), 1774
- 1774 *Fasciola linearis* O. F. Müller, Verm. terr. fluv., 1 (II): 67 (orig. descript., Europe)
- 1844 *Microstoma lineare* A. Örsted, Plattw., 73, t. 2, f. 17-20
- 1845 *Microstomum lineare* O. Schmidt, Rhabd. Strudelw. süßw., 56, t. 6, f. 17 (tot. fig.)
- 1885 *Microstomum lineare* Zacharias, Zool. Anz., 8: 316 (excret. syst.)
- 1888 *Microstomum lineare* Sekera, Bohm. Gesell., 304, 344, t. 1., f. 1-13 (sex. org.)
- 1890 *Microstomum lineare* F. v. Wagner, Zool. Jahrb. Anat., 4: 349, t. 22 f. 1-3, 8-11, 13-16, 18, 19; t. 23, f. 22, 24-27; t. 24, f. 28-36; t. 25, f. 37, 38, 41-43 (class., anat., asex. reprod.)
- 1894 *Microstomum lineare* Fuhrmann, Rev. Suisse Zool., 2: 228, t. 10, f. 4-6 (nematocyst)
- 1907 *Microstomum lineare* Hofstén, Zeitschr. wiss. Zool., 85: 394, t. 32, f. 1-6 (anat., histol.)
- 1911 *Microstomum lineare* Sekera, Sitzber. Bohm. Gesell., 13: 6, f. 8, 9
- 1929 *Microstomum lineare* Nassonov, C. R. Acad. Sci. l'URSS, 1927, 424
- 1930 *Microstomum lineare* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ. ser. B, 5 (1): 77 (new loc.)
- 1932 *Microstomum lineare* Okugawa, Zool. Mag. Japan 44- 267 (key)
- 1923-33 *Microstomum lineare* Bresslau, Kükenthal-Krumbach Handb. Zool., 2 (1 Half.): (1) 219 f. 226 (asex. reprod.)
- 1938 *Microstomum lineare* Okugawa, Bot. & Zool., 6: 1858-1664 (new loc.)
- 1940 *Microstomum lineare* Tu, Zool. Jahrb. Syst., 73: 210
- 1949 *Microstomum lineare* Okugawa, Illust. Encycl. Japan, rev. ed., 1493, f. 4209
Loc. Japan proper, Hokkaido, Formosa, Loo-choo Isl. (Yaku, Okinawa, Irinooomote), North China, Sumatra, Europe, North America
2. **Microstomum giganteum** Hallez, 1878
- 1878 *Microstomum giganteum* Hallez, Bull. Sci. Nord., 10: 198
- 1890 *Microstomum giganteum* Hallez, Trav. Wimerceux 2: 148, tf. A-D, t. 6, f. 27-30, 34, 35, 41, 42 (anat.)
- 1890 *Microstomum giganteum* E. v. Wagner, Zool. Jahrb. Anat., 4: 394, t. 22, f. 4-7, 12, 17; t. 23, f. 23, 24; t. 24, f. 30; t. 25, f. 38 40, 42 (class., anat., fission)

Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ. ser. B,
5 (1) : 77 (new loc.)

1932 *Microstomum giganteum* Okugawa, Zool. Mag. Japan, 44 : 267 (new loc.)

1940 *Microstomum giganteum* Tu, Zool. Jahrb. Syst. 73 : 210 (monogr.)

Loc. Province Kyoto, Fukui (Tsuruga), Europe

III. Familia MACROSTOMIDAE

I. Genus MACROSTOMUM O. Schmidt, 1848

Macrostomum appendiculatum (O. Fabricius)

Derostoma A. Dugès (partim), 1828

Turbella Ehrenberg (partim), 1831

Macrostoma Örsted, 1843 (nec Risso 1826)

Turbella Diesing, 1850

1. *Macrostomum appendiculatum* (O. Fabricius, 1826)

1826 *Planaria appendiculatum* O. Fabricius, Danske Selsk. Afhandl. 2 : 17, t. 1, lit.

B. f. 1, 2 (orig. descript., Europe)

1848 *Macrostomum hystrix* O. Schmidt, Rhabd. Strudelw. süßw., 54, t. 5, f. 15
(tot. fig.)

1905 *Macrostomum hystrix* Luther, Festschr. Palmén 1 (5) : 4, 48, tf. 2 ; t. 1, f. 2, 4-8,
10, 17-19, 27 ; t. 2, 1, 7, 8, 10 ; t. 3, f. 1-8 ; t. 4, f. 1-7, 16-22, 28, 31-35 (anat., histol.)

1913 *Macrostomum appendiculatum* v. Graff, Tierreich, 35 : 49, f. 51, 52

1930 *Macrostomum appendiculatum* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ.,
ser. B., 5 (1) : 77 (new loc.)

1932 *Macrostomum appendiculatum* Okugawa, Zool. Mag. Japan, 44 : 269 (key)

1923-33 *Macrostomum appendiculatum* Bresslau, Kükenthal-Krumbach ; Handb.
Zool., 2 (1 Half.) : (1) 205, f. 203 (a, b) (reg.)

1937 *Macrostomum appendiculatum* Ferguson, Zool. Anz., 119 : 31, f. 7, 8 (male
reporod. org.)

1939 *Macrostomum* sp. Okugawa, Bot. & Zool., 3 : 1864 (new loc.)

1939 *Macrostomum appendiculatum* Ferguson, Zool. Anz., 128 : 49-53, tf. 1-5
(monogr.)

1940 *Macrostomum appendiculatum* Tu, Zool. Jahrb. Syst., 73 : 210 (monogr.)

Loc. Japan proper (Kyoto, Miyazu, Lake Biwa), Loo-choo Isl. (Irinomote), For-
mosa, Java, Europe, Siberia (Tomsk), North America

2. *Macrostomum japonicum* Okugawa, 1930

1930 *Macrostomum japonicum* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ., ser. B,
5 (1) : 79, t. 3, f. 10-13 (orig. descript., Lake Biwa)

1932 *Macrostomum japonicum* Okugawa, Zool. Mag. Japan, 44 : 268 (key)

1939 *Macrostomum japonicum* Ferguson, Zool. Anz., 128 : 204-205, f. 26-28 (monogr.)

1940 *Macrostomum japonicum* Tu, Zool. Jahrb. Syst., 73 : 210 (monogr.)

Loc. Kyoto, Lake Biwa, Yodo-river

3. *Macrostomum saifunicum* Nasonov, 1929

1929 *Macrostomum saifunicum* Nasonov, C. R. Acad. l'URSS, 1929 424-425, tf. 1
(orig. descript., Tsuruga)

1930 *Macrostomum kawamurai* Okugawa, Mem. Coll. Sci. Kyoto Imp. Univ., ser.
B, 5(1) : 78-79, t. 3, f. 6-9

1940 *Macrostomum kawamurai* Ferguson, Zool. Anz., 129 : 120-122, tf. 1-5 ; 142
(monogr.)

1940 *Macrostomum saifunicum* Tu, Zool. Jahrb. Syst., 73 : 210 (monogr.)

Loc. Japan proper (Tsuruga, Lake Biwa),

4. *Macrostomum gigas* (Okugawa, 1930)

1927 *Macrostomum tuba* Beklemishev, Bull. Instit. Recher. Biol. Univ. Perm, 5: