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## The morphology and taxonomy of *Macrostomum beaufortensis* n. sp.

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(With 6 Figures.)

Eingeg. 4. Oktober 1937.

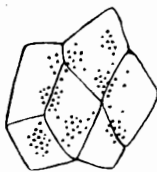
*Macrostomum beaufortensis* is a member of the family Macrostromidae, of the sub-order Opisthandropora, and of the order Rhabdocoelida<sup>1</sup>.

This flatworm lives among the algae upon the rocky eastern shore of Pivers Island, Beaufort, N. C., on which the United States Fisheries Biological Station is located. The animals may be collected in great numbers at low tide. The salinity of the waters around Pivers Island is thirty parts per thousand.

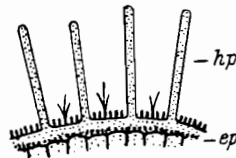
The mature animal has a typical *Macrostomum* shape (Fig. 1), in that it has a boat-shaped form, plus a spatulate tail. It measures on the average 1.4 mm. by .2 mm. The color of this rapidly swimming species is light brown. The epidermis is supplied with small reddish-brown inclusions (Fig. 2). There is a broad transverse band of these epidermal inclusions located just anterior to the mouth on the ventral side, and two broad bands lateral to the mouth. These inclusions do not show well in reflected light.

<sup>1</sup> The author wishes to acknowledge the aid rendered by the gracious director of the United States Fisheries Biological Station, Beaufort, North Carolina, Dr. HERBERT F. PRYTHERCH, in the preparation of this paper.

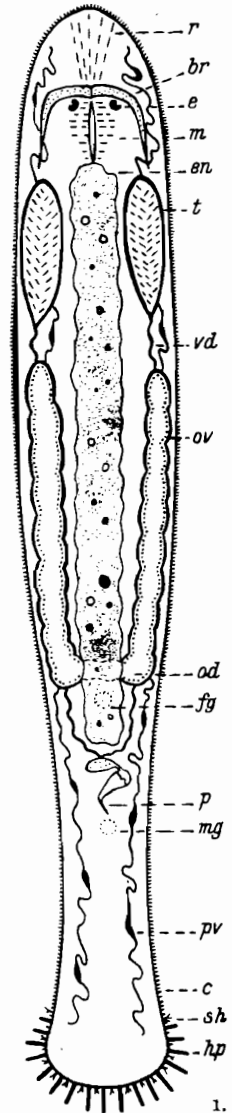
The epidermis is constituted of approximately diamond-shaped cells (Fig. 2). Very small rhabdites are orientated at the body surface in groups of from eight to ten. They are .8 of a micron long. The component ducts of a clearly defined "Rhabditenstrassen" (Fig. 1, *r*) originate under and above the commissures of the "brain" and extend to the anterior end of the body. Sensory hair tufts (Fig. 1, *sh*) are confined to the posterior body only. Spines are absent. The entire body surface is ciliated. The spatulate tail region is well supplied with "Haftpapillen" (Fig. 1, *hp*) which are long adhesive epidermal processes. They differ entirely from the ordinary rhabdite, with which the tail region of most species of *Macrostomum* is provided. Rhabdites, in this genus, are subdermal products which are orientated at the surface, while "Haftpapillen" are true epidermal outgrowths. The "Haftpapillen" (Fig. 3, *hp*) are possessed of a homogeneous cytoplasm and measure 16 micra (circa) in length. They are not readily observable when the tail adheres to the cover-slip. Zoochlorellae are present in the parenchyma. Hyaline vesicles, averaging 24 micra in diameter, are dispersed throughout the parenchyma.



2.



3.



1.

Fig. 1. Gross anatomy of *M. beaufortensis*. Dorsal view. 100 ×.  
*br*, "brain"; *c*, cilia; *de*, ductus ejaculatorius; *e*, eye; *ep*, epidermis; *fg*, female gonopore; *gl*, gland; *gp*, male gonopore; *hp*, "Haftpapillen"; *m*, mouth; *ad*, oviduct; *op*, opening; *ov*, ovary; *p*, penis stilette; *pv*, protonephridial vesicle; *r*, "Rhabditenstraßen"; *sh*, sensory hairs; *t*, testis; *vd*, vas deferens; *vg*, vesicula granulorum; *vs*, vesicula seminalis.

Fig. 2. Epidermal inclusion in *M. beaufortensis*. 333 ×.

Fig. 3. "Haftpapillen" of tail region in *M. beaufortensis*. 1000 ×.

The eyes (Fig. 1, *e*) are very black and are of the usual pigment-cup and lens structure common to *Macrostomum*. They are not embedded in the tissues of the "brain". The so-called "brain" (Fig. 1, *br*) has the morphology characteristic of the genus in that it is comprised of two ganglia bound by a very narrow median commissure. A lateral posterior nerve stem is appended to each ganglion.

The mouth (Fig. 1, *m*) is laterally bounded by mucous glands which pour their product into the pharynx simplex. The ciliated enteron (Fig. 1, *en*) is very long and narrow and is dorsal to the sexual apparatus. This is unusual in *Macrostomum*, for the enteron is generally displaced ventrally by the development of the sex organs.

Large vesicles (Fig. 1, *pv*) are located in the main line of either lateral protonephridial tubule. Four or five of these secondary collecting reservoirs may appear on either side. The external opening to the excretory system was not located.

The testes (Fig. 1, *t*) are large and are located in the anterior third of the body. They are smooth and thickly walled organs. A false vesicula seminalis may or may not be formed at the union of the vasa deferentia. The vesicula seminalis (Fig. 4, *vs*) is a very long sack-like structure, whose main part narrows to a tube-like ductus ejaculatorius (Fig. 4, *de*) which empties into the greatly reduced<sup>2</sup> vesicula granulorum (Fig. 4, *vg*). Elongated and flask-shaped glands (Fig. 4, *gl*) supply the reduced vesicula granulorum with granular material.

The smaller connecting lobular pockets inside the basal part of the stilette (Fig. 4, *p*) presumably empty their granular contents into the genital canal. The stilette has a simple right angle curve in which the organ is gradually reduced from its broadened undulating base to a long sharpened termination. The external opening is oval in shape and is located sub-terminally on the convexity of the curve. The curved point extends ventrally towards the ciliated margins of the male gonopore. The stilette measures 24 micra from its tip to its base.

The sperm cell (Fig. 5) is a simple, undulating elongated thread which measures 51 micra by .8 of a micron. No cellular differentiation is apparent.

<sup>2</sup> A normal vesicula granulorum is a discrete organ, within whose muscular walls ciliated pits are located at the ductus ejaculatorius.

The female sexual apparatus does not possess features which would warrant a specific description.

The  $n$  number of chromosomes (Fig. 6) is three and the  $2n$  number is six. In a somatic mitosis there is a large pair with unequal arms, a medium pair with equal arms, and a small pair with unequal arms. These chromosomes are very small in comparison with those studied in other *Macrostomum*.

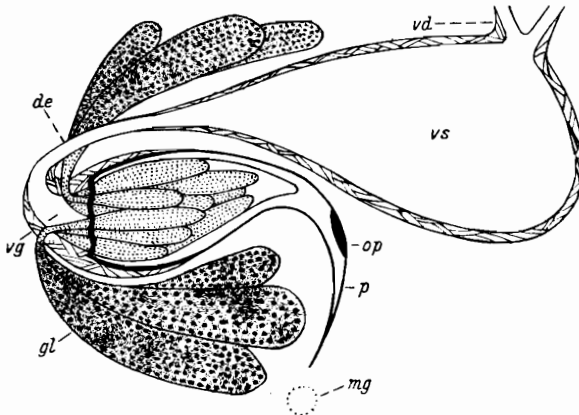


Fig. 4. Male sex apparatus of *M. beaufortensis*. Dorsal view. 1500  $\times$ .

Taxonomically, the nearest relative of *M. beaufortensis* is *M. appendiculatum* O. FABR. The two species differ in the following manner:

(1) *M. appendiculatum* O. FABR. is shown by FERGUSON (1937, Fig. 6) to have a wide, anteriorly truncated form. *M. beaufortensis* is a slender animal with rounded extremities.



Fig. 5. Mature sperm cell of *M. beaufortensis*. 1500  $\times$ .  
Fig. 6. Somatic chromosomes of *M. beaufortensis*. 6000  $\times$ .

(2) BRONN (1908, Taf. VII, Fig. 1) displays three distinct types of rhabdites for *M. appendiculatum* O. FABR. There is only one type in *M. beaufortensis*.

(3) "Haftpapillen" are absent in *M. appendiculatum* O. FABR. while they are present as true epidermal processes in *M. beaufortensis*.

(4) Sensory hair tufts are present over the entire body surface of *M. appendiculatum* O. FABR. They are confined to the posterior body of *M. beaufortensis*.

(5) The eyes of *M. appendiculatum* O. FABR. are shown to be either located on the anterior margin of the "brain" in BRONN (1908, Textfig. 18) or embedded in the posterior tissues of the "brain" in BRONN (1908, Taf. XVII, Fig. 12). The eyes of *M. beaufortensis* are not embedded in "brain" tissue.

(6) The enteron of *M. appendiculatum* O. FABR. is ventral to the common oviduct and ovaries as shown in BRONN (1908, Taf. XVII, Fig. 12; Textfig. 18) and in FERGUSON (1937, Textfig. 6). The enteron of *M. beaufortensis* is dorsal to the sex apparatus.

(7) BRONN (1908, Taf. XII, Fig. 3) depicts *M. appendiculatum* O. FABR. as having an unusually large mass of glandular tissue near the female genital atrium. *M. beaufortensis* has but a very limited supply of this tissue.

(8) *M. appendiculatum* O. FABR. does not possess the parenchymatous vesicles nor parenchymatous zoochlorellae which are present in *M. beaufortensis*.

(9) FERGUSON (1937, Textfig. 6) describes the excretory system of *M. appendiculatum* O. FABR. as having a posterior cross stem in the spatulate tail region. The lateral protonephridial main stems of this system in *M. beaufortensis* have many vesicular dilations in their course and lack a posterior connection.

(10) FERGUSON (1937, Textfig. 6) shows the development of the vesicula granulorum of *M. appendiculatum* O. FABR. to be normal, while in *M. beaufortensis* it is greatly reduced.

(11) The stylette of *M. appendiculatum* O. FABR. is depicted by FERGUSON (1937, Textfig. 7) as having a comparatively short, curved terminal region and a narrow crenated basal rim. It averages 60 micra in length. The stylette of *M. beaufortensis* is a greatly curved and highly sharpened funnel with a broad undulating basal rim. It averages 24 micra in length.

(12) The sperm cell of *M. appendiculatum* O. FABR. is spindle-shaped, measures 50 micra in length and lacks setae according to FERGUSON (1937, Textfig. 8). The sperm cell of *M. beaufortensis* is a thin undifferentiated thread which measures 51 micra in length.

(13) The chromosomes in a somatic mitosis of *M. appendiculatum* O. FABR. are one-third (circa) larger than those of *M. beaufortensis*.

## Specific Diagnosis.

*Macrostomum beaufortensis* new species; body slender, extremities rounded, posterior sensory hairs and "Haftpapillen", enteron dorsal to sexual apparatus, vesicles in lateral main stems of excretory system, vesicular areas and zoochlorellae in parenchyma, vesicula granulorum greatly reduced, stilette a widened and greatly curved funnel with undulating basal rim, chromosomes very small, body length 1.4 mm.

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### Über einen neuen südamerikanischen Characiniden der Gattung *Hypnessobrycon*.

VON ERNST AHL, Zool. Museum Berlin.

Eingeg. 30. Oktober 1937.

Von der Firma SCHOLZE & POETZSCHKE, Berlin, erhielt ich einige Fische zur Bestimmung übersandt, unter denen sich auch die unten neu beschriebene Art befand. Es ist mir eine angenehme Pflicht, den Herren SCHOLZE und POETZSCHKE auch an dieser Stelle für das freundlichst dem Zoologischen Museum Berlin übergebene Material zu danken.

#### *Hypnessobrycon pulchripinnis* spec. nov.

Körperhöhe  $2\frac{2}{3}$ —3 mal in der Körperlänge, Kopflänge 4 mal. Körper zusammengedrückt; Kopfhöhe an der Basis des Occipitalfortsatzes  $1\frac{2}{3}$ — $1\frac{3}{4}$  mal in der größten Körperhöhe; Präventralgegend abgerundet; Prädorsalgegend leicht gekielt. Auge groß, etwa 2 mal in der Kopflänge; Interorbitalbreite wenig kleiner als der Augendurchmesser; Occipitalfortsatz 5 mal in dem Abstand von seiner Basis bis zum Anfang der Dorsalen; 2. Suborbitale in Kontakt mit dem Präoperculum unten, eine schmale, nackte Linie hinten frei lassend; 3. Suborbitale klein. Maxillare etwas kürzer als das Auge; Mandibulum fast so lang wie das Auge,  $2\frac{1}{3}$  mal in der Kopflänge; Schnauze kurz, der Unterkiefer nicht vorragend. Prämaxillare mit 3 konischen Zähnen in der äußeren Reihe und 5 dreispitzigen in der inneren Reihe; Maxillare ohne