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Protoancylodiscoides mansourensis n. sp. A Monogenean Gill Parasite of the Egyptian Freshwater Fish *Chrysichthys auratus* Geoffroy 1809.

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ABSTRACT. A description is given of *Protoancylodiscoides mansourensis* n.sp. a monogenean from the gills of *Chrysichthys auratus* Geoffroy 1809, inhabiting the Demietta Branch of the River Nile in Egypt. The genus *Protoancylodiscoides* Paperna 1969, is reported for the first time in Egypt. *C. auratus* is a new host record for the genus *Protoancylodiscoides*. Particular attention has been paid to the reproductive system, digestive system, anterior adhesive appartus and haptoral sclerites. A funnel-like structure, through which muscles to the dorsal hamuli pass, has been discovered in *P. mansourensis*. Possible functions of some internal organs are discussed. The diagnosis of the genus *Protoancylodiscoides* is emended.

During the course of studying the monogenean fauna of Egyptian freshwater fishes, a monogenean belonging to the genus *Protoancylodiscoides* Paperna 1969, was collected from the gills of *Chrysichthys auratus* Geoffroy 1809. Careful comparison with *Protoancylodiscoides chrysichthes* Paperna 1969, the only monogenean of the genus *Protoancylodiscoides* which has so far been described, revealed that the present parasite is a new species. I propose to name it *Protoancylodiscoides mansourensis* in the honour of Mansoura city at which the parasite's host was collected. Since Paperna's description and illustration of the reproductive system and other organs of *P. chrysichthes* are incomplete and unclear, it was decided to extend our study to include the anatomy of *P. mansourensis* particularly the reproductive system.

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The copulatory tube of *P. mansourensis* is relatively long and resemble, to some extent, that of *Amphibdelloides maccallumi* described by Llewellyn (1960) and that of *Ergenstrema labrosi* and *Ligophorus angustus* described by Llewellyn and Anderson (1984). However, in *Amphibdelloides, Ergenstrema* and *Ligophorus*, the penis tube was found to be enclosed in a sleeve of muscle, the contraction of which results in protrusion of the distal end of the penis. It is possible that there may be a similar muscle sleeve around the copulatory tube (narrower part) of *P. mansourensis* but such a structure has not been identified with the light microscope.

Llewellyn (1960) described two accessory sclerites associated with the tubular penis in amphibdellids while in *P. mansourensis* there is only a single accessory sclerite, bearing four spines, associated with the copulatory tube. Llewellyn suggested that the two accessory sclerites serve as pincers to grasp the vaginal region, thus facilitate insertion of the selender penis. The function of the accessory sclerite in the copulatory organ of *P. mansourensis* is not clear, but it may likewise serve as a means of attaching the copulatory organ to the vaginal region of the co-copulant, so permitting insertion of the copulatory tube into the sclerotized vaginal duct. In *Quadriacanthus aegypticus* recently described by El-Naggar and Serag (1986) the copulatory organ has an accessory apparatus terminating with two hooks which are pointed away from each other. El-Naggar and Serag suggested that a firm anchorage of the copulatory organ into the vaginal region of the co-copulant is brought about by insertion of the distal hooked region of the accessory apparatus into the vaginal opening and counter-rotation of the hooks so as to perform an outwardly directed gaffing motion.

It is noteworthy that in *P.chrysichthes* Paperna has shown the vas deferens to open into the base of the copulatory tube; in *P. mansourensis* the vas deferens runs in an anterior direction where it forms a relatively large anterior vesicula seminalis at the level of the accessory copulatory sclerite and then travels posteriorly giving rise to a posterior vesicula seminalis before entering the copulatory tube. Futhermore, a unique feature of the vas deferens of *P. mansourensis* is that as it leaves the anterior vesicula seminalis it becomes surrounded by a loop of muscle fibres. It seems likely that the loop serves as a sphincter which controls the passage of spermatozoa from the anterior vesicula seminalis to the posterior vesicula seminalis. This is consistent with the observation that in some unflattened specimens the muscle fibres of the loop are fully contracted and no spermatozoa were observed in the posterior vesicula seminalis while in other specimens the muscle fibres of the loop are in a relaxed condition and masses of spermatozoa are seen in the posterior vesicula seminalis.

P. mansourensis differs markedly from *P. chrysichthes* in the structure of the reproductive organs discussed above, in the average length of the body, and in the structure of the haptoral sclerites. Adult *P. mansourensis* is twice as long as *P. chrysichthes*. A characteristic feature of the haptor of *P. mansourensis* is the

presence of a funnel-like structure; such a funnel was not reported by Paperna (1969) in *P. chrysichthes.* The funnel's function is not understood, except that it appears to serve as a "fair-lead" permitting the tendinous regions of the extrinsic muscles to apply their pull in a different direction from that of the muscle fibres. If muscular, the funnel might function as a "catch-mechanism" by contracting and gripping the tendons and thereby allowing the extrinsic muscles to relax temporarily. A similar "catch-mechanism" was described and discussed by Llewellyn (1960) in amphibdellid monogeneans. Possible functions of the tendons and extrinsic muscles of *P. mansourensis* are not known but it is possible that contraction of muscles results in an inwardly movement of the tendons and consequently the outer roots of the dorsal hamuli. In this way, the distal recurved points of the dorsal hamuli perform an outwardly-directed gaffing motion. Similar tendons were described by Kearn (1971) in the haptor of *Entobdella soleae* and Kearn reported that the tendons play an impotrant role in generating suction and embedding the hamuli points in the host's skin. Another important feature which distinguishes *P. mansourensis* from *P. chrysichthes* is that the ventral hamulus of *P. mansourensis* posseses a finger-like process; in *P. chrysichthes* such a finger process was not reported. In *P. chrysichthes,* Paperna has reported that two of the seven pairs of marginal hooklets are large while others are small; in *P. mansourensis* three pairs of marginal hooklets (I, III and VII) are considerably larger than the others.

In the present study, hooklet VII projects from the dorsal surface of the haptor, while in other dactylogyrids hooklet VII was reported to project ventrally (Kearn, 1968). The possible functional interpretation of this displacement seems difficult since no study has been done on the orientation of hooklet VII during the course of larval development. However, it is possible that displacement of hooklet VII has taken place in order to secure an efficient attachment of the dorsal surface of the haptor with the gill tissues of the host.

Gussev (1961) separated all ancyrocephaline genera, which have accessory bars associated with the ventral hamuli, from the subfamily Ancyrocephalinae (Bychowsky, 1937) and included them into a new subfamily Ancylodiscoidinae. Accordingly, Paperna (1969) placed the genus *Protoancylodiscoides* in the subfamily ancylodiscoidinae. However, in the present study no evidence has been found of accessory bars (sclerites) associated with the vfntral hamuli of *P. mansourensis.* Therefore, it is suggested that the genus *Protoancylodiscoides* might be assigned to the subfamily Ancyrocephalinae rather than Ancylodiscoidinae.

Protoancylodiscoides Paperna 1969, emended diagnosis

With characters of the family Dactylogyridae (Bychowsky 1933 and the subfamily Ancyrocephalinae (Bychowsky 1937). Dorsal hamuli larger than ventral hamuli. Two or three of the seven pairs of marginal hooklets larger than the others. Dorsal bar single. Ventral bar V-shaped. Haptor with or without a dorsally located

Materials and Methods

The specimens of *Chrysichthys auratus* Geoffroy 1809, used in this study, were obtained from the Demietta Branch of the River Nile near Mansoura, Dakahlia Province, Egypt. Fishes were kept alive until required in tanks containing circulating river water. Methods of collecting the parasites and studying their morphology and internal anatomy are as described by El-Naggar and Serag (1986). The parasites were prepared for Scanning Electron Microscopy (SEM) according to El-Naggar and Khidr (1985).

Results

Protoancylodiscoides mansourensis n. sp.

About 20 living specimens were studied. The average dimensions of ten, flattened, adult specimens were : lenght 835 (710-1000) µm and breadth 187 (142-261) µm. The anterior adhesive apparatus, anterior median head gland cells and gut are generally similar to those of other dactylogyridean monogeneans such as *Cichlidogyrus halli typicus* redescribed by El-Naggar and Khidr (1985) and *Quadriacanthus aegypticus* described by El-Naggar and Serag (1986). There are four pigment-sheilded eyes, each of which is provided with a lens (Fig. 1). The posterior eyes appear closer to each other than are the anterior eyes. Furthermore, the posterior eyes are larger than the anterior ones and are directed anterolaterally while the anterior eyes are directed posterolaterally.

The single germarium is pear-shaped and lies ventrally, anterior to the testis in the middle region of the body (Fig. 2). The receptaculum seminis which lies dorsal to the anterior region of the germarium, contains both spermatozoa and fine spherical secretory bodies and its posterior region opens into the oviduct. The sclerotized vaginal duct arises from the anterior region of the receptaculum seminis and forms two or three coils before running in a lateral direction to the left side of the body where it dilates to form a funnel - like structure, the opening of which communicates with the vaginal opening via a relatively wide, less sclerotized, short canal (Fig. 2). Only one kind of Mehlis' gland cell, producing spherical secretory bodies was recognized with the light microscope. At least 10 gland ducts extending from Mehlis' gland cells pass anteriorly where they open at the proximal end of the ootype. The two transverse vitelline ducts open into the oviduct on its dorsal side. The anterior end of the ootype communicates, by means of a short tube, with the common genital opening which lies on the ventral surface of the body behind the intestinal bifurcation (Figs. 1 & 2)

The single testis lies dorsally in the posterior half of the body proper and extends anteriorly to cover the posterior part of the germarium (Fig. 2). The vas deferens takes an anterior course along the left side of the body. At about the level

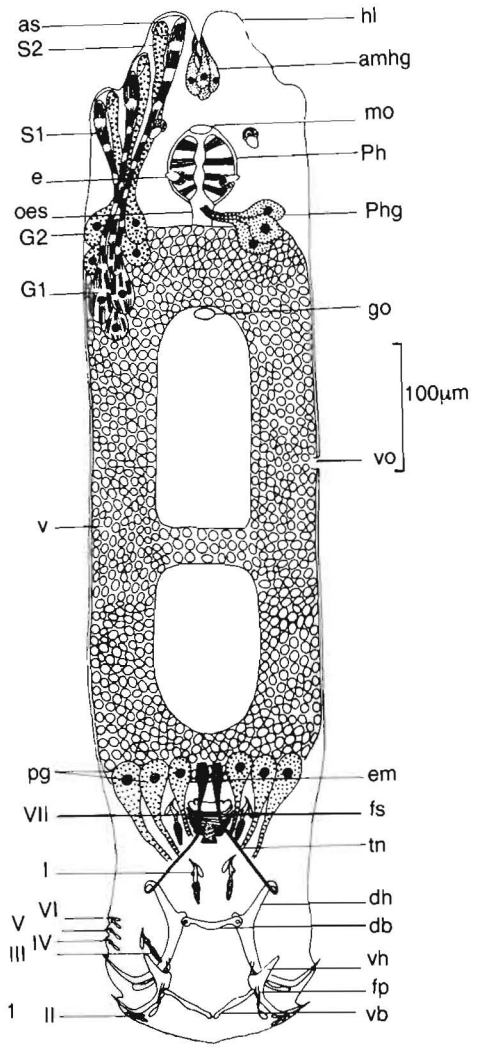

Fig. 1. *Protoancylodiscoides mansourensis* (entire worm) in ventral view. For the sake of clarity some organs, *e.g.* anterior adhesive glands and pharyngeal glands have been omitted from one side of the body. Reproductive system is shown in Fig. 2.

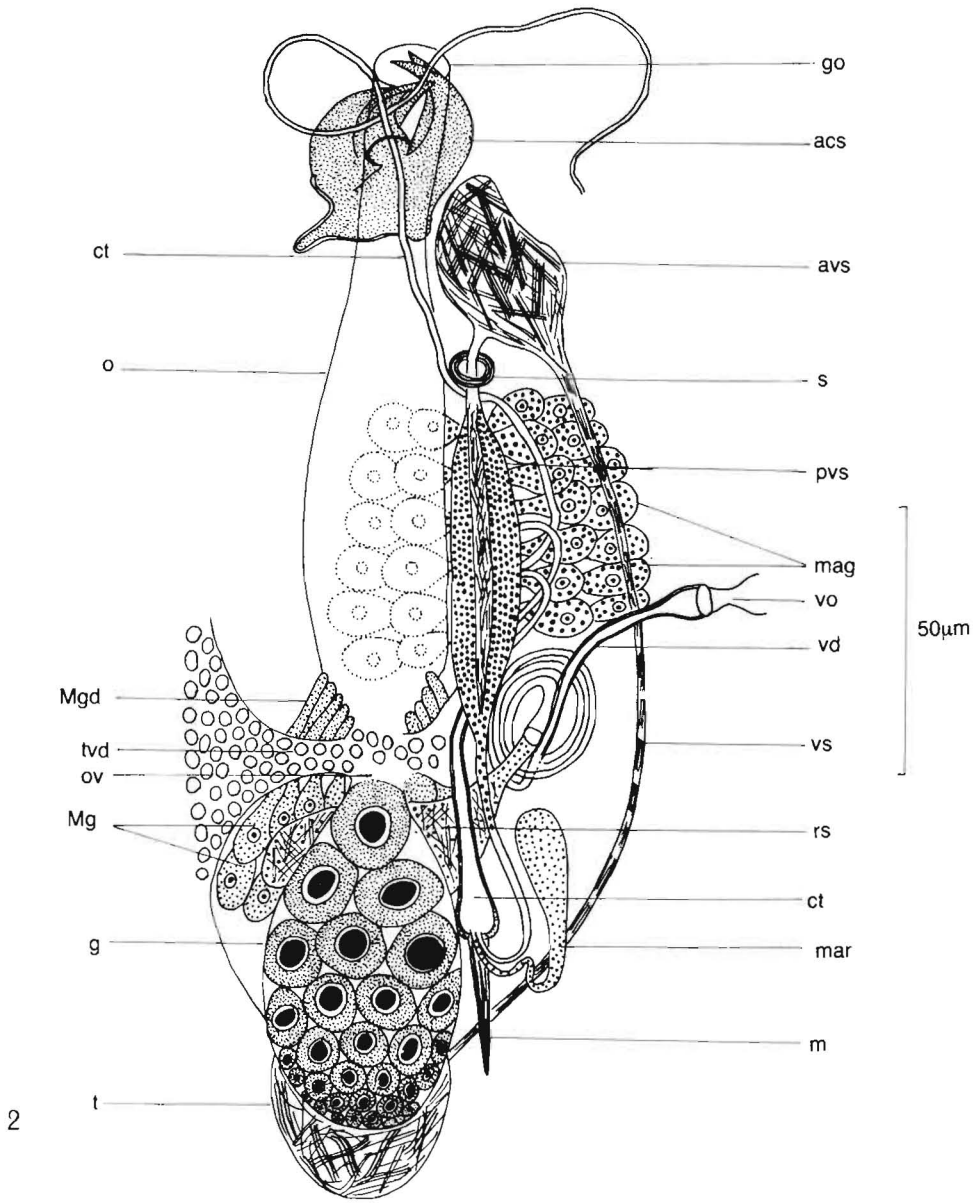

Fig. 2. Reproductive system of *P. mansourensis* in ventral view. For the sake of clarity, the posterior vesicula seminalis and the copulatory tube are slightly shifted to the left side of the body.

of the accessory sclerite of the copulatory organ, the vas deferens dilates to form a relatively large anterior vesicula seminalis, then it runs in a posterior direction where it dilates again to form a second (posterior) vesicula seminalis (Fig. 2). In many specimens, the central region of the posterior vesicula seminalis is occupied by a mass of spermatozoa surrounded by relatively large spherical secretory bodies (Fig. 2), while in other specimens, no spermatozoa were seen in the posterior vesicula seminalis and the latter was completely filled with the spherical secretory bodies. These bodies are produced by a great number of male accessory gland cells occupying the middle region of the body between the two intestinal limbs and extending from the level of the anterior vesicula seminalis to the level of the coiled vaginal tube. As it leaves the anterior vesicula seminalis, the vas deferens becomes surrounded by a loop of circular fibres. There is evidence that these fibres are muscular since in some unflattened, living specimens and in other stained preparations, the fibres of the loop are fully contracted and no spermatozoa were observed in the posterior vesicula seminalis, while in other specimens, the fibres of the loop are in a relaxed condition and masses of spermatozoa are seen in the posterior vesicula seminalis. In some partly-flattened, living specimens, spermatozoa were seen passing from the anterior vesicula seminalis to the posterior vesicular seminalis through the short narrow duct of the vas deferens, perhaps as a result of the pressure created by the coverslip. From the posterior vesicula seminalis, the vas deferens runs in a posterior direction as far as the middle region of the germarium where it opens into the base of the copulatory tube. A male accessory reservoir containing smaller spherical secretory bodies than those associated with the posterior vesicula seminalis lies on the left side of the copulatory tube and opens into its basal region *via* a short narrow duct (Fig. 2).

A remarkable feature of the copulatory tube is that its basal region is located in the posterior half of the body proper where it lies dorsally in the midline of the parasite, overlying the middle region of the germarium (Fig. 2). In some specimens, the proximal region of the copulatory tube was observed further back overlying the posterior region of the testis. The total length of the copulatory tube ranges from 302-347 μm (average 325μm). The copulatory tube widens at its base to receive ducts from the male accessory reservoir and the posterior vesicula seminalis. A single bundle of longitudinal muscle fibres extend posteriorly from the proximal extremity of the copulatory tube. In unflattened specimens, the copulatory tube is coiled two or three times as it proceeds anteriorly but in well-flattened specimens these coils are not visible, presumably because the body of the animal and the copulatory tube are stretched. The distal part of the copulatory tube is narrower than the remaining part of the tube and is associated with an accessory sclerite bearing four, slightly-curved, spine-like structures. This accessory sclerite projects into the genital opening which lies in the mid-line, ventrally, behind the intestinal bifurcation. It seems likely that the copulatory tube passes through a canal in the accessory sclerite but this needs confirmation by transmission electron microscopy.

At the posterior region of the body lies a group of gland cells with their ducts extending posteriorly where they enter the haptor (Fig. 1). The structure of these gland cells and the deployment of their ducts is currently under investigation with light and electron microscopy.

There is no evidence of a constriction between the haptor and body proper. The haptor is equipped with a variety of sclerites which includes two pairs of hamuli, seven pairs of marginal hooklets, two connecting bars (an unjointed dorsal and an articulated ventral) and a single dorsally-located accessory structure (Figs. 1 & 3). All measurements of haptoral sclerites are shown in Table 1 and follow the method used by Gussev in Bykhovskaya - Pavlovskaya *et al.* (1962). The dorsal hamuli are twice as large as the ventral hamuli. In unflattened specimens, the

Table 1: Comparison between the average measurements (in μm) of the hard parts of *Protoancylodiscoides mansourensis* n. sp. and *P. chrysichthes* Paperna 1969.

	Protoancylodiscoides mansournsis* n. sp.	***P. chrysichthes* (figures from Paperna 1969)**
Body length	835 (710-1000)**	400-500
Body width	187 (142-261)	
Dorsal hamulus:		
Total length	88 (81-93)	100-110
Outer root	28 (25-32)	20-30
Inner root	4 (4- 5)	3- 5
Hook point	24 (22-25)	
Funnel-like structure	33 (29-36)×33 (28-38)	
Dorsal bar	45 (40-48)	30-40
Ventral hamulus:		
Total length	44 (39-47)	40-60
Outer root	17 (16-19)	10
Inner root	4 (3- 4)	1-2
Hook point	22 (19-24)	
Finger-like process	11 (9-12)	
Ventral bar (each arm)	41 (38-43)	40
Marginal hooklets:		
I	36 (32-35)	28-30
III	30 (28-32)	20
VII	34 (33-35)	28-30
Small marginal hooklets	14 (13-16)	20
Copulatory tube	325 (302-347)	over 400
Accessory sclerite	44 (42-45)×33 (30-35)	
Vagina	127 (115-145)	

* Measurments based on 10 sclerites.

** Figures in parentheses show the size range of each sclerite.

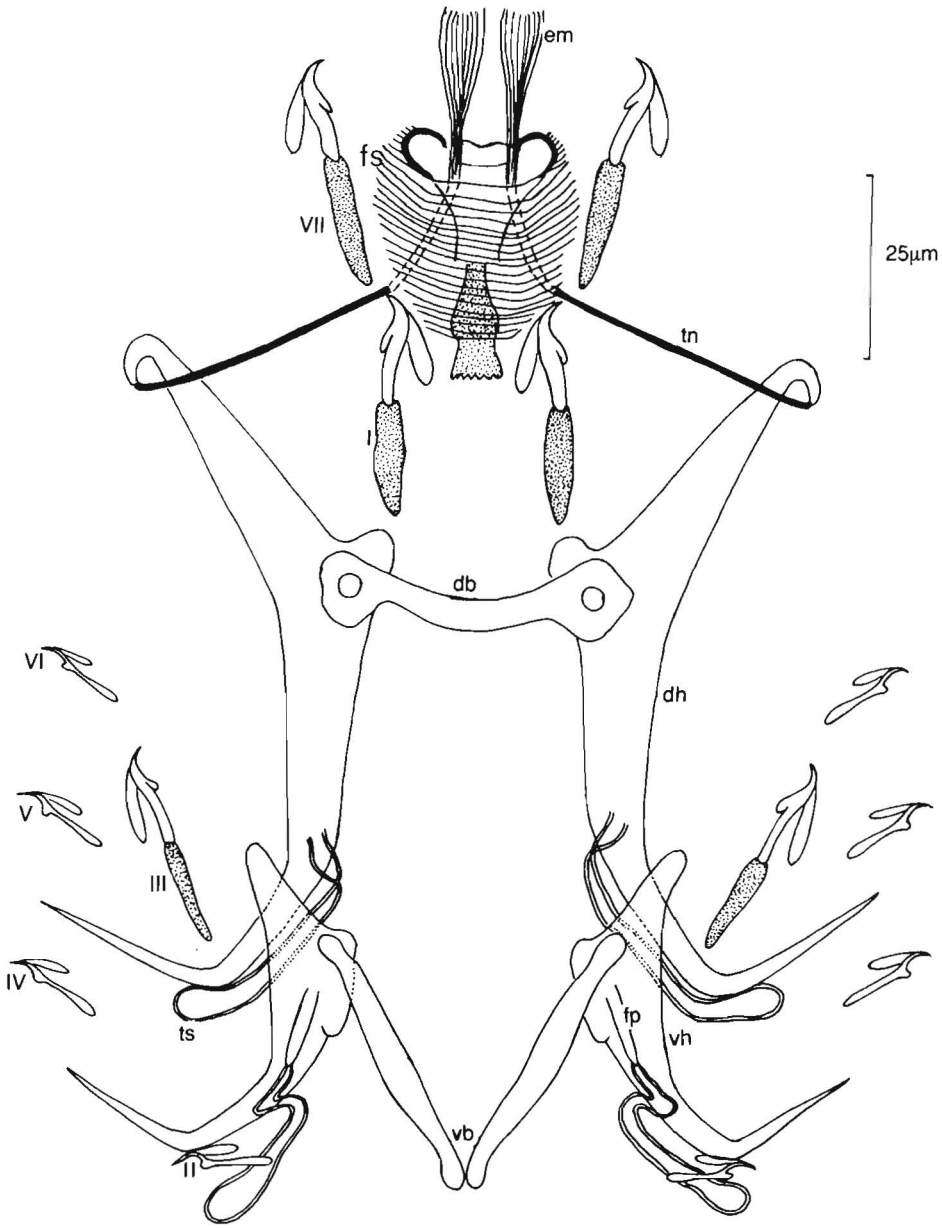

Fig. 3. *Haptoral sclerites of P. mansourensis.*

dorsal hamuli lie in the dorsal region of the haptor with the terminal ends of the outer roots lying adjacent to the anterior margin of the haptor (Fig. 4), while the long axis of the shaft sloping posteriorly so that the hamuli points emerge dorsally from the posterior extremity of the haptor. There is a finger-like process arising from the lateral aspect of the enlarged proximal part of the ventral hamulus (Fig. 3). The recurved points of the ventral hamuli project from the ventral surface of the haptor. Each of the four hamuli is equipped with a thread-like sclerite which forms a loop near the hook point. Marginal hooklets I, III and VII are considerably larger than the other hooklets (Hooklets are tentatively numbered from posterior to an anterior direction as proposed by Llewellyn 1963). Marginal hooklets I, II, V and VI project from the ventral surface of the haptor while hooklets III, IV and VII project from the dorsal surface of the haptor.

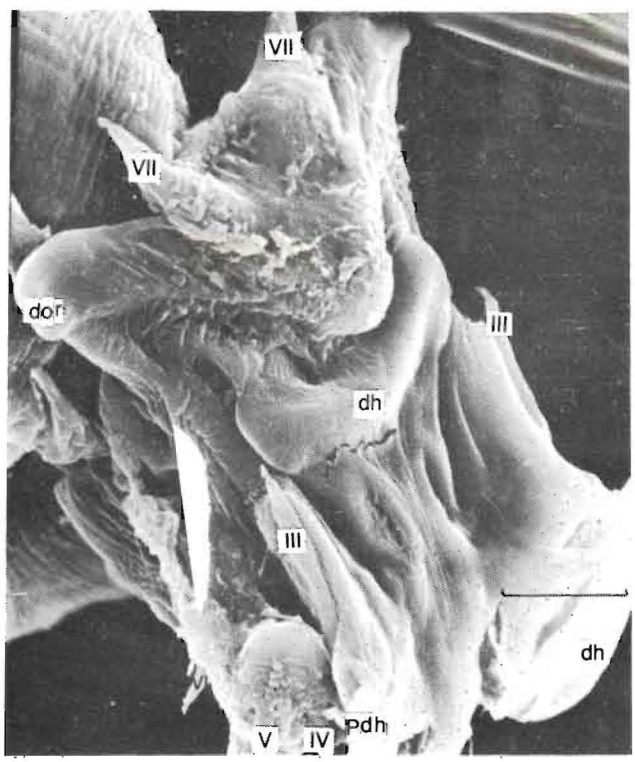

Fig. 4. Scaning electron microscope photograph showing the dorsal surface and part of the ventrolateral surface of the haptor. Note that hooklets III, IV and VII project from the dorsal surface and the plates of the funnel-like sclerite are not superficially located. Scale bar=20μm.

The ventral bar appears to consist of two halves which are joined medially. The dorsal bar is a single sclerite, enlarged on both ends.

A characteristic feature of the haptor is the presence of a funnel-like structure, through which pass the two conspicuous extrinsic muscles leading from the body proper to the dorsal hamuli (Figs. 1 & 3). The diameter of the muscles decreases as they pass through the funnel. As they leave the posterolateral margins of the funnel, they take the form of tendons which join the proximal ends of the dorsal hamuli. The funnel is located dorsally at the mid-line of the body in the anterior region of the haptor and its outer surface is covered by narrow, transversely arranged plates but detailed analysis of their structure must await transmission electron microscopy. The funnel has a triangle-like plate extending from its posterior region (Fig. 3). In an attempt to discover whether the plates on the outer surface of the funnel are located on the dorsal surface of the parasite, some specimens were examined with scanning electron microscopy. It was found that these plates are not superficially located (Fig. 4).

Discussion

A description has been given of *Protoancylodiscoides mansourensis* n. sp. from the gills of *Chrysichthys auratus*. This is only the second species of this genus that has been described, the type species being *Protoancylodiscoides chrysichthes* Paperna 1969, which was reported on the gills of *Chrysichthys nigrodigitatus* inhabiting Volta lake in Ghana. The most interesting features of the genus *Protoancylodiscoides* are the elongated and elaborate male reproductive system and the relative sizes and arrangements of the haptoral sclerites. A funnel-like structure, through which muscles to the dorsal hamuli pass, has been discovered in *P. mansourensis;* such a structure was not described by Paperna (1969) in *P. chrysichthes*.

Paperna (1969) has claimed that the male genital organs of *P. chrysichthes*, particularly the testis and proximal part of the copulatory tube, are shifted to the extreme posterior region of the body and his figure (Fig. 85) shows the germarium (ovaries according to Paperna) anterior to the testis but widely separated from it. In *P. mansourensis*, the proximal region of the copulatory tube is also posteriorly located in the body but the germarium lies in contact with the anterior region of the testis. Paperna (1969) has also reported that the distal region of the copulatory tube in *P. chrysichthes* is covered with a so-called "preputium" and that the "prostate" glands and seminal vesicles open into "a small dilation around the cirrus funnel". Neither of these features has been observed in *P. mansourensis*. According to Paperna the accessory sclerite of the copulatory organ of *P. chrysichthes* is "clasper-like"; in *P. mansourensis* the accessory copulatory sclerite terminates in two pairs of slightly curved spine-like structures.

funnel-like structure. Proximal part of the copulatory tube lying in the posterior half of the body. Vaginal duct sclerotized.

Specific Diagnosis

Protoancylodiscoides mansourensis n. sp.
Genus ***Protoancylodiscoides*** (Paperna 1969) emend.

Total length and breadth of flattened preserved adult specimens 835 (710-1000) μm and 187 (142-261) μm respectively. Haptor with a funnel-like structure. Dorsal hamuli twice as large as ventral hamuli. Each ventral hamulus has a finger-like process. Between the anterior and posterior vesicula seminalis there is a sphincter surrounding the vas deferens. Accessory copulatory sclerite terminating in four, slightly curved, spine-like structures.

Host: Gills of *Chrysichthys auratus. Geoffroy, 1809.*
Locality: Demietta Branch of the River Nile, near Mansoura, Dakahlia Province, Egypt.

Holotype and paratype specimens are deposited in the British Museum, Natural History, South Kensington, London, UK
Holotype No. 1985. 1.8.1
Paratypes No. 1985. 1.8.2-3

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Abbreviations for the Figures

acs	Accessory sclerite	*Mg*	Mehlis' glands
amhg	Anterior median head glands	*Mgd*	Mehlis' gland duct
as	Adhesive sac	*o*	Ootype
avs	Anterior vesicula seminalis	*oes*	Oesophagus
ct	Copulatory tube	*ov*	Oviduct
db	Dorsal bar	*phg*	Pharyngeal glands
dh	Dorsal hamulus	*pdh*	Point of dh
dor	Distal end of outer root of dh	*ph*	Pharynx

e	Eye	*pg*	Posterior body glands
em	Extrinsic muscles	*pvs*	Posterior vesicula seminalis
fp	Finger-like process	*rs*	Receptaculum seminis
fs	Funnel-like structure	*s*	Sphincter-like structure
g	Germarium	*S1*	Rod-shaped bodies
go	Common genital opening	*S2*	Spherical secretory bodies
G1	Gland cell producing rod-shaped bodies	*t*	Testis
		tvd	Transvers vitelline duct
G2	Gland cell producing spherical secretory bodies	*tn*	Tendon
		v	Vitellaria
hl	Head lobe	*vb*	Ventral bar
m	Muscle fibres	*vd*	Vaginal duct
mag	Male accessory glands	*vh*	Ventral hamulus
mar	Male accessory reservoir	*vo*	Vaginal opening
mo	Mouth opening	*vs*	Vas deferens
		I-VII	Numbers of marginal hooklets

References

Bychowsky, B. E. (1933) Beitrag zur Kenntniss neuer monogenetischen Fischtrematoden aus dem Kaspisee nebst einigen Bemerkungen uber die Systematik der Monopisthodiscinea Furhmann, 1928, *Zoologischer Anzeiger* **105:** 17-38.

Bychowsky, B. E. (1937) Ontogenese und Phylogenetisch Beziehungen der parasitischen Plathelminthes, *Izvestiya Akademiya SSSR* **4:** 1353-1383.

Bykhovskaya-Pavlovskaya I. E., Gussev, A.V., Dubinina, M.N., Izyumova, N.A., Smirnova, T.S., Sokolovskaya, I.L., Shtein, G.A., Shulman, S.S., and Epshtein, V.M. (1962) *Key to Parasites of Freshwater Fish of the U.S.S.R.* Moscow-Leningrad: Akademiya Nauka SSSR. (In Russian) English translation in 1964 Isreal Program for Scientific Translations, Jerusalem, IPST Cat. No. 1136, 919 p.

El-Naggar, M.M. and **Serag, H.M.** (1986) *Quadriacanthus aegypticus n. sp.* a monogenean gill parasite from the Egyptian teleost *Clarias lazera*. *Systematic Parasitology* **8:** 129-140.

El-Naggar, M.M. and **Khidr, A.A.** (1985) Redescription of the monogenean gill parasite *Cichlidogyrus halli typicus* (Price and Kirk, 1967) Paperna, 1979 from *Tilapia spp.* in Egypt. *Proce. 1st Intern. Conf. Appl. Sci., Zagazig University* **4:** 138-157.

Gussev, A.V. (1961) A new subfamily of monogenetic trematodes (Monogenoidea) (in Russian). *Doklady Akad. Nauka SSSR* **139:** 1480-1482.

Kearn, G. C. (1964) The attachment of the monogenean *Entobdella soleae* to the skin of the common sole, *Parasitology* **54:** 327-335.

Kearn, G. C. (1968) The development of the adhesive organs of some diplectanid, tetraonchid and dactylogyrid gill parasites (Monogenea), *Parasitology* **58:** 149-163.

Llewellyn, J. (1960) Amphibdellid (Monogenean) parasites of electric rays (Torpedinidae). *J. Marine Biol. Associ. U. K.,* **39:** 561-589.

Llewellyn, J. (1963) Larvae and larval development of monogeneans, *Advances in Parasitology,* **1:** 287-326.

Llewellyn, J. and **Anderson, M.** (1984) The functional morphology of *Ergenstrema labrosi* and *Ligophorus angustus,* monogenean gill parasites of *Chelon labrosus, Parasitology,* **88:** 1-7.

Paperna, I. (1969) Monogenetic trematodes of the fish of the Volta basin and South Ghana. *Bulletin de L'Institute Fondemental d'Afrique Noire* **31:** 840-880.

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بروتوأنكيلوديسكويدز منصورينسس نوع جديد من الطفيليات وحيدة العائل المتطفلة على خياشيم سمك المياه العذبة المصري «كريزيكثيس أيوراتس»

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تم عمل وصف للطفيلي «بروتوأنكيلوديسكويدز منصورينسس» وهو نوع جديد من الطفيليات وحيدة العائل المتطفلة على خياشيم سمك المياه العذب المصري «كريزيكيثيس أيوراتس» المستوطن لنهر النيل «فرع دمياط» بمصر.

كشف البحث عن أن هذه أول مرة يتم فيها تسجيل الجنس «بروتوأنكيلوديسكويدز» في مصر، وأن سمك المياه العذبة «كريزيكثيس أيوراتس» يعد عائلاً جديداً لجنس «بروتوأنكيلوديسكويدز». اهتم البحث بعمل دراسة تشريحية للأجهزة الآتية: الجهاز التناسلي، الجهاز الهضمي، جهاز الالتصاق الأمامي وكذلك دعامات جهاز الالتصاق الخلفي. كشفت الدراسة عن وجود تركيب صلب يشبه القمع يمتد من خلاله مجموعة من العضلات إلى الخطاطيف المركزية ـ ناقش البحث الوظائف المحتملة لبعض الأعضاء الداخلية. ثم أيضاً عمل تصويب للتشخيص السابق لجنس «بروتوأنكيلوديسكويدز».

(١) العنوان الحالي: كلية التربية، فرع جامعة الملك سعود بأبها
ص. ب ١٥٧، المملكة العربية السعودية