New records of Turbellarian Platyhelminthes from Al-Dalmage lake / Iraq

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Abstract:

A total of 437 individuals of Turbellarin Platyhelminthes were sorted from benthic samples collected monthly for a period of seven months(April to November 2013) from AL-Dalmage lake, a part of middle section for main outfall drain south of Baghdad. They were identified as *Gyratrix hermaphroditus, Stenostomum leucops ,Stenostomum unicolar and Stenostomum bryophilum* ,The relative abundance of worms decreased during hot season which (May to September) ,where they start rising again. The species were studied alive , the identification criteria were illustrated by photos. *G. hermaphroditus* was the most abundant species among the four species.

Key word: Turbellarin, AL-Dalmage lake, *Gyratrix hermaphrodites, Stenostomum* sp

Introduction:

The class Turbellaria , phylum Platyhelminthes includes all free living members of the phylum . The body is vermiform., among conspicious external characters are the eyes , cilited pits or grooves , sensory hairs or bristles , and sclerotized structure. The epidermis is always cilitated in whole or in part. The mouth is ventrally located anywhere along the mid-ventral line from about the middle of the body to near the anterior end .The phyarnx occurs in three grades of structure : simple , bulbuous with two types dolioform and rosulate and plicate.[1]

The Genus *Gyratrix* is a turbellarian platyhelminthes belonging to Rhabditophora , order Radbocoela ; Family Polycystididae , subfamily Gyeatricinae . Rhabdocoela are small flatworms (mostly less than 5 mm) belonging to the microtubellarians . The order includes more freshwater turbellaria than other orders . they mainly found in the standing water , only a few kinds live in streams [2] .

The Genus *Stenostomum* Schmidt 1848 is the largest genus of the Catenulid ,with more than 50 known species with few useful morphological characters includes:

1-The cilited pits are two invaginations at the anterior end of the worm . They are associated with the anterior brain lobes, and should be studied preferentially in live animals . They vary in length , depth and location .

2-The refractile bodies associated with the brain lobes ; their shape and number vary among species.

3-The brain lobes can vary in shape,size and development .

4- The excretophores, which are locted in the intestine (immobile cells with excretory function) They are rounded spots that are whitish,almost reflective in incident light and dark in transmitted light . They can be evenly distributed in two rows or scattered in the intestine[3 &4].

The Catenulids Turbellaria in general lack sclerotized structures such as copulatory stylets , which are used in other flatworm taxa in species

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recognition . characters such as size , colour and shape are often variable , and sexually mature specimens are rarely encountered [5 &6].

Material & Methods:

Samples of aquatic plant , benthic periphyton , fine detritus sediments, and water were collected from the AL-Dalmage lake , part of middle section for main outfall drain , southern Baghdad between wastt and Al-Qadisyai governorate and to the Eastren-Nourth of Thiqar governorate, .for a period from April to October 2013 using a long hand digger to eradicate the plants .The eradicated plants and algae are collected in container with water from the sits and then transferred to the laboratory where they were put in an aquarium of (40x20x20 cm) and left for about 5-10 days to allow the flatworm to settle down . Air pump was used to ventilate water in each aquarium. The settled sediment wasis collected with care by fine dropper and transfered to petri dishes of 10cm diameter .

The speciemen were studied alive and the location and size of the internal organs. Were examined by a dissecting and a compound microscope[3&4].

Results and Discussions:

Four species of Turbellarian Platyhelminthes were identified, including ***Gyratrix*** *hermaphroditus* , *Stenostomu leucops* , *Stenostomum bryophilum*, and *Stenostomum unicolor*.

Table(1) Show that there are a total number of 437 individuals of Turbellarian worms were collected during the study period, the higher number of worms recorded in April, in which a total of 139 individuals was recorded , it is clear that the population always decrease during hot season starting from May to the end of August, and they reappear in September. *Gyratrix hermaphroditus* was the most dominant species in all samples.

Table (1) : Number of individuals of different turbellarian species collected during study period

months / Species	April	May	June	July	August	Sept.	Oct.	Nov.	Total
Gyratrix hermaphroditus	50	12	5	-	8	30	45	50	200
Stenostomum leucops	30	8	-	-	9	7	11	38	103
Stenostomum bryophilum	20	--	-		2	5	8	18	53
Stenostomum unicolor	39	-	2	-	8	5	10	17	81
Total	139	20	7	-	27	47	74	123	437

Description of Species

1- Gyratrix hermaphroditus Ehrenberg, 1831

This species is characterized as colorless, very transparent, with one pair of black eye spots set about the end of the first one third of the body. It is very contractile and may rounded up into ball or elongate into a thin cylinder. There is a papillated conical proboscis at the anterior end which does not protrude from the body, and a long sclerotized or chitinous structures of the copulatory organ at the posterior end . the mouth and pharynx rosulatus, and they are close to the middle of the body. The intestine which is covered on the dorsal side by vitellaria. The ciliated pits and grooves , wich olways found in close related species are frequently lacking. (plate 1)

This species can easily be recognized by its large copulatry bursa , long sheath and stylet , lacking a hook on the stylet . a

papillated conical proboscis at the anterior end which does not protrude from the body , one pair of black eye spots.

It is cosmopolitan and euryhaline species, recorded In Ausrralia,[7], Jamaica[8] , Hawaii [9] , North American Pacific Coast[10] , New York state [11].Nigeria [12]., and in Arkansas State [13] .

The worms are generally feeding on protozoa , small crustaceans , diatoms and algae

Asexual reproduction does not occur in species of order Neorhabdocoela, and the identification of species is mainly based on the reproduction system in addition to other morphological characters . They are produce thin walled summer eggs and thick-walled resting-eggs for propagation and for surviving un-favorable conditions such as cold or drought [14, 15].

the order includes more of freshwater turbellaria than other orders, are mainly to found in the standing water[16] ; only a few kinds live in streams .*Gyratrix hermaphroditus* was recorded in marine [8] , freshwater [12], and brackish habitats [9].

Stenostomum leucops O. Schmidt , 1848

Specimens were identified mainly based on the shape of the body , ciliated pits and refractile organs [17,18] Length of single zooids 0.580-0.800 mm, maximum width about 0.137mm . the animals are extremely contractile but when they are swimming , the body is spindle – shaped, rounded anteriorly , tapering posteriorly into a long or short tail (depending on the age) . Large ciliated pits lie halfway between the mouth and the anterior tip. The long anterior lobes of the brain lie close to the epidermis of the ciliated pits . the posterior lobes bear light-refracting organs . the mouth is continuously change in shape . Pharynx three times longer than it is wide and does not reach the middle of the body. It is surrounded by a large number of small glands . the pore of the protonephridium lies about halfway between the end of the intestine and the tip of the tail. (Plate2).. Cosmopolitan [3] .

Stenostomum bryophilum Luther, 1960

Adult specimens, 0.2–0.80 mm long Chains usually with two zooids (0.8–1 mm). Anteriorand Posterior end generally rounded. The intestine reaches the caudal body region. Epithelium with short uniform cilia and rigid sensory cilia scattered on the body surface,. Anterior brain lobes formed by small i ndependent masses . No light-refracting bodies .Oral pore oval,. Pharynx 1–2 times longer than it is wide. nephridiopore terminal (plate3). This species was described in Finland by Luther 1960 .

Stenostomum unicolor Schmidt, 1848

Chains of two or three zooids usually detected. Length 0.398-1.000 mm , maximum width 0.050- 0.070 mm. The anterior lobes of the brain do not touch each other .They reach the posterior edges of the small ciliary pits. The light-refracting organs are spherical with excavation on the anterior side. The mouth has variable forms .The pharynx is slender, more than three times as long as wide, with very small glands .The intestine has two rows of excretophores with granular contents .the pore of the protonephridium lies terminal.(plate 4).

This species is Cosmopolitan . [5] referred to *S. unicolor* as a species complex , may be divided into two or three species, but he was not able to divide this complex into separate species, because of the lack of good characters, the great variability, and the rarity of the sexual reproduction.

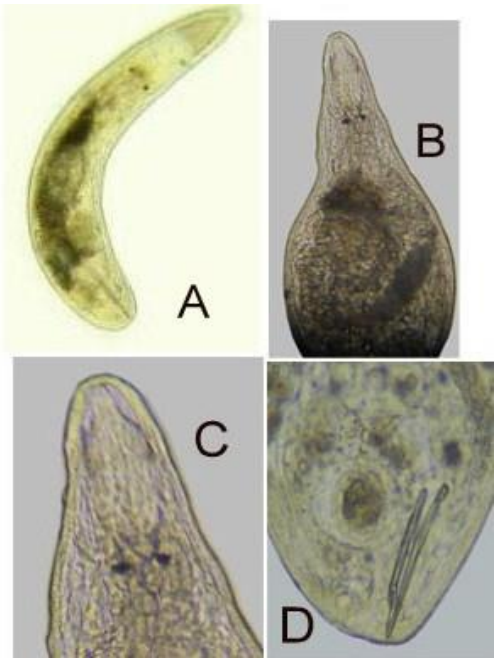
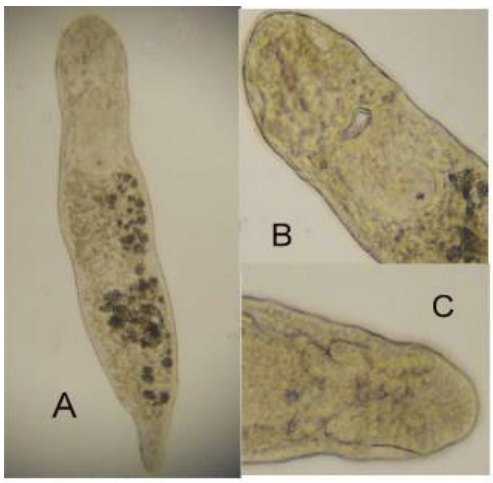


Plate1: ***Gyratrix hermaphroditus***
A: whole worm, cylinder form; B: whole worm, rounded form
C: anterior end ; D: posterior end

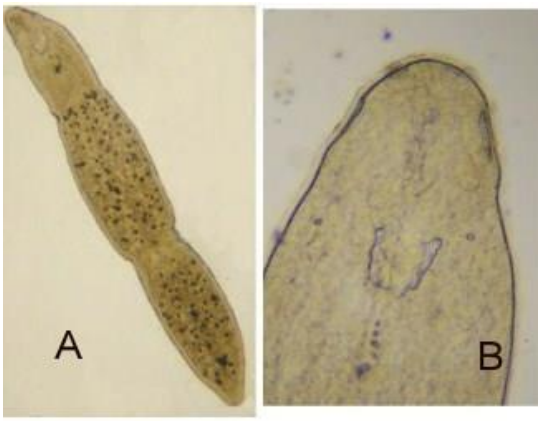


Stenostomum leucops

Plate2: ***Stenostomum leucops***
A: Whole worm; B: anterior end showing mouth; C: anterior end showing brain

Stenostomum bryophilum

Plate3: ***Stenostomum bryophilum,*** Whole worm



Stenostomum unicolor

Plate4: ***Stenostomum unicolor***
A: whole worm; B: anterior end

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تسجيل جديد للديدان المسطحة المعكرات من بحيرة الدلمج / عراق

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الخلاصة :

عزل من437 فرد من الديدان المسطحة من عينات قاعية ونباتات مائية جمعت شهريا على مدى سبعة اشهر اعتبارا ًمن مايس والى تشرين الثاني من 2013 من بحيرة الدلمج ، وهي القسم الاوسط للمصب العام جنوب بغداد . شخصت الديدان الى الانواع *Gyratrix hermaphrodites* و *Stenostomum leucops* و *Stenostomum unicolar* و *Stenostomum bryophilum* ،سجل *النوع Gyratrix hermaphroditus*سيادة على بقية الانواع . لوحظ ان الوفرة النسبية للديدان تنخفض خلال الاشهر الحارة ابتداءا من مايس ولغاية ايلول حيث تبدا بالارتفاع تدريجيا . درست الديدان لغرض تشخيصها حية ووضحت الصفات التشخيصية بالصور الفوتوغرافية .