

HAPLOPORUS BILQEESAE N.SP. (HAPLOPORIDAE: TREMATODE) IN FISH CHELON SUBVIRIDIS (VALENCIENNES) FROM KARACHI COAST, PAKISTAN

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خلاصہ

تیلون سبورائزس (Valenciennes) کراچی کے ساحلی پانی میں وسیع پیمانے پر تقسیم ایک مچھلی ہے۔ نئی نوع *Haploporusbilqeesae* اپنی جسامت، وینٹریل سکر اور تولید اعضاء (Testis) کے شکل کے اعتبار سے اصل نوع سے مختلف ہے۔ نئی نوع کا terminal genitalia بھی اصل نوع *Haploporusbenedenii* (Stossich, 1887) سے مشابہت نہیں رکھتا جس میں اندرونی اور بیرونی seminal vesicle کافی لمبے اور بیرونی شکل کے ہیں جس کا ہر ماہر وڈیک تھیلی بڑی ہے جو اپنے اندر اعضاء سے 1887) mertraterm، حرما فر وڈیکٹ، جیناٹل ایٹریم اور جیناٹل پور سائے ہیں۔ جینس *Haploporus* کی یہ پہلی معلوماتی رپورٹ ہے جو ساحل کراچی کے مچھلی میں پایا گیا ہے۔

Abstract

Fish *Chelonsubviridis* (Valenciennes) is a widely distributed fish found in coastal water of Karachi, Sindh, Pakistan. The new species *Haploporusbilqeesae* separated from the type species in its body shape, ventral sucker and testis. In the present species, terminal genitalia also does not resemble to the one in the type species *H. benedenii* (Stossich, 1887) Looss, 1902 in which the external and internal seminal vesicles are quite larger and oval in shape. The hermaphroditic sac is also bigger and accommodates the mertraterm, hermaphroditic duct, genital atrium and genital pore.

This is the first report of the genus *Haploporus* Looss, 1902 in a fish *Chelonsubviridis* from Karachi coast, Sindh, Pakistan.

Keywords: *Haploporusbilqeesae n. sp.*, Fish *Chelonsubviridis*, Karachi coast, Pakistan.

Introduction

Chelonsubviridis (Valenciennes) (Pisces: Mugilidae) a commercially important fishes (Rahman *et al.*, 2013) found in coastal and estuarine waters of tropical and temperate areas of the globe. They are also cultured widely (Lee and Ostrowski, 2001). These mullets serve as an important food fishes of estuaries and act as a major source of food for upper level piscivores. It is found in Gulf of Sri Lanka, Queensland, Polynesia, China, Pakistan and India. Pakde *et al.*, (2018) and Labony *et al.*, (2021) reported that trematodes cause excessive threats to humans who consume improperly cooked fish and food products. As we progress in our knowledge of marine parasite relationship under different climate change it is important to study host-parasite relationship and observe it from broader community perspective (Byers, 2021).

In this paper, description of a new trematode species from *C. subviridis* from marine waters of Karachi coast, Pakistan is being reported.

Materials and Methods

The host fish were collected from Karachi coast, Pakistan (24.8607° N, 67.0011E°). Parasites obtained were pressed between two slides, fixed with AFA, preserved in ethanol, stained with Mayer's Carmalum and finally mounted in Canada Balsam. Drawings were made with the help of a camera Lucida and measurements are given in mm unless otherwise mentioned. Holotype and Paratype are in the possession of the senior author (M. I).

Haploporusbilqeesae n.sp.

(Fig: 1-4)

Host:	<i>Chelonsubviridis</i> (Valenciennes)
Location:	Intestine
Locality:	Karachi coast, Pakistan
No. of host examined/infected:	20/2
No. of specimen recovered:	7

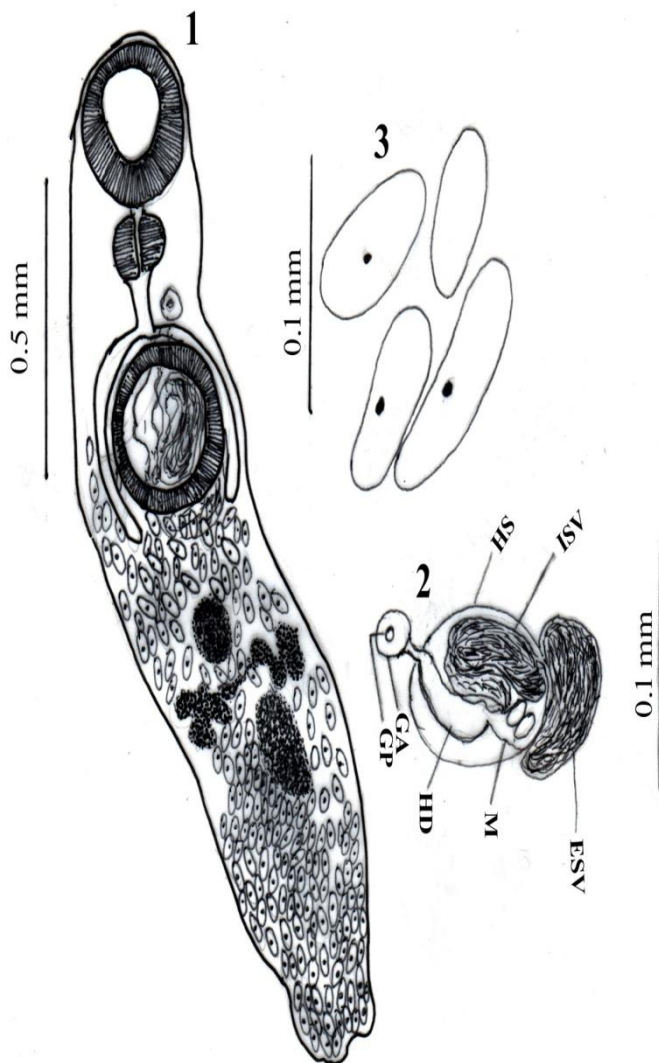


Fig. 1: Entire, Holotype of *Haploporus bilqeesae n. sp.*,

Fig. 2: Seminal vesicle and associated structures

HS = Hermaphroditic sac; ISV = Internal seminal vesicle; M = Mertraterm;

HD = Hermaphroditic duct; GA = Genital atrium; GP = Genital pore

Fig. 3: Eggs with eyespot



Fig. 4: Photomicrograph of entire specimen

Results and Discussion

Description is based on 7 whole mount, adult specimen. Body elongated, oval, total body length is 1.09-2.01, maximum width is acquired in the anterior third of the body in the region of the acetabulum, 0.42-0.44, 22-24 percent of the entire body length. Tegument is thick armed with minute spines, obvious in anterior body region. Eye-spot pigment is dispersed, abundant between subterminal and muscular layers. Spherical oral sucker, 0.28-0.29 long and 0.26-0.28 wide. Spherical ventral sucker larger in size as compared to oral sucker 0.28-0.30 in length and 0.29-0.30 wide. Forebody 0.84-0.86 long. Prepharynx very short 0.02-0.41. Pharynx globular 0.1-0.11 long and 0.13-0.14 wide much smaller as compared to oral sucker. Esophagus as long as the pharynx. Intestinal bifurcation is dorsal to the ventral sucker, caeca relatively narrow and blindly end at the level of acetabulum surrounded by the uterus, full of eggs.

Testis single, elongated with smooth walls, far more posterior to acetabulum, 0.19-0.20 long and 0.12-0.13 wide. Seminal vesicle external contiguous with hermaphroditic sac, secular, sub globular and similar in size with internal seminal vesicle. Mostly in forebody hermaphroditic sac oval to slightly elongate, globular, antero-dorsal to

posterior ventral hermaphroditic duct. The internal seminal vesicle is thin walled, secular, sub globular and occupies more than half of the hermaphroditic sac. Unarmed hermaphroditic duct, weakly muscular, thin walled with length less than third length of the hermaphroditic sac. Genital atrium obvious, circular, thin walled, genital pore is median between ventral sucker and pharynx and wide round.

Ovary roughly spherical 0.10-0.11 by 0.10 in size, posterior to ventral sucker but anterior to the testis and vitelline follicles. Uterus thin walled, extensive reside almost entire third body and area behind the acetabulum. Egg oval and elongated, numerous each with eye spot. Vitellarium two, unsymmetrical, separated with irregular follicles or irregular compact masses below the ovary. Egg measures 0.075-0.11 by 0.030-0.035.

Blasco-Costa *et al.* (2009) reassessed the position of the nominal species of *Haploporus* Looss, 1902 and *Lecithobotrys* Looss, 1902 by a comparative morphological study based on recent specimens collected from the western Mediterranean. The re-examination of museum material and critical judgement of the data published, authors described *Haploporus benedenii* Stossich, 1887 (type species) and considered *H. lateralis* Looss, 1902 to be the junior synonym. They also presented new generic diagnosis for the both *Haploporus* and *Lecithobotrys*.

Present specimens differ from type species *Haploporus benedenii* (Stossich, 1887) Looss, 1902; Blasco-Costa *et al.*, (2009) mainly in its broader shape which is elongated with its anterior head region comparatively rounded while the posterior end is rather narrow. Large ventral sucker as compared to oral sucker with narrow caeca ending blindly before the acetabulum.

Testis in the present specimens is oblong and elongated while *H. benedenii* the testis is roughly rounded and oval in shape. Terminal genitalia in present specimens also does not match with that of *H. benedenii* in which the external and internal seminal vesicles are quite larger and oval in shape. The hermaphroditic sac is also bigger and accommodates the metraterm and hermaphroditic duct also the genital atrium and genital pore. Ovary in the present specimens is far more posterior to the acetabulum. Vitellarium 2, separated, smooth and compact masses.

In present specimens all the male and female gonads are in the hind body while the terminal genitalia are situated in the anterior region of the body behind the caecal bifurcation while the genital pore and genital atrium are situated between the pharynx and acetabulum in *H. benedenii*.

Eggs in present specimens are oval to elongated and appear large in size, and in some specimens the uterus body region extends up-to the acetabulum and beyond it in the anterior.

Other existing species;

- 1) *Haploporus pacificus* (Manter, 1963) Overstreet and Curran, 2005 sp. inq.
Locality: Fiji
Definitive Host: *Scatophagus argus* (Bloch)
- 2) *Haploporus Pseudoindicus* Rekhariet Madhavi, 1985 sp. inq.
Locality: India
Host: *Liza macrolepis*
- 3) *Haploporus loosii* Al-Bassel, 1990
Locality: Egypt
Host: *Liza ramada*
- 4) *Haploporus* sp. innom.
Locality: Indo-Pacific region
Definitive Host: *Mugilsoiuy*
- 5) *Haploporus indicus* Rekhariet et Madhavi, 1985
Locality: India
Definitive Host: *Valamugilcunnesius*
- 6) *Haploporus spinosus* Machida, 1996 (Insertaesis)
Locality: Japan
Host: *Valamugilseheli*
- 7) *Haploporus magnisaccus* Machida, 1996 (Insertaesis)
Locality: Japan
Definitive Host: *Valamugilseheli*
- 8) *Haploporus mugilis* Liu and Yang, 2002 (Insertaesis)
Locality: China
Host: *Mugilengeli*
- 9) *Haploporus musculosaccus* Machida, 2003 (Insertaesis)
Locality: Japan
Definitive Host: *Valamugilseheli*
- 10) *Haploporus lateralis* (Looss, 1902) Al-Bassel, 1999
Locality: Libya
Host: *Mugilcephalus*

Present specimens resemble *Haploporus mugilis* Liu and Yang (2002) collected from *Valamugilengeli* from Fujian province, China mainly in its body shape, position and shape of testis while it differs in having an acetabulum smaller than oral sucker and its position which is pre-bifurcal, further differences include compact dumb-bell shaped vitellarium and an overlapping oval to rounded ovary situated in the roughly mid-region of the body, an oval elongated hermaphroditic sac with hermaphroditic duct armed with two long spines at its base and numerous small spines and intestinal bifurcation post-acetabular and also a different host and locality.

Al-Bassel (1999) reviewed *H. lateralis* Looss, 1902 along with other two genera namely *Saccocoeliodes* Szidat, 1954 and *Dicrogaster* Looss, 1902 from Libya for the first time.

Present specimens differ from the description given by Al-Bassel, 1999 mainly in having an elongated spindle shaped body. The acetabulum in present specimen is larger than the oral sucker while in *H. lateralis* (Looss, 1902) Al-Bassel, 1999 it appears to be similar in size. Vitelline glands are compact round masses and the ovary appears to lie below the ventral sucker.

The testis is roughly oval to round in shape and quite larger in size, all the genital organs which are situated in the upper half of the body. The eggs measure 37-38 μ long, 22-25 μ wide.

Al-Bassel and Ouhida (2008) described briefly seven different shapes of trematodes isolated from the intestine of mullet *Mugilcephalus* for the first time from Libya.

The present specimens mainly differ from the already reported species of the genus in having elongated and spindle shaped body, acetabulum larger than oral sucker. Testis elongated far more located in the posterior half of the body, the vitellaria are irregular follicular masses on either side of the body above the testis and below the rounded ovary.

The terminal genitalia in the present specimens contain external seminal vesicle compact, oval to elongated lie adjacent to the hermaphroditic sac while the internal seminal vesicle is smaller in size. Internal seminal vesicle duct and the terminal duct of uterus combines to form metraterm which then transforms into the hermaphroditic duct, which in turn opens into the hermaphroditic atrium and finally to the genital pore which is pre-bifurcal in position. Eggs in present specimens are larger in size and measure 0.075-0.11 by 0.030-0.035.

Haploporus bilqeesae n. sp. is the first report of the genus and species from Pakistan from the host *Chelonus viridis* caught from Karachi coast, Sindh, Pakistan. Species name is in honor of a (Late) Parasitologist, Dr. Fatima Mujib Bilqees from Pakistan.

Conclusion

The genus *Haploporus* Looss, 1902 is being reported for the first time from fish *Chelonus viridis* from Karachi Coast, Pakistan.

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