

**ON SOME HEMIURID TREMATODE PARASITES AND DESCRIPTION OF *HALIPEGUS MURADABADENSIS* N.SP (HEMIURIDAE : HALIPEGINAE) FROM UTTAR PRADESH, INDIA**

**Shuvajit Chakrabarti**

Zoological Survey of India, M-Block; New Alipore, Kolkata – 5, India.

**ABSTRACT**

Thirteen species of Trematode parasites from different fishes, amphibians and reptilians under the family Hemiuridae Luhe, 1901 of four subfamilies and six genera collected from Uttar Pradesh during different survey tours have been described and illustrated with their keys for easy identification. Furthermore *Halipegus muradabadensis* n.sp (Hemiuridae : Halipeginae) have been reported from *Rana*(=*Euphlyctis*) *cyanophlyctis* of Muradabad, Uttar Pradesh which is proposed as new to science.

**KEY WORDS:** Trematodes; Hemiuridae, Uttar Pradesh, *Halipegus muradabadensis* n.sp.

**INTRODUCTION**

Fishes, amphibians and occasionally the reptiles harbor a considerable number of endoparasitic trematode infection . Several faunistic survey tours to Uttar Pradesh have yielded a good number of Trematode parasites under the family Hemiuridae forms the subject matter of the present communication.

**MATERIALS AND METHODS**

Specimens were collected from the internal organisms of the host in 4% saline solution, narcotized and pressed in 70% alcohol, stained in Borax Carmine and were dehydrated with gradation of alcohol for preparation of permanent slides.

**RESULTS AND DISCUSSION**

Family: Hemiuridae Luhe, 1901

**Key to the subfamilies of Hemiuridae**

1. Body with tail.....Dinurinae  
Body without tail.....2.
2. Vitellaria at posterior extremity.....Halipeginae  
Vitellaria separated from posterior extremity by uterus.....Derogeninae  
Vitellaria posterior to ovary or overlapping it.....Lecithasterinae

1. Subfamily: Halipaginae Ejsmont, 1931

**Key to the genus of Halipeginae**

- Cirrus pouch well developed, posterior esophageal pouch prominent.....*Pseudogenarchopsis*  
Cirrus pouch and posterior pouch prominent..... *Halipegus*

I. Genus: *Halipegus* Looss, 1899

**Key to the species of *Halipegus***

- 3.56 x 1.13; pharynx overlaps oral sucker; testes oblong,extraeacal.....  
*H. mehransis* Srivastava, 1933  
4.12 x 2.13; pharynx does not overlap oral sucker; testes juxtaposed,  
Intercaecal.....*H.muradabadensis* n.sp

**i. *Halipegus mehransis* Srivastava, 1933**

*H.mehransis* Srivastava *Bull.Acad.Sci.Allhabad* 3: 41-60

**Material:** Host : *Rana*(=*Euphlyctis*) *tigrina*; Location Intestine; Locality: Galibpur, Azamgarh,Gyanpur, Varanasi; Uttar Pradesh.

**Diagnostic characters :** Spindle shaped,3.56 x 1.13; oral sucker subterminal, 0.25 x 0.27; pharynx overlaps oral sucker; ventral sucker 0.50 x 0.51; testes oblong, extraeacal, left testis partly overlapping caecum; ovary post testicular; vitellaria Lobed into two groups.

**Distribution:** India : Andhra Pradesh, Uttar Pradesh

**ii. *Halipegus muradabanensis* n.sp**

**Material:** Host : *Rana*(=*Euphlyctis*) *cyanophlyctis*; Location : Intestine; Locality : Muradabad, Uttar Pradesh.

**Diagnostic characters :** Ovoid, 4.12 x 2.13; oral sucker subterminal, 0.31 x 0.32; pharynx does not overlap oral sucker; ventral sucker 0.80 x 0.62; testes intercaecal; ovary post testicular; vitellaria lobed into two groups.

**Distribution:** India: Uttar Pradesh.

### iii. *Pseudogenarchopsis thapari* (Gupta et Chakraborty, 1967) Yamaguti, 1971

1967. *Genarchopsis thapari* Gupta et Chakraborty. *Ind.J.Helm.* **18**(2) 177-180

1971. *Pseudogenarchopsis thapari* Yamaguti *Systema Helm.* **Vol.I** : 1-1074

**Material :** Host : *Mastacembellus armatus*; Location : Stomach; Locality : Gaziabad, Uttar Pradesh.

**Diagnostic characters :** Small, without tail; oral sucker subterminal, surrounded by preoral lobe; acetabulum larger than oral sucker, just postequatorial; posterior esophageal pouch prominent; cirrus pouch well developed; testes subsymmetrical, immediately post acetabular; ovary small, submedian, posttesticular, intercaecal; vitellaria consisting of two lobes.

**Distribution :** India : Uttar Pradesh.

2. Subfamily : Derogeninae Odhner, 1927

III. Genus : *Genarchopsis* Ozaki, 1925

### Key to the species of the genus : *Genarchopsis*

- Uterus extends behind the shell gland mass.....1.
- Uterus extends upto the shell gland mass.....2.
- 1. Testes lying little asymmetrically.....*G.ovocaudatum*  
Testes symmetrical.....*G.punctati*
- 2. Testes situated a little oblique extracaecal.....*G.piscicola*  
Testes situated symmetrically or slightly asymmetrically, mostly intercaecal  
but sometimes overlaps by the intestinal caeca.....*G.goppo*

### iv. *Genarchopsis piscicola* (Srivastava, 1933) Manter, 1938

1933. *Progonus piscicola* Srivastava *Bull.Acad.Sci.U.P.Agra and Oudh Allahabad* **3**(1) : 41-60

1938. *Genarchopsis piscicola* Manter *Trans.Ame.Micr.Soc.* **57**(1) : 33-34

**Material:** Host ; *Ophiocephalus punctatus* ; Location : Intestine; Locality : Allahabad, Uttar Pradesh.

**Diagnostic characters :** Muscular, cylindrical, 3.3-3.4 x 1-1.2(max); oral sucker subterminal, spherical, 0.33-0.34; acetabulum twice as large as oral sucker at 1<sup>st</sup> half of post equatorial region, 0.66-0.68; testes oval, oblique; ovary compact; uterine coils do not extend beyond shell gland.

**Distribution:** India : Uttar Pradesh.

### v. *Genarchopsis ovocaudatum* (Srivastava, 1933) Manter, 1938

1933. *Progonus ovocaudatum* Srivastava *Bull.Acad.Sci.U.P.Agra and Oudh Allahabad* **3**(1) : 41-60

1938. *G.ovocaudatum* Manter *Trans.Ame.Micror.Soc.* **57**(1) : 33-34

**Material :** Host : *Ophiocephalus punctatus* ; Location : Intestine; Locality: Allahabad, Uttar Pradesh.

**Diagnostic characters:** Cylindrical, 1.5-2.3 x 0.5-0.8; oral sucker subterminal, 0.04-0.64; 0.64; ventral sucker 0.09-0.12; testes somewhat triangular in shape lying little asymmetrically; ovary close behind left testis, spherical; uterine coils extend beyond the intestinal caeca on eitherside upto the posterior end.

**Distribution :** India : Uttar Pradesh.

### vi. *Genarchopsis punctati* Agrawal, 1966

1966. *G.punctati* Agrawal *Ann.de.Parasit.* **41** : 211-231

**Material :** Host : *Ophiocephalus punctatus* ; Location : Intestine; Locality : Lucknow, Uttar Pradesh.

**Diagnostic characters :** 1.3-3.33 x 0.68-1.02; genital pore close behind the pharynx esophagus with pouch like structure; testes symmetrical; uterine coils extend upto the hind end of the vitellaria.

**Distribution :** India: Uttar Pradesh.

### vii. *Genarchopsis goppo* Ozaki, 1925

1925. *G.goppo* Ozaki *Jap.J.Zool.* **I** : 101-104

**Material :** Host : *Channa punctatus*, *Channa striatus*, *Rana*(=*Euphlyctis*) *cyanophlyctis* *Natrix*(=*Trodidonotus*) *piscator*; Location : Intestine; Locality : Lucknow, Uttar Pradesh.

**Diagnostic characters :** Cylindrical, elongate, oval 2.31-2.65 x 0.63-0.91; oral sucker subterminal, 0.14-0.26 x 0.23-0.32; acetabulum located in the middle third of the body, 0.42-0.67 x 0.45-0.68; testes equal, symmetrically or slightly assytrically; ovary round or oval, median or dextrally placed between the testes and vitelline follicles; uterus

transversely surrounded in intercaecal space but also extends in the extracaecal field overlapping the shell gland mass.

**Distribution :** India : Uttar Pradesh.

#### IV. Genus : *Ophiorchis* Srivastava, 1933

Key to the species of the genus *Ophiorchis*

1. Genital pore on the ventral side of the left intestinal caecum near its bifurcation.....*O.faruquis*
- Genital pore otherwise.....2.
2. Genital pore on the side of the pharynx, esophagus present, esophageal pouch absent.....*O.desus*
- Esophageal pouch present.....3
3. Vitelline glands lobed and uterine coils not extending in the region of vitellaria.....*O.lobatum*
- Vitelline glands compact, coils extending between the two vitelline glands.....*O.singularis*

#### viii. *Ophiorchis lobatum* Srivastava, 1933

1933. *O.lobatum* Srivastava *Bull.Acad. Sci.U.P.and Oudh Allhabad* 3(1): 41-60

**Material** Host : *Ophiocephalus striatus*; Location : Stomach; Locality : Lucknow, U.P.

**Diagnostic characters :** Cylindrical, highly muscular, 2.8-3.2 x 1.1-1.2; oral sucker subterminal, 0.3(diameter); acetabulum at the middle of body, 2/5<sup>th</sup> of the size of oral sucker, 0.76(diameter); testes transversely oval; ovary situated to the right, about half way between right testis.

**Distribution :** India : Uttar Pradesh

#### ix. *Ophiorchis singularis* Srivastava, 1933

1933. *O.singularis* Srivastava *Bull.Acad.Sci.U.P.Agra and Oudh Allhabad* 3(1): 41-60

**Material :** Host : *Ophiocephalus striatus* ; Location : Intestine; Locality : Sitapur, Uttar Pradesh.

**Diagnostic characters :** Small, smooth, muscular, cylindrical, 1.6 x 0.72; oral sucker subterminal; acetabulum 0.22(diameter), caudad, twice the size of oral sucker; testes oval, asymmetrical, one on each side of acetabulum; ovary spherical, intercaecal.

**Distribution :** India : Uttar Pradesh.

#### x. *Ophiorchis dasus* Gupta, 1951

1951. *O.dasus* Gupta *Ind.J.Helm.* 3(1) : 41-54

**Material :** Host : *Ophiocephalus punctatus*; Location : Stomach; Locality : Lucknow and Sahjhanpur, Uttar Pradesh.

**Diagnostic characters :** Smooth, spindle shaped, 2.26-0.6; oral sucker ventral, subterminal, 0.25-0.3; ventral sucker larger than oral sucker at middle of body; 0.62-0.55; genital pore at behind intestinal bifurcation; testes oval, symmetrical at middle third of body just behind acetabulum; vitelline glands two, compact, asymmetrical at the extreme of the body.

**Distribution :** India : Uttar Pradesh.

#### xi. *Ophiorchis faruquis* Gupta, 1951

1951. *O.faruquis* Gupta *Ind.J.Helm.* 3(1) : 41-54

**Material:** Host : *Mastacembellus armatus* ; Location: Stomach; Locality : Sahranpur, Uttar Pradesh.

**Diagnostic characters :** Smooth, elongated, elliptical, 2.24-2.92 x 0.62-1.18; oral sucker subterminal; ventral sucker oval, 0.250.31, larger than oral sucker, 0.64 x 0.6; testes large, symmetrical; ovary oval, post testicular; vitelline glands two, deeply lobed; genital pore on ventral side; excretory pore terminal.

**Distribution :** India : Uttar Pradesh.

#### 3. Subfamily : Diniurinae Looss, 1907

#### V. Genus : *Clupenurus* Srivastava, 1935

#### xii. *Clupenurus piscicola* Srivastava, 1935

1935. *C.piscicola* Srivastava *J.Par.* 8(1): 135-138

**Diagnostic characters :** 3.9-0.66.

**Distribution :** India : Uttar Pradesh.

#### 4. Subfamily : Lecithasterinae Luhe, 1901

## VI. Genus : *Lecithaster* Luhe, 1901

Key to the species of the genus *Lecithaster*

Ovary tetra lobed; vitellaria consist of seven lobes; vesicula seminalis bulb shaped, undivided.....*L.indicus*

Ovary pentalobed; vitellria consisting of eight lobes; vesicula seminalis slightly constricted in middle..... *L.extralobatus*

### xiii.*Lecithaster indicus* Srivastva, 1935

1935. *L.indicus* Srivastava *Proc.Acad.Sci.Univ.Proc.* 4(4) : 381-387

**Material :** *Clupea ilisha*; Location: Intestine; Locality : Allahabad, Uttar Pradesh.

**Diagnostic characters :** Smooth, muscular, fusiform or spindle shaped, 0.95-0.7 x 0.24-0.43; oral sucker subterminal, slightly elliptical; acetabulum 0.16-0.17, situated at little behind intestinal bifurcation; testes small, spherical, close behind the acetabulum; vesicula seminalis bulb shaped, undivided; ovary consists of four elongated bulb shaped lobes; vitellaria consist of seven finger shaped lobes.

**Distribution :** India : Uttar Pradesh

### xiv. *Lecithaster extralobatus* Srivastava, 1935

1935.*L.extralobatus* Srivastava *Proc.Acad.Sci.Univ.Proc.* 4(4) : 381-387

**Material :** Host : *Clupea ilisha*; Location : Stomach; Locality : Allahabad, Uttar Pradesh.

**Diagnostic characters :** Smooth, muscular, spindle shaped, tapering at both end, 1.44 x 0.47; oral sucker subterminal; acetabulum situated at junction of first and second qtr. of body; testes oval, post acetabular; vesicula seminalis fairly large in size, slightly constricted in middle; ovary consist of five huge lobes, all connected in the center.

**Distribution :** India : Uttar Pradesh.

Looss, 1899 erected the genus *Halipegus* under the family Hemiridae Luhe, 1901 and subfamily Halipeginae Ejsmont, 1931 with its type species as *H.ovocaudatus* of *Rana viridis* from Europe. The present specie described and illustrated closely resembles with *Halipegus mehransis* Srivastava, 1933 but differences observed are shown in the table are the valid group of creation of a new species under the genera *Halipegus*, proposed as *Halipegus muradabanensis* after the place from where it was collected.

**Table :** Showing the comparative chart between *Halipegus mehransis* Srivastava, 1933 and *H.muradabadensis* n.sp. in respect of their Diagnostic characters, Hosts, Location of the parasite in their hosts and locality of the hosts from where the parasites were been collected.

Sr.No	Name of the parasite	Diagnostic characters	Host	Location of the parasite in their host	Locality of the host from where the parasite collected.
01.	<i>Halipegus mehransis</i> Srivastava, 1933	Spindle shaped, 3.56 x 1.13; oral sucker subterminal, 0.25 x 0.27; pharynx overlaps oral sucker, 0.50 x 0.51; testes oblong, extra-caecal, left testis partly overlapping caecum; ovary post testicular; vitellaria lobed into two groups.	<i>Rana(=Euphlyctis) tigrina</i>	Intestine	India : Uttar Pradesh: Galibpur, Azamgarh, Gyanpur, Varanasi
02.	<i>Halipegus muradanensis</i> n.sp.	Ovoid, 4.12 x 2.13; oral sucker subterminal, 0.31 x 0.32; pharynx does not overlap oral sucker; ventral sucker 0.80 x 0.62; testes intercaecal; ovary post testicular; vitellaria lobed into two groups.	<i>Rana(=Euphlyctis) cyanophlyctis</i>	Intestine	India : Uttar Pradesh : Muradabad

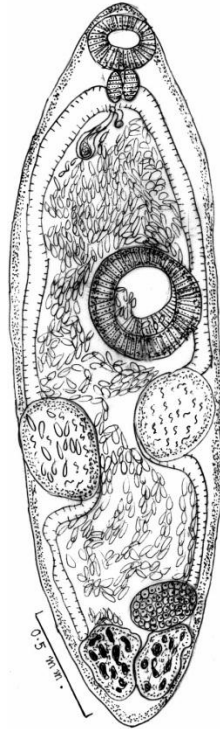


Figure I. *Halipegus mehransis* Mehra, 1933 (after Mehra, 1933)

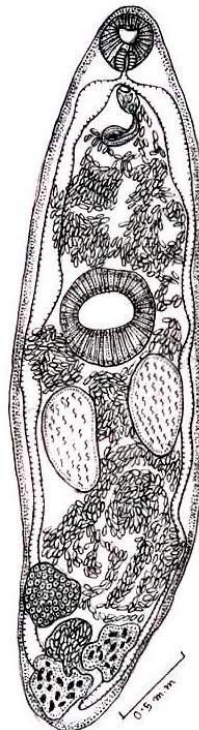


Figure II. *Halipegus muradabanensis* n.sp.

### SUMMARY

Forteen species including newly described one of Hemiurid trematodes from Uttar Pradesh under four subfamilies and six genera have been illustrated with their diagnostic characters, hosts, distribution and keys are provided in the present communication. The newly described species have been identified as *Halipegus muradabanensis* n.sp. after the place from it was collected.

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