DESCRIPTION OF TWO NEW SPECIES OF THE GENUS GLOSSIMETRA MEHRA, 1937 (PLAGIORCHIIDAE : TREMATODA)*

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ABSTRACT

Two new species of the genus Glossimetra Mehra, 1937; G. tamiansis n.sp. and G. narmadai n.sp. are added. The genus Glossimetra is discussed in detail and amended. Its relationship with Spinometra Mehra, 1931, is described. The paper also includes key to species of the genus.

INTRODUCTION

In January, February and March 1965, the author dissected a large number of fresh-water tortoises Kachuga intermedia, collected from Tamia, a tribal place in Chhindwara, M.P. One of them harboured in its intestine ten trematode parasites which on study were found to belong to the genus Glossimetra Mehra, 1937. As they differed from the type species G. orientalis, the only known species, the author describes G. tamiansis n.sp. in order to receive them.

The present research work was conducted in the Department of Zoology, Government Science College, Jabalpur, and Chhindwara, M.P.

Family .. Plagiorchiidae Ward, 1917.
Subfamily .. Astiotrematinae Baer, 1924.
Genus .. Glossimetra Mehra, 1937.

Mehra (1937) described the genus Glossimetra for such trematode parasites of tortoises as had convoluted seminal vesicle enclosed in a long cirrus sac but no receptaculum seminis. Glossimetra Mehra (1937) and Spinometra Mehra (1931) are very closely related genera. The differences between

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the two genera are (i) in the situation of genital opening; median close in front of ventral sucker in Glossimetra and to the left side in front of the ventral sucker in Spinometra, (ii) different shape of body spines; backwardly directed pointed spines in Glossimetra and scale-like chitinous spines in Spinometra, (iii) absence or presence of receptaculum seminis; absent in Glossimetra and present in Spinometra. On the inclusion of Spinometra giganticum n.sp. in the genus Spinometra the diagnosis of the genus Spinometra is being amended by Dwivedi (1965). S. giganticum Dwivedi (1965) so closely resembles S. kachugae Mehra, 1931 and S. gangeticus Mehra, 1937 that for assigning this species to the genus Spinometra the author has amended the genus for accommodating worms with preacetabular and median genital opening. In fact this situation of genital opening is found in Glossimetra but as the genus lacks receptaculum seminis, S. giganticum could not be accommodated. Hence the first difference, regarding the genital opening now becomes a common character of both the genera. The shape of the spines cannot be given a generic status. In the author's opinion the only difference between the two genera is that of absence or presence of receptaculum seminis which appears to be a strong character by which the two genera can be differentiated.

Description of G. tamiansis n.sp.

(Figs. 1, 2)

The shape of the body is elongated, bluntly pointed anteriorly, rounded posteriorly. Body wall spinose. Body spines extend from the anterior end up to the ovary. Body measures 18.01–18.78 mm. in length and 3.84–3.86 mm. in breadth in the level of the ovary; 1.96–1.981 mm. in the level of intestinal bifurcation; 3.106–3.501 mm. in the level of the posterior testis. Oral sucker is subterminal, broader than long and measures 0.448–0.451 mm. in diameter. Ventral sucker is larger than oral sucker, situated one-sixth of the body length from anterior end and measures 0.64–0.68 mm. in diameter. The ratio in the size of the two suckers is 3:4:2. Prepharynx is very small and measures 0.080–0.089 mm. in length and 0.176–0.178 mm. in breadth. Oesophagus is 0.56–0.601 mm. long. Intestinal bifurcation measures 1.31–1.408 mm. in front of ventral sucker; caeca smooth without indented surface and terminate symmetrically 1.52–1.59 mm. in front of the posterior extremity.

Both the testes are transversely elongated, oval, much broader than long, intertesticular space measures 1.08–1.12 mm. situated in the middle third of the body in such a way that the anterior testis is pre-equatorial and posterior testis little below the anterior one. Anterior testis sinistral, touches the left
caecum situated $0.82-0.84$ mm. behind the ovary and measures $0.74-0.78$ mm. in length and $1.71-1.76$ mm. in breadth. Posterior testis is dextral, situated $6.44-7.01$ mm. distant from the hinder end and measures $0.81-0.89$ mm. in length and $1.89-1.902$ mm. in breadth. Cirrus sac is exceedingly long.

![Diagram](image-url)  
*Fig. 1. Glossimetra tamlensis n.sp. (ventral view).*
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and extends from 0·16–0·181 mm. in front of the ventral sucker up to the mid-level of the ovary, little sinous measures 3·52–3·55 mm. in length and 0·75–0·78 mm. in breadth, terminal part curved on the right side of the ventral sucker partly overlapping the latter. The vesicula seminalis is coiled and occupy 0·62–0·701 mm. space of the basal region of the cirrus sac. Pars prostatica is long, narrow, straight and measures 0·51–0·59 mm. in length. Cirrus is not protruding out hence ductus ejaculatorius measured which comes to 1·62–1·65 mm. in length and 0·38–0·41 mm. in breadth. Genital opening (Fig. 2) is median, ventral and situated 0·081–0·084 mm. from the anterior level of the ventral sucker. Ovary is round, pretesticular, dextral situated about one-third of the body length from the anterior end, i.e., 2·01–2·02 mm. in distance behind the ventral sucker and measures 0·801–0·810 mm. in diameter. Receptaculum seminis is absent. "Mehlis's", gland is median on the left inner side of the ovary. Laurer's canal is present, coiled, opening dorsally, just below the ovary, in median line. Uterus is much coiled, traversing in between the testes up to the hind margin, intercaecal, a few coils may overlap caeca. Metraterm is prominent, muscular, situated on the left side of ventral sucker and opens in the genital opening. Vitellaria are usually extracaecal, made up of bunches of vitelline follicles, extending from the middle of cirrus sac up to a little in front of the caecal ends and measures 2·22–2·31 mm. from the hinder end of the body; the right vitelline gland is composed of ten and left of nine bunches of vitelline follicles.

Excretory pore is dorsal, subterminal and situated in the hinder end of the body. Excretory bladder is 'Y'-shaped, the long median stem bifur-
cate just in front of anterior testis into two long sinous cornua which extends up to the level of the middle of oral sucker. Ova are numerous oval, with thin yellow brown shell and measure 0.021–0.023 mm. in length and 0.008–0.0088 mm. in breadth.

**DISCUSSION**

The present worms have been assigned to the genus *Glossimetra* Mehra, 1937 in having long elongated body; oral sucker smaller than ventral sucker, caeca reaching to the hinder end; genital opening median; testes entire, oblique, situated in the middle of the body, long cirrus sac with its axis running parallel to the body, coiled vesicula seminalis, long pars-prostatica, ovary entire, dextral, pretesticular, vitellaria lateral from little behind cirrus sac to a little distance in front of hinder end and the absence of receptaculum seminis.

So far the genus *Glossimetra* Mehra, 1937 includes the type species *G. orientalis*. The worms under study can be differentiated from the type species in having a bigger body size; suckers ratio 3:4.2, ventral sucker situated one-sixth of the body length from the anterior end; smooth surface of caeca and anterior testis pre-equatorial. For accommodating these worms *G. tamiansis* n.sp. is being described.

**Host** .. Kachuga intermedia
**Location** .. Intestine.
**Locality** .. Tamia, Chhindwara (M.P.), India.

**DESCRIPTION OF G. narmadai** n.sp.

*(FIG. 3)*

Subsequently two specimens of *Kachuga dhongoka* were collected in Jabalpur from Bheraghat in the month of May 1965 which revealed the presence of forty parasites belonging to another species of the genus *Glossimetra*. This species is smaller than *G. tamiansis* n.sp. and also shows other morphological differences hence they are being described under the name *G. narmadai* n.sp.

The shape of the body is oval with rounded extremities at both the ends. The body wall is spinose; the pointed body spines thickly crowd the anterior region and extend up to the posterior end. The body measures 6.15–7.78 mm. in length and 2.048–2.19 mm. in breadth in the level of the ovary; 0.98–0.99 mm. in the level of the intestinal bifurcation; 1.35–1.71 mm.
in the level of the ventral sucker and ultimately 1·825–2·37 mm. in the level of the posterior testis. Oral sucker is subterminal broader than long and measures 0·13–0·15 mm. in diameter. Ventral sucker is larger than oral sucker, situated a little less than one-fourth of the body length from the anterior end and measures 0·48–0·51 mm. in diameter. The ratio in the size of the two suckers is 3: 10·2.

Prepharynx is very small and measures 0·200–0·201 mm. in length. Pharynx is globular and measures 0·051–0·061 mm. in length and 0·048–0·055 mm. in breadth. Oesophagus measures 0·21–0·32 mm. in length. Intestinal bifurcation measures 0·81–0·93 mm. in front of ventral sucker. Caeca possess lobes like outgrowths and end asymmetrically. In all the specimens left caecum was found to end just posterior to posterior testis.

**Fig. 3. Glossimetra narmadai n.sp. (ventral view).**
Both the testes are transversely elongated, much broader than long, post-equatorial, obliquely situated with the intertesticular space of 0.28–0.32 mm. Anterior testis is sinistral, touches the left caecum situated at the distance of 0.351–0.59 mm. behind the ovary and measures 0.29–0.31 mm. in length and 0.59–0.751 mm. in breadth. Posterior testis is dextral, situated at the distance of 2.1–2.23 mm. from the posterior end, touches the right caecum and measures 0.31–0.32 mm. in length and 0.61–0.83 mm. in the breadth. Cirrus sac is exceedingly long and extend from 0.098–0.11 mm. distance in front of the ventral sucker up to the middle level of the ovary, little sinous and measures 1.69–1.98 mm. in length and 0.39–0.41 mm. in breadth. The terminal part of the cirrus sac is curved dorsally, partly overlapping the ventral sucker on the right side. The vesicula seminalis is coiled and occupy 0.31–0.41 mm. of space in its basal region of the cirrus sac. Pars-prostatica is long narrow straight duct, surrounded by prostatic gland cells, and measures 0.31–0.42 mm. in length. In none of the specimens cirrus is protruding out hence ductus ejaculatorius is being measured which comes to 0.85–0.98 mm. in length and 0.16–0.18 mm. in breadth. Genital opening median, in position and measures 0.043–0.060 mm. in front of the ventral sucker.

Ovary is round, pretesticular, dextral and situated a little less than half of the body length from the anterior end, i.e., 2.91–3.44 mm. and measures 0.25–0.27 mm. in diameter. Receptaculum seminis is absent. "Mehlis's" gland median on the left inner side of the ovary. Laurer's canal is present, long and coiled opening just below the ovary dorsally. Uterus is highly convoluted and both the limbs pass in between the two testes; post-testicular uterine coils may overlap the caeca. Metraterm is well developed, muscular, prominent situated on the left side of the ventral sucker, measures 0.85–0.88 mm. in length and 0.15–0.18 mm. in breadth and open in the genital opening. Eggs small, oval, numerous and measure 0.028–0.03 mm. in length and 0.009–0.01 mm. in breadth.

Vitelline follicles extend from the middle of the cirrus sac up to a little in front of the caecal ends, the right vitelline gland measures 0.71–0.75 mm. and the left 0.56–0.58 mm. from the hinder end, the right vitelline gland is composed of 9 to 10 bunches of follicles and the left of 13 to 14. Excretory system is same as described in *G. tamiansis* n.sp.

**DISCUSSION**

The genus *Glossimetra* till now includes only two species *G. orientalis* Mehra, 1937 and *G. tamiansis* n.sp. described by the author in this paper.
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The worms under discussion differ from both the species, in small body size (length 6.15–7.78 mm); shape of the body (oval); ratio in the size of two suckers (3:10.2); situation of ventral sucker (less than one-fourth of the body length from anterior end) and in the extension of the spines (up to the posterior end of the body). They resemble closely with G. orientalis in having caeca with lobed surface and anterior testis post-equatorial. In view of the distinctive features, the worms under study are considered new and the name proposed for them is *Glossimetra narmadai* n.sp.

Host .. *Kachuga dhongoka*.

Location .. Intestine.

Locality .. Bheraghat, Jabalpur (M.P.), India.

In order to accommodate new species the generic diagnosis of *Glossimetra* is amended.

**Amended Diagnosis of the Genus Glossimetra, Mehra, 1937**

*Generic Diagnosis* Plagiorchiidae Ward, 1917; Astiotrematinæ Baer, 1924. Body elongated and somewhat elliptical, of moderate length. Body wall spinose. Oral sucker smaller than ventral sucker: *ratio in their size 3:4 to 3:10.2*. Prepharynx and pharynx present; oesophagus of moderate length; intestinal bifurcation much in front of ventral sucker; intestinal caeca reaching near hinder end *symmetrically or asymmetrically*. Genital opening median, immediately in front of ventral sucker. Testes entire, elliptical or transversely oval, *in the middle third of the body*, nearly equal, obliquely situated. Cirrus sac large, elongated with its long axis parallel to the body length, thin-walled with slightly developed musculature, more or less curved in S-shaped manner or rarely much curved and crescent-shaped, extending far behind ventral sucker to middle or posterior margin of ovary. Vesicula seminalis coiled in small basal part of cirrus sac; pars prostatica long, narrow; cirrus muscular with a wide lumen, armed with minute chitinous scales; prostate gland cells numerous, surrounding pars prostatica and terminal part of vesicula seminalis. Ovary entire, dextral, pretesticular, nearly rounded; receptaculum seminis absent; Laurer’s canal present. Uterus voluminous, passing between testes, coiled characteristically, filling hinder body; metraterm large, without folds in its walls. Vitellaria latera from about half-way between ventral sucker and ovary or from a little behind middle of cirrus sac to a little distance in front of hinder end. Excretory pore subterminal, dorsal; excretory bladder Y-shaped with a long stem bifurcating into long cornua reaching oral sucker. Ova oval, thin-walled, yellow brown, measuring 0.021–0.03 × 0.008–0.012.
Type species: *Glossimetra orientalis* Mehra, 1937.

**KEY TO THE SPECIES OF THE GENUS *Glossimetra*, MEHRA, 1937**

1. Anterior testis post-equatorial. Caeca indented with lobed surface. Ventral sucker situated one-fourth or less the body length from anterior end

Anterior testis pre-equatorial. Caeca smooth. Ventral sucker situated one-sixth of the body length from anterior end


Ratio in the size of suckers 3:10·2. Body spines extending up to the posterior end. Caeca ending asymmetrically

2. G. *tamiensis* n.sp.

G. *orientalis* Mehra, 1937

G. *narmadai* n.sp.

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**REFERENCES**


Two New Species of Genus Glossimetra Mehra, 1937


LETTERING TO FIGURES

(a.t., Anterior testis; c., Caeca; c.d., Collecting duct; c.s., Cirrus sac; d.ej., Ductus ejaculatorius; e.s., Oesophagus; e.x.o., Excretory opening; g.o., Genital opening; met., Metraterm-M.gl., “Mehlis’s” gland; o.s., Oral sucker; ov., Ovary; ph., Pharynx; p.p., Pars-prostatica; p.ph., Prepharynx; p.t., Posterior testis; s.e.m. ves., Seminal vesicle; Sp., Spines; vit., Vitellaria; v.s., Ventral sucker.)