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# STUDIES ON SOME TREMATODES (DIGENEA : LECITHODENDRIIDAE) OF PISCES AND AMPHIBIA FROM EAST COAST OF INDIA

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ABSTRACT

The present study includes descriptions of two new species, viz., *Prosotocus bangaense* n. sp. and *Ganeo ankholaensis* n. sp., and report of four known species, viz., *Ganeo gobindia* Dayal and Gupta, 1953, *G. tigrinum* Mehra and Negi, 1928, *G. korkei* Bhalerao, 1936 and *G. srinagarensis* Kaw, 1950 with additional interesting informations. On re-examination of the type and paratypes of *Prosotocus kashabia* Kaw, 1944, it was found to possess genital pore on the dorsal surface of the body instead of on the ventral surface as originally described in it. So is the case with *P. indicus* Mehra and Negi, 1928 also. Differing with Fotedar (1967), *P. kashabia* is revalidated *vis-a-vis P. himalayai* Pande, 1937. *P. baughi* K. C. Pandey, 1975 is considered as a synonym of *P. kashabia*. *Ganeo gobindia* is reported from a marine fish host rather than a freshwater one. *G. tigrinum*, which is hitherto known to infect amphibians, is also reported from a marine fish. *G. lucknowensis* Gupta and Jahan, 1978, described on the basis of a single testis, is considered as a synonym of *G. tigrinum*. *G. behurai* Ghosh and Chauhan, 1982 was not compared with *G. madrasensis* Kaw, 1950, which is surely identical to the latter. *G. macrocotyle* Bilqees and Kaikobad, 1976 is not distinguishable from *G. attenuatum* Srivastava, 1933 and therefore held a synonym of the latter. *G. korkei* is reported and held valid on the basis of the grouping of the vitelline follicles in it. *G. srinagarensis* is reported with intersting variations. The genus *Ganeo* Klein, 1905 is known to possess V-or U-shaped excretory vesicle, but the new species *G. anknolaensis* is described to have transverse connections between the crenulations of the arms of V-shaped excretory vesicle like a ladder. Keys to the species of the genera *Prosotocus* Looss, 1899 and *Ganeo* Klein, 1905 with vitellaria on one side only, are also provided.

## Introduction

The material for this study was collected from frogs and fishes from coastal areas of West Bengal, Orissa and Andhra Pradesh. In addition to describing two new species and reporting four known ones with interesting informations, some new facts have also been noted about others. Originally, the occurrence of vitellaria only on one side of the body was repoted as a character to distinguish species in the genera *Prosotocus* Looss, 1899, *Ganeo* Klein, 1905 and others. Later on, more species were added in both the genera with other distinguishing characters also, the character of unilateral vitellaria being common. Rao (1974), Ghosh and Srivastava (1976), Gupta (1977) and Mukherjee (1977) believe that it is an abnormal character. In this context, it may be of some interest and use for future studies to emphesise that the three independent populations of the specimens with one-sided vitellaria described below as new species in the genus *Prosotocus*, were recovered unmixed with specimens having vitellaria on both the sides.

The drawings were made with the aid of a camera lucida. All measurements are in microns unless otherwise stated.

## Systematic Account

Family Lecithodendriidae (Lühe, 1901)

Subfamily Prosotocinae Yamaguti, 1958

Genus **Prosotocus** Looss, 1899

### **Prosotocus bangaense** n. sp.

(Fig. 1)

*Host* : *Rana cyanophlyctis*, (Amphibia : Ranidae)

*Location* : Intestine

*Locality* : Subhash Sarobar, Calcutta

*No. of specimens* : 13, 1, 3 (three independent populations)

*Specimens deposited* : Z. S. I. Reg. Nos. W 7287/1 to W 7291/1

*Description* (based on 3 independent populations with measurements of 4 good specimens): Body small, 0.645-1.186 mm long, 0.516-0.731 mm wide at acetabular level, ovate. Tegument spinose. Acetabulum 122-154 in diameter, preequatorial. Oral sucker subterminal, 52-70 long, 94-115 wide, smaller than acetabulum. Sucker ratio 1 : 1.3-1.8. Prepharynx absent ; pharynx 35-42 long, 42-59 wide ; oesophagus 42-66 long ; intestinal caeca may be extending up to level of posterior margin of acetabulum.

Testes two, asymmetrical, generally caecal, left testis lying anterior to cirrus sac, 124-179 long, 95-178 wide ; right testis 165-233 long, 96-137 wide. Cirrus sac muscular, L-shaped, preacetabular ; situated towards left. Seminal vesicle internal having two loops ; pars prostatica swollen, flask-shaped, surrounded by prostatic gland cells, ductus ejaculatorious and muscular cirrus present. Genital atrium well developed and muscular ; genital pore dorsal, dextral, near margin at level of pharynx.

Ovary entire, 165-206 long, 124-137 wide, diagonally behind right testis, overlapping right caecum, smaller than testes. Receptaculum seminis dorsal to acetabulum towards right side. Vitellaria follicular, situated asymmetrically on right side only, roughly between the two testes. Uterine coils completely filling the hind body, extending up to acetabulum. Metraterm well developed and muscular, long, opening into atrium independently of male duct. Genital pore surrounded by muscular sucker. Eggs yellowish, 28-31 × 14.

Excretary vesicle V-shaped, arms reaching acetabulum. Excretory pore subterminal.

*Discussion* : Seven species have been described in the genus *Prosotocus* Looss, 1899 which have vitelline follicles on the right side only. They are: *P. himalayi* B.P. Pandey, 1937; *P. kashabia* Kaw, 1944. *P. partapus* Kaw, 1950 ; *P. dorsoporus* Murhar, 1960 ; *P. poroformis* Bhardwaj, 1963 ; *P. tigrinum* Bhardwaj, 1963 ; and *P. baughi* K. C. Pandey, 1975. Fotedar (1967) did not give population-wise variations in the species of *Prosotocus* in his collection. The possibility is strong that there might have been two species in his eollection of *Prosotocus* which he made from frog and toad in Kashmir in different months of the years after 1955. This becomes evident by seeing his figures 1, 2, 3 & 5 together as comared to figure 4. *P. himalayai* is characterised by the combination of characters such as unilateral vitellaria, oral sucker larger than acetabulum, ovary larger in size than testes, and extent of caeca distinctly going beyond the posterior level of acetabulum. Moreover, in *P. himalayai* the genital pore has been reported to be ventral whereas in *P. kashabia* it

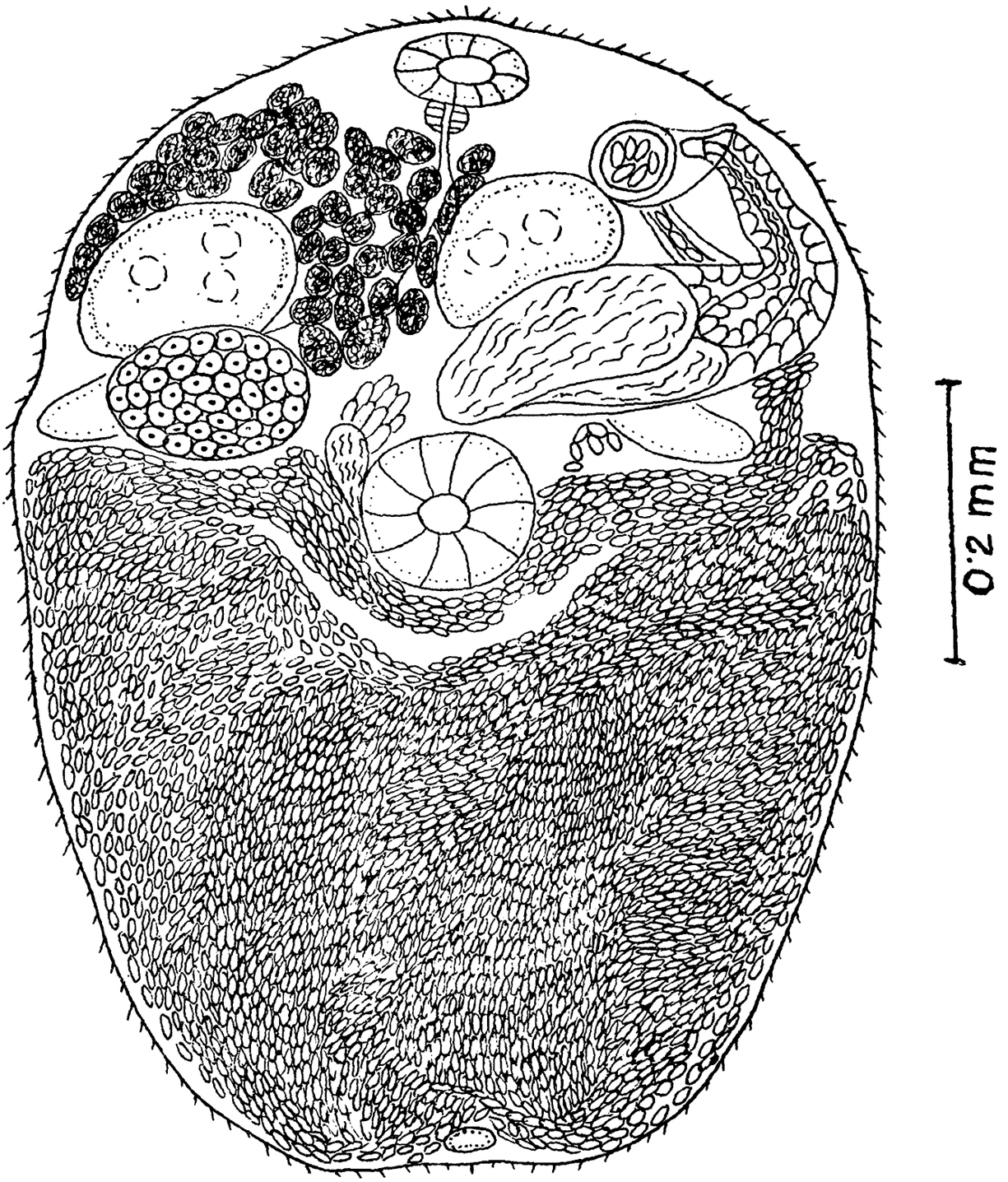


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Fig. 1. *Prosotocus bangaense* n. sp. Holotype, ventral view.

is dorsal beyond any shodow of doubt (Present paper). It seems Fotedar (1967) had mixed populations of two species. We are still inclined to consider the latter distinct from the former. Further, Fotedar (1967) did not consider Bhardwaj's (1963) paper in which to new species with unilateral vitellaria in *Prosotocus* have been described and a

key to the species of the genusprovided. In *P. baughi* K. C. Pandey, 1975, the ovary is caecal and acetabular, and the cirrus sac almost caecal. The authors feel that the differences between *P. kashabi* and *P. baughia* are to meagre to give separate species status to the latter which should be considered as a synonym of the former.

The present species keys to *P. poroformis* on the key provided by Bhardwaj (1963) in the sense that it also has a genital sucker. Other species with vitellaria on the right side only have not been reported in original descriptions to have a genital sucker. Thus, there is close resemblance between *P. poroformis* and the present species with the difference that the left testis is situated behind the cirrus sac in the former whereas in the latter it is in front of the cirrus sac. From *P. tigrinum* Bhardwaj, 1963, it differs mainly in the presence of a genital sucker, extracaecal cirrus sac, intercaecal and acetabular ovary, and in the sucker ratio. In body shape, egg size and shape and position of cirrus sac, the present form comes close to *P. himalayai* but differs from it in that the oral sucker is distinctly smaller than acetabulum, dorsrlly oriented genital pore, and presence of a genital sucker. The present form differs from *P. kashabia* in sucker ratio and presence of genital sucker. From *P. dsrsoporus* the difference is obvious, it having reverse sucker ratio.

The authors have examined the type and paratype specimens of *Prosotocus kashabia* Kaw, 1944 (Z. S. I. Helminthological Coll. No. W/5584/1) all mounted on one slide. It has been found that the species was described on the basis of a population consisting of immature and young adult specimens. That is why some of the structures like uterus and musculature around genital pore are not fully developed in them. The other most important thing about this species is that the openings of the two suckers and the genital pore lie on opposite surfaces of the body. This fact establishes that the genital opening in *P. kashabia* is dorsally located and not on the ventral side as originally described. Moreover, its position in various specimens on the same slide varies from testicular to pretesticular. The cirrus sac is well anterior to acetabulum or touches or varies from anterodorsal to posterodorsal to acetabulum. At least in one specimen there is indication of the presence of some arrangement of muscles around the genital aperture. This musculature is very weak probably because the specimen is a young adult. Comparing *P. partapus* Kaw, 1950 with *P. kashabia* Kaw, 1944 in the light of the above mentioned deviations from the original description of the latter and taking into consideration that both have been reported from Kashmir and from the same host species, there seems to be no material difference between the two, except in the orientation of the genital pore which has been described to be ventral in *P. partapus*. Unfortunately, the type or paratype speciemens of *P. partapus* are not available for checking this. It is quite likely that the genital pore in this species may also be dorsal. In that case the two species will become identical and synonymous too as Fotedar (1967) and Karyakarte (1972) have considered. It may not be out of place to mention that specimens of *Prosotocus* labelled as *P. indicus* Mehra, 1928 (Z. S. I. Helminthological Coll. No. W/4187/1) also have genital pore located on the dorsal surface of the body surrounded by a large sucker. In *P. dorsoporus* Murhar, 1960, which has been described from a different species of host frog, *Rana*

*tigrina*, from Nagpur, the prepharynx has not been mentioned in the description but the same character has been used for differentiation from other species described till then. Moreover, the measurement of the ventral sucker has not been given in the description for this species, but from the illustration it appears that oral sucker is larger than acetabulum. In *P. kashabia* and *P. partapus* the two suckers are almost equal.

Bhardwaj (1963) described *P poroformis* and *P. tigrinum* from the frog *Rana tigrina* from Bombay region near west coast of India, According to him, *p. poroformis* commonly occurs in this frog in the region whereas *P. tigrinum* is rare. *P. poroformis* has unilateral vitellaria, extracaecal testes and intestinal caeca reaching level of posterior margin of acetabulum or slightly beyond it. In these respects it is similar to *P. himalayai* Pande, 1937 but significantly differs from the latter in having left testis behind the cirrus sac instead of in front of it, oral sucker smaller than acetabulm, and smaller length of oesophagus. *P. tigrinum* has unilateral vitellaria, equal suckers, extra caecal testes, extracaecal cirrus sac, intercaecal ovary between right caecal end and acetabulum, and the intestinal caeca extend up to the level of posterior margin of acetabulum or slightly beyond it. Extracaecal cirrus sac, intercaecal and acetabular ovary overlapping no organ, and presence of a short prepharynx are its characteristic features.

Our species is easily distinguished from *P. himalayai*, *P. poroformis* and *P. tigrinum*. It differs from *P. kashabia* also in oral sucker distinctly smaller than acetabulum, and ovary almost of the size of testes. From *P. dorsoporus*, it differs mainly in having reverse sucker ratio i.e. oral sucker smaller than acetabulum, caecal testes, and ovary of the size of testes.

*P. himalayai* and *P. dorsoporus* have oral sucker larger than the acetabulum, massive postacetabular uterus and extracaecal testes but differ from each other in extent of cecal and size of the ovary with respect to that of the testes. Additionally, in *P. himalayai* the genital pore is ventral.

A close scrutiny of the literature on the species of the genus *Prosotocus* Looss, 1899 with unilateral vitellaria, as well as specimens of three species of the genus give the impression that probably all of them have broad and shallow genital atrium in which the male and female ducts open independently at different levels, the female aperture sometimes being ahead of the male aperture. Moreover, the genital pore is surrounded by weakly or moderately developed circular arrangement of muscles which has been termed as genital sucker or gonotyle. In all these three species, the genital pore has been found to be located on the dorsal surface of the body. Of these three species, two of them are known in which the genital pore was originally described to be located on the ventral surface of the body. Thus there is a need to recheck the location of the genital pore on the dorsal or ventral surface of the body and the presence or absence of a sucker around it, at least, in those species which have been reported from ranid and bufonid amphibians.

*Key to species of* **Prosotocus** Looss, 1899 *with unilateral vitellaria*

1. Oral sucker distinctly larger than acetabulum. ... ... 2
   Oral sucker smaller than acetabulum. ... ... 3
   Oral sucker almost equal to acetabulum. 4

| | | |
|---|---|---|
| 2. | Caeca extend beyond level of posterior margin of acetabulum; ovary larger than testes; genital pore ventral ... | *P. himalayai* Pande, 1937 |
| | Caeca short and preacetabular; ovary smaller than testes; genital pore dorsal. ... | *P. dorsoporus* Murhar, 1960 |
| 3. | Left testis posterior to cirrus sac; genital pore ventral ... | *P. poroformis* Bhardwaj, 1963 |
| | Left testis in front of cirrus sac as usual; genital pore dorsal ... | *P. bangaense* n. sp. |
| 4. | Cirrus sac extracaecal; ovary inter-caecal overlapping neither right cecum nor acetebulum ... | *P. tigrinum* Bhardwaj, 1963 |
| | Cirrus sac and ovary caecal ... | *P. kashabia* Kaw, 1944 |

## Subfamily Ganeoninae Yamaguti, 1958

## Ganus **Ganeo** Klein, 1905

### **Ganeo ankholaensis** n. sp.

(Fig. 2)

*Host*: *Rana cyanophlyctis* (Amphibia: Ranidae)

*Location*: Intestine

*Locality*: Ankhola, 24-Parganas (W. Bengal)

*No. of specimens*: One

*Date of collection*: November 17, 1977.

*Specimens deposited*: Z. S. I. Reg. No. W 7292/1

*Description* (with measurements of one good specimen): Body ovoid, 1.28 mm long, 0.97 mm wide at vitellarian level, posterior end rounded. Tegument beset with minute scale-like spines. Acetabulum 15 long, 19 wide, preequatorial. Oral sucker subterminal, 12 long, 16 wide, slightly smaller than acetabulum. Sucker ratio 1 : 1.2. Prepharynx present, 4 long; pharynx 6 long, 9 wide; oesophagus 24 long; intestinal caeca extending posteriorly a little beyoud vitellaria, not reaching posterior end of body.

Testes two, asymatrical, right testis overlapping right intestinal caecum; left testis intercecal, measuring 20 long, 28 wide; right testis 19 long, 28 wide. Seminal vesicle rather tubular, long, coiled, taking two transverse turns, 41 long, 11 wide at base, well developed, broad and rounded at base and then tapering anteriorly, surrounded by well developed prostate cells; ejaculatory duct long, opening into genital atrium; genital pore marginal, situated at about mid-oesophageal level.

Ovary entire, 15 long, 22 wide, situated behind right testis, smaller than testes. Seminal receptacle behind ovary. Vitellaria follicular, unilateral on left side only, overlapping left caecum. Uterus postovarian, describing lateral coils, filling most of hind body, extending posteriorly much beyond caecal ends. Metraterm differentiated, well developed, 13 long, opening into genital atrium idenpendently. Eggs 21-23×14-15, thick-shelled.

Excretory vasicle V-shaped, arms narrow and crenulated reaching ovary and connected transversely at crenulations with three visible or more transverse connections in a ladder-like fashion; excretory pore subterminal.

*Discussion*: In the type and most other species of the genus *Ganeo* Klein, 1905, the vitellaria are bilateral. Only *Ganeo* sp. Kaw, 1950 (= *G. kawi* Dwivedi and Chauhan, 1970 redescribed from the intestine of *Rana tigrinum* from Chhindwara, M. P.) reported from *Rana cyanophlyctis* from Kashmir; *Ganeo bufonis* Fotedar, 1959 (also reported from Kashmir

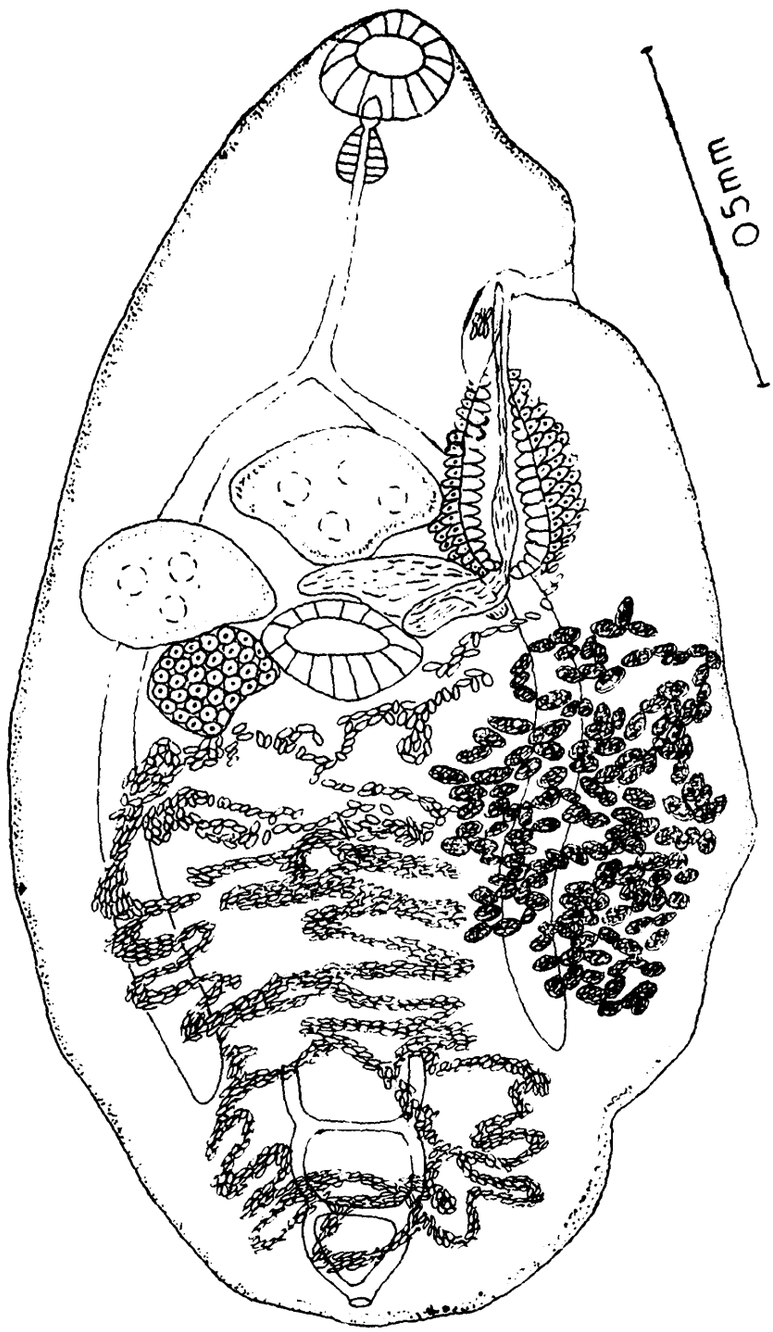


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Fig. 2. *Ganeo ankholaensis* n. sp. Holotype, ventral view.

but in *Bufo viridis*) ; *Ganeo gazipurensis* Pandey and Chakravarty, 1968 in *Rana cyanopylyctis* from U. P. ; and *G. vitellosinistrum* Dwivedi and Chauhan, 1970 from the intestine of *Rana limnocharis* from Jabalpur, M. P. have been described to posses unilateral vitellaria.

All the species of *Ganeo* with bilateral or unilateral vitellaria have been reported to have V-or U-shaped excretory vesicle with broad arms and without transverse connections. The present species is characterised by having V-shaped excretory vesicle having narrow and crenulated arms and with three

or more transverse connections at crenulations in a ladder-like fashion.

However, the present new species very much resembles *G. vitellosinistrum* in having vitellaria on the left side of the body, acetabulum slightly larger than oral sucker, and other anatomical features but differs from it in having transverse connections between the arms of crenulated V-shaped excretory vesicle, and smaller egg size. The present from also closely resembles *Ganeo bufonis* but differs from it in the more posterior extent of uterine coils going much beyond caecal ends and the presence of V-shaped excretory vesicle having crenulated arms which have transverse connections at crenulations between them in a ladder-like fashion, the acetabulum is larger than oral sucker, and the eggs are longer (27-30×12-15 in *G. bufonis*). It differes from *G. gazipurensis* Pandey and Chakraverty, 1968 in the absence of spines on the cirrus, acetabulum being larger than oral sucker, and excretory arms connected by transverse branches. Gupta and Jahan (1978), however, considered *G. gazipurensis* as a synonym of *G. bufonis*.

*Key to the species of* **Ganeo** Klein, 1905 *with unilateral vitellaria*

| | | |
|---|---|---|
| 1. | Vitellaria dextral | ... *G.*sp. Kaw, 1950 (=*G. kawi* Dwivedi & Chauhan, 1970 |
| | Vitellaria sinsitral | ... ... 2 |
| 2. | Cirrus armed with spines. | ... *G. gazipurensis* Pandey & Chakravarty, 1968 |
| | Cirrus unarmed | ... ... 3 |
| 3. | Excretory arms narrow, crenulated and connected by tranverse connections | ... *G. ankholaensis* n. sp. |
| | Excretory arms broad, not crenulated and not connected by tranverse connections | ... ... 4 |
| 4. | Suckers equal | ... *G. bufonis* Fotedar, 1959 |
| | Oral sucker smaller than acetabulum | ... *G. vitellosinistrum* Dwivedi & Chauhan, 1970 |

**Ganeo gobindia** Dayal and Gupta, 1953

(Fig. 3)

*Host* : *Strongylura strongylura* (Pisces : Belonidae).

*Location* : Inestine.

*Locality* : Kakdwip (W. Bengal), Gangetic Deltaic area.

*Number of specimens* : 1, collected on February 11, 1977.

*Specimens deposited* : Z. S. I. Reg. No. W 7293/1.

*Discussion* : *Ganeo gobindia* was first described from a freshwater fish, *Wallago attu* (Bloch) from the river Gomti at Lucknow on the basis of ten specimens. This is the second record of this species but from an altogether different group of fish which is estuarine or marine form. Morphologically this specimen almost conforms to the original description of the species except that the excretory bladder is indiscernible and the testes overlap right caeum and the seminal vesicle overlaps left caecum. The eggs measure 15-26×9-13.

**Ganeo tigrinum** Mehra and Negi, 1928

Syn. *G. kumaoensis* Pandey, 1937

*G. linganensis* Li, 1938

*G. puajabensis* Gupta, N. K. 1045

*G. lucknowensis* Gupta, V. *et* Jahan 1978 (Syn. Nov.)

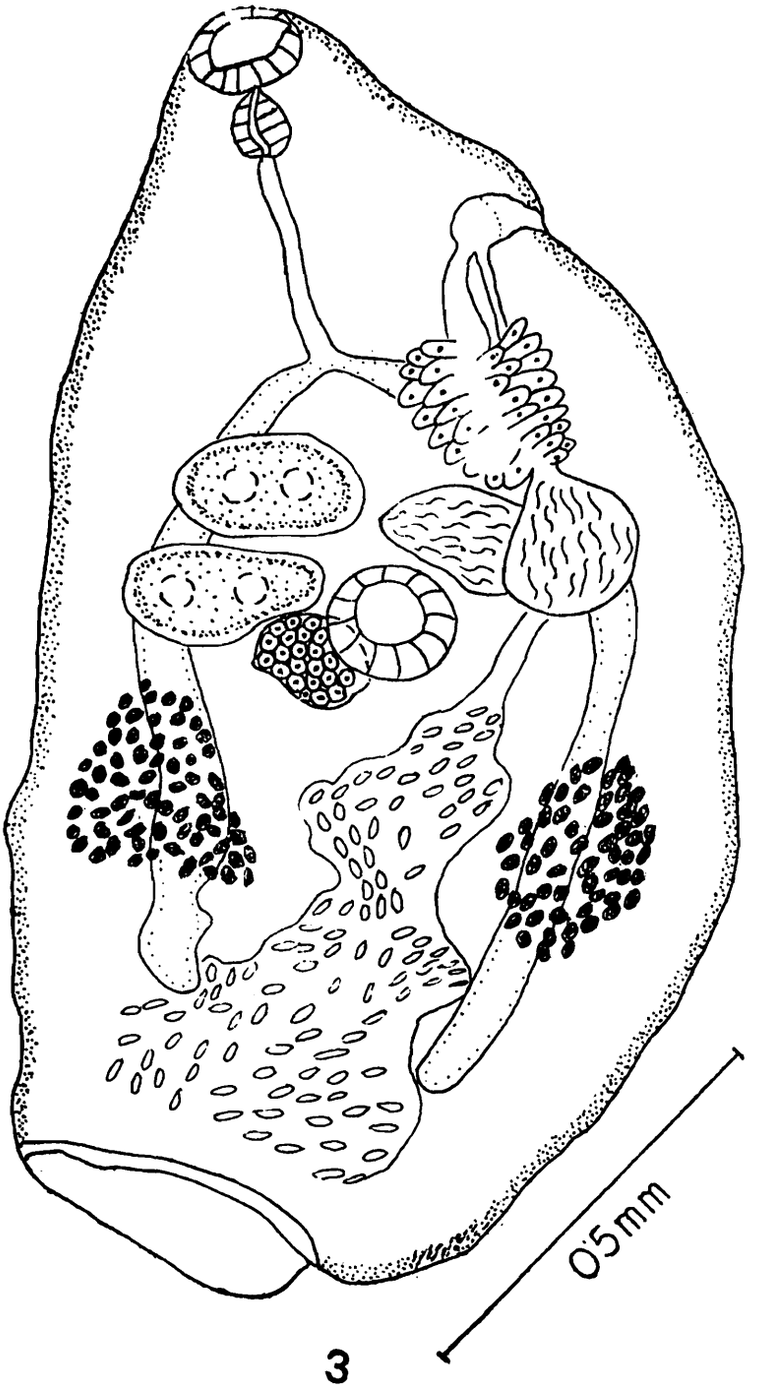


Fig. 3. *Ganeo gobindia*, ventral view.

**G. gastricus** Srivastava, 1933

*Host* : *Therapon jarbua*, (Pisces : Theraponidae).

*Location* : Intestine.

*Locality* : Machilipatnam (Bay of Bengal).

*No. of specimens* : 1, collected on January 22, 1975.

*Specimen deposited* : Z. S. I. Reg. No. W 7294/1.

Synonymity of *G. kumaoensis* Pande, 1937 and *G. lingnanensis* Li, 1938 with *G. tigrinum* as proposed by Fotedar (1959) is agreed to, but proposing synonymity of *G. attenuatum* Srivastava, 1933 with *G. tigrinum* on the plea that differentiation of metraterm and presence

of minute spines on the terminal parts of genital ducts and atrium have no taxonomic value as done by Mukherjee and Ghosh (1970) and Mukherjee (1977), is inconvincing and hence unacceptable. The differenciation of metraterm and/or presence of spines on the the terminal parts of genital ducts and atrium alongwith some other supporting characters definitely forms basis to distinguish species. In this particular case, the distinctness of *G. attenuatum* lies in the distinguishing characters such as differenciation of metraterm, presence of minute spines on the terminal male and female ducts as well as in the atrium, and posteriorly attenuated body. Bilqees and Kaikobad (1976) described a new species, *Ganeo macrocotyle* in the intestine of *Rana tigrina* from Karachi, on the basis of a single specimen. The reported aspinose body and the illustration of the species suggest that either the specimen was not in good condition or it was not carefully processed. The measurements of the suckers (oral sucker 0.12×0.15 and acetabulum 0.14×0.16) point that they are almost equal in size, which is also the case in *G. attenuatum* with which *G. macrocotyle* has been distinguished. Further, the details of the terminal parts of male and female ducts and atrium are inadequate (probably because the specimen was not good). However, the posteriorly attenuated body, almost equal suckers and equal egg size in *G. macrocotyle* and *G. attenuatum* suggest that the former is identical to the latter. Gupta, V. and Jahan (1978) described *G. lucknowensis* on the basis of a single specimen from *Bufo melanostictus* and differentiated it from *G. tigrinum* on the basis of a single testis. This is nothing but an abnormality as has been pointed out by Ghosh and Srivastava (1979) in other digenetic trematodes having two testes normally. Hence, *G. lucknowensis* is a synonym of *G. tigrinum*. We also concur with Mukherjee (1977) that *G. gastricus* Srivastava, 1933 is a synonym of *G. tigrinum*.

This first record of *G. tigrinum* from a marine fish is interesting.

**Ganeo korkei** Bhalerae, 1936.

(Fig. 4)

*Host* : *Rana cyanophlyctis*, (Amphibia : Ranidae)

*Location* : Intestine

*Locality* : Konarak (Orissa)

*Number of specimens* : 1, collected on 10.6.1972.

*Specimens deposited* : Z. S. I. Reg. No. W. 7295/1

Bhalerao (1936) had described this species on the basis of one specimen from *Rana tigrina* at Nagpur. He had collected this specimen alongwith others which were identified by him as *Ganeo tigrinum* Mehra and Negi, 1928. Since then specimens of this species were not collected by any worker. This species is apparantly characterised by the acetabulum larger than oral sucker, ovary larger than testes and follicles of vitellearium arranged in groups of five and seven on the left and right sides of the body respectively.

Only one specimen of this species was present in our collection in a population of three specimens. The other two specimens are identified as *G. tigrinum*. This is the third record of this species since it was described by Bhalerae in 1936. It rarely occurs in frogs, and whenever found, its incidence is very scanty. A large number of *Rana cyanophlyctis* and *Rana tigrina* were examined in various parts of India and in different seasons but only one specimen was found which has the characteristics of *G. korkei*.

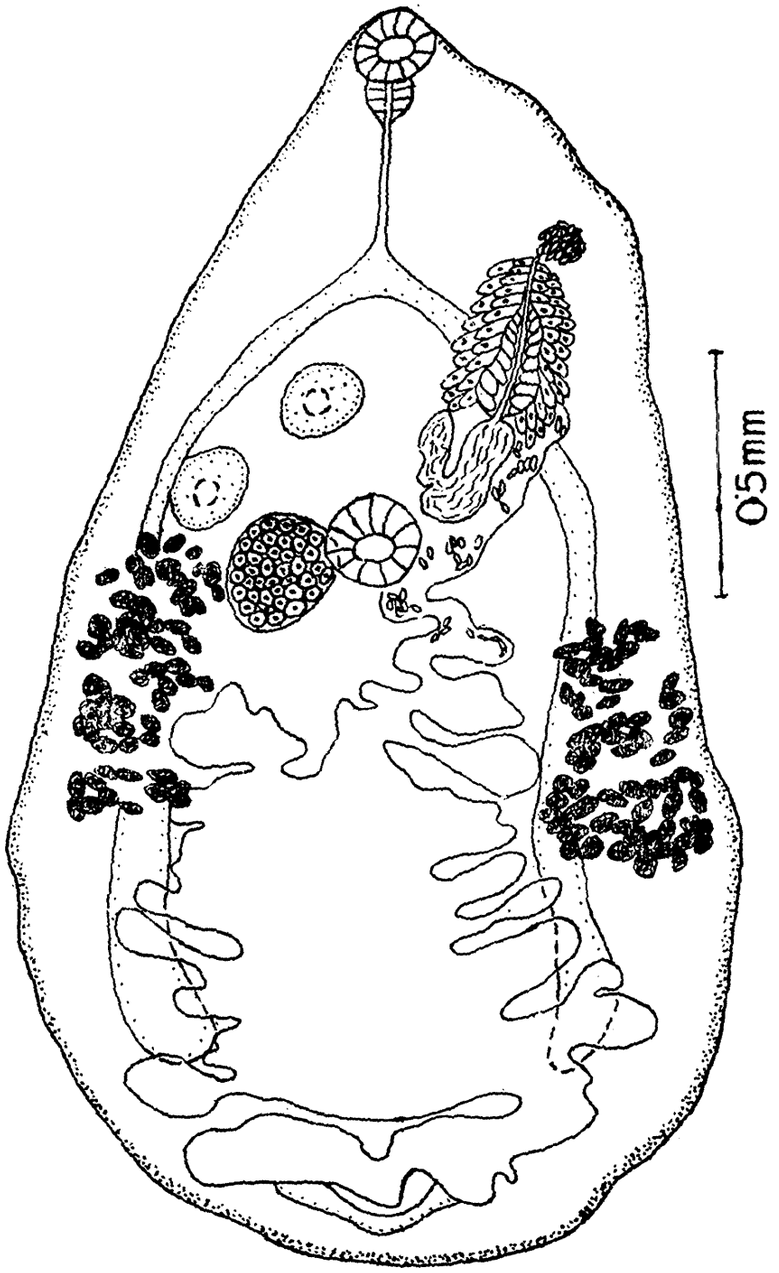


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Fig. 4. *Ganeo korkei*, ventral view.

The ovary in our specimen is larger than the testes and acetabulum, and the grouping of the vitilline follicles is demarcated although the follicles have coalesced probably due to overpressing during processing.

Nama (1974) reported one specimen of this species for the second time and made certain important observations. His most significant observations are that the ovary may be smaller than the testes and acetabulum, and the groups of vitelline follicles may not commence from immediately behind the posterior testis but, instead, they may be postacetabular. Moreover, the two testes in Nama's

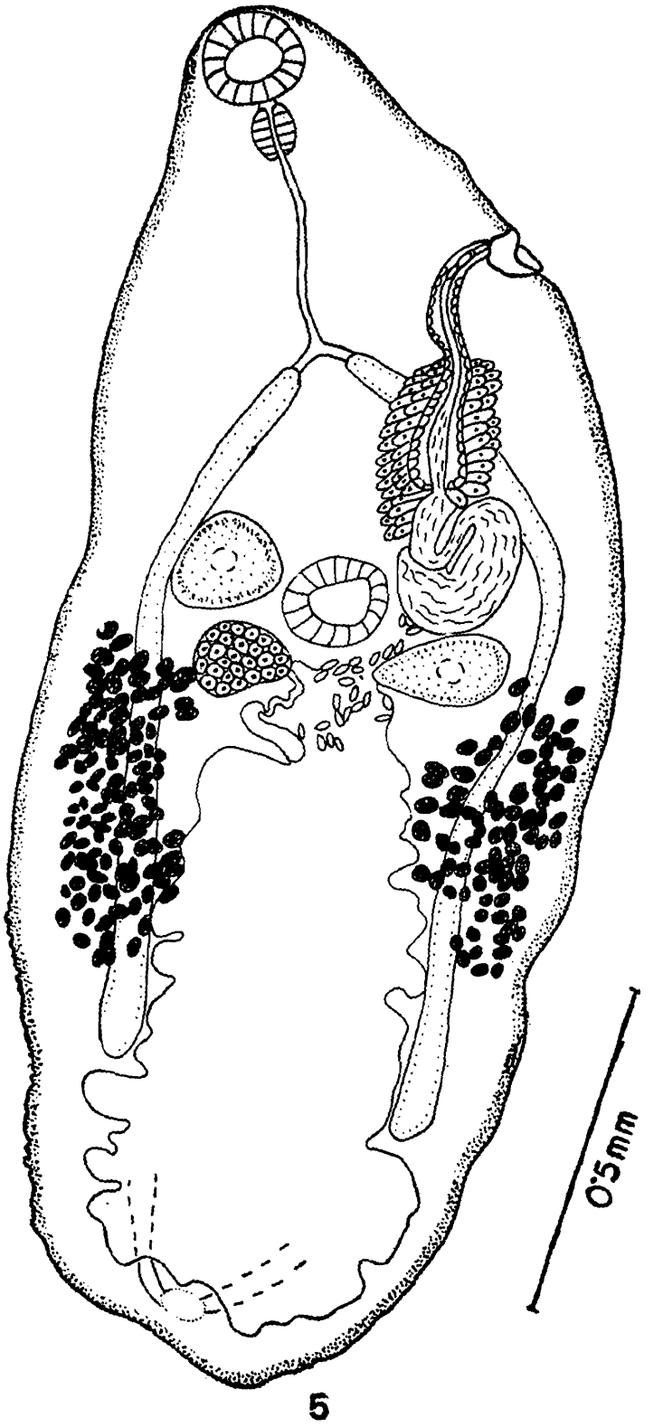


Fig. 5. *Ganeo srinagarensis*, ventral view.

specimen are almost equal He considered these dissimilarities as mere variations and thus confirmed the validity of *Ganeo korkei* Bhalerae, 1936. In the light of these observations, it is understandable that *G. korkei* may be having ovary equal to or smaller or larger than the testes as in *G. tigrinum* but the former gets certainly distinguished from the latter in the grouping of vitelline follicles on each side of the body. Ghosh and Chauhan

(1982) appear to agree with Rao and Kameshwari (1976) in synonymising *G. korkei* with *G. tigrinum* in spite of Nama's (*op. cit.*) report and Mukherjee's (1977) key to species of *Ganeo*, who recognise the validity of *G. korkei* on the basis of the grouping of the vitelline follicles. *Ganeo behurai* Ghosh and Chauhan, 1982 was not at all compared with *G. madrasensis*, which have striking morphological similarities in addition to the constant feature of unequal caeca. The authers consider *G. behurai* a sure synonym of *G. madrasensis*. The authors also agree with Rao and Kameshwari (*op. cit.*) that *G. pujabensis* is synonymous with *G. tigrinum*.

Gupta, P. D. (1977), obviously unaware of Nama's work, feels that "Bhalerae (1936) has possibly made an erroneous statement that grouped arrangement of vitelline follicles", but now it is confirmed that *G. korkei* does have vitelline follicles in groups on both the sides which may get coalesced due to excessive pressure during processing.

**Ganeo srinagarensis** Kaw, 1950

(Fig. 5)

*Host* : *Rana cyanephlyctis*, (Amphibia : Ranidae)

*Location* : Intestine

*Locality* : Nazat, 24-Parganas, (W. Bengal)

*No. of specimen* : 1, collected on September 15, 1978

*Specimen deposited* : Z. S. I. Reg No. W 7296/1

*Discussion* : Only one specimen of this species was present mixed with many others which were identified as *G. tigrinum*. *Ganeo srinagarensis* was originally charactarised to possess oral sucker slightly smaller than acetambulum, tests almost symmetrical and immediately postacetabular, and ovary smaller than testes lying between them in the immediately postacetabular area. The present specimen which is assigned to *G. srinagarensis* has equal sukers, tests symmetrical in disposition but lying in the acetahular region, and ovary smaller than or equal to testes and lies in the postacetabular area. The dissimilarities *vis-a-vis* original description are considered as variations only. Bilqees and Kaikobad (1976) reported this species from Karachi, Pakistan. Our reporting forms the third record of this species since it was described in 1950.

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