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# Two New Species of Helminth Parasites from Frog (*Rana tigrina* Daudin)

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**Abstract.-** A new digenetic trematode, *Ganeo gibsoni*, and a new acanthocephala, *Centrorhynchus bilqeesae*, are being reported from frog (*Rana tigrina*) from Oderolal Station, Sindh, Pakistan. *Ganeo gibsoni*, new species, is characterized by possessing a tongue-shaped body, somewhat large size of oral sucker, compact masses of vitellaria, two rounded testes, in having a macro-cirrus sac which opens to the exterior through a typical collar-shaped genital opening and in having eggs oval to elongate in shape measuring 0.028-0.029 by 0.014-0.015. The distinctive features of *Centrorhynchus bilqeesae*, new species are body elongate, small, indented in the posterior region; hypodermic nucleic small, numerous; proboscis well developed, having 12 rows of spines, each having ten spines measuring 0.030-0.041 by 0.011-0.015; testes small oval and bursa measuring 0.16-0.19 by 0.11-0.13.

**Key word:** Acanthocephala, small intestine, stomach, frog (*Rana tigrina*), Pakistan.

## INTRODUCTION

A survey was conducted to study helminth parasites of frog (*Rana tigrina* Daudin) from Sindh, Pakistan. During examination of frogs three trematodes were recovered from the small intestine and four acanthocephala from the stomach and small intestine and are described here. Few reports are available on the occurrence of trematodes and acanthocephala parasites of frogs from Pakistan (Bhutta and Khan, 1975; Bilqees and Kaikobad, 1976; Khan and Mohiuddin, 1982; Farooq and Khan, 1994; Khan and Bilqees, 1994). Present specimens of trematodes and acanthocephala are proposed to be new species from frogs collected from Oderolal Station, Sindh, Pakistan.

## MATERIALS AND METHODS

The worms were collected during November 2003. Permanent slides were prepared by fixing the specimens in F.A.A. (a solution of formalin, acetic acid and 50% alcohol in the ratio of 5:3:92) and stained in Mayer's carm alum and mounted permanently in Canada balsam. Measurements are in millimeters. Photomicrographs of the acanthocephalans were taken using an automatic photographic camera mounted on a research microscope Nikkon Optiphot-2 in the Department of Zoology, University of Karachi.

Holotype and paratype specimens are deposited in the collection of the second author (A.K.).

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Family *Lecithodendriidae* Odhner, 1910

### *Ganeo gibsoni*, new species

(Fig. 1)

| | |
|---|---|
| Host: | Frog (*Rana tigrina* Daudin) |
| Location: | Small intestine |
| Locality: | Oderolal Station, Sindh |
| Number: | 3 trematodes from a single host. |

*Description*

Small delicate worms 1.82-1.84 by 0.88-0.89 wide, in the posterior half region of the body somewhat tongue-shaped. Oral sucker slightly larger than the ventral sucker. Oral sucker 0.10-0.11 by 0.10-0.11. Oesophagus long 0.19-0.20 by 0.04-0.045. Ceca narrow, long ending in the posterior third of the body 1.01-1.08 long by 0.07-0.08 wide. Ventral sucker small 0.09-0.1 by 0.08-0.09 in size, located at a distance of 0.20-0.21 from the cecal bifurcation.

Testes two, tandem, oval to rounded in shape in the anterior body region, below the cecal bifurcation and above the ovary, measuring 0.21-0.22 by 0.21-0.23.

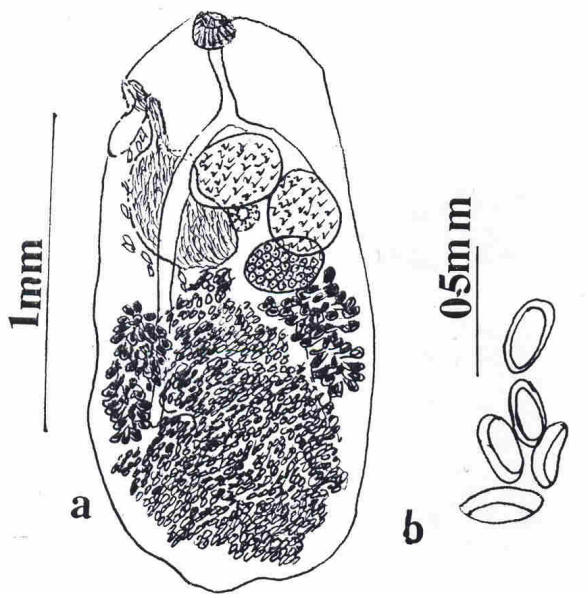


Fig. 1. *Ganeo gibsoni*, new species, holotype, a, entire specimen; b, eggs.

Ovary situated below the testes, little anterior to the mid body region, somewhat oval in shape, smaller than the testis, 0.16-0.17 by 0.24-0.24. Vitelline glands in compact bunches extend from the level of mid body region to a length of 0.42-0.44. Uterus fills the entire posterior portion of the body. Cirrus sac is a large oval and elongated structure, occupying latero-anterior position 0.4-0.42 by 0.25-0.26, followed by a lobular structure, which leads to a collar-like lateral genital opening. The eggs are oval to elongate in shape, measuring 0.028-0.029 to 0.014-0.015.

*Discussion*

Species of the genus *Ganeo* have been widely reported from amphibian hosts especially from *Rana* spp. (Yamaguti, 1958). The species known from Pakistan are: *Geneo gastricus* (Srivastava, 1933) Bilqees and Kaikobad, 1976; Farooq and Khan, 1994 from *R. cyanophlyctis and R. tigrina. G. kumaonensis* (Pande, 1937) Bhutta and Khan, 1975; Bilqees and Kaikobad, 1976. Farooq and Khan, 1994 from *R. cyanophlyctis* and *Rana tigrina. G. macrocotyle* (Bilqees and Kaikobad, 1976) Farooq and Khan, 1994 from *Rana tigrina. G. sirinagarensis* (Kaw, 1951) Bilqees and Kaikobad, 1976 from *R. cyanophlyctis* and *G. tigrina* (Mehra and Negi, 1928) Bilqees and Kaikobad, 1976 Farooq and Khan, 1994 from *R. tigrina*. Additionally Shaikh and Ahmed (1989) examined frogs from Hyderabad for *Gnathostoma* and *Ganeo* sp. infections.

The present specimens are described from the common frog *Rana tigrina*. These appear closer to *G. kumaonensis* (Pande, 1937). Bhutta and Khan (1975); Bilqees and Kaikobad (1976) reported from *R. cyanophlyctis* in Karachi, mainly in the position of male and female gonads and position of the genital opening, but the differences noted are; in having tongue-shaped body, somewhat large size of the oral sucker, compact masses of vitellaria, rounded testes, general body dimensions and macro-cirrus sac which opens to the exterior through a typical collar-shaped genital opening.

On the basis of the differences noted, a new species *Ganeo gibsoni* is proposed. The species is named in honour of Dr. D.I. Gibson, Natural History Museum, Cromwell Road, London, UK.

Family ***Centrorhynchidae*** Odhner, 1910

***Centrorhynchus bilqeesae*, new species**
(Figs. 2-3)

| | |
|---|---|
| Host: | Frog (*Rana tigrina* Daudin, 1803) |
| Location: | Small intestine and stomach |
| Locality: | Oderolal Station, Sindh, Pakistan. |
| No. of hosts examined: | 8 |
| No. of specimens recovered: | 4 male from a single host. |

*Description*

Body elongate, small, indented in the posterior region, measuring 3.26-3.58 by 0.67-0.73, greatest body width a little anterior to the middle of posterior testis and body end, hypodermic nuclei small, numerous. Proboscis well developed, divided by a slight insertion into two regions measuring 0.40-0.42 by 0.33-0.35 having 12 rows of spines, each row having ten spines measuring 0.030-0.041 by 0.011-0.015. Neck short measuring 0.43-0.45 by 0.064-0.066. Proboscis receptacle double-walled measuring 0.50-0.53 by 0.33-0.35. Lemnisci two measuring 0.54-0.36 by 0.045. Testes small, oval at a distance of 0.031-0.037 from each other, the anterior measuring 0.16-0.18 by 0.10 and posterior

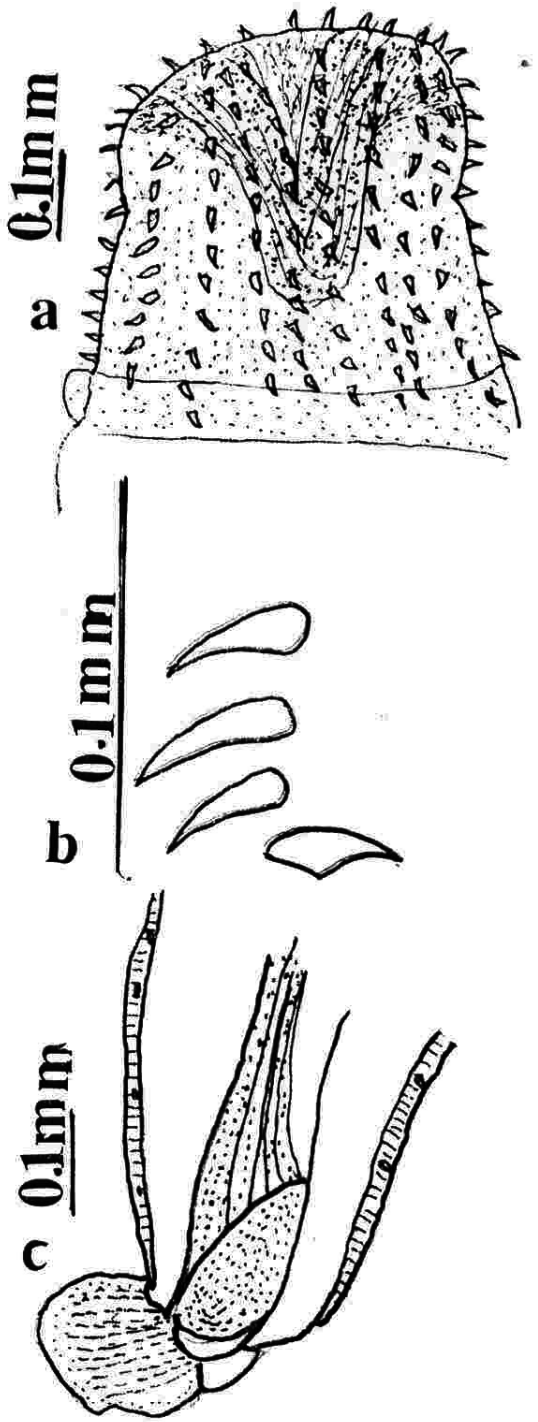


Fig. 2. *Centrorhynchus bilqeesae*, new species; a, proboscis elongated; b, spines enlarged; c, bursal region.

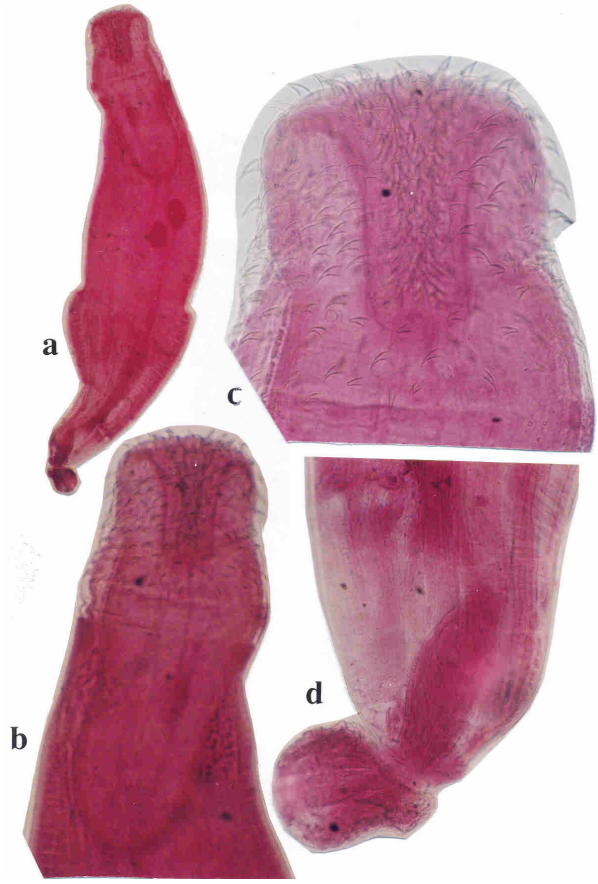


Fig. 3. *Centrorhynchus bilqeesae*, new species; a, entire specimen (x10); b, anterior region (x25); c, proboscis enlarged (x50); d, bursal region (x50).

measuring 0.15-0.16 by 0.09-0.10. Distance between anterior testis and proboscis 0.645-0.720. Cement glands four, slender. Saefftigens pouch oval, measuring 0.21-0.22 by 0.073-0.075. Bursa small measuring 0.16-0.19 by 0.11-0.013.

*Female*

Not recorded.

*Discussion*

The genus *Centrorhynchus* Van Cleave, 1916 has been reported from a number of hosts including mammals, reptiles and birds.

The following species have greater number of longitudinal rows of proboscis spines as compared to the present specimens which have 12 rows of

spines *viz. C. albidum* Meyer, 1932 (28-30); *C. aluconis* (Muller, 1780) Luhe, 1911 (26-30); *C. areolatum* (Rud.) (24-26); *C. bancrofti* (Johnston *et* Best, 1943) (28); *C. bazaleticum* Kursachvili, 1955 (42); *C. bengalense* Datta and Soota, 1955 (35-40); *C. brevicanthus* Das, 1949 (30-32); *C. bubonis* Yamaguti, 1939 (35); *C. buteonis* (Schrank, 1788) Kostylew, 1914 (30-34); *C. chabaudi* Golvan, 1958 (30-34); *C. clitorideum* (Meyer, 1931) (30); *C. conspectum* Van Cleave *et* Pratt, 1940 (26-32); *C. corvi* Fukui, 1929 (35-40); *C. elongatum* Yamaguti, 1935 (25-33); *C. embae* Kostylew, 1916 (24); *C. faleonis* (Johnston *et* Best, 1943) (38); *C. freundi* (Hartwich, 1953) (70); *C. galliardi* Golvan, 1956 (24-28); *C. gendrei* (Golvan, 1957) (34-38); *C. globocaudatum* (Zeder, 1800) (30); *C. gibsoni* Khan *et al*., 2002 (14); *C. horridum* (Linstow, 1897) (26-28); *C. indicum* Golvan, 1956 (28-30); *C. insulare* Tubangui, 1933 (32-34); *C. knowlesi* Datta *et* Soota, 1955 (42-46); *C. lancea* (Westrumb, 1821) (30); *C. lanceoides* Petrotschenko, 1949 (36-38); *C. macrorchis* (Das, 1950) (24-26); *C. madagascariense* (Golvan, 1957) (32-36); *C. magnum* Fukui, 1929 (34-36); *C. maryasis* (Datta, 1933) (24-28); *C. microcephalus* Bravo-Hollis, 1947 (36-38); *C. microrchis* Fukui, 1939 (34-44); *C. milvus* Ward, 1956 (34-38); *C. narcissae* Florescu, 1942 (34); *C. nickoli* Khan *et al*., 2001 (16); *C. olssoni* Lundstrom, 1942 (28-34); *C. optimum* Travassos, 1919 (24); *C. pinguis* Van Cleave, 1918 (30-40); *C. polyacanthus* (Creplin, 1825) (18); *C. polymorphus* (Travassos, 1926) (30); *C. sindhensis* Khan *et al*., 2002 (16); *C. robustus* Richardson and Nickol, 1995 (23-30); *C. scanense* Lundstrom, 1942); *C. skrjabini* (Kaiser, 1893) Van Cleave, 1924 (30-34); *C. spinosus* (Kaiser, 1893) Nickol, 1983 (26-35); *C. tenuicaudatum* (Marotel, 1899) (35); *C. tumidulum* (Rud, 1819) (26); *C. trudi* Yamaguti, 1939 (26) and *C. undulatum* Dollfus, 1951 (38) (Yamaguti, 1961; Nickol, 1983; Richardson and Nickol, 1995; Khan *et al*., 2001, 2002a,b).

Richardson and Nickol (1995) and Khan *et al*. (2002b) suggested that the proboscis armature is the most consistent feature for recognizing acanthocephala.

In the present species, the proboscis has 12 longitudinal rows of spines, each having ten spines, is different arrangement from all the species reported.

As compared to the species reported from Pakistan, the present species differs from *C. nickoli* Khan *et al*. (2001) reported from a bird (*Coracias garrulous* Linn.) and *C. gibsoni* Khan *et al*. (2002a) from crow (*Corvus splendens*) in possessing smaller body size and in the arrangement and number of proboscis spines and from *C. sindhensis* Khan *et al*. (2002b) from snake (*Naja naja*) in having different arrangement and number of proboscis spines and also in having smaller size of bursa and saefftigen's pouch. Furthermore, in having indented posterior region, it is separated from all the species reported so far.

The species *C. bilqeesae* is named in honour of Prof. Dr. Fatima Mujib Bilqees, an eminent parasitologist of Pakistan.

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