

TREMATODE FAUNA OF RAJASTHAN, INDIA, PART 2, FAMILIES CATHAEMASIIDAE, ECHINOSTOMATIDAE & PARAMPHISTOMIDAE

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INTRODUCTION

In the first paper of this series this author (1970) reported the occurrence of 15 species of trematodes belonging to 14 genera and 9 families collected from western districts of Rajasthan viz. Barmer, Bikaner, Jaisalmer, Jodhpur and Nagaur. Subsequently, some more collections were made. In this paper are reported one species belonging to Cathaemasiidae, 6 species to Echinostomatidae and 4 species to Paramphistomidae. Excepting *Paryphostomum indicum*, the other ten species are reported for the first time from Rajasthan.

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SYSTEMATIC ACCOUNT

FAMILY CATHAEMASIIDAE Fuhrmann

1. *Cathaemasia dollfusi* Travassos

1951. *Cathaemasia dollfusi* Travassos, *Arq. Zool. Estado S. Paulo*, 7 : 474-477.

Material : 6 exs., *Ibis leucocephala*, oesophagus, Nimli village (District Jodhpur), 20.ix.'70, P. D. Gupta coll.

Measurements: Length of body 10.5-12*; width of body 5-6; collar 1.014-1.092 × 1.575-1.638; oral sucker 0.858-1.014 × 0.967-1.154; ventral sucker 1.560-1.918 × 1.606-1.872; prepharynx 0.015-

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* All measurements in millimetres.

0.187; pharynx 0.405-0.452 × 0.374-0.421; oesophagus 0.312-0.717; anterior testis 1.138-1.169 × 2.340-3.088; posterior testis 1.138-1.513 × 1.794-2.542; ovary 0.514-0.670 × 0.468-0.951.

Distribution: Rajasthan: Jodhpur. *Elsewhere*: U. P. (INDIA). CONGO.

Remarks: These specimens resemble closely *C. dollfusi* Travassos (1951). The collar is feebly discernible with an uninterrupted row of collar spines. Stunkard and Gandal (1965) doubted that probably *C. dollfusi* is synonym of *C. seetali* Wesley (1943). The intestinal caeca in *C. seetali* are smooth where as in *C. dollfusi* and in the present material their outer margin is provided with a number of diverticulae almost through out their length. These two species also differ in other details like the extension of cirrus sac and comparative size of ovary in relation to body length. Therefore *C. dollfusi* is treated distinctly from *C. seetali*.

Family ECHINOSTOMATIDAE Poche

2. *Echinochasmus euryporus* (Looss), Dietz, 1910

1896. *Echinostomum euryporum* Looss, nec Looss, 1899, *Mem. Inst. Egypt*, 3: 144, tab. 9, fig. 93.

Material: 11 exs., *Circus aeruginosus*, intestine, Kharda Dam (Pali District), 16. xii. '70, P. D. Gupta coll.

Measurements: Length of body 2.073-2.796; width of body 0.460-0.575; oral sucker 0.040-0.066 × 0.053-0.079; ventral sucker 0.292-0.399 × 0.279-0.399; prepharynx 0.026-0.053; pharynx 0.066-0.079 × 0.053-0.079; oesophagus 0.133-0.266; ovary 0.079-0.133 × 0.079-0.133; anterior testis 0.186-0.306 × 0.239-0.399; posterior testis 0.292-0.345 × 0.212-0.319; cirrus sac 0.133-0.212 × 0.079-0.133.

Distribution: Rajasthan: Pali District (First record from India). *Elsewhere*: EGYPT, USSR.

3. *Paryphostomum indicum* (Bhalerao)

1927. *Testisacculus indicum* Bhalerao, *Proc. 14th Indian Sci. Congr.*, Pt. 3: 191.

1931. *Paryphostomum indicum* Bhalerao, *Parasitology*, 23: 99-102.

Distribution: Jaisalmer. *Elsewhere*: Northern India.

Remarks: Gupta (1970) reported its occurrence from intestine of *Varanus monitor* at Jaisalmer.

4. *Paryphostomum radiatum* (Dujardin) Dietz, 1910

1845. *Distomum (Echinostoma) radiatum* Dujardin, *Hist. Nat. Helm. intestinaus*, : 427.

Material: 4 exs., *Phalacrocorax* sp., intestine, Kharda Dam (Pali District), 30.ix.'70, P. D. Gupta coll.

Measurements: Length of body 5.985-7.805; width of body 1 116-1.514; oral sucker 0.093-0.172 × 0.133-0.226; pharynx 0.106-0.239 × 0.093-0.239; oesophagus 0.159-0.665; ovary 0.133-0.305 × 0.159-0.359; cirrus sac 0.226-0.399 × 0.119-0.199.

Distribution: *Rajasthan:* Pali District (First record from India)
Elsewhere : SRI LANKA, SOUTH AFRICA, JAPAN, EUROPE, U. S. S. R., AUSTRALIA, INDOCHINA, Inner Mongolia (CHINA).

Remarks: Acetabulum in some specimens has posterior sac like prolongations. One specimen has a cestode larva in its acetabulum.

5. *Mesorchis pendulus* (Looss) Dietz, 1909

1899. *Echinostomum pendulum* Looss, *Zool. Jahrb. Syst.*, 12 : 688-692.

Material: 1 ex. (damaged), *Anhinga melanogaster*, intestine, Kailana Lake (Jodhpur District), 10. vi.'65, P. D. Gupta coll.

Measurements: Body length 2.371; width 0.269; oral sucker 0.055 × 0.055; ventral sucker 0.130 diameter; pharynx 0.055 × 0.046; oesophagus 0.370; cirrus sac 0.139 × 0.083; anterior testis 0.176 × 0.176; posterior testis 0.279 × 0.186; ovary 0.065 × 0.083.

Distribution: *Rajasthan:* Jodhpur District (first record from INDIA).
Elsewhere: CATANIA, AFRICA, JAPAN and U.S.S.R.

Remarks: Yamaguti (1958) treats *Mesorchis* as synonym of *Stephanoprora* and assigns it to the subfamily Echinochasminae. Skrjabin and Bashkirova (1956) assign this species to the genus *Mesorchis* which is included in the subfamily Allechinostomatinae and they treat *Stephanoprora* as monotypic genus with *S. ornata* Odhner, 1902, as the type species. This author agrees with Yamaguti in assigning the genus *Mesorchis* to the subfamily Echinochasminae on the basis of dorsally interrupted row of collar spines.

6. *Patagifer wesleyi* Verma, 1936

1936. *Patagifer wesleyi* Verma, *Allahabad Univ. Stud.*, 12, Sci. Sec., (3) : 160-162.

Material: 24 exs., *Threskiornis melanocephala*, intestine, Chandelao village (Jodhpur District), 3. ix.'71, P. D. Gupta coll.

Measurements: Length of body 17.6-23.2; maximum width 1.6-2.3; 30 collar spines on each side. Oral sucker mostly transversely elongated but sometimes rounded, $0.255-0.333 \times 0.255-0.632$; ventral sucker $1.333-1.529 \times 1.254-1.587$; pharynx $0.252-0.333 \times 0.297-0.405$; oesophagus $0.921-1.372$; anterior testis $1.117-1.646 \times 0.392-0.686$; posterior testis $1.195-1.685 \times 0.372-0.646$; Mehli's gland complex $0.646-1.215 \times 0.496-0.823$; ovary $0.432-0.666 \times 0.306-0.594$.

Distribution: *Rajasthan:* Chandelao, District Jodhpur (First record from Rajasthan). *Elsewhere:* Gyanpur (District Varanasi and Fatehpur both in U. P. (INDIA)).

Remarks: *Patagifer srivastavai* Peter, 1954, known only by an abstract description, resembles so closely *P. wesleyi* in measurements and other details that the former is treated as synonym of the latter. Verma (1936) has mentioned presence of 30-31 spines on each side of the collar. Jain (1967) has reported 31 spines where as the present material has only 30 spines on each side of the collar.

7. *Nephrostomum ramosum* (Sonsino) Dietz, 1910

1895. *Echinostomum ramosum* Sonsino, *Monit Zool. Ital.*, 8 (6) : 123-124.

Material: 2 exs., intestine, egret, Kharda Dam (Pali district), 21.iv. 71 P. D. Gupta coll.

Measurements: Length of body 11.100-11.360; width 2.940-3.180; Number of collar spines 47.50; oral sucker $0.167 \times 0.176-0.186$; ventral sucker $1.460-1.512 \times 1.237-1.330$; pharynx $0.214-0.279 \times 0.186-0.241$; oesophagus $0.353-0.576$; ovary $0.279-0.418 \times 0.261-0.418$; anterior testis $0.734-0.744 \times 0.799-0.817$; posterior testis $0.632-0.697 \times 0.669-0.744$; cirrus sac $0.372-0.604 \times 0.409$. Genital pore in a opposition to the intestinal bifurcation.

Distribution: *Rajasthan:* Pali District (first record from India) *Elsewhere:* EGYPT, MADAGASCAR and NETHERLAND.

Family PARAMPHISTOMIDAE Fiscoeder

8. *Diplodiscus mehrai* Pande

1937. *Diplodiscus mehrai* Pande, *Proc. Indian Acad. Sci.*, 6(2) : 109-112, 113., 119, figs. 1-2.

Material: 2 exs., *Rana cyanophlyctis*, intestine, Chittrogarh, 7 X. '64, P. D. Gupta coll.

Measurements: Body length 1.920-2.200; width 0.244-0.279; oral sucker $0.279-0.334 \times 0.390-0.399$; oesophagus 0.158; testis 0.324×0.279 ; ovary $0.223-0.241 \times 0.209-0.214$; ova $0.111 \times 0.130 \times 0.065-0.083$.

Distribution: Rajasthan: Chittorgarh District (first record from Rajasthan). **Elsewhere:** Uttar Pradesh (INDIA) PHILIPPINES, KOREA and MANCHURIA.

Remarks: These specimens have genital opening at intestinal bifurcation, vitellaria only extracaecal, oesophagus short, oral diverticula reaching the intestinal bifurcation and the position of genads is somewhat definitely lateral. Singh (1954), considering position of genital pore of minor importance, has treated *D. mehrai* synonymous with *D. amphichrus*. Mukherjee and Chauhan (1967) agree with Singh. A detailed study may provide stable characters for separation of *D. mehrai* from *D. amphichrus* on the basis of position of genads, cirrus pouch and the genital opening. Present forms are tentatively assigned to *D. mehrai*.

9. *Ceylonocotyle scoliocoelium* (Fischoeder) Näsmark, 1937

1904. *Paramphistomum scoliocoelium* Fischoeder, *Zool. Jahrb. Syst.*, 20(5) : 463-468.

Material: Many exs., buffalo, rumen, zoo slaughterhouse, Jodhpur, 6.i.'71, P. D. Gupta coll.

Measurements: Body length 4.762-5.919; width 1.920-2.548; oral sucker 0.509-0.705 × 0.450-0.666; ventral sucker 0.705-1.234 × 0.784-1.234; oesophagus 0.392-0.646; anterior testis 0.588-0.960 × 0.860-0.980; posterior testis 0.666-0.744-0.725-1.274; ovary 0.372-0.392-0.359-0.431. Genital pore behind intestinal bifurcation.

Distribution: Rajasthan: Jodhpur (first record from Rajasthan) **Elsewhere:** INDIA (Punjab, U. P., W. Bengal), INDOCHINA, CELEBES, AFRICA, JAPAN, INDONESIA.

Remarks: All the specimens do not have rounded or transversely elongated testes.

10. *Ceylonocotyle nasmarki* Mukherjee

1963. *Ceylonocotyle nasmarki* Mukherjee, *Indian J. Helminth.*, 15 : 70-73.

Material: 1 ex., buffalo, rumen, zoo slaughterhouse, Kota, 25.x.'64, P. D. Gupta coll.

Measurements: Length of body, 5.060; width 2.780; oral sucker 0.560 diameter; ventral sucker 0.800 × 0.760; oesophagus 0.440; anterior testis 1.180 × 1.200; posterior testis 1.280 × 1.000; ovary 0.400 × 0.300.

Distribution: Rajasthan: Kota (first record from Rajasthan). **Elsewhere:** INDIA (Bareilly, U. P.).

11. *Cotytophoron indicum* Stiles and Goldberger

1910. *Cotytophoron indicum* Stiles & Goldberger, *Bull. Hyg. Lab. U. S. Publ. Hlth. Mar. Hosp. Serv.*, No. 60 : 63-73.

Material: 21 exs., goat, rumen, Banswara slaughterhouse, 17.iii. '72, P. D. Gupta coll.

Measurements: Body length 4.540-7.840; width 2.180-2.980; oesophagus 0.240-0.660; oral sucker 0.500-0.669 × 0.460-0.820; ventral sucker 1.400-1.640 × 1.440-1.620; genital sucker 0.340-0.400 × 0.360-0.420; anterior testis 0.200-1.160 × 0.340-1.140; posterior testis 0.200-1.080 × 0.400-1.280; ovary 0.200-0.300 × 0.180-0.340.

Distribution: *Rajasthan*: Banswara District (first record from Rajasthan). *Elsewhere*: U. P. and West Bengal.

SUMMARY

One species belonging to the family Cathaemasiidae, 6 species to Echinostomatidae and 4 species to Paramphistomidae are reported. All the species excepting *Paryphostomum indicum* are recorded for the first time from Rajasthan. *Paryphostomum radiatum*, *Echinochasmus euryporus*, *Mesorchis pendulus* and *Nephrostomum ramosum* are reported here for the first time from India.

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