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Systematic studies on redescribed species of trematode Diplodiscus amphichrus (Tubangui, 1933) in Rana cyanophlyctis (Schneider, 1799) at Omerga dist. Dharashiv (M.S.) India

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Abstract:
Trematode parasites or flatworm that can cause severe deformities in frog such as extra limbs or twisted limbs in developing tissues and disrupting cell growth, result in declining frog population and raising awareness about environmental degradation.
Deformed frog has highlighted potential environmental issues, as the prevalence of these parasites can signal broader ecological problems.
A decline in the frog population has a domino effect on the ecosystem, disrupting the food web , increasing insect borne diseases, causing wider environmental instability. Frog play central component in food chain and play prey and predators. The flat under discussion deals with description of species of genus *Diplodiscus* (Diesing1836) from *Rana cyanophlyctis* As a type species. The present form agrees all the characters of the genus *Diplodiscus.*

Keywords: Gastrointestinal Helminth, Trematode, *Diplodiscus amphichrus, Rana cyanophlyctis*

Introduction

The genus *Diplodiscus* of the family *Diplodiscidae* Cohn, 1904 was erected by Diesing, 1836 and ascribed *D. Subclavatus* Pallas. 1760 as its type species . Five valid species have been reported from Indian amphibians by Srivastava, Pande, Bhalerao, Kaw, Pande and Chakrubarti, Mukharjee and Ghosh, Dwivedi and Shing. The Indian species are *D. amphichrus* Tubangui,1933, *D. amphichrus magnus* Srivastava, 1934, *D. mehari* Pandey , 1937*, D. lali* Pandey and Chakrabarty , 1968 and *D. chauhani* Pandey, 1969.
Trematode parasites significantly impact on frog mostly effect severe limb deformities of developing limb buds, this results in reduced mobility, increased susceptibility to predators and lower survivorship rates for infected frog .
high parasites loads can lead to crippling effects, lower tadpole survival and can even disrupt their metamorphosis, potentially leading to population declines in affected areas.
In food chain a frog typically occupies the secondary consumer level (third tropical level) feeding on primary consumes like grasshopper and other insect, this position the frog as pray for tertiary consumers such as snakes and birds. The frog's role is crucial in connecting lower and higher tropical level and maintaining ecological balance by controlling insect population .adult frogs are significant insect predators, consuming billions of insect like mosquitoes, flies, grasshoppers each year. Their decline leads to an explosion in insect population, which can damage crops and spread diseases and predators on frog such as snakes, birds, fish and some mammals. Experience a food shortage and a drop in their own population this creates in balance the entire ecosystem and increase insect population that time spread diseases, insect population increase that time more pesticide use, pesticide is harmful to crop and humans and wildlife and aquatic terrestrial environment and their nutrient cycle is disturbed.

Material and Method

These trematodes were preserved in 4% formalin and ten specimens were stained with Harris haematoxylin, passed through various alcoholic grades, cleared in xylene, mounted in D. P. X. and drawings are made with the aid of camera lucida. All measurements are given in millimetre.

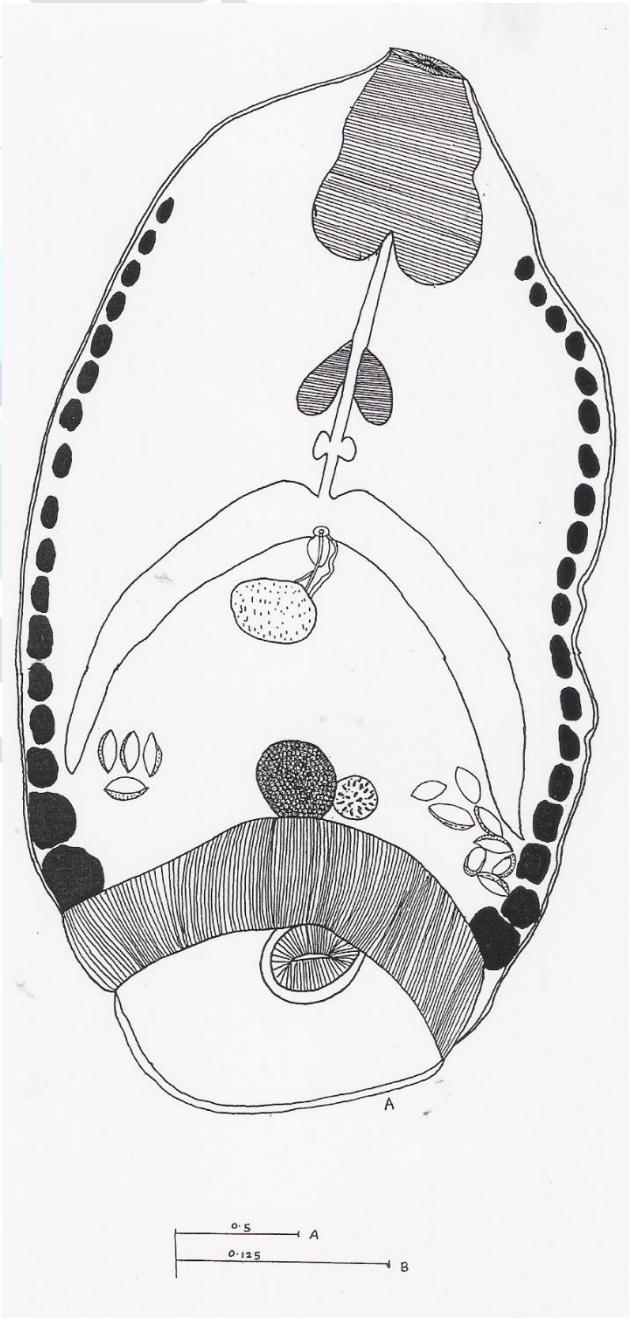
Description

Eight trematode are collected from rectum of *Rana cyanophlyctis* (Schneider, 1799) at Omerga, dist. Dharashiv (M.S.), India during January, 2024 to December 2024.

The worms are conical in shape with smooth cuticle. They measure 2.13 in length and 1.15 breadth. The maximum breadth occurs in front of Acetabulum and at the level of caecal termination.

The oral sucker oval which is provided with oral pouches at the posterior end which oval and large shaped and measures 0.39 in length and 0.33 in breadth. the oral sucker measures 0.19 in length and 0.02 in width. The distinct oesophagus arises from the base of oral sucker which is muscular long and tubular measures 0.19 in length and 0.02 in breadth. It is provided with a distinct oesophageal bulb at the caecal bifurcation. Which is globular, bulbus and measures 0.08 in length and 0.06 in breadth.

The wide almost straight intestinal caeca bifurcated and extend up to the anterior margin of acetabulum it measures 4.32 in length and 0.25 in width. Acetabulum is well developed, muscular, large and transversally oval and measures 0.85 in length and 0.62 in breadth. Small central sucker which is oval in shape present in between the acetabulam and measures 0.19 in length and 0.16 in width.



***Diplodiscus amphichrus*, Tubangui,1933**

Testis rounded, unlobed almost single, situated in the middle of the body and measures 0.13 in diameter.

The genital pore is small, oval present below the post bifurcal zone. It measures 0.026 in length and 0.017 in breadth. Cirrus sac is small, oval in shape it contains ejaculatory duct and seminal vesicle which measures 0.05 in length and 0.04 in width.

The seminal vesicle small, located just anterior to intestinal bifurcation and measures 0.17 in length and 0.06 in breadth. The ovary is medium, rounded situated posterior to testis just behind the acetabulum and measures 0.15 in diameter. The large vitelline follicle which is oval to rounded in shape, extend almost from the region of oesophageal bulb to the anterior margin of acetabulum. It measures 0.05 in length and 0.035 in width.
Excretory bladder saccular with paired collecting canals arising from its anterior end extending up to the anterior region of the body.
Shell gland post-ovarian which is rounded in shape and measures 0.02 in diameter. Uterus is elongated, coiled and intercaecal which contains operculated eggs, which is brown in colour, oval in shape and measures 0.053 in length and 0.044 in breadth.

Result and Discussion

The genus *Diplodiscus* erected by Diesing 1836 which is under the family Diplodiscinae. The present parasites resembles in most of characters with *Diplodiscus amphichrus*. (Tubangui, 1933) but it differs from the same in few characters known as a additional characters, which as follows.

1. the present fluck differs from it, Extension of intestinal caeca up to the plane of ovary Vs intestinal caeca up to posterior region.
2. The present form differs from the same Ovary lies just in front to acetabulum Vs ovary lies below the testis.
3. The present trematodes differs from it, Operculated eggs few in number Vs more in number.

As the characters are minor it is redescribed here as *D. amphichrus* Tubangui, 1933. The present parasite is collected from India while *D. amphichrus* from Philippines.

Taxonomic Summary

Genus	*Diplodiscus* Diesing, 1836
Species	*Diplodiscus amphichrus* Tubangui, 1933.
Type host	*Rana* cyanophlyctis (Schneider, 1799)
Habitat	Rectum
Type locality	Dharashiv, (M. S.) India.
Period of collection	Jan. 2024 to Dec. 2024
Etymology	As the trematode species reported from Dharashiv, (M.S.) India

Conclusion

Trematode parasites have required multiple hosts for its complex life cycle. These parasites may serve as Reliable indicators of species diversity in an ecosystem. The larval trematode parasites are easily sampled in intermediate host snails.
Trematode parasites significantly impact on frog mostly effect severe limb deformities of developing limb buds, this results in reduced mobility, increased susceptibility to predators and lower survivorship rates for infected frog .
high parasites loads can lead to crippling effects, lower tadpole survival and can even disrupt their metamorphosis, potentially leading to population declines in affected areas.

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