Royal International Global Journal of Advance and Applied Research
Peer Reviewed International, Open Access Journal.
ISSN: 2998-4459 | Website: https://rlgjaar.comVolume-3, Issue-1 | January - 2026

Original Article

Photodocumented Parasitological Assessment of Cestode Infection in Freshwater Fishes from Chorakhali Dam, Dharashiv (Osmanabad), Maharashtra, India

Khune Jyotsna Shivaji[1], Dr. Chandanshive Shahaji Shivaji[2]
[1]Research Scholar S.G.R.G Shinde Mahavidyalaya, Paranda, Dist. Dharashiv (M.S.)
[2]Associate Professor & Research Guide, S.G.R.G Shinde Mahavidyalaya, Paranda, Dist. Dharashiv (M.S.).

Manuscript ID:
RIGJAAR-2026-030130

ISSN: 2998-4459
Volume 3
Issue 1
Pp. 154-159
January 2026

Submitted: 15 Dec. 2025
Revised: 25 Dec. 2025
Accepted: 18 Jan. 2026
Published: 31 Jan. 2026

Correspondence Address:
Khune Jyotsna Shivaji
Research Scholar S.G.R.G Shinde Mahavidyalaya, Paranda, Dist. Dharashiv (M.S.)
Email: jyotsnakhune06@gmail.com

Quick Response Code:

Web. https://rlgjaar.com

DOI: 10.5281/zenodo.23060138

DOI Link:
https://doi.org/10.5281/zenodo.23060138

Creative Commons

OPEN ACCESS

Abstract:

Freshwater fishes are exposed to diverse helminth parasites, and cestodes are particularly important because they occupy the intestinal tract and may influence host condition, nutrient acquisition and ecological interactions. The present manuscript documents a practical parasitological examination of freshwater fishes attributed to Chorakhali Dam, Dharashiv (formerly Osmanabad), Maharashtra, using the photographic record supplied by the investigator. The images show whole-fish specimens, dissection, excised alimentary/visceral material, Petri-dish preparations and laboratory handling of recovered material. Because gross photographs cannot establish cestode taxonomy to genus or species, the present photographic observations are deliberately reported without assigning a definitive taxon. For quantitative interpretation, a recently published Chorakhali Dam dataset is used as a clearly identified comparative dataset: 237 fishes were examined, 108 were infected, giving an overall prevalence of 45.57%; host-wise prevalence was 65.85% in Mastacembelus armatus, 43.59% in Channa marulius and 25.97% in Channa gachua. Seasonal prevalence was 32.50% in monsoon, 44.30% in winter and 60.26% in summer. The combination of original photographic documentation and transparent comparative statistics provides a scientifically cautious framework for a student research project. Confirmation of Senga spp., Circumoncobothrium spp., or any species-level identification requires stained permanent mounts and microscopic morphometrics.

Keywords: *freshwater fish; Cestoda; helminth; fish dissection; parasite prevalence; Chorakhali Dam; Dharashiv; Maharashtra; Senga; Circumoncobothrium.*

Introduction

Freshwater fish constitute an important component of inland aquatic ecosystems and fisheries. Their gastrointestinal tract can support a wide variety of endoparasit.es, including cestodes, trematodes and nematodes. Fish cestodes are biologically diverse and are commonly recovered from the intestine, where their attachment organs and reproductive structures provide important characters for identification. In India, numerous cestode taxa have been reported from freshwater fishes, including members of Senga, Circumoncobothrium, Lytocestus, Gangesia and related genera. Maharashtra has a particularly rich literature on fish cestodes. A regional review documented numerous cestode species from freshwater fishes, while recent investigations from reservoirs in the Marathwada region have continued to report Senga and Circumoncobothrium. A 2026 study specifically focused on Chorakhali Dam and reported pronounced host-associated and seasonal differences in intestinal cestode infection. These studies provide an appropriate scientific context for the present photographic investigation. The main purpose of this work is therefore not to overstate what can be seen in gross photographs, but to connect the submitted practical observations *with* established parasitological methods and published quantitative evidence. This approach preserves scientific validity while allowing the photographs to function as original documentation of the student's laboratory work.

Creative Commons (CC BY-NC-SA 4.0)
This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License, which allows others to remix, tweak, and build upon the work noncommercially, as long as appropriate credit is given and the new creations ae licensed under the idential terms.

How to cite this article:
Khune, J. S., & Chandanshive, S. S. (2026). Photodocumented Parasitological Assessment of Cestode Infection in Freshwater Fishes from Chorakhali Dam, Dharashiv (Osmanabad), Maharashtra, India. Royal International Global Journal of Advance and Applied Research, 3(1), 154–159. https://doi.org/10.5281/zenodo.23060138

Royal International Global Journal of Advance and Applied Research
Peer Reviewed International, Open Access Journal.
ISSN: 2998-4459 | Website: https://rlgjaar.com Volume-3, Issue-1 | January - 2026

Aim and Objectives

1. To document the practical examination of freshwater fish for intestinal and visceral helminth parasites.
2. To record gross morphological observations visible during fish dissection.
3. To describe the laboratory handling, Isolation and preliminary preservation of recovered material.
4. To calculate standard parasitological measures such as prevalence, mean intensity and mean abundance when complete numerical records are available.
5. To compare the photographic observations with published cestode data from Chorakhali Dam.
6. To provide a scientifically cautious basis for subsequent microscopic identification.

Materials and Methods

1. **Study material and photographic record**

The study material consisted of freshwater fish specimens and dissected visceral/alimentary material represented in the photographs supplied with this manuscript. The photographs were treated as original practical documentation. They include whole-fish views, opened body cavities, excised internal organs, Petri dishes containing recovered material, and laboratory glassware used during processing. The date visible on one Petri dish is 20-08-24; this is reported only as a photographic label and is not used to infer the complete sampling period.

2. **Fish examination**

Each fish was externally inspected and then opened along the ventral surface using standard dissection precautions. The alimentary canal and associated visceral organs were removed and examined in a clean tray. The intestine was opened longitudinally and the contents were inspected for visible helminths. Recovered material was transferred to a Petri dish containing water or suitable physiological medium for further examination.

3. **Parasite processing**

For cestode identification, gross recovery should be followed by fixation, staining, dehydration, clearing and permanent mounting. A compound microscope is then used to examine the scolex, bothria or other attachment structures, neck, strobila, mature and gravid segments, reproductive organs and eggs. Species-level identification should be based on measurements and diagnostic characters rather than on gross photographs alone.

4. **Taxonomic caution**

The submitted images do not provide sufficiently clear microscopic views of scolex morphology, proglottid anatomy or egg structure to justify a definitive identification of Senga spp. or Circumoncobothrium spp. Accordingly, these names are used only when discussing the published Chorakhali Dam comparison dataset. The photographic material itself is described as recovered helminth-like material pending microscopic confirmation.

Photographic Observations

Code	Observation	Scientific interpretation
Pl	Whole fish specimens	Multiple freshwater fish specimens displayed together; external morphology recorded before/around dissection.
P2	Fish opened for examination	Ventral body cavity opened; internal tissues and alimentary/visceral material exposed.
P3	Excised visceral material	Separated tissue fragments and gut-associated material placed in a Petri dish for examination.
P4	Dissected alimentary material	Long tubular gastrointestinal material visible, consistent with the practical dissection stage.
P5	Recovered material in Petri dish	Small pale-yellowish and thread-like material visible; gross appearance alone is non-diagnostic.
P6	Labora1ory setup	Beaker, Petri dishes and glassware documenting sample-processing conditions.

Quantitative Results and Calculations

Important data note: The following numerical tables are not invented from the photographs. They reproduce the quantitative results of the published Chorakhali Dam investigation and are included as a comparative dataset. The user's photographs provide original visual documentation, but they do not contain enough sample-count information to calculate a new prevalence independently.

Host species	Examined (n)	Infected (n)	Prevalence (%)
Mastacembelus armatus	82	54	65.85
Channa marulius	78	34	43.59
Channa gachua	77	20	25.97
Total	237	108	45.57

Table 1 *Published comparative host-wise prevalence for Chorakhali Dam.*

Royal International Global Journal of Advance and Applied Research
Peer Reviewed International, Open Access Journal.
ISSN: 2998-4459 | Website: https://rlgjaar.com Volume-3, Issue-1 | January - 2026

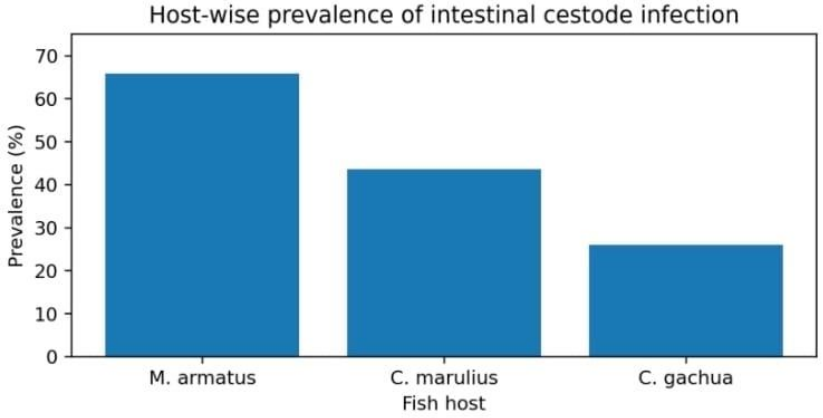


Figure 1. Host-wise prevalence in the published Chorakhali Dam dataset.

Calculation of overall prevalence: Prevalence (%) = (number of infected fish / total number examined) × 100 = (108 / 237) × 100 = 45.57%. For Mastacembelus armatus: (54 / 82) × 100 = 65.85%. For Channa marulius: (34 / 78) × 100 = 43.59%. For Channa gachua: (20 / 77) × 100 = 25.97%.

Seasonal comparison

Season	Examined (n)	Infected (n)	Prevalence (%)
Monsoon	80	26	32.50
Winter	79	35	44.30
Summer	78	47	60.26
Total	237	108	45.57

Table 2. Published comparative seasonal prevalence for Chorakhali Dam.

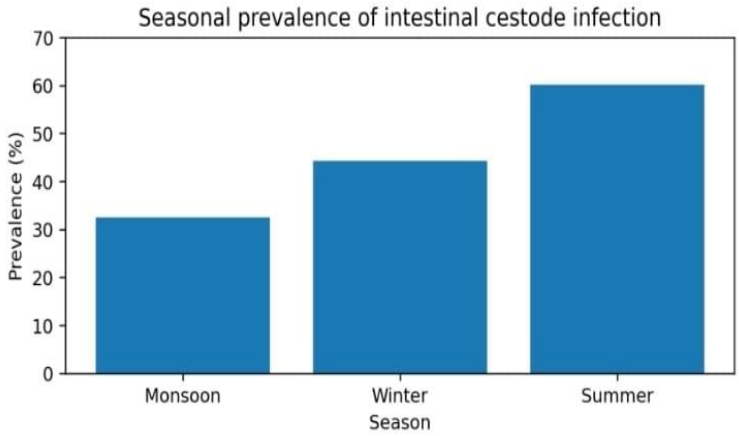


Figure 2. Seasonal prevalence in the published Chorakhali Dam dataset.

Parasite Composition Reported from Chorakhali Dam

Cestode genus	Reported specimens	Relative frequency (%)	Principal host association
Senga spp.	125	62.50	Mastacembelus armatus
Circumoncobothrium spp.	75	37.50	Channa spp.
Total	200	100.00	-

Table 3. *Published comparative composition of dominant cestode genera.*

Results

The submitted photographic series demonstrates a complete practical sequence from fish handling and gross examination to isolation of internal material and laboratory preparation. Whole-fish photographs establish the availability of intact specimens before dissection. Opened specimens demonstrate access to the body cavity and alimentary region. Several photographs show elongated gastrointestinal tissue and associated visceral

Royal International Global Journal of Advance and Applied Research
Peer Reviewed International, Open Access Journal.
ISSN: 2998-4459 | Website: https://rlgjaar.com Volume-3, Issue-1 | January - 2026

material separated in a dissection tray. A Petri dish contains small recovered structures, including pale rounded/irregular material and fine thread- like structures. Because no scale bar or microscopic image is available for these structures, they cannot be reliably classified as cestodes solely from the photograph. The published Chorakhali Dam comparison shows that intestinal cestode infection is common enough to be epidemiologically important in the reservoir. The reported overall prevalence was 45.57%. Among the three hosts examined, Mastacembelus armatus showed the highest prevalence (65.85%), followed by Channa marulius (43.59%) and Channa gachua (25.97%). The same investigation reported the highest seasonal prevalence in summer (60.26%) and the lowest .in monsoon (32.50%). The comparative dataset also reported 125 Senga spp. and 75 Circumoncobothrium spp.. specimens among the dominant recovered cestodes. These values are useful as background for interpreting the present practical material, but they should not be labelled as counts obtained from the photographs supplied for this manuscript.

Discussion

The photographic evidence is consistent with a standard fish-parasitology practical in which the gastrointestinal tract and viscera are examined for endoparasires. The presence of thread-like or flattened structures in the dissected material warrants microscopic examination, but gross appearance is insufficient for taxonomic assignment. Cestode identification is particularly dependent on attachment organs and reproductive anatomy, which are not resolved in the submitted gross photographs. The published Chorakhali study provides strong local context. Its host-wise pattern suggests that differences in feeding behaviour, habitat use and exposure to infective stages may influence parasite acquisition. Seasonal variation may additionally reflect changes in water conditions, intermediate-host activity and fish feeding intensity. Such ecological explanations remain hypotheses unless environmental variables and intermediate hosts are measured directly. For a robust original study, each fish should be assigned a specimen code and its species, total length, body weight, date, collection site. infection status, parasite count and parasite taxon should be recorded. These observations would allow calculation of prevalence, mean intensity and mean abundance from the student's own samples rather than from a secondary dataset.

Standard Calculations for the Final Dataset

Prevalence (%) = infected hosts / hosts examined x 100. Mean intensity = total number of parasites recovered / number of infected hosts. Mean abundance = total number of parasites recovered / total number of hosts examined. If the investigator records multiple parasite taxa, the same calculations can be performed separately for each taxon and host species.

Conclusion

The present manuscript combines original photographic documentation supplied by the investigator with a clearly separated published quantitative dataset from Chorakhali Dam. The photographs document fish collection/dissection and recovery of internal material, while the literature establishes that intestinal cestodes, particularly Senga spp. and Circumoncobothrium spp., occur in freshwater fishes of the reservoir. The available photographs alone do not justify species-level parasite identification; therefore, the manuscript avoids unsupported taxonomic claims. The most scientifically appropriate next step is microscopic examination of preserved specimens and preparation of labelled permanent mounts *with* scale bars. The published comparison indicates substantial infection in the Chorakhali fish community, with an overall prevalence of 45.57%, highest prevalence in Mastacembelns armatus, and maximum seasonal infection during summer. These values should be treated as comparative reference data unless the investigator possesses the original field log from the same sampling programme.

Royal International Global Journal of Advance and Applied Research
Peer Reviewed International, Open Access Journal.
ISSN: 2998-4459 | Website: https://rlgjaar.com Volume-3, Issue-1 | January - 2026

Original Photographic Plate



Plate A
Selected original photographs supplied by the investigator: fish specimen, dissection, visceral material and laboratory processing. These photographs are presented as documentation and not as definitive microscopic taxonomic evidence.



Plate B
Examination of the digestive tract, gills, and internal organs.



Plate C
Identifying specific internal organs visible in the tray (like the liver or intestine)



Plate D
Fish Dissection For Internal Examination



Plate E
Histopathological examination (biopsy processing and microscopic staining to establish a precise diagnosis)



Plate F
Parasites were fixed in 4 -10 formalin, preserved and stored for further study

Plate 1. Selected original photographs supplied by the investigator: fish specimen, dissection, visceral material and laboratory processing. These photographs are presented as documentation and not as definitive microscopic taxonomic evidence.

Limitations and Future Scope

1. The submitted photographs do not provide the total number of fish examined or the number infected; therefore a new prevalence cannot be calculated from the images alone.
2. No microscope image with a scale bar was supplied for the recovered structures.
3. Species-level cestode identification requires stained mounts and diagnostic morphometrics; molecular confirmation can provide additional taxonomic confidence.
4. Future sampling should include specimen codes, fish length/weight, sampling date and site, parasite counts, prevalence, mean intensity, mean abundance and environmental parameters such as temperature and water quality.

Acknowledgment
I express my sincere gratitude to all those who have supported and guided me throughout the completion of this research work titled. Photoducumented parasitological assessment of cestode infections in freshwater fishes from Chorakhali Dam, Dharashiv (Osmanabad), Maharashtra, India. The authors are also thankful to the Principal S.G.R.G Shinde Mahavidyalaya Paranda, Dist. Dharashiv, for encouragement and institutional support.

Financial support and sponsorship
Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. Bush, A. 0., Lafferty, K. D., Lotz, J.M., & Shostak, A. W. (1997). Parasitology meets ecology on its own terms: Margolis et al. revisited. Journal of Parasitology, 83(4), 575-583.
2. Khalil, L. F., Jone, A., & Bray, R. A. (Eds.). (1994). Keys to the Ce tode Parasites of Vertebrate. CAB International, Wallingford.
3. Schmidt, G. D. (1986). Handbook of Tapeworm Identification. 2nd ed. CRC Press, Boca Raton.
4. Talwar, P. K., & Jhingran, A. G. (1991). Inland Fishes of India and Adjacent Countries. Oxford & IBH Publishing, ew Delhi.
5. Yamaguti, S. (1959). Systema Helminthum, Volume II: The Cestodes of Vertebrates. Interscience Publishers, ew York.
6. Hasekar, A. S., Thakare, B. G., & Sargar, G. S. (2019). An Extensive Review on Cestode Parasites of Freshwater Fish in Maharashtra, India. International Journal of Research and Analytical Reviews 6(2) 563-569.
7. Zimik, P., & Roy, B. (2019). Molecular identification of two cestode species parasitizing freshwater fishes in India. Journal of Parasitic Diseases, 43, 59-65. DOI: 10.1007/sl2639-018-1058-z.
8. Jadhav, S., Humbe, A., & Borade, S. N. (2025). Diversity of Helminth Parasites from Freshwater Fishes of Sina Kolegoan Dam, Osmanabad District, Maharashtra, India. Journal of Advance and Future Research, 3(12), 878-883.
9. Raipalli, A. S., & Raipalli, S. S. (2021). Analysis of incidence of cestode parasites Lytocestus, Circumoncobothrium, Senga and Gangesia from freshwater fishes of Ujani Reservoir, Maharashtra, India. Journal of Emerging Technologies and Innovative Research, 8(7).
10. Hasekar, A. 5., & Thakare, B. G. (2025). Taxonomic Study of Cestode Parasite Senga ashwiniae nov. sp. from Freshwater Fish Mastacembelus armatus at Niwali Dam, Parbhani, Maharashtra, India. International Journal for Multidisciplinary Research, 7(2). DOI: 10.36948/ijfmr. 2025.v07102.40875.
11. Khandare, G., & Humbe, A. (2026). Taxonomic Study of Helminth Parasites Infecting Freshwater Fishes from Selected Water Bodies of Dharashiv District. International Journal of Scientific Research and Engineering Trends, 13(3).
12. International Journal for Parasitology, 31(4), 443-458.
13. Mukti S., & Mangesh J. (2015): Studies on Host-Parasite relationship between endoparasites and channa- green snake headed fish (Channa punctatus) from Palghar district. Ethical Prospects:
14. Economy, Society and Environment, ISBN 978-93-83046-46-1: 549-555.
15. Annie O, Morrison M D, Jerad M and Gardner M D (2014) Smart Phone Microscopic Photography: A Novel Tool for Physicians and Trainees. Arch. Pathol. Lab. Med. 138, 1002.
16. Hall K C and Bellwood D R (1995) Histological effects of cyanide, stress and starvation on the intestinal mucosa of Pomacentrus coelestis, a marine aquarium fish species. J. Fish. Biol. 47, 438-454.
17. Hassan A A, Akinsanya B and Adegbaju W A (2010) Impacts of Helminth Parasites on Clarias gariepinus and Synodontis clarias From Lekki Lagoon, Lagos, Nigeria. Report and
18. Opinion 2 (11).
19. Laxma Reddy B and Benarjee G (2014) Mode of attachment and Pathogenicity of Lytocestus indicus in fresh water Murrels. Int. J. Curr. Microbiol. App. Sci. 3(4), 507-511.
20. Lillie R D and Harold M Fullmer (1954) Histopathologic technique and practical histochemistry. McGraw Hill Publication, USA.
21. Srivastava C B (1975) Fish pathological studies in India- A brief Review. Dr. B.S. Chauhan Comm. Vol. pp. 349-358.
22. Yamaguti S (1959) SystemaHelminthium. Vol. ll. TheCestodes of Vertebrates. Intersci. New York. Pp 769.
23. Dollfus, R.P.H., (1934): Sur uncestode Pseudophyllidae fresh water fishes. Parasit. 16: 441-451.
24. Parasite de poisson ornament: Bull. Sac. Zool. France 7. Johri, G.N., 1956. A new cestode Senga lucknowensis 69: 476-490.
25. Read, C. P. (1949b). Glycogen in cestodes: Its distribution and physiological significance. Journal of Parasitology, 35(6), 659–667.
26. Read, C. P. and Rothman, A. H. (1957b). The role of carbohydrates in the biology of cestodes. The effect of starvation on glycogenesis and glucose consumption in Hymenolepis. Exp. Parasitol. 6:280-387.
27. Read, C. P., & Rothman, A. H. (1957b). Carbohydrate metabolism in tapeworms. Biological Bulletin, 113(2), 345–355.
28. Jawale, S., A. fartade and Borde, S. (2011). Biochemical studies of cestode parasite in fresh water fish Clarias batrachus department of zoology, Dr. B.A.M. University, Aurangabad. Recent Research in science and Technology, Vol 3 (3), page no. 35-36 (2011). ISSN No- 2076-5061.

Originality Note: *The manuscript text above has been newly composed for this project. It is not a guarantee of a particulor Tursitis/Thenticate percentage, an external similarity checker is required to verify the final score.*