

OCCURRENCE OF FRESHWATER CRABS AND THEIR COMMENSAL ASSOCIATION WITH LEECHES IN LOWER STREAMS OF SELECTED WATER BODIES OF DHARNI REGION, MAHARASHTRA, INDIA

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Abstract

The present study investigated freshwater crab occurrence and leech commensalism in the lower streams of five selected water bodies—Mandwa, Jutpani, Gaolandoh, Ranapisa and Hirabambai dams—of the Dharni region, Amravati District, Maharashtra, India, during February 2024–January 2026. A total of 740 specimens of the freshwater crab *Barytelphusa cunicularis* were examined, comprising 396 males and 344 females. Among them, 225 crabs showed association with the freshwater leech *Glossiphonia complanata*, representing an overall prevalence of 30.41%. A total of 481 leeches were recorded, with a mean intensity of 2.14 leeches per associated crab. The highest prevalence was observed at Ranapisa Dam (37.58%), followed by Gaolandoh (32.28%), Hirabambai (29.09%), Jutpani (27.46%) and Mandwa Dam (24.60%). The findings demonstrate a regular but spatially variable crab–leech association across the studied freshwater habitats and provide baseline information on this ecological interaction in the Dharni region.

Keywords: *Barytelphusa cunicularis*; *Glossiphonia complanata*; freshwater crab; leech commensalism; prevalence; Dharni; Amravati; freshwater ecology.

Introduction

Freshwater ecosystems are among the most biologically diverse and ecologically important habitats, supporting a wide variety of aquatic and semi-aquatic organisms. Among freshwater macroinvertebrates, crabs play an important role in maintaining ecosystem functioning through decomposition of organic matter, nutrient recycling, sediment turnover and food-web interactions. Their occurrence and abundance are influenced by water availability, substrate characteristics, vegetation, food resources, shelter and seasonal environmental conditions (Sakhare and Kamble, 2014; Fadlaoui *et al.*, 2021).

The Indian freshwater crab *Barytelphusa cunicularis* (Westwood in Sykes, 1836) is commonly associated with rivers, streams, reservoirs and other freshwater habitats. It generally occupies shallow waters, muddy and rocky substrates, submerged stones, crevices and burrows along the margins of water bodies. Such habitat preferences provide protection from predators and environmental fluctuations and offer suitable conditions for feeding, reproduction and survival. Freshwater crabs therefore constitute an important component of the benthic and littoral communities of inland aquatic ecosystems (Padghane *et al.*, 2016; Padghane and Chavan, 2018; Bridhikitti *et al.*, 2023).

Freshwater crabs may also support various associated organisms on their external body surfaces. Among these, leeches represent an interesting group because their relationship with

aquatic hosts may vary from temporary attachment and phoresy to commensal or parasitic association. The freshwater leech *Glossiphonia complanata* (Linnaeus, 1758) occurs in freshwater environments and may utilize aquatic animals or their body surfaces as temporary microhabitats. The occurrence of such leeches on freshwater crabs provides an opportunity to understand species interactions within natural freshwater communities (Mitra and Dev Roy, 2019; Severino-Rodrigues and de Almeida Duarte, 2020).

The Dharni region of Amravati District, Maharashtra, contains several dams, reservoirs and associated lower streams that provide suitable habitats for freshwater crabs and other macroinvertebrates. However, information regarding freshwater crab occurrence and their association with leeches from this region is comparatively limited. Therefore, the present study was undertaken to investigate the collection and occurrence of freshwater crabs and leech commensalism in the lower streams of selected water bodies of the Dharni region, Amravati District, Maharashtra, India, with particular emphasis on the ecological association between freshwater crabs and leeches.

Materials and Methods

The present study was conducted from February 2024 to January 2026 in the lower streams associated with Mandwa, Jutpani, Gaolandoh, Ranapisa and Hirabambai Dams around Dharni region, Amravati District, Maharashtra, India. Dharni is situated in the Melghat region of the

Satpura ranges at approximately 21.52° N latitude and 77.18° E longitude, with the selected water bodies located within the surrounding forested and rural landscape.

Freshwater crabs were collected periodically by hand-picking from shallow water, muddy and rocky substrates, beneath submerged stones, stream margins, crevices and burrows. The collected specimens were identified as *Barytelphusa cunicularis* (Westwood in Sykes, 1836) using standard taxonomic characteristics. Each crab was carefully examined for leech association on the carapace, appendages and ventral body surface. Associated leeches were collected using forceps and identified as *Glossiphonia complanata* (Linnaeus, 1758). Site-wise and seasonal

observations on crab occurrence and leech association were recorded and summarized using frequency, percentage and descriptive statistics.

Results and discussion

Following table represents the freshwater crab collection and occurrence of leech commensalism at the lower streams of five selected water bodies during February 2024–January 2026. A total of 740 freshwater crabs were examined, comprising 396 males and 344 females. Of these, 225 crabs were associated with leeches, giving an overall prevalence of 30.41%, while 515 crabs showed no leech association. A total of 481 leeches were recorded, with an overall mean of 2.14 leeches per infected crab.

Table 1. Freshwater Crab Collection and Occurrence of Leech Commensalism at Lower Streams of Different Water Bodies during February 2024–January 2026

Water Body	Crabs Examined (N)	Male	Female	Crabs with Leeches	Crabs without Leeches	Prevalence of Commensalism (%)	Total Leeches Recorded	Mean Leeches per Infected Crab
Mandwa Dam	126	68	58	31	95	24.60	58	1.87
Jutpani Dam	142	76	66	39	103	27.46	79	2.03
Gaolandoh Dam	158	84	74	51	107	32.28	112	2.20
Ranapisa Dam	149	80	69	56	93	37.58	131	2.34
Hirabambai Dam	165	88	77	48	117	29.09	101	2.10
Total	740	396	344	225	515	30.41	481	2.14

The prevalence of leech commensalism varied considerably among the studied water bodies. The highest prevalence was recorded at Ranapisa Dam (37.58%), where 56 of 149 crabs were associated with 131 leeches and the mean intensity was also highest (2.34 leeches per infected crab). This was followed by Gaolandoh Dam (32.28%), Hirabambai Dam (29.09%), Jutpani Dam (27.46%) and Mandwa Dam (24.60%). The lowest prevalence occurred at Mandwa Dam, with 31 infected crabs and a mean of 1.87 leeches per infected crab.

Overall, the results demonstrate that leech commensalism was present at all five water bodies but differed spatially in prevalence and intensity. The relatively greater association at Ranapisa and Gaolandoh dams may reflect differences in local habitat characteristics, water quality, crab density and availability of suitable microhabitats for leech attachment. The occurrence of leeches on nearly one-third of the examined crabs indicates a regular ecological association between freshwater crabs and leeches in the studied water bodies.

These findings are in well agreement with earlier studies of Sathiadhas *et al.* (2004), Rahman and Sharma (2008), Sinha (2015), Tahmid *et al.* (2015), Padghane *et al.* (2016), Padghane *et al.* (2018), Azra *et al.* (2019), Mitra and Dev Roy (2019), Severino-Rodrigues and Duarte (2020), Rahman *et al.* (2020), Fadlaoui *et al.* (2021), Bridhikitti *et al.* (2023), Biag and Mendoza (2023), Pati *et al.* (2023), Dana *et al.* (2024), Sowmiya *et al.* (2026) and name a few

Conclusion

The present study confirms the regular occurrence of leech commensalism with freshwater crabs across all five selected water bodies of the Dharni region. Of the 740 crabs examined, 30.41% showed leech association, with the highest prevalence and intensity recorded at Ranapisa Dam and the lowest at Mandwa Dam. The observed spatial variation may be related to differences in habitat conditions, water quality, crab abundance and availability of suitable attachment sites. Overall, the findings indicate a consistent ecological association between freshwater crabs and leeches in the lower-stream habitats of the Dharni region.

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