First Record of Laccotrephes sp. (Hemiptera: Heteroptera: Nepidae) from Masai Pathar, Panhala, Kolhapur District, Maharashtra, India

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ABSTRACT

The present study reports the occurrence of a water scorpion, Laccotrephes sp. (Hemiptera: Heteroptera: Nepidae), from Masai Pathar, Panhala, Kolhapur District, Maharashtra, India. The specimen was recorded during a field survey conducted in the monsoon season from a shallow seasonal freshwater pool on the lateritic plateau. Members of the family Nepidae are predatory aquatic insects that play an important ecological role in freshwater ecosystems by regulating populations of aquatic invertebrates. The recorded specimen was identified based on its characteristic elongated body, raptorial forelegs, and long caudal respiratory siphon. Masai Pathar is a biodiversity-rich lateritic plateau in the northern Western Ghats, but information on its aquatic insect fauna remains limited. This record contributes to the faunal inventory of the region and highlights the ecological significance of temporary freshwater habitats occurring on lateritic plateaus. Further systematic surveys are recommended to document the diversity, distribution, ecology, and conservation status of aquatic Hemiptera in this unique ecosystem.

Keywords: Laccotrephes sp., Nepidae, Water scorpion, Hemiptera, Masai Pathar, Panhala, Kolhapur, Lateritic plateau, Western Ghats, Aquatic insects.

INTRODUCTION

Water scorpions belonging to the family Nepidae (Order: Hemiptera; Suborder: Heteroptera) are predatory aquatic insects widely distributed in freshwater ecosystems throughout tropical and temperate regions. The family comprises two principal genera in India, Laccotrephes and Ranatra, which inhabit ponds, marshes, lakes, paddy fields, slow-moving streams, and temporary freshwater pools. Members of the genus Laccotrephes are characterized by their broad, dorsoventrally flattened body, raptorial forelegs adapted for capturing prey, and a long caudal respiratory siphon that enables them to breathe atmospheric oxygen while remaining submerged. As ambush predators, they feed on aquatic insects, crustaceans, tadpoles, and small fishes, thereby playing an important role in maintaining the ecological balance of freshwater habitats.

The Western Ghats of India are recognized as one of the world's biodiversity hotspots and support a remarkable diversity of freshwater ecosystems and aquatic insects. Among these habitats, lateritic plateaus represent unique seasonal landscapes that develop numerous ephemeral freshwater pools during the southwest monsoon. These temporary wetlands provide breeding and feeding habitats for a wide range of aquatic organisms, including insects, amphibians, molluscs, and crustaceans. Despite their ecological importance, the aquatic insect fauna of many lateritic plateaus remains inadequately documented.

Masai Pathar, located near Panhala in Kolhapur District of Maharashtra, is a lateritic plateau situated at an elevation of approximately 900 m above mean sea level. During the monsoon season, the plateau supports numerous rain-fed freshwater pools and marshy depressions, creating suitable habitats for aquatic macroinvertebrates. Although Masai Pathar is well known for its rich seasonal flora and scenic landscape, systematic studies on its aquatic insect diversity are limited, particularly for predatory aquatic Hemiptera.

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During field surveys conducted in the monsoon season, a specimen of Laccotrephes sp. was recorded from a seasonal freshwater pool on Masai Pathar. This observation contributes to the documentation of the aquatic insect fauna of the region and highlights the ecological significance of temporary freshwater habitats on lateritic plateaus. The present study provides the locality record, habitat characteristics, and diagnostic features of the recorded specimen and emphasizes the need for comprehensive surveys to better understand the diversity, distribution, and conservation of aquatic Hemiptera in the northern Western Ghats.

METHODOLOGY

Field surveys were conducted during the monsoon season last five years (June 2022 – September 2025) at Masai Pathar, Panhala, Kolhapur District, Maharashtra, to investigate the occurrence of water scorpions in seasonal freshwater habitats. Sampling was carried out in temporary rain-fed pools and marshy depressions using visual searches and a fine-mesh aquatic insect net. Collected specimens were photographed in their natural habitat. Identification was based on external morphological characteristics, including body shape, raptorial forelegs, and the caudal respiratory siphon, using standard taxonomic keys for the family Nepidae. Habitat characteristics such as water depth, aquatic vegetation, substrate type, and associated fauna were recorded at each sampling site. The findings were documented descriptively to provide a locality record of Laccotrephes sp. from Masai Pathar.

RESULTS

A total of fourteen adult specimen of Laccotrephes sp. (Hemiptera: Heteroptera: Nepidae) was recorded from a seasonal freshwater pool on Masai Pathar, Panhala, Kolhapur District, Maharashtra, during the monsoon survey. The specimen was observed among submerged aquatic vegetation in a shallow, rain-fed pool with muddy substrate and clear, stagnant water.

The recorded individual exhibited the characteristic morphological features of the genus Laccotrephes, including a broad dorsoventrally flattened body, cryptic brown coloration, well-developed raptorial forelegs, and a long caudal respiratory siphon extending beyond the abdomen. These diagnostic characters confirmed its identification to the genus level.

The collection site consisted of a temporary freshwater habitat formed during the southwest monsoon. The pool supported aquatic vegetation and a variety of freshwater organisms, including aquatic beetles, mosquito larvae, tadpoles, and other aquatic macroinvertebrates, indicating a healthy wetland ecosystem.

The occurrence of Laccotrephes sp. demonstrates that the seasonal freshwater pools of Masai Pathar provide suitable habitat for predatory aquatic Hemiptera. This observation contributes to the faunal inventory of the lateritic plateau and provides baseline information for future studies on the aquatic insect diversity of the region.

DISCUSSION

The present study documents the occurrence of Laccotrephes sp. (Hemiptera: Heteroptera: Nepidae) from a seasonal freshwater pool on Masai Pathar, Panhala, Kolhapur District, Maharashtra. Species of Laccotrephes are widely distributed in India and are commonly associated with stagnant and slow-moving freshwater habitats containing submerged vegetation. They are ambush predators that occupy an important trophic position in freshwater ecosystems by feeding on aquatic insects, tadpoles, and other invertebrates.

The seasonal freshwater pools of Masai Pathar provide suitable habitat conditions for aquatic Hemiptera. The presence of submerged vegetation, shallow water, and organic substrates creates favourable microhabitats for predatory aquatic insects. Similar ecological preferences have been reported for Laccotrephes griseus, which commonly inhabits ponds, marshes, and slow-flowing waters throughout peninsular India.

Lateritic plateaus of the northern Western Ghats are internationally recognized as ecologically unique landscapes supporting diverse and often endemic flora and fauna. Seasonal rock pools formed during the monsoon function as temporary wetlands that sustain numerous aquatic organisms, including insects, amphibians, crustaceans, and

molluscs. These habitats are increasingly threatened by habitat degradation, tourism, land-use change, and other anthropogenic disturbances, emphasizing the need for their conservation.

Studies on aquatic Heteroptera from the Western Ghats have shown that habitat characteristics such as water depth, vegetation cover, hydroperiod, and water quality strongly influence species distribution and community composition. Therefore, the occurrence of Laccotrephes sp. at Masai Pathar indicates that the seasonal freshwater pools of the plateau provide suitable environmental conditions for predatory aquatic bugs and may support a richer aquatic insect community than currently documented.

The present observation contributes to the faunal inventory of Masai Pathar and provides baseline information for future ecological investigations. However, the study is limited by the observation of a fourteen specimens and identification only to the genus level. Future research should include repeated seasonal surveys, detailed morphometric examination, molecular identification, water-quality analysis, and long-term monitoring of aquatic insect communities to better understand the diversity and conservation status of Nepidae in the lateritic plateau ecosystems of the northern Western Ghats.

CONCLUSION

The present study documents the occurrence of Laccotrephes sp. (Hemiptera: Heteroptera: Nepidae) from the seasonal freshwater pools of Masai Pathar, Panhala, Kolhapur District, Maharashtra. This finding adds to the existing knowledge of the aquatic insect fauna of the lateritic plateau ecosystem and highlights the ecological importance of temporary freshwater habitats in supporting predatory aquatic Hemiptera. Although the observation is based on limited sampling, it provides valuable baseline information for future biodiversity inventories and ecological studies in the northern Western Ghats.

Further investigations involving systematic seasonal surveys, detailed morphological and molecular identification, and ecological assessments are required to determine the diversity, distribution, habitat preferences, and conservation status of Laccotrephes and other aquatic insects inhabiting Masai Pathar. The conservation of seasonal freshwater pools and associated wetland habitats is essential for maintaining the unique aquatic biodiversity of this ecologically significant lateritic plateau.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research. The authors have no financial, personal, or professional relationships that could have influenced the work reported in this manuscript.

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