ISSN 0376-5156
Geophytology 56 Special Issue: 33–48
November 2026

Marine macroalgae from the Ordovician-Silurian sediments of the Tethyan Himalaya, India: A critical review of taxonomic diversity and palaeoenvironmental significance

Husain Shabbar[1], Suyash Gupta[2*] and Anju Saxena[2]

[1]Department of Geology, Parul Institute of Applied Sciences, Parul University, Vadodara- 391760, India.
[2]Gondwana Palaeobiology Lab, Birbal Sahni Institute of Palaeosciences, 53 University Road, Lucknow- 226007, India.
*Corresponding author: suyash.gupta@bsip.res.in
Manuscript received: 20 September 2026
Accepted for publication: 01 November 2026

ABSTRACT

Shabbar H., Gupta S. & Saxena A. 2026. Marine macroalgae from the Ordovician-Silurian sediments of the Tethyan Himalaya, India: A critical review of taxonomic diversity and palaeoenvironmental significance. Geophytology 56 Special Issue: 33–48.

The Ordovician-Silurian algal record of the Indian Tethyan Himalaya offers valuable insights into the diversity and preservation of early Palaeozoic marine algae. This review examines published fossil records from Spiti, Kinnaur and Garhwal, focusing on their taxonomic composition, stratigraphic occurrence and relationship to algal assemblages described from other parts of the world. The reported fossils include calcareous algae, cyclocrinitids and non-calcified marine macroalgae. The Takche Formation of Spiti is particularly noteworthy because the discovery of carbonaceous macroalgae has expanded the regional record beyond the calcareous forms documented in earlier studies. Other reports, including those from the Thango and Shiala formations and the Silurian Manchap Formation, provide additional evidence of algal occurrences across the Tethyan Himalayan succession. However, uncertainties surrounding the provenance and stratigraphic assignment of some specimens complicate their use in regional correlation. Comparisons with assemblages from the Tarim Basin of China, the Baltic region and North America reveal similarities in certain taxa and morphological features but these must be assessed in light of differences in geological age, preservation and the reliability of taxonomic identification. Such similarities do not, on their own, establish direct palaeogeographic connections. A clearer understanding of the Himalayan record will require renewed field investigations, careful documentation of fossil-bearing horizons and critical reassessment of previously described material. Integrating taxonomic study with sedimentology and independent stratigraphic evidence will also help clarify the depositional settings and distribution of these fossils. This review identifies the principal contributions and limitations of existing research and outlines priorities for establishing a more reliable account of Ordovician-Silurian algal diversity in the Indian Tethyan Himalaya.

Keywords: Ordovician, Silurian, marine algae, calcareous algae, non-calcified macroalgae, Tethyan Himalaya, palaeobiogeography.

INTRODUCTION

The Ordovician-Silurian interval represents an important phase in the development of marine ecosystems, particularly because of the expansion and reorganisation of marine biodiversity during the Great Ordovician Biodiversification Event (GOBE). This event was not a single, globally synchronous episode, rather, diversification proceeded at different times among taxonomic groups, ecological communities and palaeogeographic regions (Webby et al. 2004; Servais et al. 2010; Harper et al. 2015; Servais & Harper 2018). Understanding this broader pattern requires attention to individual fossil groups and their own evolutionary and preservational histories rather than assuming that all marine organisms followed the same trajectory. Marine algae are an important component of this history but

© The Palaeobotanical Society, Lucknow, India