

# *Enigmophyllum cycadoides* gen. et sp. nov. from the Rajmahal Hills, Jharkhand, India

S. K. Verma<sup>1</sup> and B. D. Sharma<sup>2</sup>

<sup>1</sup>Nawab Bag Colony, Police Line Road, Bhagalpur-812001, India

<sup>2</sup>Kath Mandi, Narnaul-123001, India

E-mail: bdsharma14@yahoo.com

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## ABSTRACT

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A new fossil leaf genus *Enigmophyllum* (Type: *E. cycadoides*), having cycadean affinity, is proposed here. It is based on two leaf impressions collected from Dhokuti in the Rajmahal Hills, Jharkhand. The leaves bear lateral ovules (?) like structures and the midrib has parallel striations. No similar fossil leaf genus has been described so far, hence a new name is given.

**Key-words:** *Enigmophyllum cycadoides* gen. et sp. nov., fossil cycadean leaf, Late Mesozoic, Rajmahal Hills, Jharkhand, India.

## INTRODUCTION

The fossil leaf specimen no. 01/SKV/Raj.D was collected from Dhokuti, 2.5 km south of Mirzachowki Railway Station, on Bhagalpur-Howrah track in the Rajmahal Hills, Santhal Pargana District, Jharkhand (Text-figure 1). In this locality, the fossils are preserved in the form of impressions on ash-grey coloured, medium hard siltstone. A large number of pteridophytes, cycads and bennettitalean fronds have earlier been described from the locality Dhokuti (Sharma 1969, 1971, 1972, 1975).

## DESCRIPTION

**Genus:** *Enigmophyllum* S. K. Verma & B. D. Sharma, gen. nov.

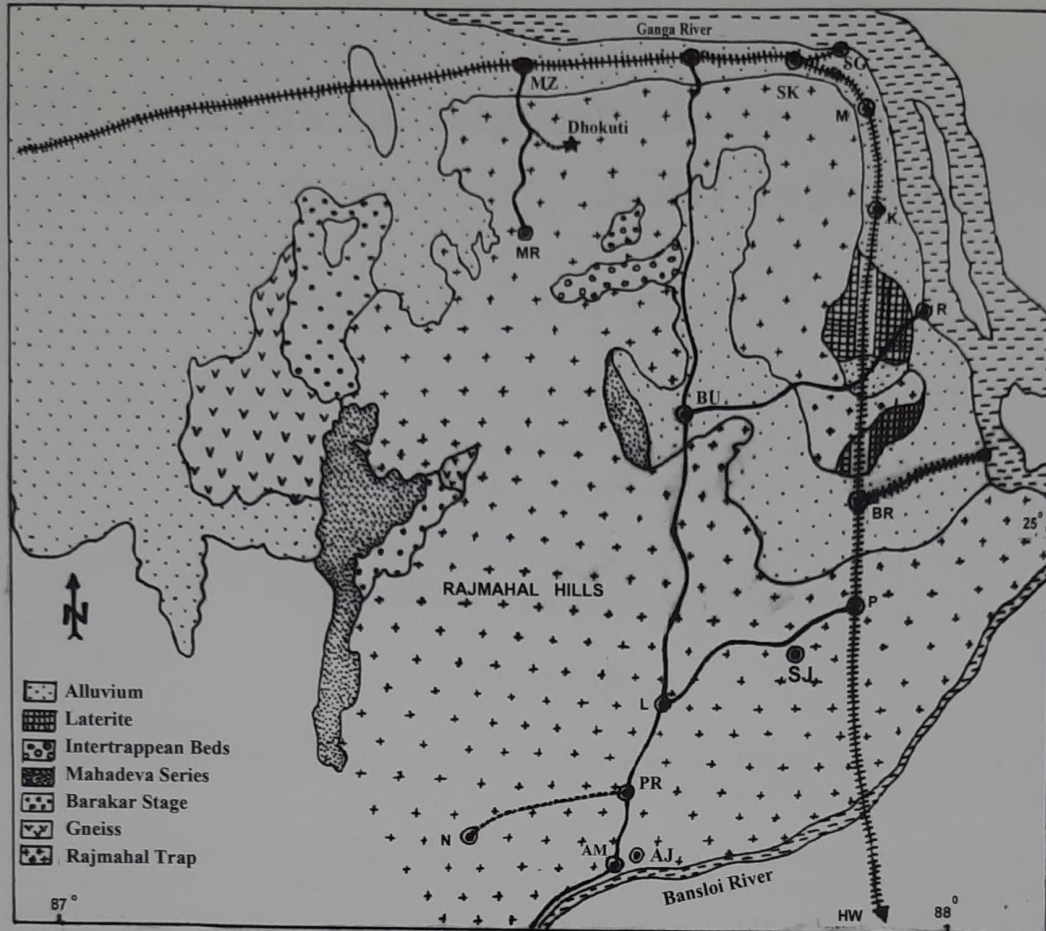
*Enigmophyllum cycadoides* gen. et sp. nov.

Figures 1-3

**Material:** The specimen preserves two impressions 'A' and 'B', measuring 40 x 15 mm and 50 x 18 mm, respectively (Figure 1).

**Diagnosis:** Fossil cycadean, non-laminated leaf / petiole, 40 to 50 mm long and 15 to 18 mm wide, with distinct 9-10 longitudinal parallel striations. On either side of the midrib / petiole (10 to 12 mm in thickness) are markings of globular to little curved and elongated bodies ranging from 3.5 x 3 mm to 4 x 4 mm, probably representing ovules.

**Comparison:** Comparison has been made with the Permian early cycadophytes (Taylor et al. 2009), e.g. *Phasmatocycas* Mammy 1973 (a taeniopteroid leaf with ovules in only petiolar portion), *Sobernheimia* Kerp 1983 (lamina margin divided into lobes having vascular supply, a condition not visible in the new genus), *Crossozamia* Gao & Thomas 1989 (a megasporophyll unlike the present specimen), etc. The present specimen differs from them in morphology, shape and size of ovules (?) and absence of lamina. Further, they are much younger in age (Late Jurassic/Early Cretaceous, Sengupta 1988) than the Permian cycads. The striations are identical to those described and figured in



**Text-figure 1.** Map of Rajmahal Hills (Jharkhand) showing location of Dhokuti—the type locality of *Enigmophyllum cycadae* gen. et sp. nov. AJ: Amarjola; AM: Amarapara; BR: Barharwa; BU: Burio; D: Dumka; HW: Howrah; K: Karnpurauto; L: Litipara; M: Maharajpur; MR: Mundro; MZ: Mirzachowki; N: Nipania; P: Pakur; PR: Parirkola; R: Rajmahal; SK: Sakarigali; SG: Sakarigalighat; SJ: Sonajori.



**Figures 1-3.** *Enigmophyllum cycadoides*. 1. 'A' and 'B' are impressions of two leaves, x2. 2. Impression 'A' showing distinct longitudinal, parallel striations and lateral globular structures (ovules?), x2. 3. Impression 'B' with little curved lateral structures (ovules?), x2.

*Spermopteris* (Cridland & Morris 1960) but in the latter, simple or divided lateral veins passed to the ovules, a condition not seen in the present material. These striations represent the path of vascular strands. This kind of fossil specimen has been collected for the first time from the Rajmahal Hills (Sharma 2004) and it differs from all the known Mesozoic fossil plants (Taylor et al. 2009).

**Holotype:** Specimen no. 01/SKV/Raj.D, stored in the museum of Birbal Sahni Institute of Palaeobotany, Lucknow.

**Locality:** Dhokuti, Rajmahal Hills, Jharkhand, India.

**Age:** Late Jurassic/Early Cretaceous.

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