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Original Article

# *Microsorum zippelii* (Bl.) Ching (Polypodiaceae), a new distributional record for Peninsular India

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**Abstract:** *Microsorum zippelii* (Bl.) Ching, earlier known from north east of India is recorded for the first time from Peninsular India. The species is collected from Mahendragiri hills of Gajapati district, in the Eastern Ghats of Odisha. On critical examination it was found to be *Microsorum zipelii* a Near Threatened (NT) fern, is differing morphologically from it's closely ally *M. membranaceum* having sori larger, round, distinct and fewer. A detailed description, photograph, illustration along with Scanning Electron Microscopic views of its sorus, sporangium and spores are provided for easy identification of the taxon.

**Keywords:** *Microsorum zippelii*, Polypodiaceae, New distributional record, Peninsular India

## Introduction

Polypodiaceae is a very large and diverse fern family, which includes more than 60 genera divided into several tribes of containing about 1,000 species with a cosmopolitan distribution. However, most species belonging to the family have a tropical distribution. Nearly all are epiphytes and some are terrestrial (Panigrahi and Pattnaik, 1961).

The genus *Microsorum* was established by Link (1833) to include a single species *M. irregulare* Link (= *M. punctatum* (L.) Copeland). *Microsorum* is a genus of over fifty species of tropical ferns. Ching (1933) restricted the genus *Microsorum* to include only species with scattered small sori and was followed by Christensen (1938) who attributed about 40 species to the genus, all known from Asia only. Holttum (1946, 1947 and 1954) concept of the genus was the same as that of Ching and Christensen. The genus is represented in India by nine species, most of them occur in the Eastern Himalayas. Darjeeling and Sikkim region harbours as many as 8 species as recorded by Mehra and Bir (1964). In the Western Himalayas only one species, *M. membranaceum* is met with, while South India records four species, namely, *M. liguiforme, M. membranaceum, M. punctatum* and *M. pteropus* (Simple-leaf form).

While collecting plants in August 2011 from Mahendragiri hills of Gajapati district, Odisha, the authors came across an epiphytic fern growing on the trunk of *Mangifera indica* Linn. On critical examination it was found to be *Microsorum zipelii* a rare fern as compared to its nearest ally *M. membranaceum*, a fairly common one and often confused with.

The citation, synonym, description, ecology, specimen examined, distribution, photographs in nature along with electron microscopic photographs (Zeiss Supra-55) are provided. The voucher specimens are housed in the herbarium of CSIR-Institute of Minerals and Materials Technology, Bhubaneswar (RRL-B).

**Taxonomic Treatments:**

*Microsorum zippelii* (Bl.) Ching in Bull., Fan Mem. Bio. 4: 308, 1933; Ic. Fil. Sin. 2. pl. 87, 1934; Holttum, Rev. Fl. Mal. 2: 176, 1955; Nayar in Bull. Nat. Bot. Gard. Lucknow 58: 20-22, 1961; Mehra et Bir, Res. Bull. Punjab Univ. 15: 176; 1964; Bir et Trikha, Bull. Bot. Surv. Ind. 10(2): 141, 1968.

**Synonym:** *Polypodium zippelii* Blume, *Pleopeltis zippelii* Moore, *Polypodium heterocarpum* Bedd, *Polypodium heterocarpum* var. *zippelii* Hook.

Rhizome thin, long creeping, densely scaly, scales fusco brown, rather firm, ovate, acute, upto 4 mm long, narrowed from peltate base, apex slender, adpressed,

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margin shortly toothed, stipes distinct, short, 1.5-5 cm long, winged almost to the base, wing widening upwards into the fronds. Lamina broadly lanceolate, 15-65 cm long, 4-7 cm wide, gradually attenuate towards the base, apex acuminate or rather subcordate, margin entire but somewhat wavy, midrib covered with cauducous scales with dentate margin, texture subcoriaceous or chartaceous, light to dark green, main lateral veins 1-1.5 m apart, conspicuous almost to the margin, slightly raised on the lower surface, intervening veinlets nearly obscure. Sori small to medium size, rounded, regular in between the main vein. (Figs 1, 2 and 3)

**Fig. 1:** *Microsorum zippelii* (Bl.) Ching in Nature

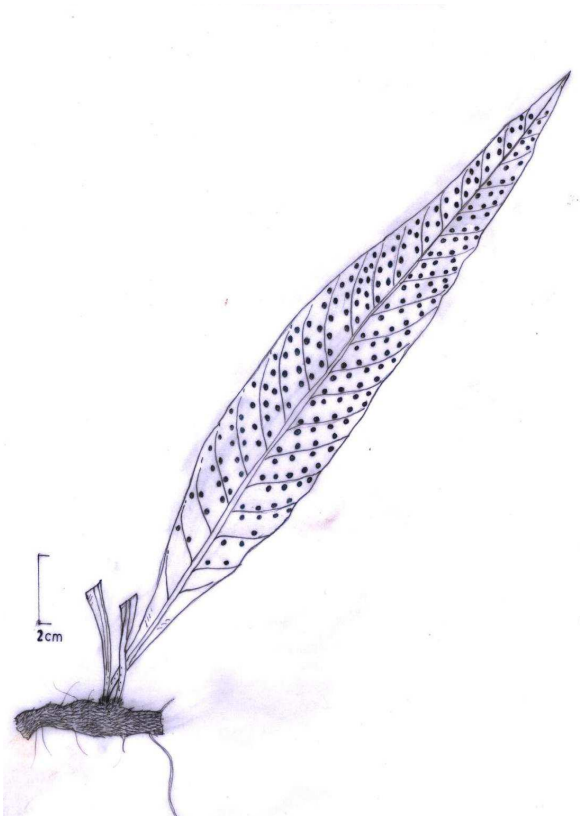


**Fig.2:** *Microsorum zippelii*: Habit

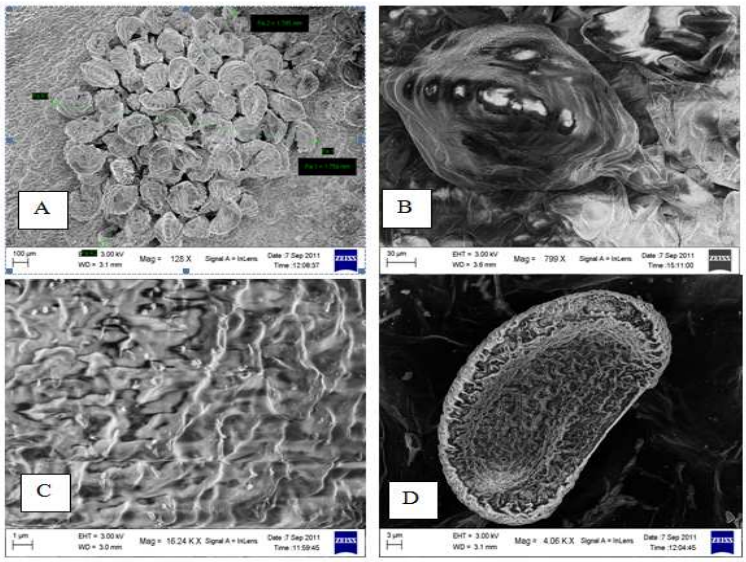


**Fig.3:** *Microsorum zippelii*: A. Sorus; B. Sprangium; C. Sprore wall; D. Spore in surface view. SE micrographs from Zeiss Supra-55

**Note:** *Microsorum zippelii* (Bl.) Ching is differing from it is closely ally *M. membranaceum* having sori larger, round, distinct and fewer. The arrangement of sori is between the smaller areoles, thus arranging in two rows between the main lateral veins, Lamina texture thick and chartaceous.

**Specimens Examined:**

S.R. Ghosh 58386 (CAL), B. Ghosh & S.R. Ghosh 59677 (CAL), G.M. Gammie 21536 (CAL), B. Ghosh & S.R. Ghosh 59311 (CAL), Sahu et al. 10128 (RRL-B).

**Ecology:**

Grows in Moist-deciduous forests of Mahendragiri hills, at an altitude range between 4500-5450 feet, rare, epiphytic, near perennial stream.

**Conservation assessment:**

Chandra et al. (2008) have done an assessment of rare and threatened Pteridophytes of political India, classifying species into different IUCN categories. They have categorised *M. zipelii* under Near Threatened (NT) category. This taxon is fairly uncommon in distribution in India and only recorded from north eastern states of India and West Bengal. CAL houses as many as seven specimens of *M. zipelii* in comparison to a large number of collections of *M. membranaceum* which reflects the rarity of the species in India. The species is only collected from three locations inside the reserve forest. The forests of Mahendragiri hill

range (the only habitat of the taxon in peninsular India) have been rampantly cut down for shifting cultivation. The rarity of the distribution of the species and the threat to its habitat makes it highly susceptible for extinction. The most effective way of preserving the taxon is to protect its habitat.

**Fertility:** June-September

**Distribution in India:**

Sikkim, Assam, Meghalaya, Manipur, Arunachal Pradesh and West Bengal and Odisha (Present findings).

**General Distribution:**

Temperate and tropical parts of the Old World, Pacific Islands to northeast Australia, Malaysia, Southeast Asia, Southern China, the Indian subcontinent extending to Madagascar and tropical Africa.

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**Conflict of interest:** None Declared