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A new distributional record of *Actinopteris radiata* (Sw.) Link. (Pteridaceae) from Eastern India; a threatened taxon

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ABSTRACT

Family Actinopteridaceae Pichi-Sermoli (1970) has been merged into family Pteridaceae Ching. by Kramer & Green (1990) and Smith *et al.* (2006). *Actinopteris radiata* (Sw.) Link., a tiny clumped fern with miniature fan-palm shaped leaves was reported from south, central and west India but never from eastern India. Present collection extends the geographical territory of the taxon. This medicinally useful species has been extensively collected hence has become threatened. The taxonomic and distributional aspect has been discussed in this paper.

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1. Introduction

Prior to the merger of allied families like Adiantaceae, Parkeriaceae, Hemionitidaceae, Actinopteridaceae etc. in to Pteridaceae by Kramer & Green (1990) and Smith *et al.* (2006), genus *Actinopteris* Link. was the sole genus in the monogeneric family Actinopteridaceae Pichi-Sermoli. The nomenclatural history of *Actinopteris* depicts how it ping-ponged between various families under different generic identity. However, all these families subsequently rested in the broader circumscription of family Pteridaceae. This species thrives in lower to lower-mid altitude of hot dry areas among sheltered rocks, below the boulders preferring the calcareous substrate. This taxon was reported from south, west and central part of India but never reported from eastern part of the country. The distributional record in adjoining countries like Nepal, Myanmar, Sri Lanka, Afghanistan strongly suggests that the taxon might be

growing in hot and dry areas of the eastern India. Ghosh *et al.* (2004) did include the taxon in their book “The Pteridophytic Flora of Eastern India” but mentioned that the species is not reported from eastern India and suggested to search for the species from this geographical region.

This species was described under as many as six genera namely *Actinopteris*, *Asplenium*, *Aerostichum*, *Acropteris*, *Blechnum* and *Pteris*. There are plenty of mentions of this plant in Ayurveda, Siddha and folk medicines. The topical use of the paste of the whole plant is beneficial in scabies and control of pigmentation. Besides, the whole plant is used to control diabetes and the roots are advised for conception. The chemical composition of the plants are mainly steroids, triterpenoids and flavonoids Manonmani *et al.* (2013). Large scale collection of the species has pushed the taxon into threatened category.

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During the floristic survey to document the wild edible plants of Keonjhar district, Odisha the authors came across this tiny species growing in Barasuan forest area, Telkoi, Keonjhar. The specimen was collected, identified and preserved in the Department of Botany, North Odisha University, Baripada. The identity was confirmed in CAL. The published literature like Beddome (1883-1892), Saxena & Brahmam (1994-96), Panigrahi (1998), Ghosh et al. (2004) and Fraser Jenkins (2015) were consulted to verify the identity and distribution of the species.

2. Taxonomic Treatment

Until the treatment put forth by Green (1990) and Smith et al. (2006) this taxon was treated as to belong to a monogeneric family i.e. Actinopteridaceae. There are 5 species in the world out of which two are reported from Indian subcontinent. *Actinopteris radiata* and *A. semiflabellata* were very closely resembling species whereas the latter is yet to be reported from India. Eyeing the close resemblances of these taxa it is pertinent to provide the diagnostic key for the easy identification of the species.

Key to the Species

1. Scales of the stipe and rhizome are one kind, lamina broad with a median notch and flabellate.....*A. radiata*
2. Scales dimorphic, lamina narrower and cuneate, often divided into two halves, without median notch..... *A. semiflabellata*

Actinopteris radiata (Sw.) Link. Fil. Sp. 80, 1841, Hook Ic. Pl. 10.t. 975, f. 2-3, 1854; Hook, Sp. Fil. 3: 276, 1860; Hook. etBak. Syn. Fil. 246, 1867; Bedd. Ferns South Ind. t. 124, 1865; Pichi-Sermoli, Webbia 17(1): 8, 11.f.1a.f. 1962 et in Webbia 17(2): 318-321, f.1. 1963.

Typus: Koenings.n.

Fertility: July –Sept.

Asplenium radiatum Sw. Schard. J.Bot. 1800(2): 50. 1801

Acrostichum dichotomum Forsk. Pl. Aeg. Arab 184. 1775 non Linn. 1753.

Actinopteris dichotoma Kuhn. Bot. Zeit. 29: 504.1871.

Acrostichum radiatum Koenig ex Poir. Enc.Bot. Suppl.1:P128.1810.

Acropteris radiata Link. Hor. Berol. 2:56.1833.

Blechnum radiatum Presl. Tent. Pterid. 103.1836.

Pteris radiata Boj/ Hort. Maur. 399.1837.

Actinopteris australis var. *radiata* C.Chr. Dansk. Bot. Ark. 7:125.1932.

Pteris dichotoma Kuhn. Fil. Deck. 18.1867; Fil.Afr.79. 1868.

Very small plant, ca. 8-15cm. tall with fan-palm shaped circular leaves. Rhizome creeping, short, scaly; scales with shining black stripes at the centre and light narrow edges. Fronds with thin scaly stipe. Fertile fronds 10-17 cm long, stipe longer than the lamina. Lamina flabellate, divided into two symmetrical segments with prominent median deep notch up to the base of lamina, lamina branched with 5-6 times dichotomy; first dichotomies are almost equal in length and the second ones unequal, segments of the blade 32-38, narrow, linear with apices divided into 2-4 acute points. Lamina base and upper stipe covered with pluricellular minute hairs above and abundance of persistent scales beneath, scales falcate to tortuous, ovate-lanceolate, lobes irregular, sometimes dentate at base, tapering apex end in a long hair, fertile apices with almost equal twin pointed teeth. Sori elongated on either side of the midrib, indusiate. (Fig.-1a &b)

Note

Very much similar to *A. semiflabellata* Pichi-Sermoli. but distinct due to its broader, flabellate lamina. Fertile segment is almost with twin apices whereas *A. semiflabellata* tending to end in a single point. Fertile fronds are shorter than the sterile ones than in *A. semiflabellata*. During the winter (dry season) the lamina hangs down and turns grey but revives during rain.

Local Name

Mayursikha & Morpankh (Hindi), Chudala & Mayursikha (Sanskrit), Nanmukappullu (Malayalam), Mayilatumsikhai (Tamil) and Mayooshikhi (Kannada).

Ecology

This species grows in plain to lower-mid altitude (up to 1000ft.) of hot dry areas among sheltered rocks, below the boulders preferring the calcareous substrate.

Specimen Examined

N.C. Nair 8386(CAL), B.C. Vyas 8953(CAL), G. King 14268(CAL), J. Ghatak 460(CAL) and A.K. Biswal NOU-1573

Conservation Assessment

Although Chandra *et al.* (2008) did not include *Actinopteris radiata* in rare and threatened category, but the over harvesting of the species for medicinal use has been the main reason for the shrinkage of the population.

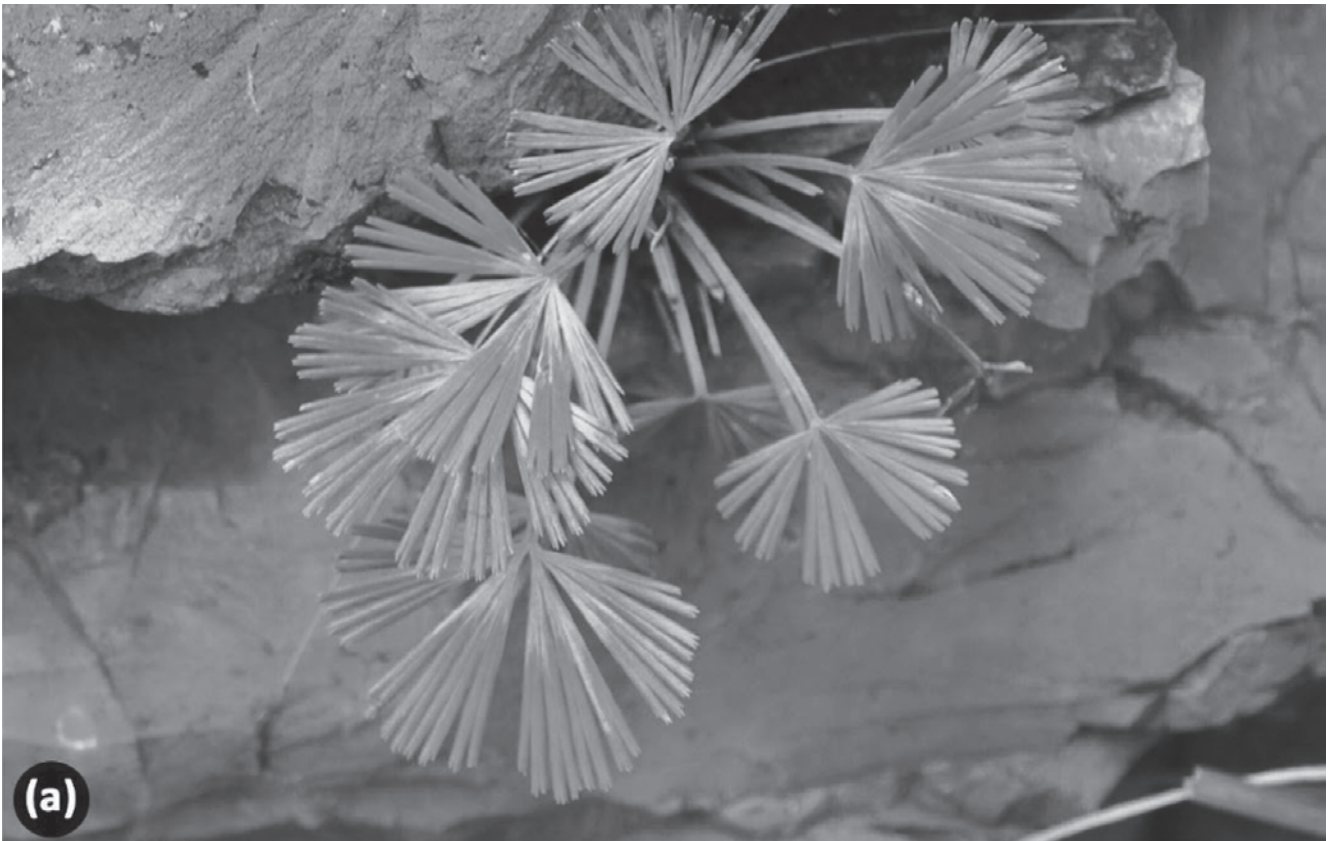


Fig. 1. *Actinopteris radiata* (Sw) Link
(a) Habit, (b) Fertile

The statement of Ghosh *et al.* (2004) indicates the rarity of the taxon and its occurrence in eastern India. The present collection by the author also notes that the population was meagre at the site of collection and very much location specific. *In situ* conservation is the choice of action to conserve the taxon.

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