

Diversity of Ferns (Pteridophytes) from Dang Region of Gujarat

Sandhya Patil

P. G. Department of Botany, S. S. V. P. S. L. K. Dr. P. R. Ghogrey Science College, Dhule

Abstract:

Ferns are the lower vascular plants diverse in number and habitat. Present article deals with the study of ferns from Dang forest of Gujarat. Three localities of Dang forest like Shabaridham, Pampa Sarovar and Subir were undertaken for survey. Four species of ferns belonging to four genera viz. *Actinopteris radiata* Link, *Adiantum caudatum* Linn, *Athyrium asprum* (Blume) Wilde and *Cheilanthes albomarginata* Clarke were recorded. Morphological details of every species is provided.

KeyWords: Ferns, Dang, *Athyrium*.

Introduction

Ferns are lower vascular plants diverse in number and habitat. Ferns growing in moist, shady and humid places at high altitude and areas near sea shore. Fern leaves are designated as fronds, they are simple or compound. Compound fronds consists pinna and pinnules. Sporangia and spores are arranged on placenta or receptacle forming sori. Sori either naked or covered with membranous or leathery covering indusium.

In India fern flora firstly studied and described by Beddome (1865-70), latter on Blaster and d' Almeida (1922) describe the ferns of Bombay, Baishya and Rao (1982) describe ferns of Meghalaya state. Mahabale and Chaudhari (1987) describe and confirm pteridophytes of Maharashtra. . Nayar and Geevarghese (1993) describe and confirm ferns of North Eastern Himalaya. Manickam and Irudayaraj (1992) confirm the ferns of Western Ghats which constitute about one third of fern flora of India. From Goa state Vartak (1966) listed 49 fern species , latter on Rao (1986) documented 29 species of Pteridophytes . Kerkar and Shetkar (2009) listed 19 species from Goa, 6 species were recorded for first time. Pardeshi (2009) published The Manual of Ferns of India (Based on Beddome's Ferns of British India). Recently Neel et al. (2018) gives comprehensive information on fern flora of Maharashtra.

Materials and Methods

Study Area: Dang is a district in the state of Gujrat in India, situated between the parallels of latitude 20° 33' and 21° 5' and longitude of 73° 27' and 73° 57'. Dang has an area of 1,764 km² it covers a part of forest that includes variety of trees mostly in hilly regions.

Random survey was carried out in November and December 2018, in various parts viz. Shabaridham, Pampa sarovar, Subir regions.

Collections, Preservations and Microscopic Studies: Frens from various localities were collected whole plant along with roots, soil and carefully brought to the laboratory in polythene bags. Photographs of fresh material were taken during collection. Herbarium specimens were made for preservation for further studies of these plants.

Morphological features were observed with the help of Binocular (Bausch and Lomb.). Microscopic features like outgrowths, hairs, sori, indusium, spores were observed and recorded. Identification and confirmation were made with the help of Beddome (1969), Blaster and d' Almeida (1922), Baishya and Rao (1982) and Pardeshi, V. N. (2009) and other relevant literature.

Morphological Descriptions

1) *Actinopteris radiata* Link

Rhizome short, closely branched, 2mm in diameter, closely fused with roots, black scales are present, fronds crowded, erect, up to 160 mm long, stipe brown, up to 130 mm long, 1.2 mm in diameter. Indusium membranous continuous, margin entire. Spores trilete, globose.

2) *Adiantum caudatum* Linn

Rhizome short, ascending, densely covered by stiff roots and dark brown, hair like linear scale. Stipe 5-10 cm long, densely paleate. Lamina unipinnate, up to 30 cm long, apical lamina not pinnae like. Pinnae oblique-ovate, 1.5-0.5 cm, upper margin inciso-lobate, lower margin entire. Sori reniform to slightly elongate on the apical margin of pinnae lobes, indusial cordate at base, round entire outwards.

3) *Athyrium asprum* (Blume) Wilde

Rhizome erect, massive, short, scaly at the apex, roots thick, glabrous, stiff, arising from the basal region of the rhizome. Fronds bipinnate, lanceolate-acuminate, glabrous, stipe erect, slender, up to 35 cm long, green, fleshy, covered with scales. Lamina membranous, spreading, up to 36 x 20 cm at base, secondary pinnae pinnatifid half way down costate. Veins forked and free. Sori dorsal on the veins, globose, indusiate, with a very rudimentary basal indusium. Spores round, exine bullate.

4) *Cheilanthes albomarginata* Clarke

Rhizome short, much fibrous, ramenta brown, long, scales brown, lanciolate with needle like apex, with translucent margin. Stipe scaly, slender, erect, 5-10 cm long. Lamina lanciolate-deltoid, 10-25 cm at base, unipinnate with deeply pinnatifid pinnae, hairy and scaly, white powdery on ventral surface of lamina, dark green above. Sori marginal, confluent. Indusium greenish brown, margin lacerate.

Conclusion

Among the four species *Actinopteris radiata* Link and *Athyrium asprum* (Blume) Wilde were found rarely at specific locality. *Cheilanthes albomarginata* Clarke found frequently. *Adiantum caudatum* Linn, found abundantly at all the localities.

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Actinopteris radiata Link (Habit)



Adiantum caudatum Linn (Habit)



Adiantum caudatum Linn (Sori)



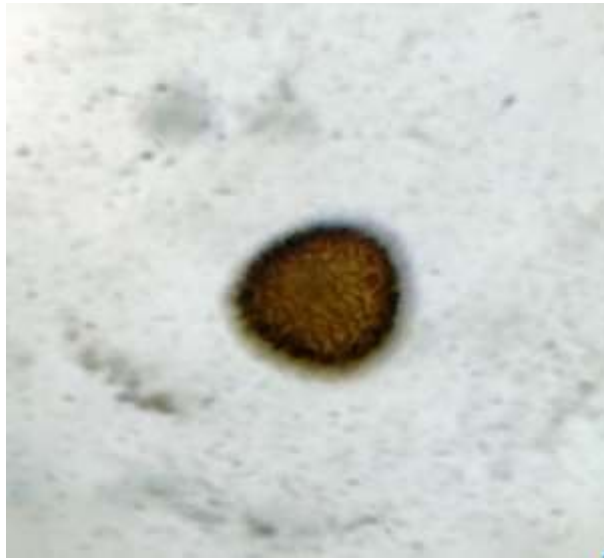
Athyrium asprum (Blume) Wilde (Habit)



Athyrium asprum (Blume) Wilde (Sori)



Athyrium asprum (Blume) Wilde (inducium)



Athyrium asprum (Blume) Wilde (Sporangium) *Athyrium asprum* (Blume) Wilde (Spore)



Cheilanthus albomarginata Clarke (Habit) *Cheilanthus albomarginata* Clarke (Sori)