



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

International Journal of Recent Scientific Research
Vol. 6, Issue, 4, pp.3280-3283, April, 2015

**International Journal
of Recent Scientific
Research**

RESEARCH ARTICLE

FOREST PTERIDOPHYTES OF CHAMPHAI DISTRICT, MIZORAM, INDIA

Vanlalpeka R and Ramachandra Laha*

Department of Botany, Mizoram University, Tanhril Mizoram

ARTICLE INFO

Article History:

Received 5th, March, 2015
Received in revised form 12th,
March, 2015
Accepted 6th, April, 2015
Published online 28th,
April, 2015

ABSTRACT

The present study assess 32 species of ferns belong to 17 families from Champhai district, Mizoram. The present report is made on the basis of field investigation in eight different sites of the district and their taxonomic identification. Amongst them 32 species are terrestrial species, 5 species are epiphytic and 6 species are of ethno botanical use(s)

Key words:

Pteridophytes, Champhai,
Mizoram

Copyright © Vanlalpeka R and Ramachandra Laha., This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Pteridophytes occur mostly in terrestrial habitats on earth and are also present in some aquatic communities. They are the important part of the ground vegetation in many forest communities and, also an important component of many epiphytic plant communities. Some species are very beneficial to humans and many species attracts many plant lovers for their graceful, fascinating and beautiful foliage.

The work on Indian pteridophytes were initiated by [Beddome](#) (1883, 1892) and after partition of the then British India in the second half of 20th century several scientists made their contributions to Indian pteridology [Bir](#) (1977, 1979), [Kachroo](#) (1975), [Panigrahi](#) (1960), [Panigrahi and Choudhury](#) (1962), [Dixit](#) (1984), [Dixit and Vohra](#) (1984), ([Handique and Konger](#) 1986), ([Barua et al.](#) 1989) and [Borthakur et al.](#) (2000) had provided. Recently, [Mirza](#) (2000) reported fern and fern allies from Bangladesh, ([Pasha and Uddin](#) 2007) reviewed the pteridophytic research done in Bangladesh.

The study on pteridophytes has been carried out for many years in the neighbouring state of Mizoram like Assam, Arunachal Pradesh, Sikkim, Manipur, Tripura and North-eastern India. In Assam, [Beddome](#) (1892), reported a total of 25 species of pteridophytes from the then Cachar District and Sylhet District of Assam. The ferns of Hailakandi District of the Assam have been studied by [Dutta Choudhury and Bhattacharya](#) (1996) and from Assam by [Bhattacharya and Sharma](#) (2002) and than by [Bhattacharya et al](#) (2003), [Nath et al](#) (2004), [Sen and](#)

[Bhattacharya](#) (2007), [Bhattacharya](#) (2009), [Dey et al](#) (2011) reported from Barak valley of Assam. In Manipur there is report of total 20 ethnobotanical pteridophytic plants belonging to 15 families documented by ([Yumkhan and Singh](#) 2011), In Meghalaya a total of 113 species pteridophytes were found in the Nokrek Biosphere Reserve, Meghalaya which shows the evidence of the area by ([Singh et al.](#) 2012). ([Benniamin .](#) 2011) conducted a study of medicinally important pteridophytes and had mentioned 51 pteridophytes belonging to 28 family. He had enumerated 76 species under 41 genera and 28 family in Arunachal Pradesh. But for Mizoram identification and proper records of pteridophytes has not been made till today

Mizoram (extended between latitude 21° 58' - 24°45' and 24°35' N and between 92°15' and 93°29' E longitude) is an important state of north east India, sandwiched between Burma and Bangladesh (Figure 1) and also is a part of the Indo-Burma hotspots of the world ([Rai, 2009](#)). The altitude ranges from 500 to 2157 m Mizoram is under direct influence of monsoon, with heavy rains from May to September and an average rainfall of 245 cm per year ([Sharma et al., 2001](#)). The study site Champhai is one of the state 8 districts extended between 23°28'28"N and 93°19'32"E. In the summer the temperature ranges from 15-30 degrees Celsius, and in the winter 10-20 degrees Celsius and the total area of Champhai district is 3185.83sq.km. with a population of 125,370 ([Anon.2011](#)). The general impact of unregulated shifting cultivation in Mizoram has altered the landscapes which was once a large tracts of evergreen dense primary forest into fragmented

*Corresponding author: **Ramachandra Laha**

Department of Botany, Mizoram University, Tanhril Mizoram

mosaics of agro forestry systems. However unique position, mountainous terrain and climatic variation are the main factor for the richness of Pteridophytes in Mizoram.

MATERIALS AND METHODS

The work is based on materials collected from eight different forest sites Khuangthing, Farkawn, Vapar, Mimbung, Ngopa, Chhawrtui, Tualte, Biate of Champhai district, Mizoram.(Fig.1). The specimens collected from the study sites through repeated visits in different seasons from March 2013 to May 2014.

The identification of the specimens was confirmed by consulting available literatures published on ferns. Field observations, collections and investigations were also taken into consideration for enumeration of species.

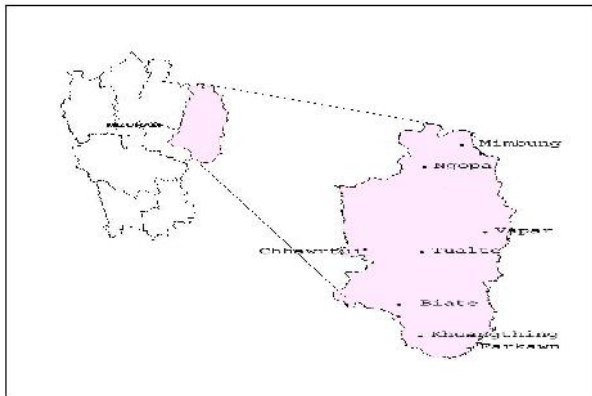


Fig 1 Map of Champhai District of Mizoram indicating different forest sites explored for Pteridophytes

The enumerated species are presented under families as per the system of classification proposed by (Pichi-Sermolli1977) literatures (Hovenkamp et al. 1998, Freser-Jenkins 2008) have been followed and for correct citation of the author of the species, Rodolfo E.G. (Pichi Sermolli1996) has been followed.

RESULT

During the study and identification of ferns from the eight selected forest sites in Champhai district, 33 species of Pteridophytes has been found and identified. Out of the 32 species found 27 species are terrestrial Pteridophytes while the other 5 species i. *Pseudodrynaria coronans* (Wall.exMett.) Ching ,*Drynaria quercifolia* (Bory)J.Sm., *Platycerium wallichi* Hook., *Drynaria propinqua* J.Sm.ex Bedd, *Drynaria quercifolia*(Bory) J.Sm are epiphytic. These 32 species found out of which 6 species belong to family Polypodiaceae,4 species belongs to family Pteridaceae and Thelypteridaceae, 3 species belongs to Dennstaedtiaceae, 2 species belongs to Athyriaceae and Tectariaceae and the other 17 species, 1 species belongs to each family i.e. Aspleniaceae, Blechnaceae, Cyatheaceae, Davalliaceae, Dryopteridaceae, Gleicheniaceae, Lindsaeaceae, Lycopodiaceae, Lygodiaceae, Marattiaceae and Selaginellaceae. Out of the 32 species 6 species *Platycerium wallichi* Hook., *Adiantum lunulatum* Burm.f., *Lygodium flexuosum* (Linn.)Sw.,*Diplazium esculentum*(Retz.) Sw. *Dicranopteris linearis* Burm.F and *Lycopodiella cernua* (L.) Pic. Serm have been of ethnobotanical importance. The different plant parts as leaves, rhizome and young stem are used for the treatments of dysentery, ulcer, burning sensation, rheumatism, wound, skin infection etc. and also as vegetable by the ethnic people(Table 2).

Table 1 List of the Pteridophytes, families and their collection forest sites.

S. No	Names of the species	Names of families	Names of the forest sites
1	<i>Adiantum lunulatum</i> Burm.f.	Pteridaceae	Khuangthing
2	<i>Angiopteris evacta</i> (G.Forst.)Hoffm.	Marattiaceae	Khuangthing
3	<i>Pseudodrynaria coronans</i> (Wall.ex Mett.) Ching	Polypodiaceae	Khuangthing
4	<i>Asplenium obscurum Blume Anisocampium cuspidatum</i> (Bedd.)Y.C.Liu,W.L.	Aspleniaceae	Farkawn
5	Chiou & M. Kato	Athyriaceae	Tualte
6	<i>Blechnum orientale</i> Linn.	Blechnaceae	Farkawn
7	<i>Christella dentata</i> (Forssk.) Brownsey&Jermy	Thelypteridaceae	Tualte
8	<i>Cyathea chinensis</i> (Copel) Philipp	Cyatheaceae	Vapar
9	<i>Davallia trichomanoides</i> Blume	Davalliaceae	Vapar
10	<i>Dicranopteris linearis</i> (Burm. f.) Underw	Gleicheniaceae	Khuangthing
11	<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	Ngopa
12	<i>Pseudodrynaria coronans</i> (Wall.exMett.) Ching	Polypodiaceae	Chhawrtui
13	<i>Drynaria propinqua</i> (Wall. ex Mett.) Bedd	Polypodiaceae	Vapar
14	<i>Drynaria quercifolia</i> (L.) J.Sm.	Polypodiaceae	Mimbung
15	<i>Dryopteris sparsa</i> (D.Don) Kuntze	Dryopteridaceae	Mimbung
16	<i>Leptochilus decurrens</i> Blume	Polypodiaceae	Biate
17	<i>Lindsaea ensifolia</i> Sw	Lindsaeaceae	Biate
18	<i>Lygodium flexuosum</i> (L.)Sw.	Lygodiaceae	Mimbung
19	<i>Microlepia hancei</i> Prantl	Dennstaedtiaceae	Ngopa
20	<i>Microlepia speluncae</i> (L.) T. Moore	Dennstaedtiaceae	Farkawn
21	<i>Platycerium wallichi</i> Hook.	Polypodiaceae	Farkawn
22	<i>Pteridium aquilinum</i> (L.)Kuhn	Dennstaedtiaceae	Chhawrtui
23	<i>Pteris confusa</i> T.G.Walker	Pteridaceae	Khuangthing
24	<i>Pteris camerooniana</i> Kuhn	Pteridaceae	Chhawrtui
25	<i>Pteris vittata</i> L.	Pteridaceae	Mimbung
26	<i>Selaginella bisulcata</i> Spring	Selaginellaceae	Biate
27	<i>Tectaria gemmifera</i> (Fée) Alston	Tectariaceae	Biate
28	<i>Tectaria paradoxa</i> (Fée) Sledge	Tectariaceae	Chhawrtui
29	<i>Pronephrium lakhimpurens</i> (Rosenst.) Holttum	Thelypteridaceae	Mimbung
30	<i>Pronephrium penangianum</i> (Hook.) Holttum	Thelypteridaceae	Khuangthing
31	<i>Thelypteris procera</i> (D.Don) Fraser-Jenkins	Thelypteridaceae	Biate
32	<i>Lycopodiella cernua</i> (L.) Pic. Serm	Lycopodiaceae	Khuangthing

Table 2 List of Ethnobotanical species of Pteridophytes and their respective uses

S. N.	Name of the fern species	Names of families	Ethnobotanical use(s)	Part(s) and prepared form of parts used
1	<i>Adiantum lunulatum</i> Burm.f.	Adiantaceae	Dysentery, ulcers and burning sensation	Leaves Leave are crushed and the juice is taken
2	<i>Lygodium flexuosum</i> (L.) Sw	Lygodiaceae	Rheumatism, ulcers and wounds	Leaves Leaves are crushed and the paste is applied externally
3	<i>Platynerium wallichii</i> Hook.	Polypodiaceae	Skin infection	Leaves and rhizomes Leaves and rhizomes are crushed and the paste is applied externally
4	<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	Vegetable	Young stems and leaves Stem and leaves are either fried or in raw form these are eaten
5	<i>Dicranopteris linearis</i> Burm.f.	Gleicheniaceae	Fresh wounds	Whole part Whole part is crush and the paste is applied externally
6	<i>Lycopodiella cernua</i> (L.) Pic. Serm	Lycopodiaceae	Fresh wounds	Whole part Whole part is crushed and the paste is applied externally

The importance of the other 26 species are not been known by the local people of these eight different sites.

DISCUSSION

The percent of occurrence of 32 Pteridophytes species under 17 different families from Champhai district shows highest value for Polypodiaceae (19 %), followed by Pteridaceae and Thelypteridaceae (13% to each) and Dennstaedtiaceae (9%) and Tectariaceae and Athyriaceae (6 %). The rest families have the same percent (3%) and each has equal value having one species to each (Fig.2).

The availability of number of plant species from the collected 8 villages are different as 7 species are found only from Khuangthing, followed by 5 species from Mimbung and Biate, 4 species from Farkawn and Chhawrtui sites and 3 species from Vapar and 2 species from Tualte and Ngopa site (Fig.3).

Thus it is seen that Polypodiaceae is more in Champhai district of Mizoram. Moreover, Champhai has much diversity of both for families as 17 and for genera as 17 having the total number of 32 species.

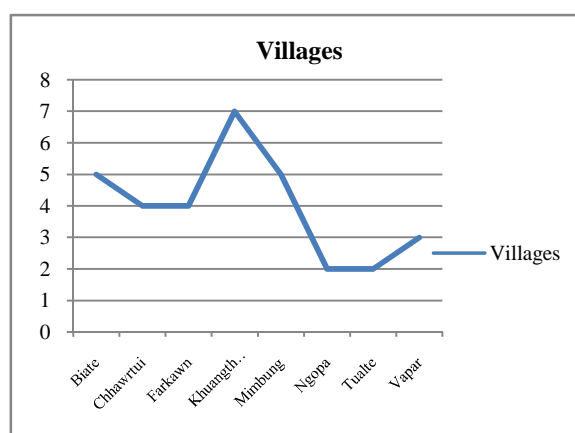


Fig 3 Number of Pteridophytes in different villages of Champhai District, Mizoram

CONCLUSION

The ferns unique group of Pteridophytes are strictly habitat specific, shade and moisture loving. The region is rich in Pteridophytes and need further collection and estimation of total species. The existing deforestation, habitat fragmentation, shifting cultivation all together create post a serious threat to the growth and survival of these plants. Effort should be made for research, germplasm collection of ferns, further study on habitat ecology, species richness, population assessment for the management of ecosystem of this unique group of plants.

References

Anonymous 2011. Statistical handbook of Mizoram, Department of Economic and Statistics,, Government of Mizoram.

Barua, I., A.K. Baishya and B. Neogi 1989. A contribution to the pteridophytic flora of Kamrup District, Assam. *Indian Fern*, 160-180.

Beddome, R.H. 1883. Handbook of the Ferns of British India, *Ceylon and Malaya Peninsula*. Thackar and Spink Co. Calcutta .(Rep.edn.)

Beddome, R.H., 1892. Handbook of the Ferns of British India, *Ceylon and Malaya Peninsula*. Thackar and Spink Co. Calcutta .(Rep.edn.)

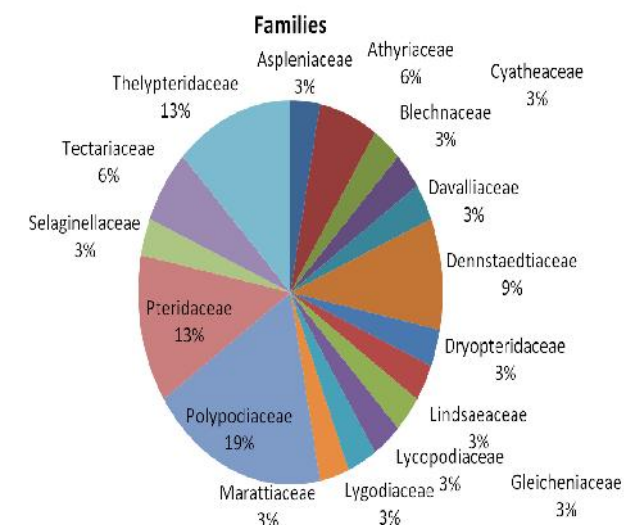


Fig 2 Percent occurrence of Pteridophytes species of different families of Champhai district, Mizoram

- Benniamin ,A.2011. Medicinal ferns of North Eastern India with special reference to Arunachal Pradesh. *Indian Jour. of Trad. Knowledge* 10(3), 516-522
- Bhattacharya, B. and G.D. Sharma 2002. Contribution to the Pteridophytic flora of Assam University Campus. In Proceedings of the UGC sponsored State level Seminar on *Biodiversity of Assam and its Conservation* (Eds. Bhattacharya, M.K., M. Dutta Choudhury and P.B.
- Bhattacharya, M.K., 2009. Some threatened ferns of Barak Valley, Assam, North-East India. *Indian Fern J* 26, 46-54.
- Bhattacharya, M.K., P.S. Das and M.D. Choudhury.2003. Some ecological studies of pteridophytes of Barak Valley, Assam, India. *Ecobios* 2, 38-45.
- Bir, S.S. 1977. Pteridophytic flora of India; A review of achievements and future challenges in the systematics and taxonomy. *Bull Bot Surv India*.19,323-329.
- Bir, S.S. 1979. An appraisal of work on the taxonomy of pteridophytes in India. In: *Plant Taxonomy in India, A state-of-Art Report*. NBRI, Lucknow 27-29.
- Borthakur ,S., P. Deka and K.K. Nath 2000. *The Illustrated Manual of Ferns of Assam*. Bishen Singh Mahendra Pal Singh, Dehra Dun, India.
- Dey Pinak , Aniruddha Sen, Mrinal Kanti Bhattacharya and Mostafa Kamal Pasha 2011. A review of the ferns of Barak Valley, Assam, India. *J. Taxon. Biodiv. Res.* 5, 33-42
- Dey, P., A. Sen and M.K. Bhattacharya 2009. Ferns of Barak Valley with special reference to their horticultural potentials. Proceedings of *Seminar on Complementary Areas in Physical and Life Sciences* (Eds. M.Dutta Choudhury and P.B.Mazumdar) November 26-27,2009, Karimganj College, Karimganj, Assam. 35 – 45.
- Dixit, R.D. 1984. *A Census of the Indian Pteridophytes*. Botanical Survey of India, Howrah.
- Dixit, R.D. and J.N. Vohra 1984. *A Dictionary of the Pteridophytes of India*. Botanical Survey of India, Howrah.
- Dutta Choudhury, M. and M.K. Bhattacharya 1996. A new report from Hailakandi District. *Indian Fern J.* 13, 18-21.
- Fraser-Jenkins. C.R. 2008. *Three Hundred Indian Subcontinental Pteridophytes With a Revised Census List*. Bishen Singh Mahendra Pal Singh. Dehra Dun.
- Handique, P.J. and J. Konger 1986. A list of fern and fern-allies of greater Guwahati, Assam (with their ecological adaptations). *Mendal* .3(2), 130-135.
- Hovenkamp, P.H., M.T.M. Bosman, E. Hennipman, A.P.Nootboom, G. Rodl-Linder and M.C. Ross 1998. In (Eds.) :Kalkman and H.P.Nooteboom 1998 *Flora Malesiana Series 11. Ferns and Fern-allies.* pp 1-277.
- Kachroo, P. 1975. Fern flora of Assam with some phytogeographical notes. *J Indian Bot Soc.* 54, 13-26.
- Mazumder, 2002), Karimganj College, Assam, India.20- 32
- Mirza, M.M. 2000. An enumeration of C.B. Clarke Pteridophytic collections from Bangladesh at Kew. *Bangladesh J.Plant Taxon.* 7(2),9- 20.
- Nath, A., A.A. Das, M.K. Bhattacharya and G.G. Maiti 2004. Ecology and systematic study on the fern flora of brick and rock constructions of southern Assam, India. *Phytotaxonomy* 4,41-54.
- Panigrahi, G. 1960. Pteridophytes of Eastern India: Enumeration of species collected and their nomenclature. *Bull Bot Surv India* 2, 309-314.
- Panigrahi, G. and S. Choudhury. 1962. Enumeration and distribution of Fern-allies in India. *Proc Indian Sci Congr.*, 49, 25-36.
- Pasha, M.K. and M.G. Uddin. 2007. An account of the exploration and taxonomic studies of Pteridophytes in Bangladesh. *J. Taxon. Biodiv. Res.* 1(1),41-48.
- Pichi-Sermolli, R.E.G. 1977. Tentamen pteridophytorum genera in taxonomic ordinem redigendi *Webbia* 31(2),313-512.
- Pichi-Sermolli, R.E.G. 1996. *Authors of Pteridophytes*. Royal Botanic Garden, Kew.UK.
- Rai P.K 2009. Comparative assessment of soil properties after bamboo flowering and death in a tropical forest of Indo-Burma hot spot. *Ambio:J.Hum. Environ.*38(2), 118 -120
- Sen,A. and M.K. Bhattacharya 2007. Further contribution to the fern flora of Barak Valley, Assam, N. E. India, *Indian Fern J.* 24, 156-160.
- Sharma H.K.,Chhangte L. and A.K.Dolui 2001.Traditional medicinal plants in Mizoram, India. *Fitoterapia* 72 , 146 – 161.
- Singh,B., V.N. Singh , S.J. Phukan, B.K. Sinha and S.K. Borthakur 2012. Contribution to the pteridophytic flora of India: Nokrek Biosphere Reserve, Meghalaya. *Jour. of Threat.Taxa* 4(1), 2277–2294
- Yumkham S.D. and P.K.Singh 2011. Less known ferns and ferns –allies of Manipur with ethnobotanic uses. *Indian Jour. of Trad. Knowledge.*10(2), 287-291

How to cite this article:

Vanlalpeka R and Ramachandra Laha., Forest Pteridophytes of Champhai District, Mizoram, India. *International Journal of Recent Scientific Research* Vol. 6, Issue, 4, pp.3280-3283, April, 2015
