

ANNUAL SCIENTIFIC MEET- 2017

Dr. A. BENNIAMIN
Scientist 'D'
Pune

Research Profile

- TITLE OF THESIS: "**FERN DIVERSITY OF WESTERN GHATS of INDIA** " St. XAVIERS COLLEGE, PALAYAMKOTTAI (TN) in 2000-2004.
- JRF, SRF and RA - "**Ferns diversity of Southern Western Ghats, India** " under ALL India Co-ordinated Project on Taxonomy of Pteridophytes (**AICOPTAX**) sponsored by Ministry of Environment, Forest & Climate Change 2000-2005.

ANNUAL ACTION PLAN PROJECTS

1. Taxonomic study of family Dryopteridaceae in North East India - (2008-2013)

Dr. A.Benniamin

- Undertaken 14 tours to different localities of North East India during 2008-2013 spending 243 days in field tour and collected 5661 specimens which includes 118 species of Dryopteridaceae

Plate 1. Ferns surveyed areas in Arunachal Pradesh





Ferns surveyed areas in Mizoram





Ferns surveyed areas in Meghalaya





Ferns surveyed areas in Manipur



Ferns surveyed areas in Nagaland



Ferns surveyed areas in Tripura



- Of the total 118 species recorded from North East India, seven species viz., *Phanerophlebiopsis balansae* (Christ) Fras.-Jenk. & Baishya,, *Polystichum hecatopterum* Diels, *Polystichum tangmaiense* H.S.Kung & Tateishi, *Tectaria ternifolia* (Alderw.) C. Chr., *Dryopteris namegata* (Kurata) Kurata, *Ctenitis paucisora* (Copel.) Copel , *Arachniodes miqueliana* (Maximowicz ex Franchet & Savatier) Ohwi are recorded for the first time in India. Two species namely *Polystichum polydon* Ching and *Tectaria subconfluens* (Bedd.) Ching are endemic to North East India.



ENDEMIC FERNS

Endemic fern



Polystichum polydon





Tectaria subconfluens



REDISCOVERED SPECIES



Tectaria zeylanica

Rediscovered from the Western Ghats (After 120 Years)



Anogramma leptophylla
Rediscovered after 90 yrs

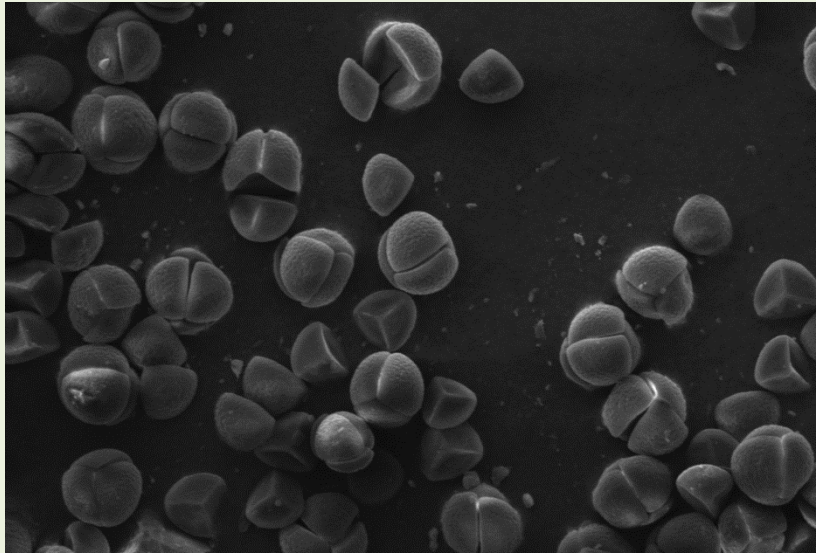


2. Ferns of Maharashtra :(2010-2014)

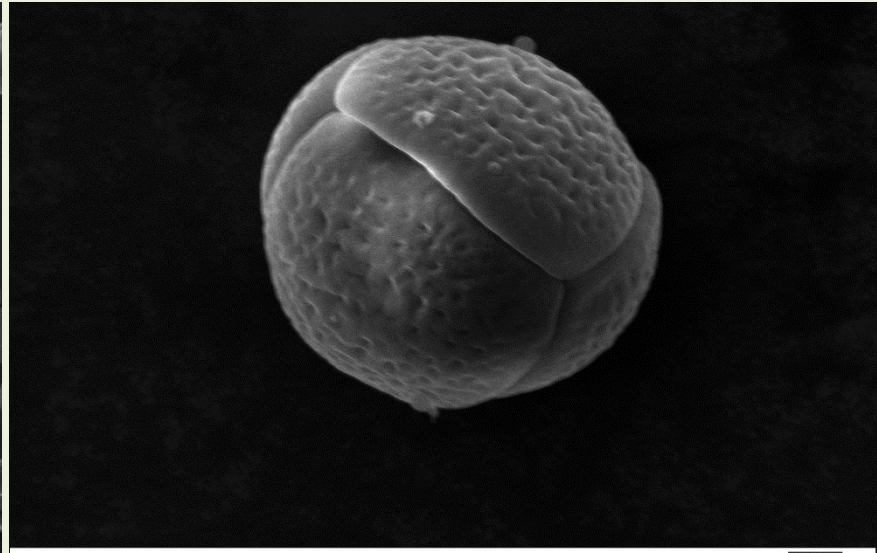
A.Benniamin and V.K.Rawat

- During the Project 92 species of Pteridophytes were documented. It includes 24 families under 46 genera.
- Two species namely *Pteris tripartita* Sw. and *Pteris heteromorpha* fee are new record for Maharashtra.



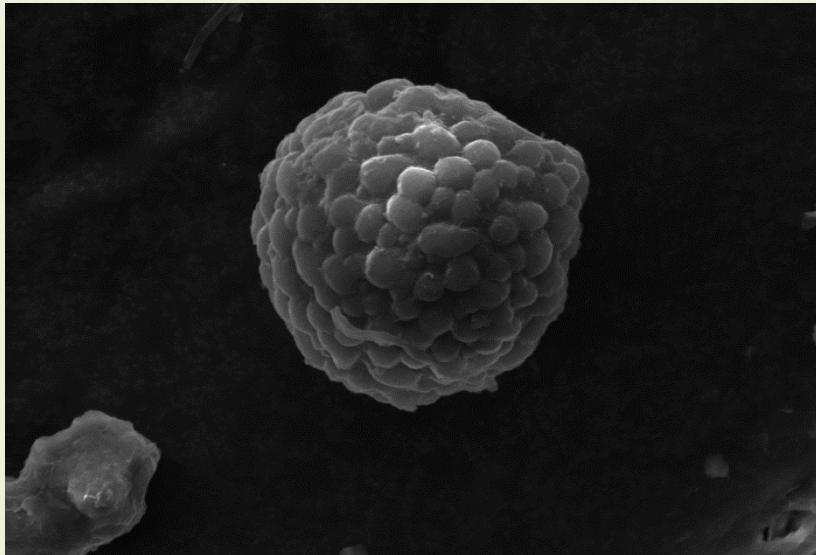


20 μ m | EHT = 20.00 kV | Signal A = SE1 | Date :9 Jul 2014 | ZEISS
WD = 8.5 mm | Mag = 656 X | Time :12:41:05

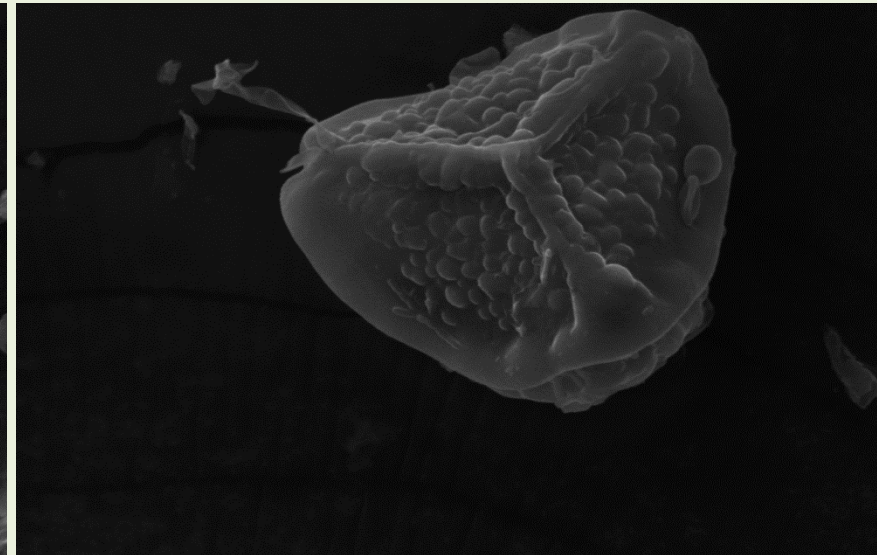


10 μ m | EHT = 20.00 kV | Signal A = SE1 | Date :9 Jul 2014 | ZEISS
WD = 8.5 mm | Mag = 3.32 K X | Time :12:33:56

Botrychium lanuginosum

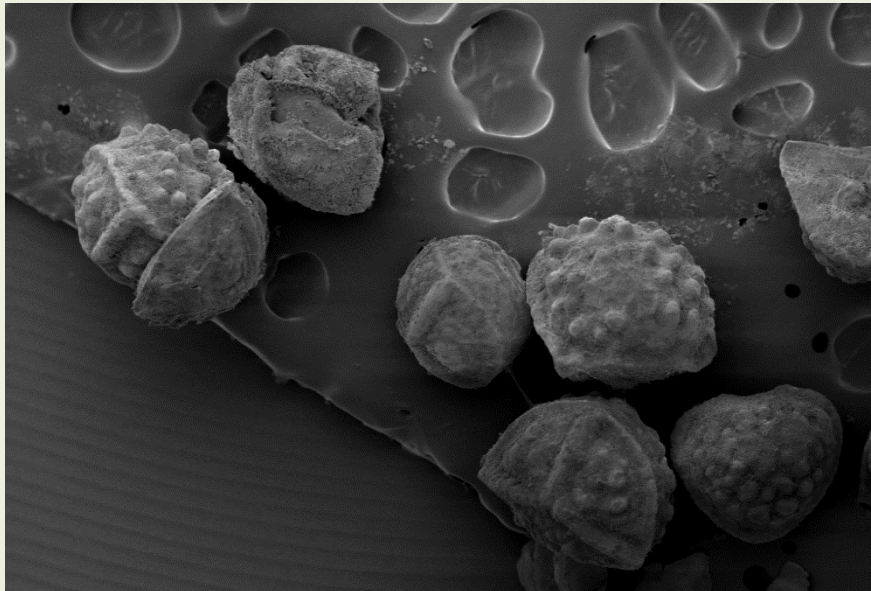


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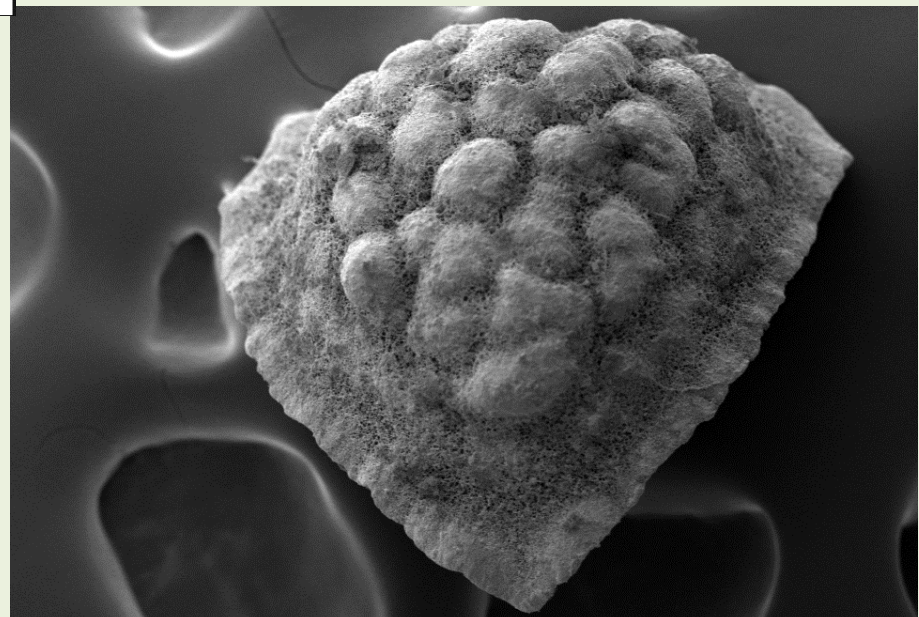
10 μ m | EHT = 20.00 kV | Signal A = SE1 | Date :9 Jul 2014 | ZEISS
WD = 9.0 mm | Mag = 3.32 K X | Time :15:17:27

Actinopteris radiata



200 μ m EHT = 5.00 kV Signal A = SE1 Date :17 Feb 2015
|-----| WD = 12.0 mm Mag = 111 X Time :16:45:13 ZEISS

Isoetes coromandelina



100 μ m EHT = 5.00 kV Signal A = SE1 Date :17 Feb 2015
|-----| WD = 12.0 mm Mag = 391 X Time :16:42:43 ZEISS

3. Taxonomic study of family Polypodiaceae in North East India - (2013-2017)

V.K.Rawat and A.Benniamin

Undertaken 10 Field tours to different parts of NEI and recorded 123 (24 genera) species of Polypodiaceae in NEI : Pyrrosia 19 species from NEI.

4. Ferns of Karnataka : (2014-2018)

A.Benniamin

Undertaken 3 field tours to Karnataka.

Collected 75 species of Pteridophytes.

Studied 34 species spore morphology under SEM.

Administrative works carried out

- **As HoO at BSI,WRC, Pune from April 2013-August 2015.**
- **Admin In charge at BSI,WRC, Pune.**
- **Dealing court cases of BSI,WRC, Pune.**
- **Vehicle In charge of BSI,WRC, Pune.**

NUMBER OF PROJECT CARRIED OUT:

Project completed : Two

On going Project : Three

Number of Papers Published: 39

Number of book : One (2016)

1. "An Annotated Checklist of Indian Pteridophytes": Part -1

Fraser jenkins, K.N.Gandhi, B.S.Kholia, and **A.Benniamin**

Jenkins, Gandhi,
Kholia, Benniamin

An Annotated
Checklist of Indian Pteridophytes



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An Annotated
Checklist of Indian Pteridophytes
Part-1
(Lycopodiaceae to Thelypteridaceae)

C.R. Fraser-Jenkins • K.N. Gandhi
B.S. Kholia • A. Benniamin

About the Book

Ferns and fern-allies are especially well represented in India and are conspicuous almost everywhere by their beautiful and intricately varied foliage. Yet this fascinating group of plants is often rather widely misunderstood due to their great complexity in the area and to a considerable degree of variation, with many erroneous accounts having been published on them in the past. In addition, the last published book covering the whole of India accurately was a Nineteenth Century work, and since then nearly all names of genera and even the majority of species have changed, while some more recent Census-lists have been beset by inaccuracies and errors to the point of being undependable. Ongoing modern research both in India and abroad has revealed the existence of many more species than were known before, while a huge number of names in use in various works have proved to be synonyms, mere reduplications of species already known.

The present work in two parts has incorporated and evaluated modern research and has set out the whole spectrum of Indian ferns as known today, detailing their types, synonyms and carefully revised distribution as researched both in the field in and around the region, and in the world's herbaria, involving re-identification and verification of specimens over many decades of research by the specialist authors. Notes concerning misidentifications or taxonomic and nomenclatural problems are provided in situ under each species or genus.

Part 1 covers the families from Lycopodiaceae through to Thelypteridaceae, in taxonomic order, and the forthcoming part 2 covers the large advanced and critical families from Woodsiaceae to the end of the taxonomic series. It is planned subsequently to present a descriptive volume followed by a photographic volume to complete the set.

In addition to aiming to produce a detailed and comprehensively accurate account of these plants, many new revisions at species and some at generic level have also been made in the book itself, while setting out to maintain the important balance between molecular and morphological concepts of taxa.

It is hoped that stability of names and concepts along with indication of modern directions of research in various groups may result from the present work, which is intended to provide a comprehensive basis for present and future fern-study, cataloguing and identification relevant to the fern-flora of the whole of Asia.



New species : **4**
New Records for India : **27**
New records for state : **10**



NEW SPECIES : **Four**

- 1. *Polystichum manickamianum* **Benniamin & Fraser Jenkins** sp.nov.
- 2. *Diplazium austrosylvaticum* Fras.-Jenk. & **Benniamin** sp.nov.
- 3. *Thelypteris parasitica* (L.) Tardieu subsp. *manickirudorum* Fras.-Jenk.& **Benniamin** sp.nov.
- 4. *Pteris mawsmeiensis* Fras.jenk & **Benniamin**

New Records for India : 27

New Record for the State : 10

Projects Evaluated :

1. Cytogenetical studies on the fern flora of eastern Uttar Pradesh Ref.No. 38/2098/NS/11/EMR-II(CSIR) - 2011.

2. Desiccation tolerance of Fern gametophytes: an experimental investigation from different ecological niche of India, DST- 2016.

Training Attended : Two

- “Public Private Partnership” organized by Administrative college of India, Hyderabad on 9-12 Sep 2012.
- “QGIS Map Essentials” organized by Qubbi Labs on 20-21 May 2016.
- **Conference/Symposium** : 9

Future plan of Research :

External Funding Project:

DST (SERB)PROJECT : 2017-2020

1. Conservation and Micro propagation of rare and endangered Pteridophytes from Central Western Ghats, India.

2. Establishment of Plant Tissue Culture Laboratory (PTCL) at Western Regional Centre, Pune

3. Study the Spore Morphology of Pteridophytes under Scanning Electron Microscope (SEM).

4. To Prepare a complete Checklist of Pteridophytes of India from Vol 2-4.

5. To Prepare a Database on Pteridophytic flora of Karnataka

National Symposium
on
The Genomic Age Challenges and Opportunities in
Taxonomy and Biology of Indian Pteridophytes

March 3-4, 2017

ORGANIZED BY



**Botanical Survey of India,
Western Regional Centre, Pune**
Ministry of Environment, Forest & Climate Change

In collaboration with



INDIAN FERN SOCIETY

PATRON

Dr. PARAMJIT SINGH
DIRECTOR, BSI

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Prof. EMERITUS Dr. S. P. KHULLAR

CO-ORDINATOR

Dr. P. LAKSHMINARASIMHAN

ORGANISING SECRETARY

Dr. A. BENNIAMIN

Awards : Seven

- **“Prof. S.S. Bir Gold Medal Award 2008”** for the Excellence in Pteridophytes, by Indian Fern Society, “during the National Symposium on Pteridophytes at NBRI, Lucknow .
- **Certificate of Merit Award 2010** by Indian Fern Society,during the **“National Symposium on Pteridophytes”** at IHBT, Palampur 2010.q
- **“Prof. S.S.Bir Gold Medal Award”** for the Excellence of Pteridophytes for the year 2014.
- Received 1st Price for **poster presentation** during **“International Symposium on Pteridophytes”** organized by CSIR- Institute of Himalayan Bioresource Technology, Palampur, Himanchal Pradesh during 20-21 December, 2014.
- Received 1st Price for **poster presentation** during Symposium on Lower cryptogams”organized at CSIR- National Botanical Research Institute , lucknow by 20-21 December, 2014.
- Received **“Scientist of the year 2014”** by National Environmental Science Academy. New Delhi.
- Received **“Scientist of the year 2016”** by PEARI Foundation , Madurai on 10th Dec 2016.
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Acknowledgments

- ***Dr. P. SINGH, Director, Botanical Survey of India, Kolkata.***
- ***Er. A. K. Pathak, Scientist G***
- ***Dr. P. M. Padhyae, Scientist F & HOO***
- ***Dr. B. K. Sinha, Scientist F BSI, Hqrts, Kolkata.***
- ***Dr. P. Lakshminarasimhan Scientist E & HOO, BSI, Pune.***
- ***Organising Committee of Annual Scientific Meet 2017***



THANK YOU