

# SCIENTIFIC ACHIEVEMENTS

**Devendra Singh**

BSIHQ, Cryptogamic Unit

**Date of Joining**

**28.11.2003 as JRF (AICOPTAX) at NRC**

04.10.2010 as Botanical Assistant at NRC

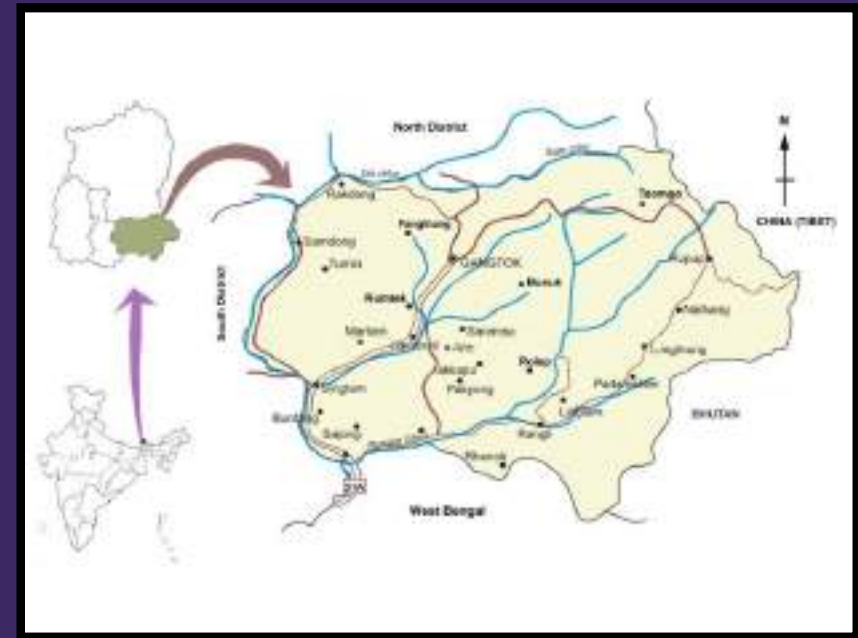
14.06.2012 as Scientist 'C' at BSIHQ, Cryptogamic Unit



# Ph. D. Thesis:

## STUDIES ON THE DIVERSITY IN HEPATICAE AND ANTHOCEROTAE OF EAST SIKKIM

(V.B.S. PURVANCHAL UNIVERSITY, JAUNPUR,  
2010)



	FAMILIES	GENERA	SPECIES/ SUBSP./VAR.
STATUS BEFORE	18	38	74
STATUS AFTER	33 (+15)	61 (+23)	169 (+95)

# ANNUAL ACTION PLAN PROJECTS

## 1. Liverworts and hornworts flora of Sikkim (Excul. East Sikkim) – 2011 to 2014 Jointly with Dr. D.K. Singh

- 1800 specimens
- 196 taxa
- 66 genera
- 29 families
- Supported by 226 figures of camera lucida illustrations and 102 colour and b/w photoplates.



## 2. Revision of the family Metzgeriaceae in India and databasing of liverwort and hornwort specimens of CAL. (2015 to 2018)

- 26 species
- 01 species new to India



## 3. Studies of diversity of Bryophytes of Larsemann Hills, East Antarctica



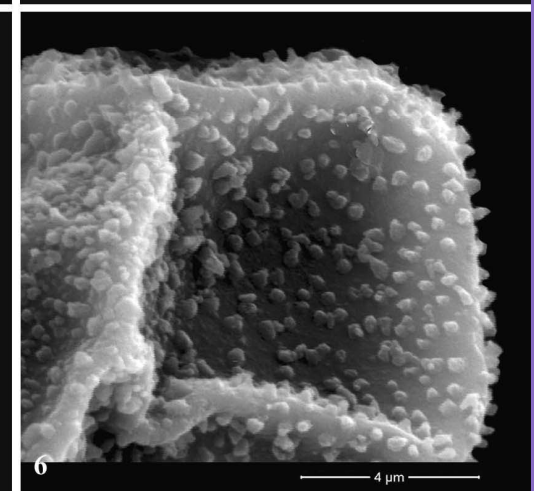
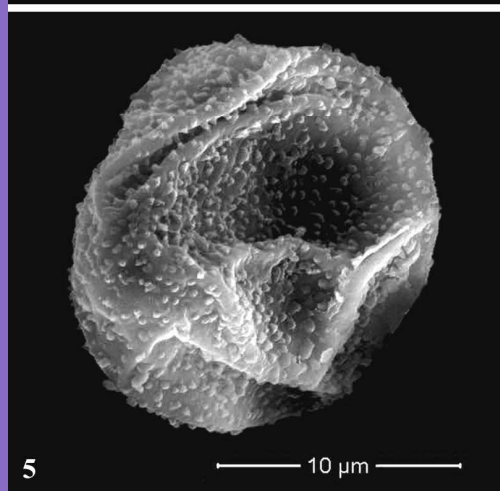
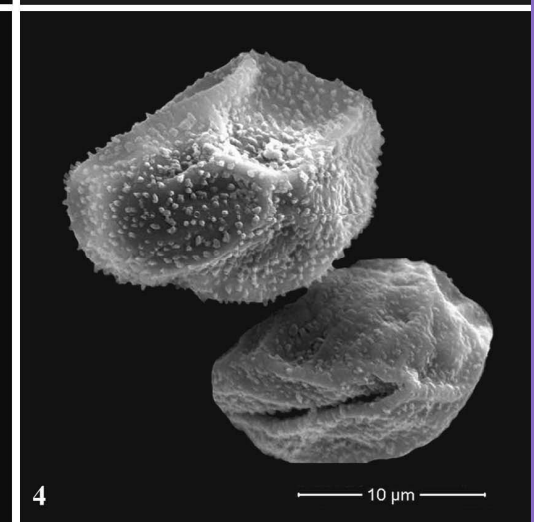
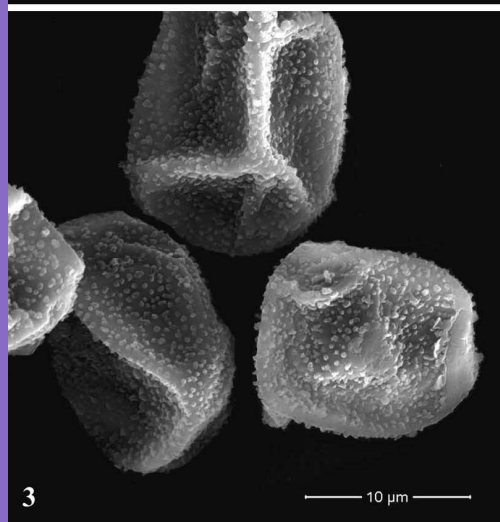
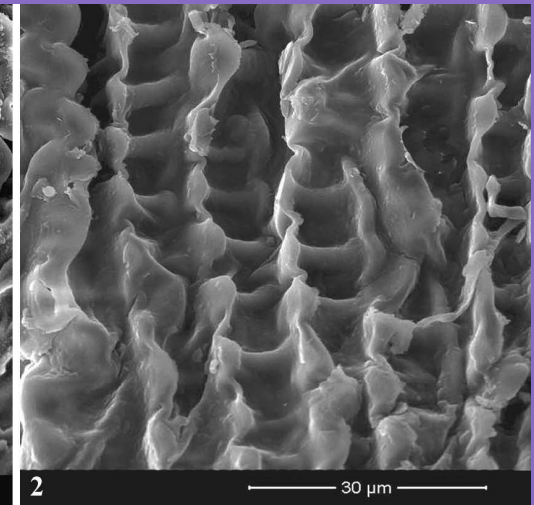
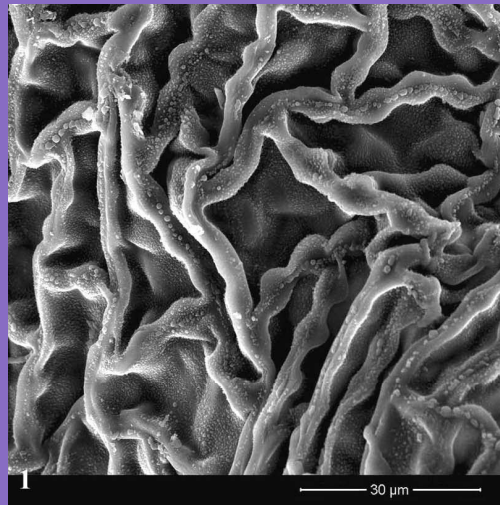
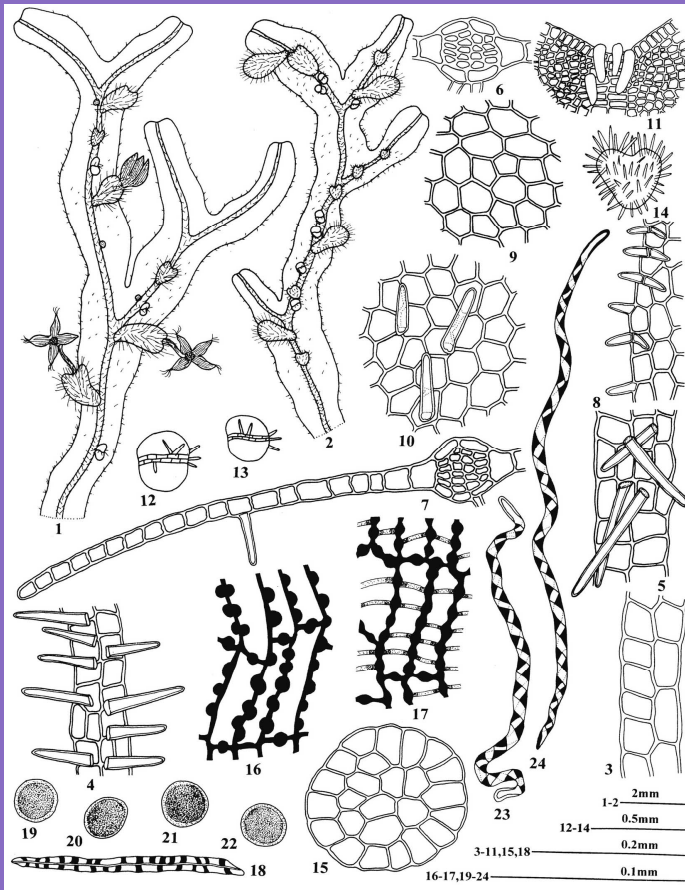
- No. of specimens collected: 169
- No of species identified: 12
- Species new to Antarctica: 01
- Species new to Larsemann Hills: 04

# Project I: Liverworts and hornworts flora of Sikkim

Period: 2011 to 2014



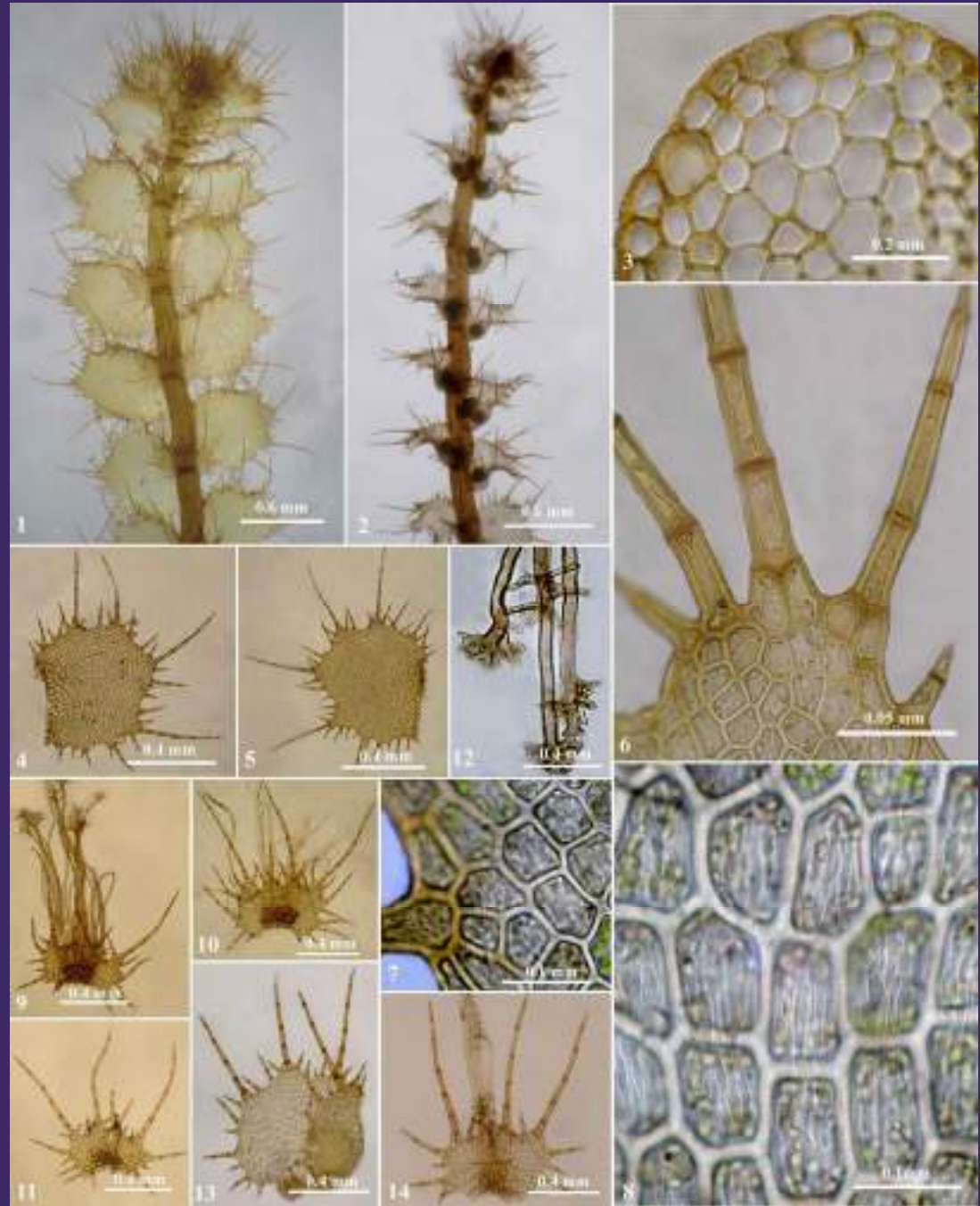
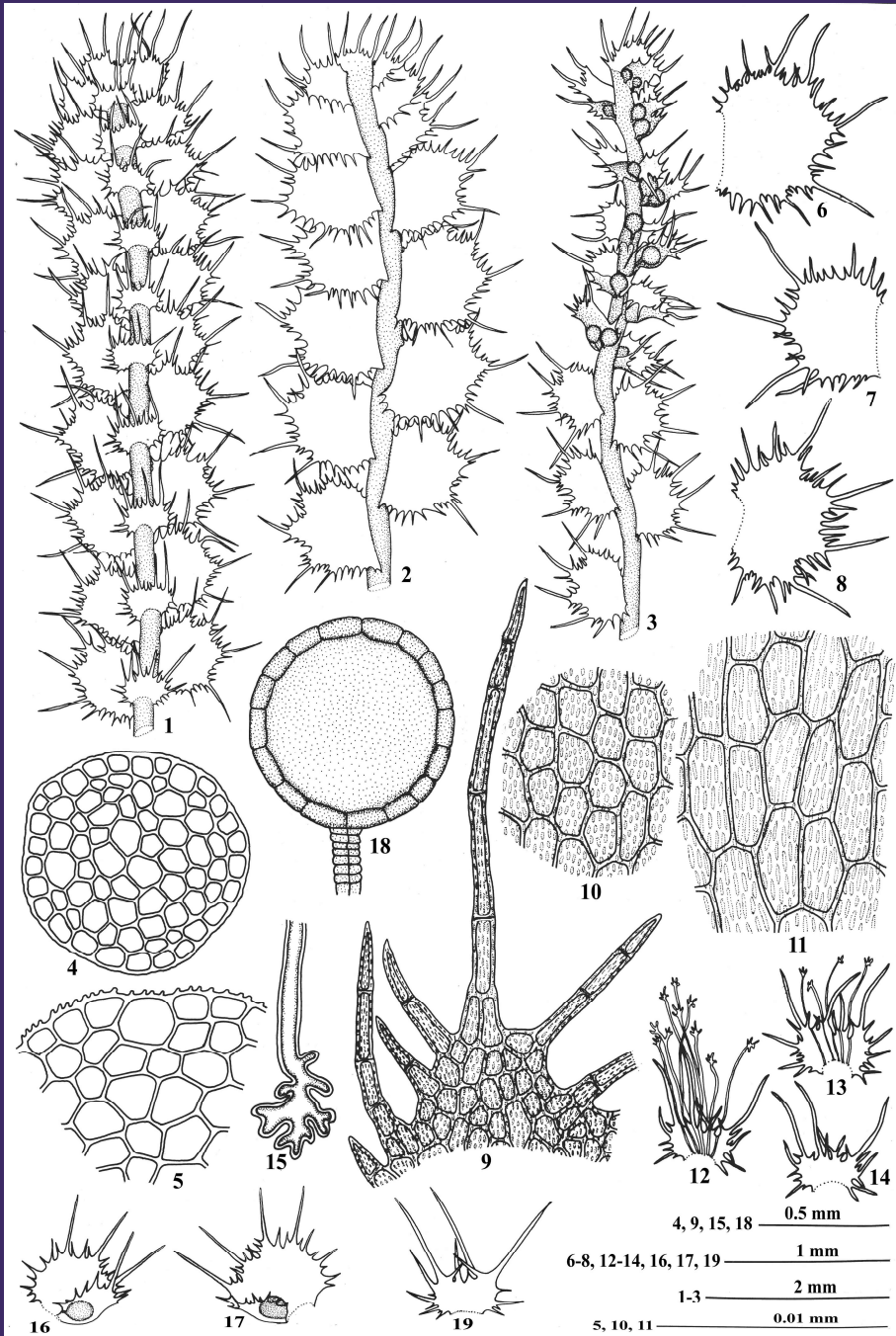
- ❖ No. of taxa: **365** (14 order, 49 families and 95 genera)
- ❖ **396** figures of camera lucida illustrations and **228** colour and b/w figures including SEM.
- ❖ During this studies discovered **01** genus, **07** species as new to science and **36** species as new records for the country.



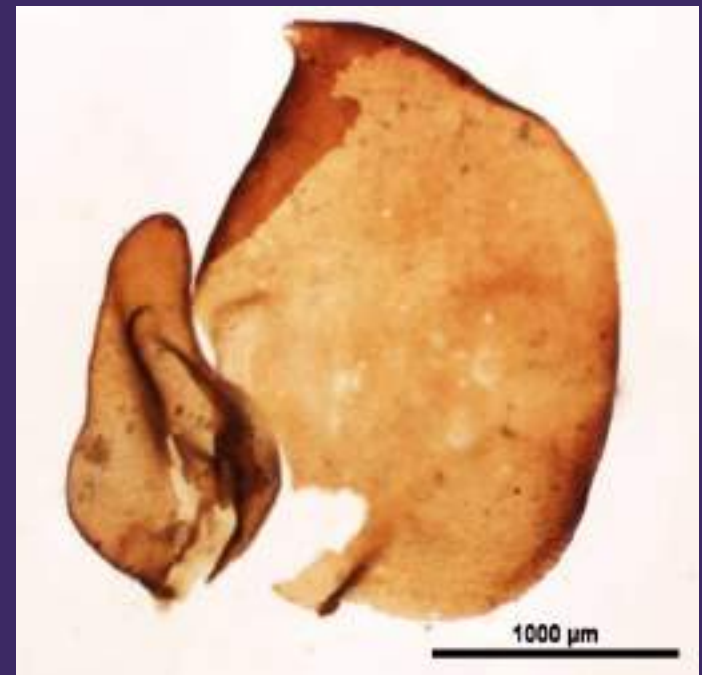
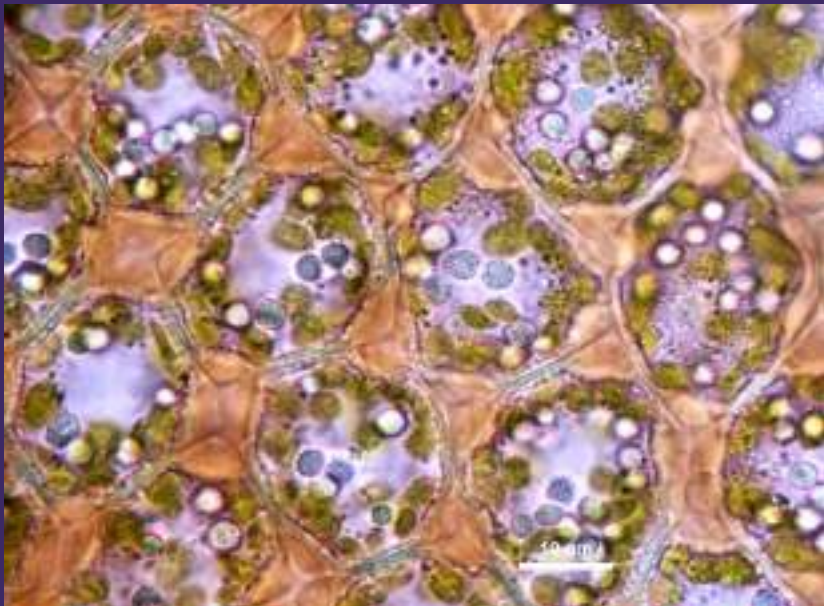
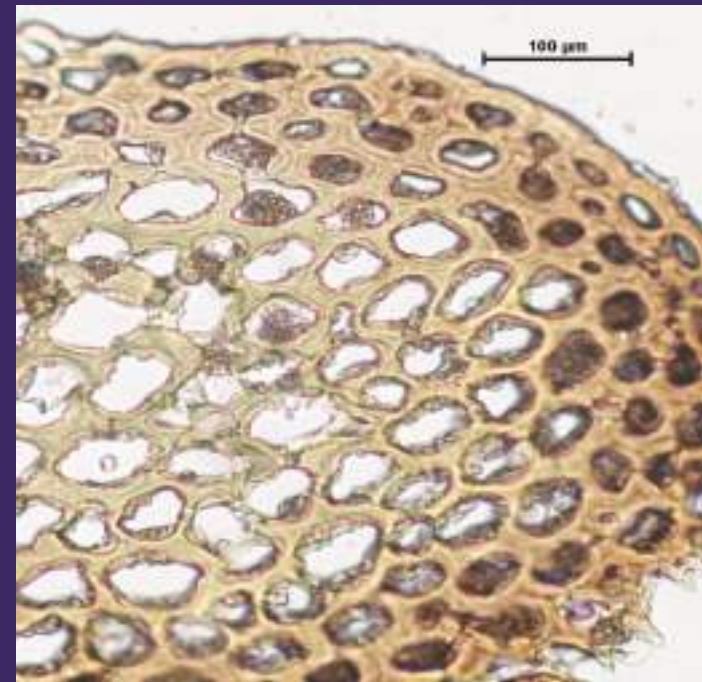
# FIELD PHOTOGRAPHS



# INTERESTING COLLECTIONS

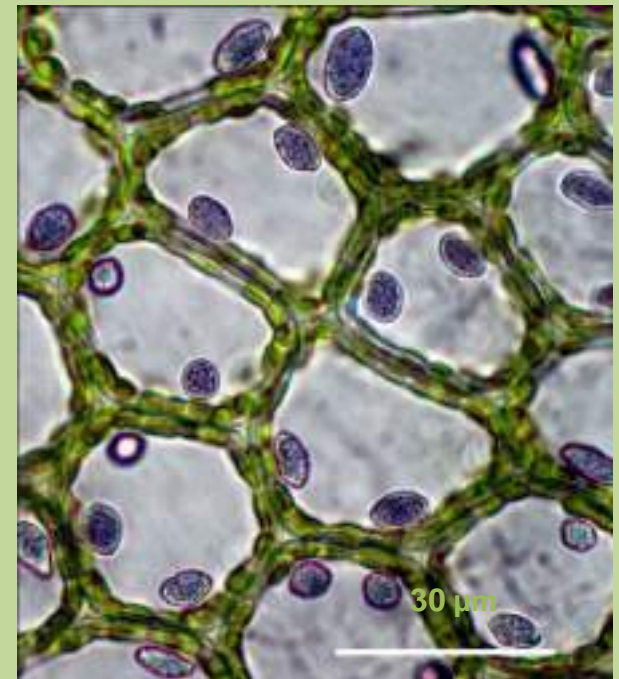


# INTERESTING COLLECTIONS

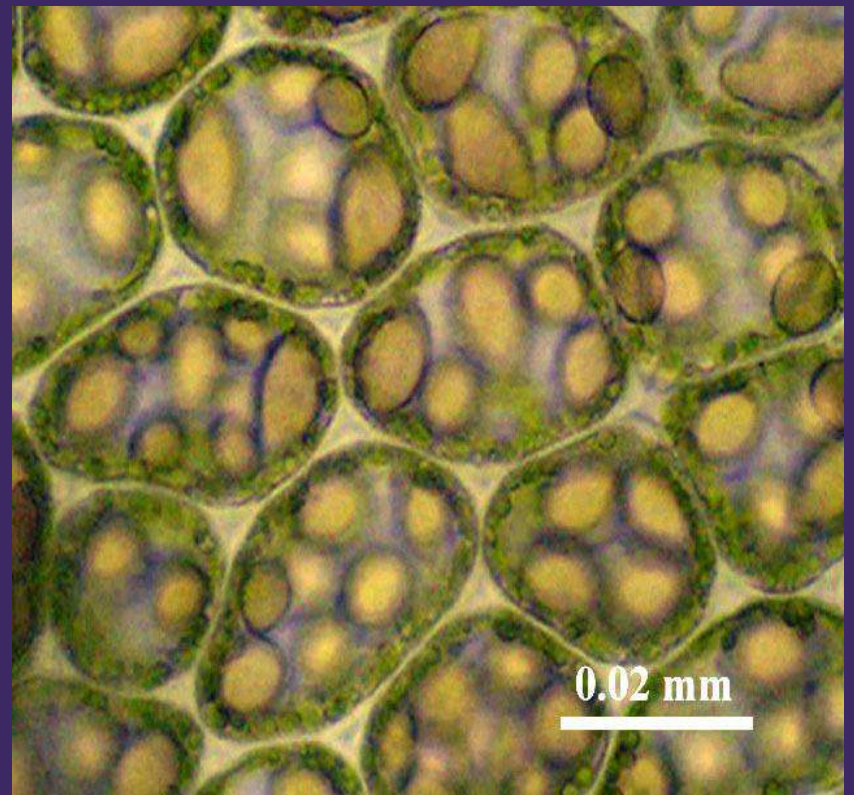
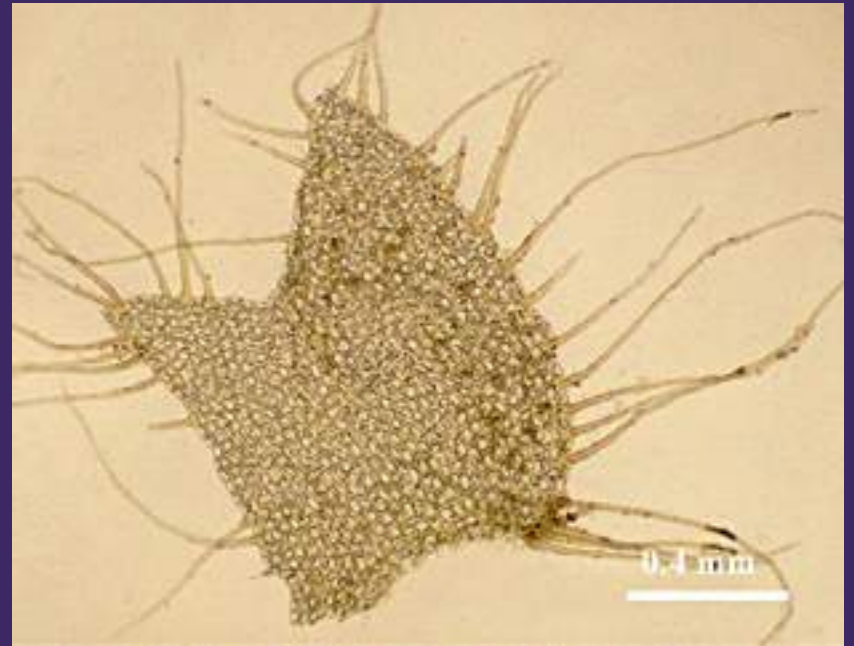




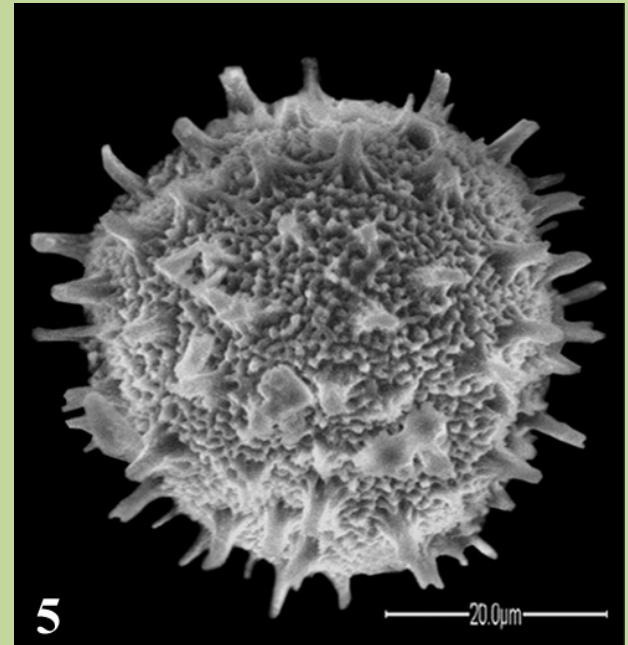
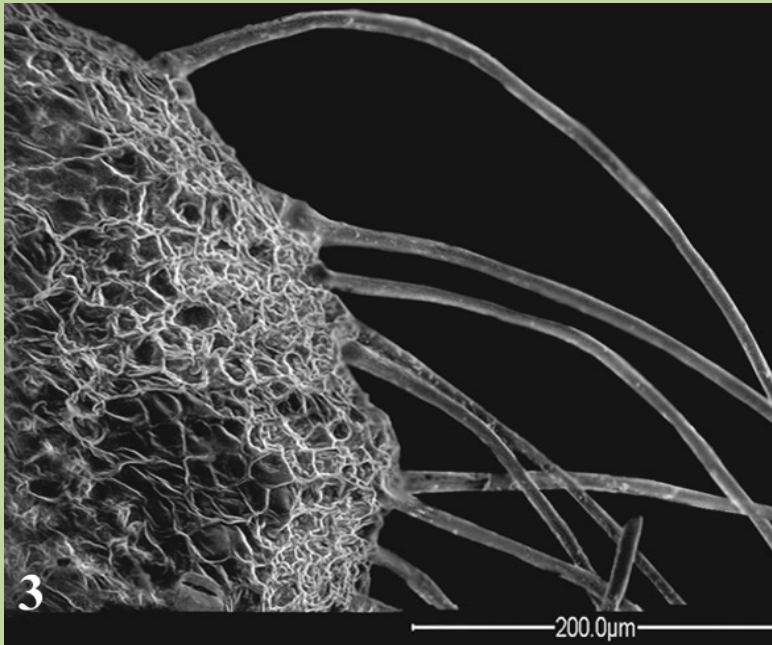
# INTERESTING COLLECTION



**INTERESTING COLLECTION**



# INTERESTING COLLECTION



# SUMMARY OF ACHIEVEMENTS

- Number of Books Published/Written : 03
- Number of research papers published : 56
- New genus discovered : 01
- **New species discovered : 07**
- Species new to India discovered : 36
- New reports for the States
  - Sikkim : 66
  - Manipur : 92
  - West Bengal : 08
  - Andaman & Nicobar Island : 10
  - Kerala : 06
  - Uttarakhand : 02
- Taxa discovered after 100 years : 03
- Participated in XXXV ISEA, collected and identified 169 field no. of Bryophytes

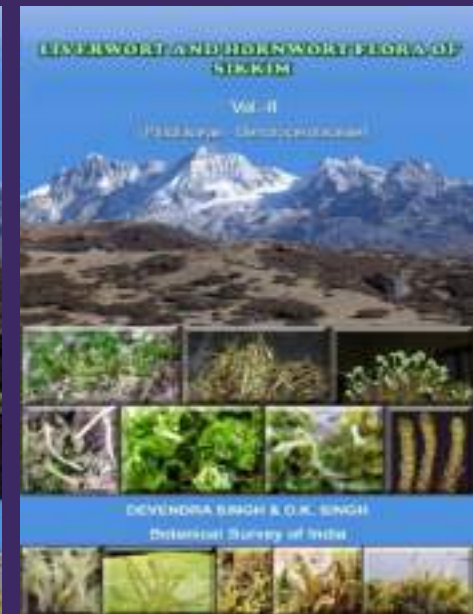
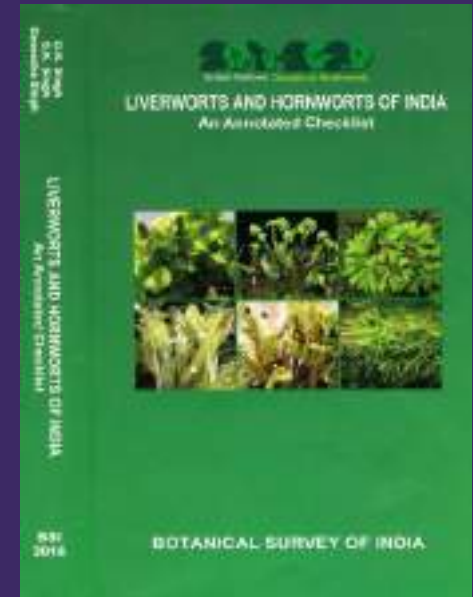
# BOOKS

1. Singh, D.K., S.K. Singh and **D. Singh** 2016. Liverwort and hornwort of India: An annotated Checklist. Botanical Survey of India, Kolkata. Bhubaneswar, pp. 439 (ISBN: 81-8177-088-9).

(930 taxa, 140 genera and 59 families, 200 endemic taxa, 563 taxa recorded from different *in situ* conservation areas and 94 colour photographs is also provided)

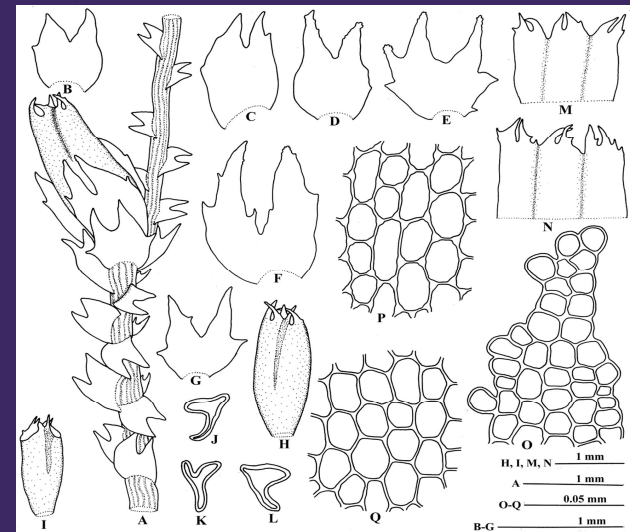
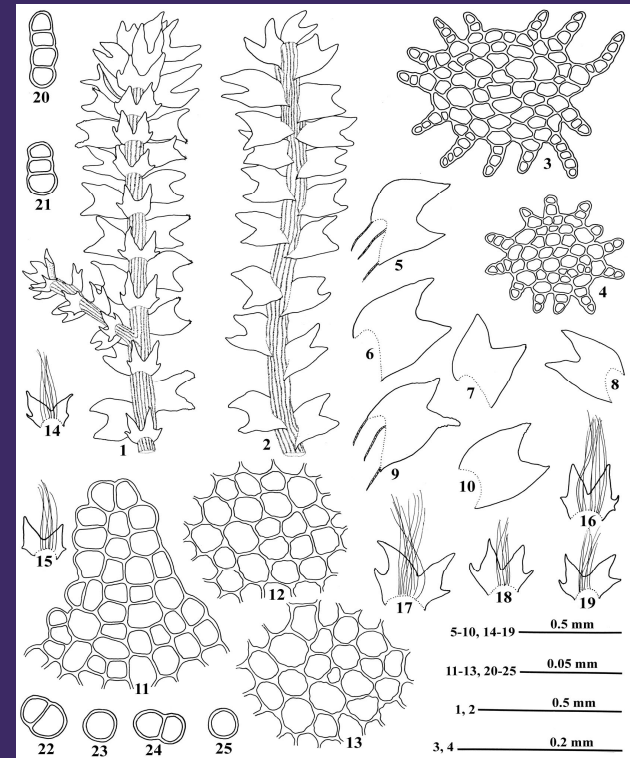
2. Singh, **D.** & D.K. Singh. Liverwort and hornwort flora of Sikkim Vol. I (Haplomitriaceae – Lejeuneaceae). Botanical Survey of India, Kolkata.

3. Singh, **D.** & D.K. Singh. Liverwort and hornwort flora of Sikkim Vol. II (Ptilidiaceae – Dendrocerotaceae). Botanical Survey of India, Kolkata.



(**365** species belonging to **95** genera and **49** families supported by **396** figures of camera lucida illustrations and **228** colour and b/w photoplates)

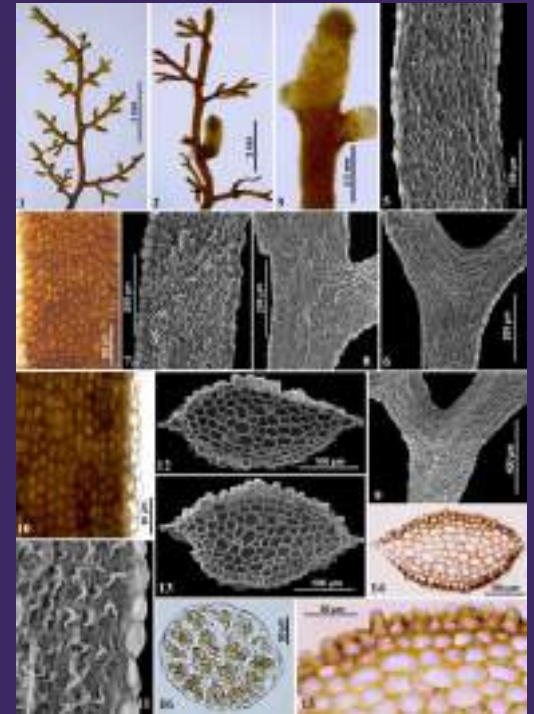
# GENUS NEW TO SCIENCE



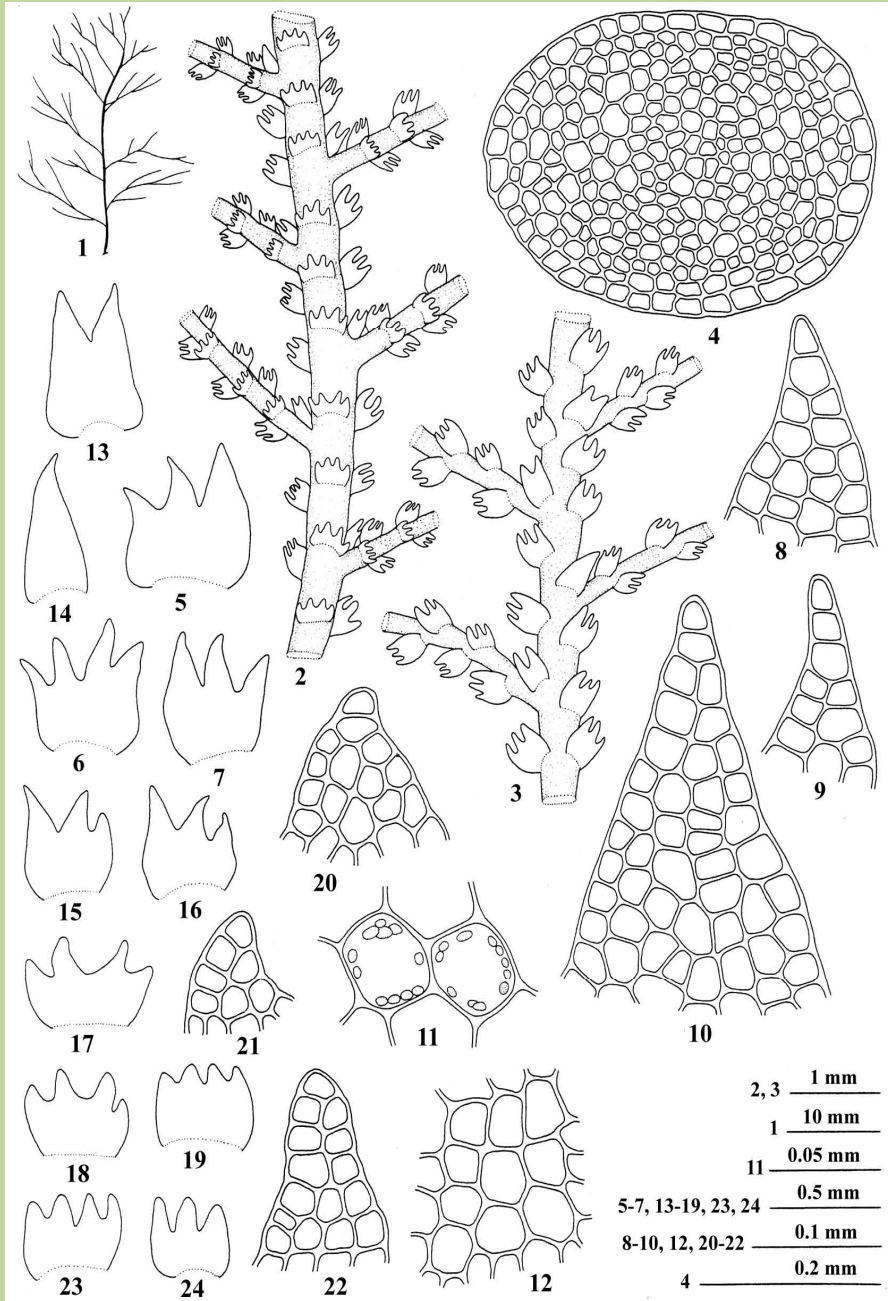
*Udaria lamellicaulis* (Lophocoleaceae)

# SPECIES NEW TO SCIENCE

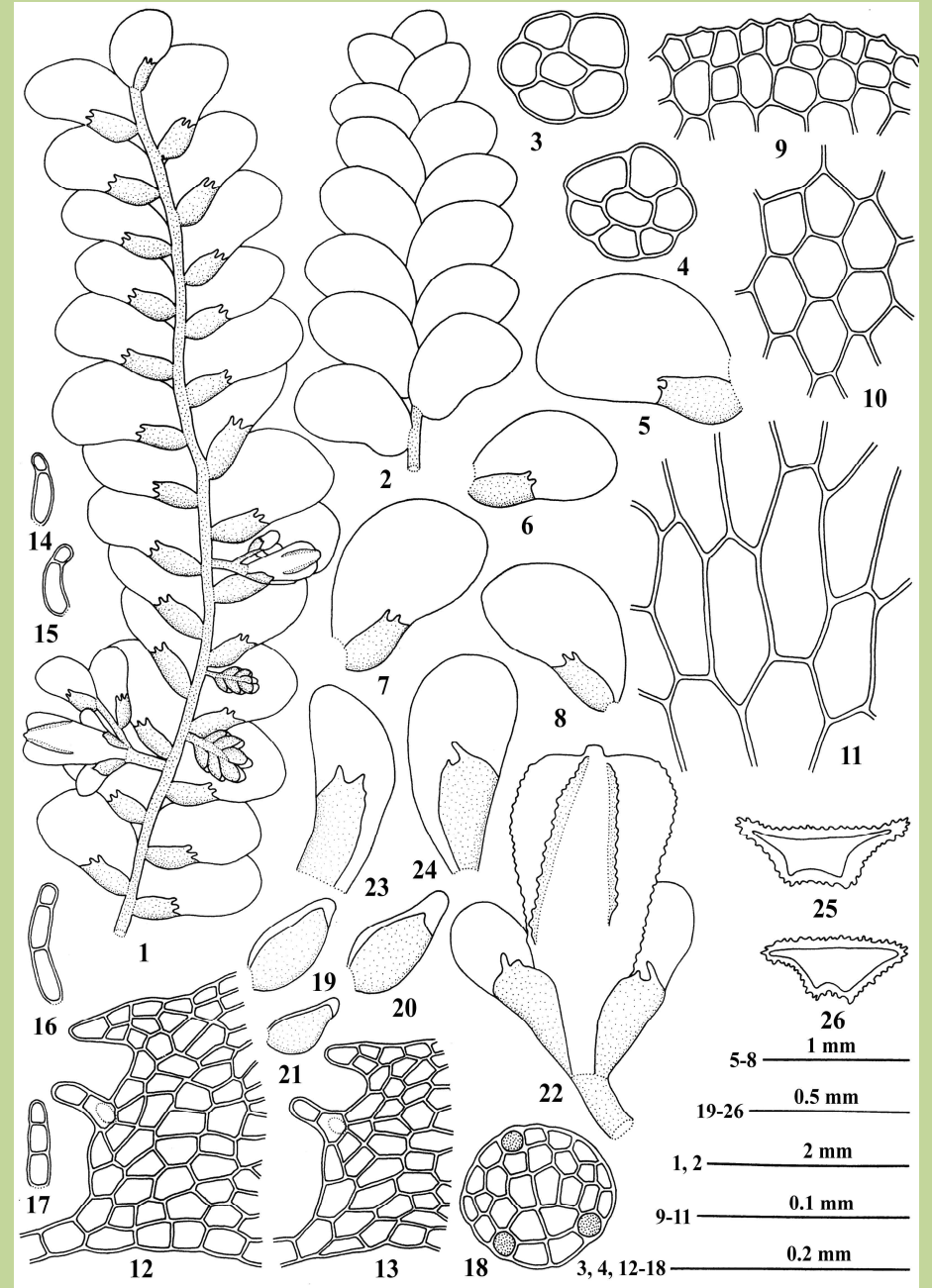
1. *Lepidozia kashyapii* D.Singh & D.K. Singh, *Nova Hedwigia* 94 (1-2): 222. 2012. (IF: 1.195]
2. *Cololejeunea tixieriana* M.Dey, D.Singh & D.K.Singh, *Taiwania* 53: 258. 2008.
3. *Lejeunea kashyapii* M.Dey, D.K.Singh & D.Singh, *J. Bryol.* 30: 126. 2008. (IF: 1.325]
4. *Lejeunea mehrana* M.Dey, D.K.Singh & D.Singh, *J. Bryol.* 30: 128. 2008. (IF: 1.325]
5. *Notoscyphus darjeelingensis* Udar & A.Kumar var. *sikkimensis* D.Singh, D.K.Singh & Ad. Kumar, *Indian J. Forest.* 33: 93. 2010.
6. *Riccardia lachungensis* D. Singh & D.K.Singh, *Taiwania* 62(1): 36. 2017
7. *Riccardia udarii* D. Singh & D.K.Singh, *Taiwania* 62(1): 39. 2017.



# SPECIES NEW TO SCIENCE



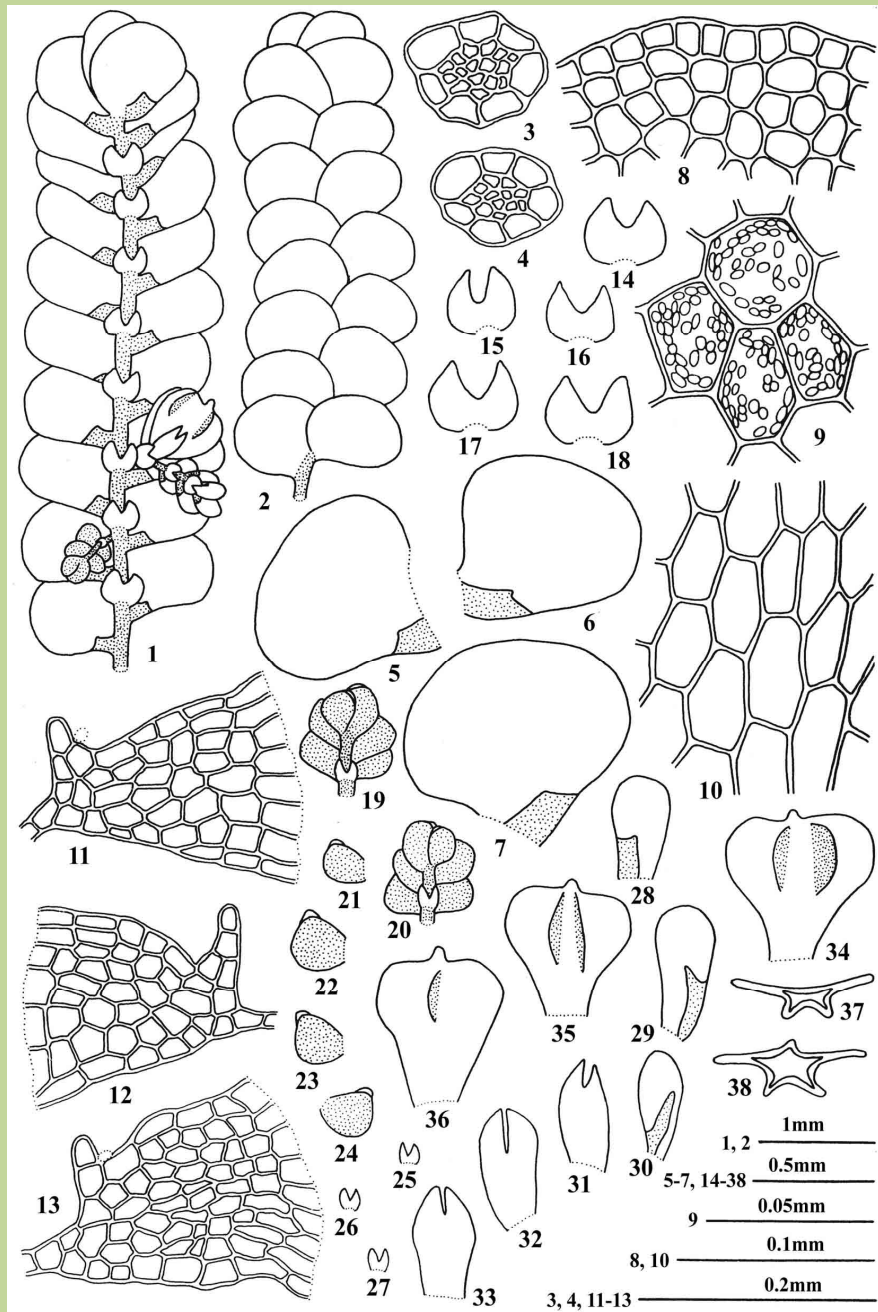
*Lepidozia kashyapii*



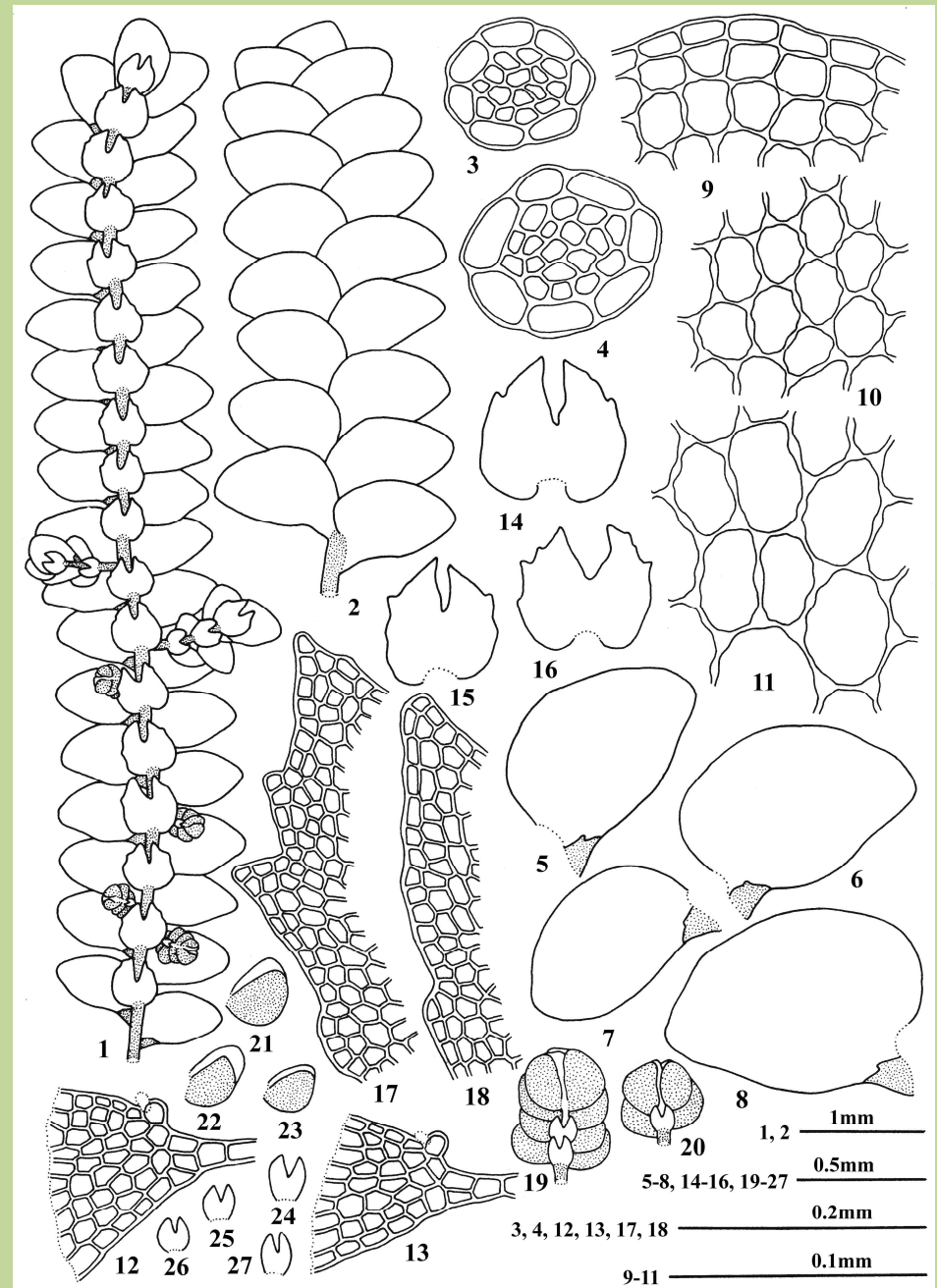
*Cololejeunea tixieriana*



# SPECIES NEW TO SCIENCE

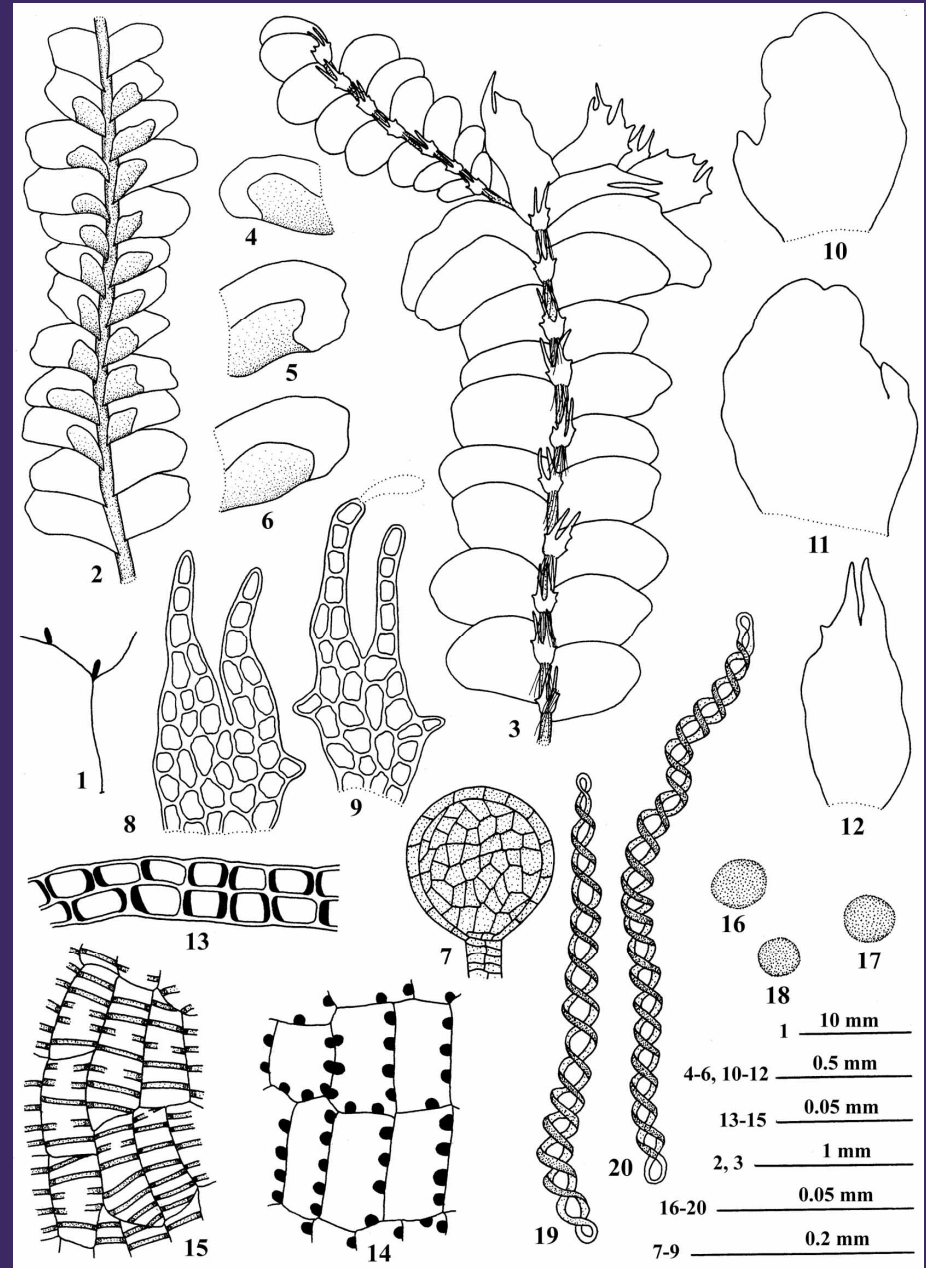
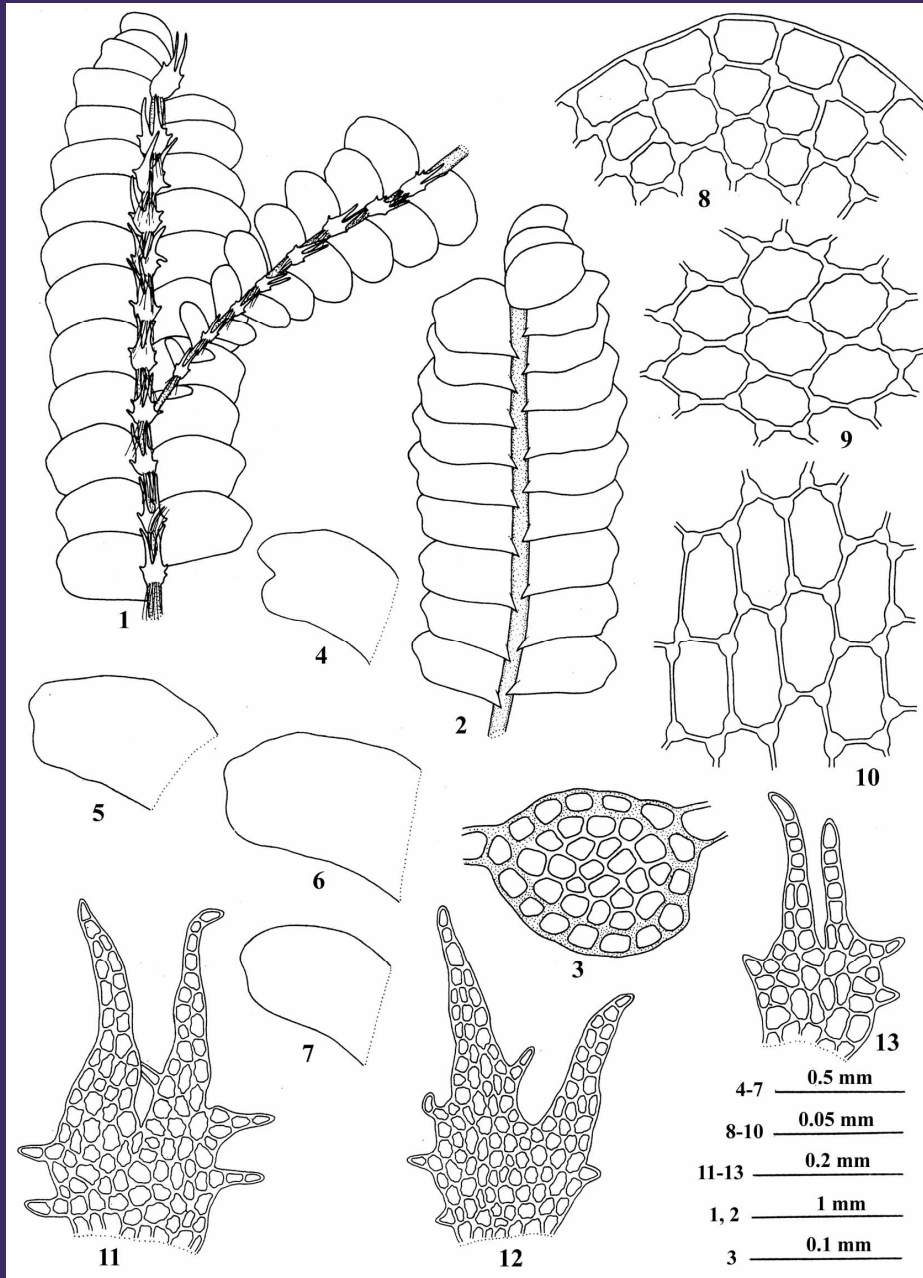


*Lejeunea kashyapii*



*Lejeunea mehrana*

# SPECIES NEW TO SCIENCE



*Notoscyphus darjeelingensis* var. *sikkimensis*

# SPECIES NEW TO INDIA

<i>Acrolejeunea pusilla</i>	<i>Lejeunea sordida</i>
<i>Bazzania angustistipula</i>	<i>Leptolejeunea apiculata</i>
<i>Cheilolejeunea osumiensis</i>	<i>Metzgeria furcata</i> var. <i>ulvula</i>
<i>Cololejeunea grosepapillosa</i>	<i>Metzgeria temperata</i>
<i>Cololejeunea macounii</i>	<i>Metzgeria violacea</i>
<i>Cololejeunea ocellata</i>	<i>Plagiochila biondiana</i>
<i>Cololejeunea pluridentata</i>	<i>Plagiochila hyalodermica</i>
<i>Cololejeunea subocelloides</i>	<i>Pseudolepicolea fryei</i>
<i>Drepanolejeunea laciniata</i>	<i>Ptilidium pulcherrimum</i>
<i>Drepanolejeunea longii</i>	<i>Radula nymanii</i>
<i>Drepanolejeunea siamensis</i>	<i>Radula retroflexa</i>
<i>Drepanolejeunea tibetana</i>	<i>Riccardia elata</i>
<i>Herbertus armitanus</i>	<i>Riccardia palmata</i>
<i>Herbertus longispinus</i>	<i>Riccardia tamariscina</i>
<i>Isotachis japonica</i>	<i>Solenostoma baueri</i>
<i>Jubula pennsylvanica</i>	<i>Solenostoma fusiforme</i>
<i>Lejeunea eifrigii</i>	<i>Solenostoma vulcanicola</i>
<i>Lejeunea papilionacea</i>	<i>Thysananthus fruticosus</i>



# Project II: REVISION OF FAMILY METZGERIACEAE IN INDIA AND DATA-BASING LIVERWORTS AND HORNWORTS SPECIMENS OF CAL

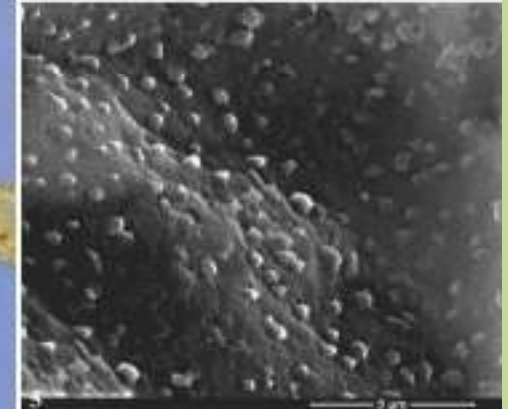
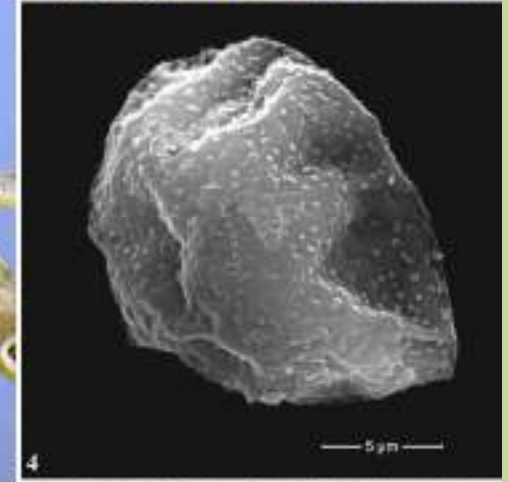
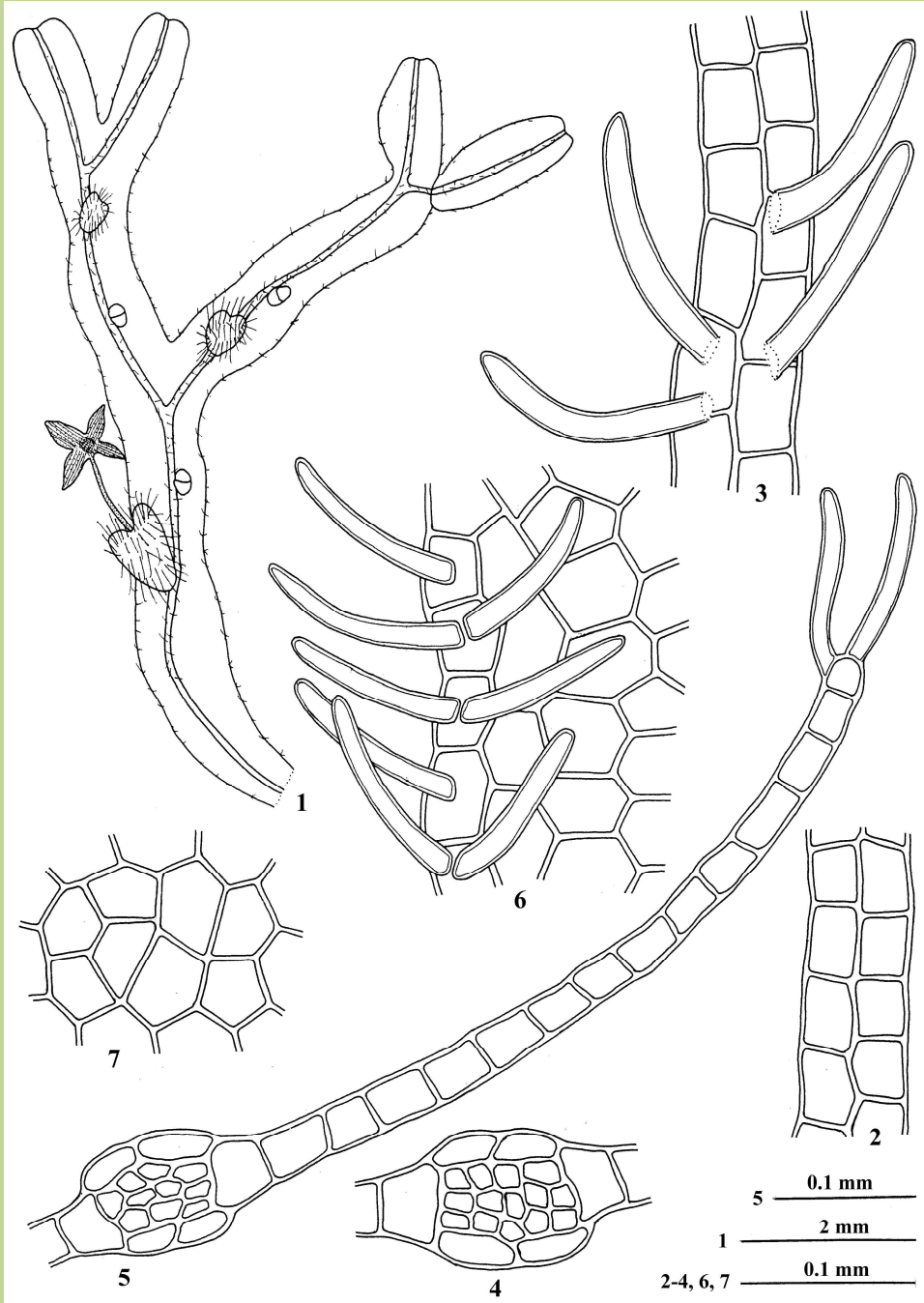
Period: 2015 to 2018



- Number of specimens identified: 168
- No. of species illustrated: 18
- Specimens studied from different National and International herbaria: CAL, BSD, LWU, LWG, G, NICH, JE, NY, E.
- Species synonymized: 03
- Species excluded: 01
- Species recorded new to India: 01



# *Metzgeria lindbergii* Schiffn.

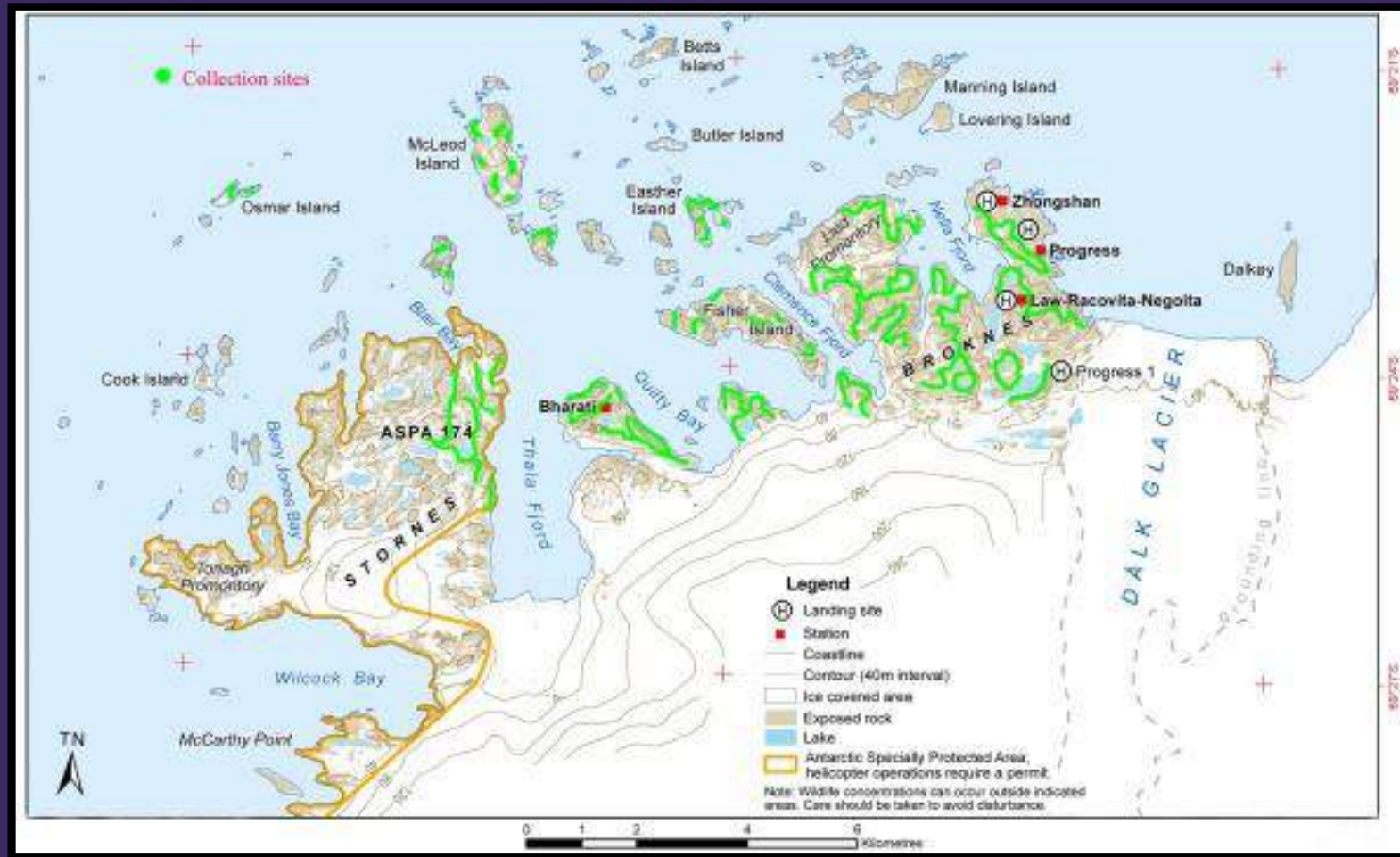


# Data base of Liverworts and Hornworts specimens of CAL

Area	No. of specimens
Sikkim	1238
Himachal Pradesh	336
Arunachal Pradesh	66
Manipur	316
Andaman & Nicobar Islands	28
Old collections (King's, Prain, Kurz, Gollan and Watt etc)	180
<b>Total</b>	<b>2164</b>



# Project III: Studies of diversity of Bryophytes of Larsemann Hills, East Antarctica



- $60^{\circ}20' - 69^{\circ}30'S$  and  $75^{\circ}55' - 76^{\circ}30'E$
- $50 \text{ km}^2$ .
- South-eastern coast of Prydz Bay, Princess Elizabeth land, East Antarctica, bordered by two main Peninsulas, Broknes and Stornes Peninsula and several islands.

# XXXV INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA





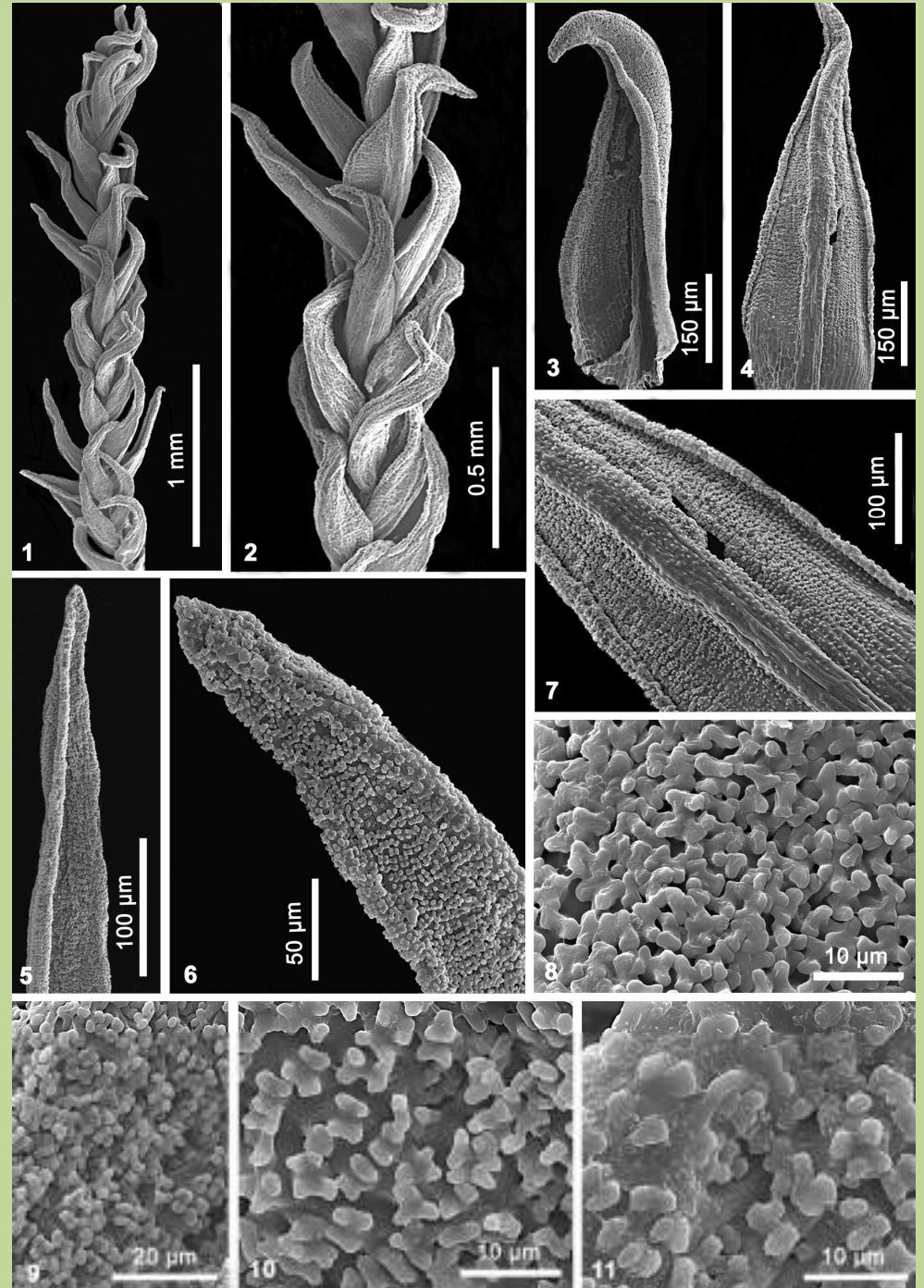
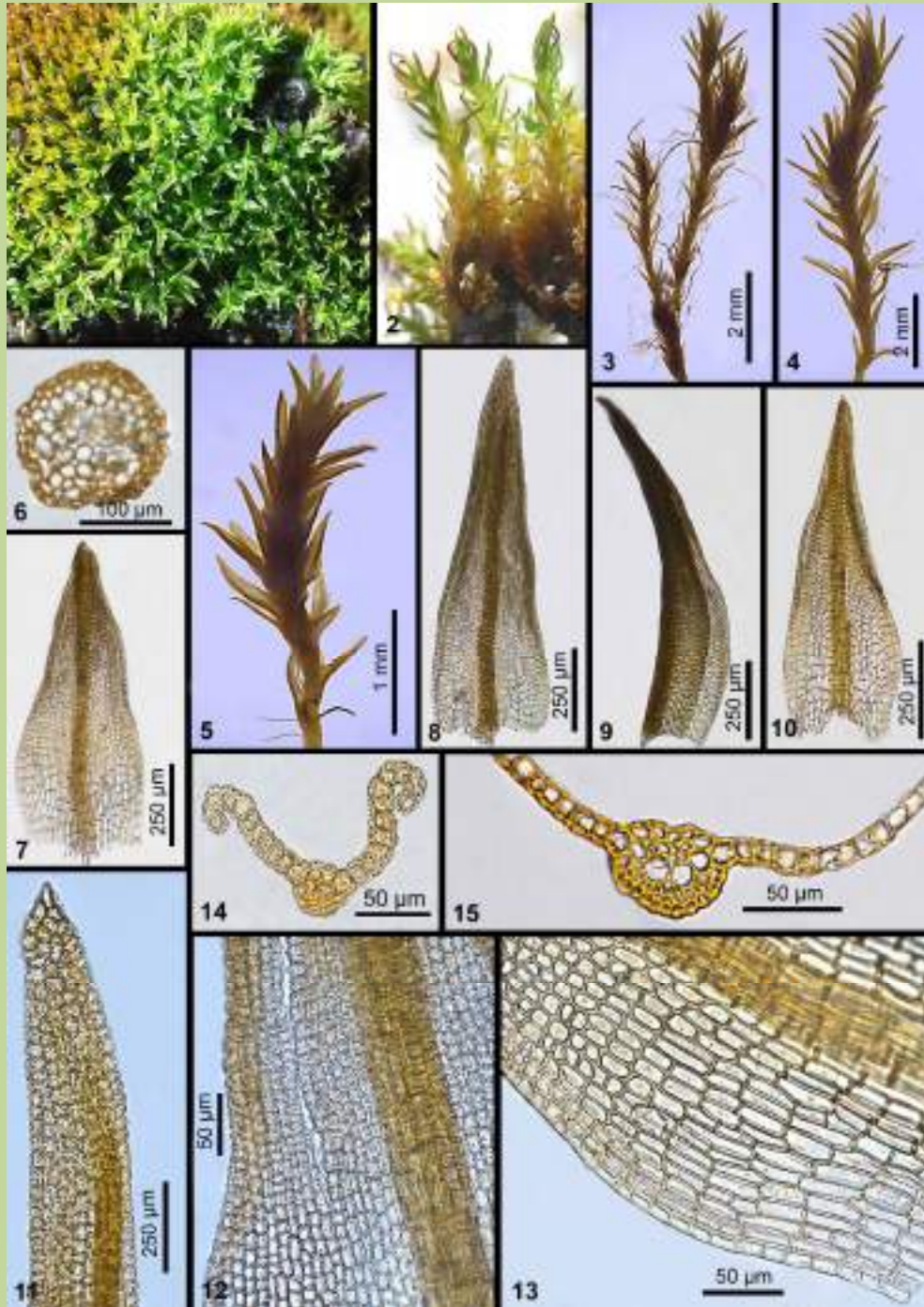
# XXXV INDIAN SCIENTIFIC EXPEDITION TO ANTARCTICA



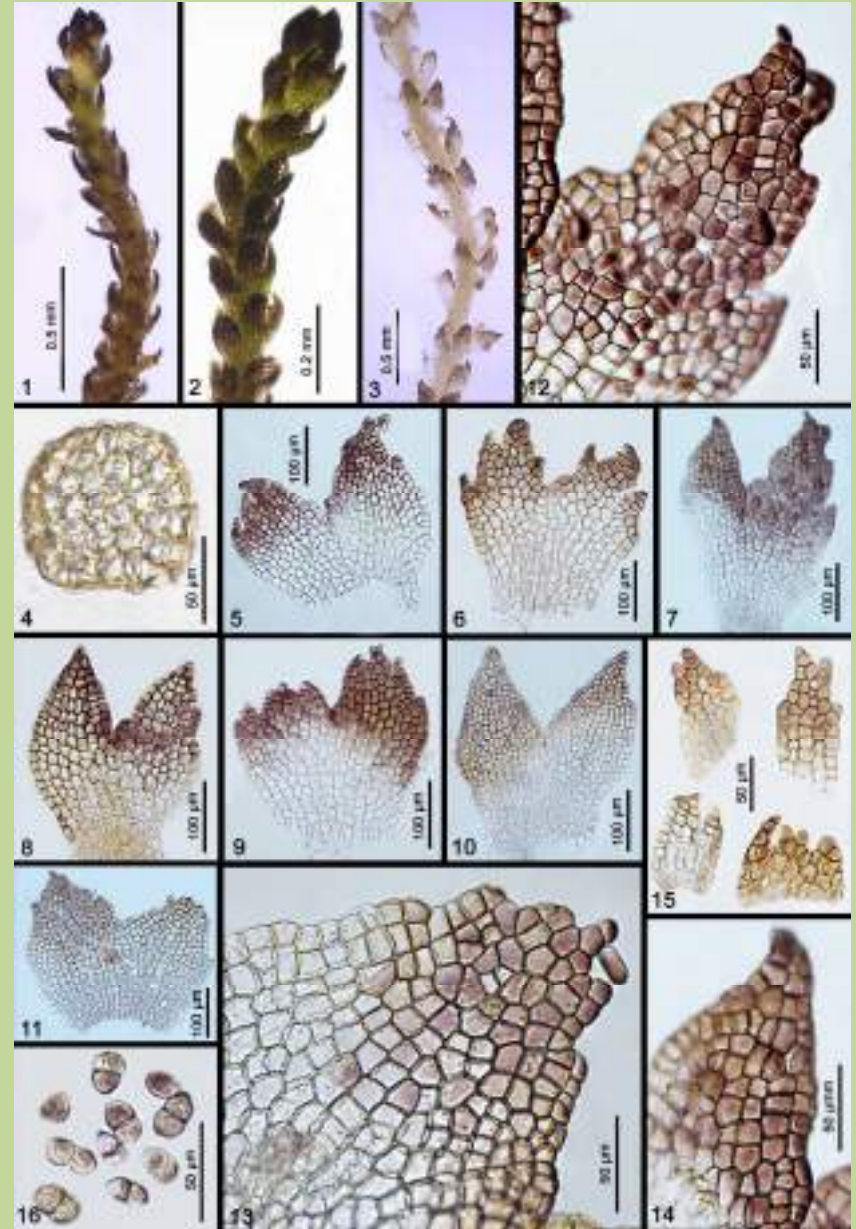
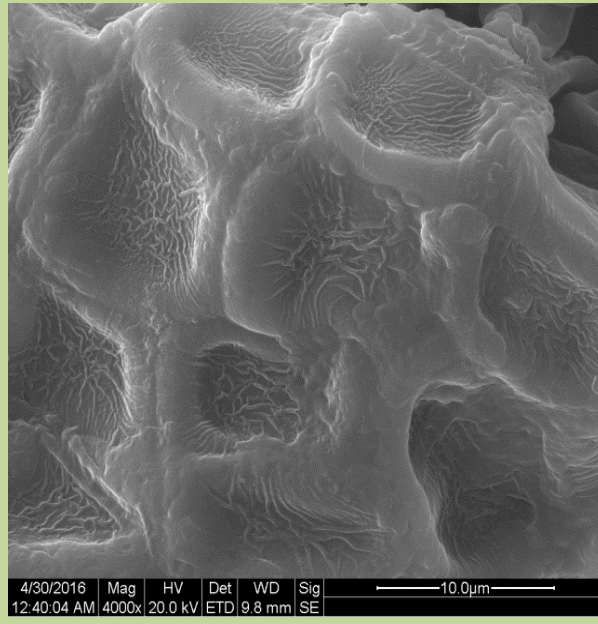
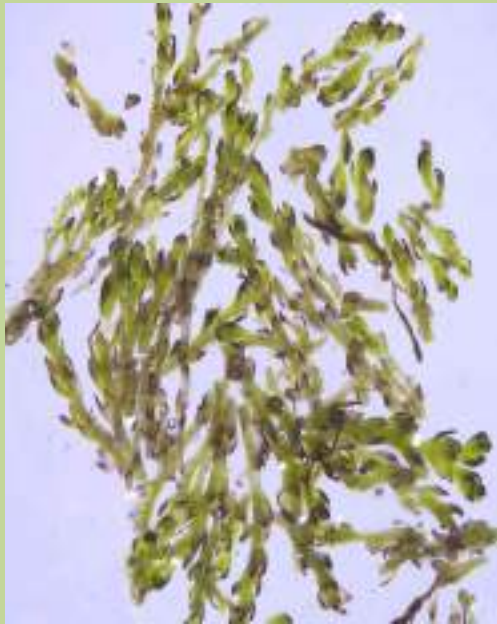
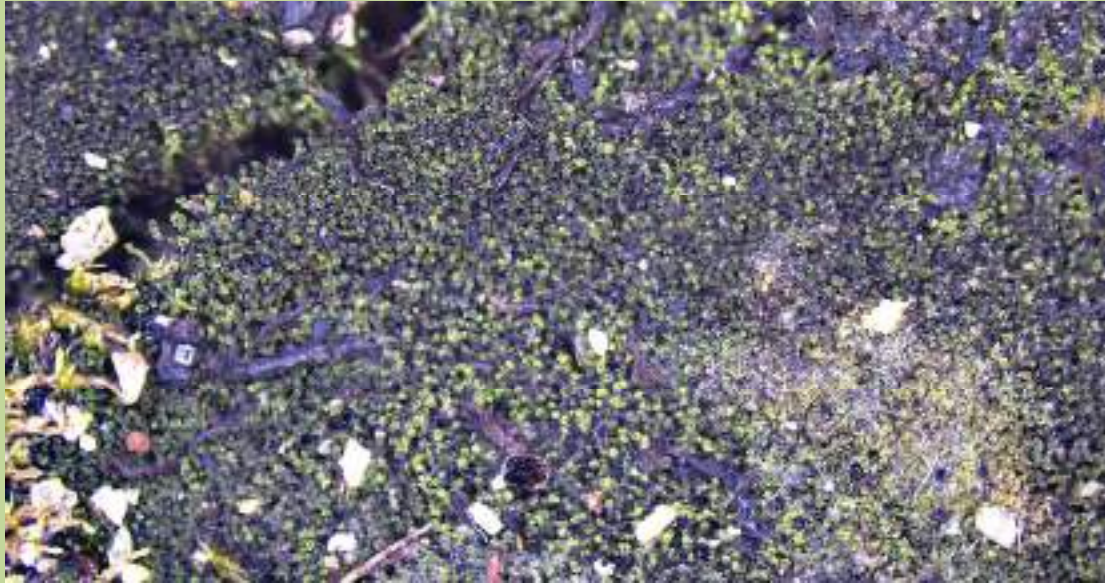
# GLIMPSES OF BRYOPHYTES OF LARSEMANN HILLS, EAST ANTARCTICA



# *Bryoerythrophyllum recurvirostrum*

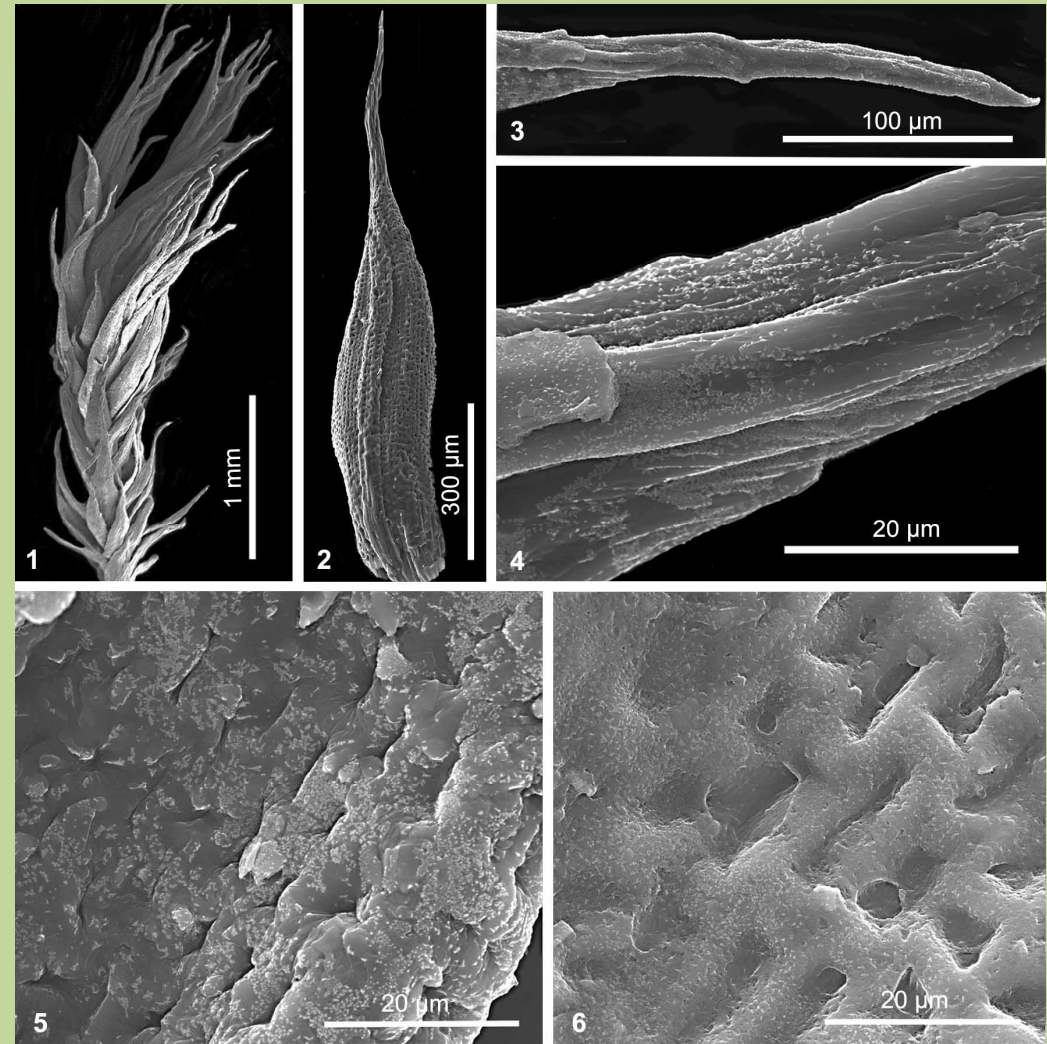
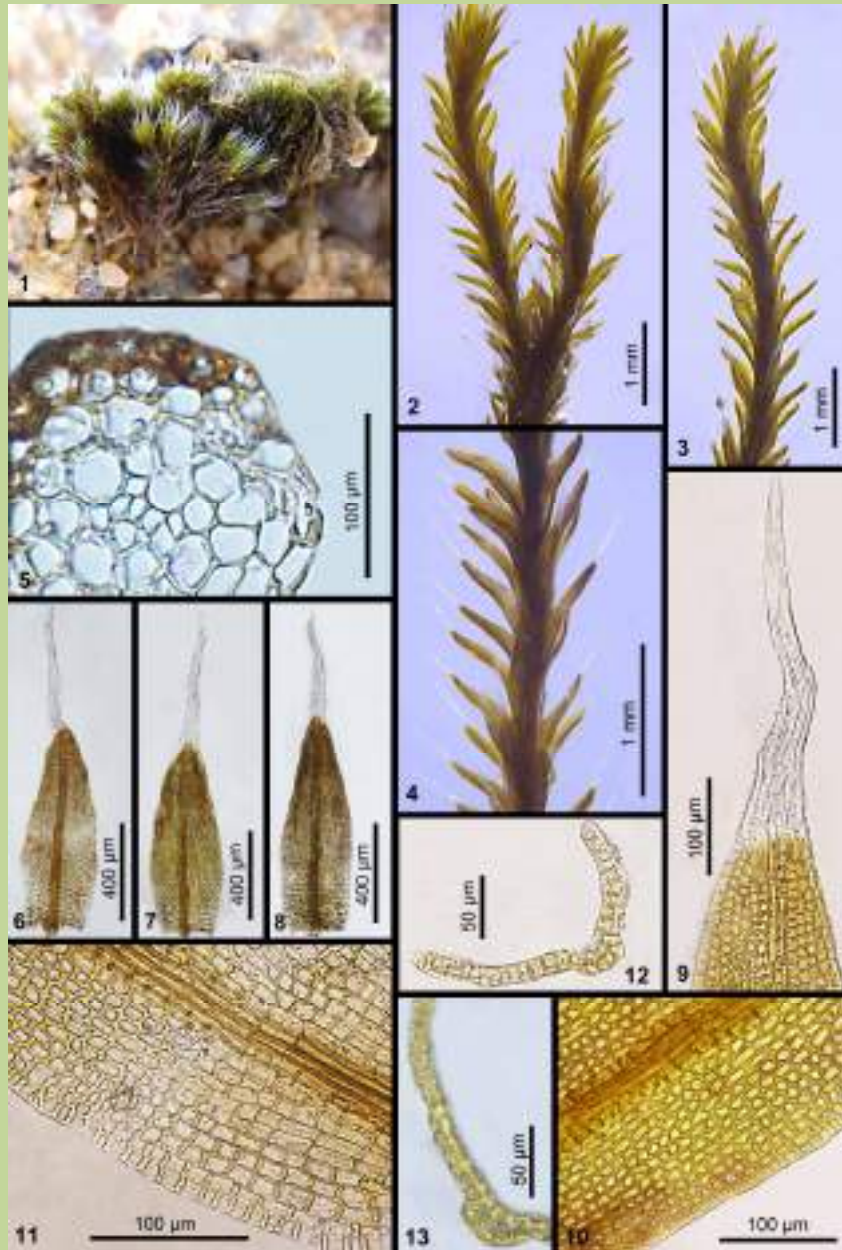


# INTERESTING FINDINGS IN ANTARCTICA



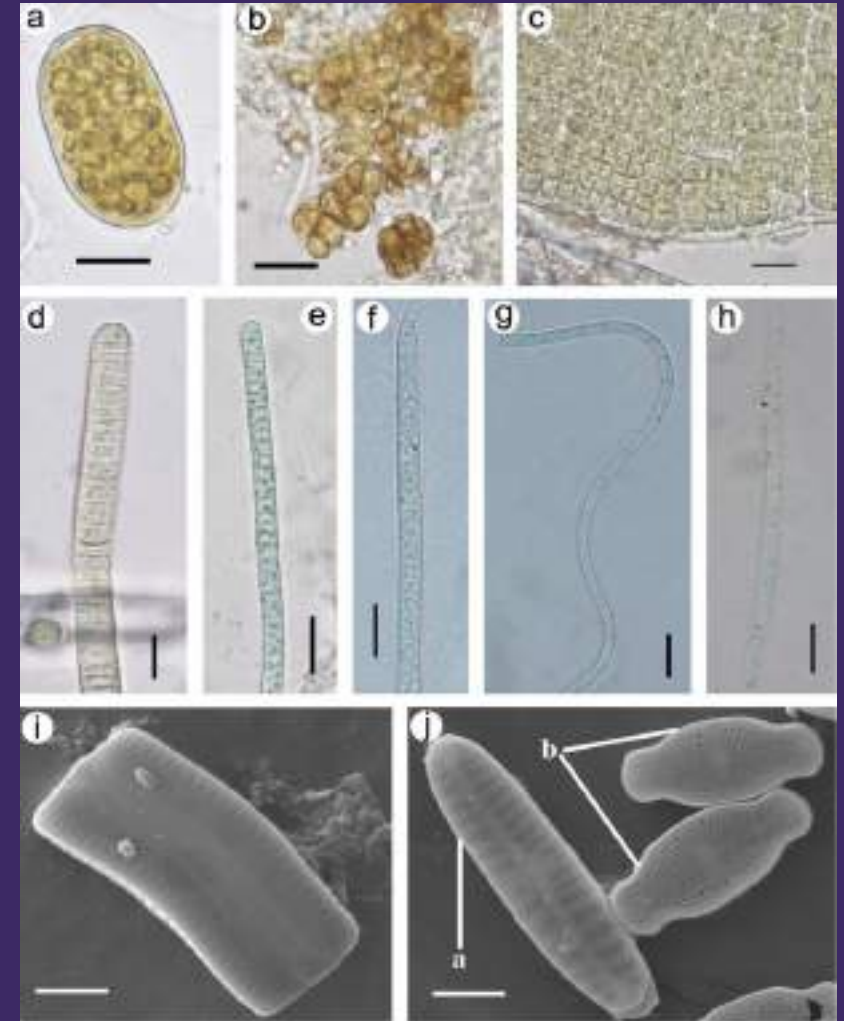
*Cephaloziella divaricata* (new to Antarctica)

# INTERESTING FINDINGS IN ANTARCTICA



*Giembelia longirostris* (new to Larsemann Hills)

# BONE ALGAE



a. *Nostoc commune*, b. *Gloeocapsopsis aurea*, c. *Prasiola crispa*, d. *Oscillatoria sancta*, e. *O. simplissima*, f. *Microcoleus autumnalis*, g. *Leptolyngbya glacialis*, h. *Coleofasciculus chthonoplastes*, i. *Achnantheidium minutissimum*, j. *Luticola muticopsis* (a) *Pinnularia borealis* (b)  
 (Scale bar: a–h, j. 20 µm; i. 2 µm)

# MARINE ALGAE FROM EASTER ISLAND, LH, EAST ANTARCTICA



*Callophyllis variegata*

*Durvillaea antarctica*





# FUTURE PLAN LAI ANKE LGVM

- Bryoflora (Liverworts, Hornworts and Mosses) of Jharkhand



Thanks