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## A Compendium to Marchantiophyta and Anthocerotophyta of Assam, India

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**Abstract.** A catalogue of 107 species of liverworts (Marchantiophyta) and 8 species of hornworts (Anthocerotophyta), recorded from Assam, India is presented. This includes three new records for India viz., *Cololejeunea denticulata* (Horik.) S. Hatt., *C. inflata* Steph., *Plagiochila furcifolia* Mitt., and three species viz., *Cololejeunea desciscens* Steph. *Colura ari* (Steph.) Steph., *Lopholejeunea eulopha* (Taylor) Schiffn. new to mainland. Twelve species are new record for Eastern Himalayan bryo-geographical territory, 20 species as new to Assam and seven species are endemic to Indian regions.

### Introduction

Marchantiophyta and Anthocerotophyta traditionally known as liverworts and hornworts (Bryophytes) are integral part of any ecosystems and recognized as land dwellers in plant kingdom. They are first colonizer of terrestrial habits after Algae and come after Lichens in plant succession. The taxonomic studies on these groups of plant are far from complete particularly in Indian region.

Assam lies in rain shadow of Himalayan ranges and forms part of East Himalayan Bryo-geographical Territory. As far as studies on Marchantiophyta and Anthocerotophyta of the region are concerned, it was initiated by William Griffith in first half of the nineteenth century who's work was published in the form of posthumous papers finally culminated into '*Notulae ad Plantas Asiaticas*' (Griffith, 1849a) wherein he reported many species of cryptogams from erstwhile undivided Assam including ca.18 liverworts of present day Assam. After a long gap of over a century, Kachroo (1951-54) explored certain areas in the region and reported 24 species from Assam. A decade later, Robinson (1964) explored the Upper Assam and reported about 15 species of liverworts and hornworts. Thereafter, no serious systematic bryo-floristic studies were made for this state except few scanty reports adverted in revision and monographs. Almost four decades later, the bryological studies popped up again on bryophytes of Bramhaputra Valley of the state (Barukial et al., 2002; Barukial & Gogoi, 2003; Barukial, 2011). Recently, a paper on Liverwort and Hornwort of Borail Wild Life Sanctuary of Barak valley containing 15 new additions to

Assam was published by the authors (Barbhuiya & Singh, 2012). There are many areas of the state still bryologically unexplored and needs thorough investigations.

The present study attempts to provide new and additional data on the diversity and distribution of liverworts and hornworts growing in the state based on the collections made by the authors and their colleagues and deposited in the herbarium of the Botanical Survey of India, Eastern Regional Centre, Shillong (ASSAM). A total of 115 species are recorded including the previous published records. This includes three new records for India viz., *Cololejeunea denticulata* (Horik.) S. Hatt., *C. inflata* Steph., *Plagiochila furcifolia* Mitt., and three species viz., *Cololejeunea desciscens* Steph., *Colura ari* (Steph.) Steph., *Lopholejeunea eulopha* (Taylor) Schiffn. new to mainland (earlier reported in India from Andaman & Nicobar Islands). Twelve species are new record for Eastern Himalayan bryo-geographical territory, i.e. *Cheilolejeunea longiloba* (Steph. ex G. Hoffm.) J.J.Engel & B.C. Tan, *Cololejeunea desciscens* Steph., *C. foliicola* S.C. Srivast. & G. Srivast., *C. furcibulata* (Berrie & E.W. Jones) R.M. Schust., *C. gottschei* (Steph.) Mizut., *C. kashyapii* Udar & G. Srivast., *C. mizutianiana* Udar & G. Srivast., *Colura ari* (Steph.) Steph., *Lopholejeunea eulopha* (Taylor) Schiffn., *L. javanica* (Nees) Schiffn., *Plagiochila bantamensis* (Reinw., Blume & Nees) Mont., *P. fordiana* Steph. and 20 species new to Assam as annotated in the text. Seven species viz., *Archilejeunea minutilobula* Udar & U.S. Awasthi, *Cololejeunea foliicola* S.C. Srivast. & G. Srivast., *Cololejeunea kashyapii* Udar & G. Srivast., *Cololejeunea mizutianiana* Udar & G. Srivast., *Cololejeunea siangensis* G. Asthana & S.C. Srivast., *Heteroscyphus palniensis* A. Srivast. & S.C. Srivast. and *Folioceros paliformis* D.K.Singh are endemic to Indian regions.

The species are arranged alphabetically in their respective phylum and nomenclatural citation for only correct name and basionyms, if any, are given. The references to the previous reports are provided in parenthesis. Doubtful taxa are kept at the end of enumeration.

## SYSTEMATIC TREATMENT

### MARCHANTIOPHYTA

**1. *Aneura pinguis*** (L.) Dumort., Comm. Bot. 115. 1822. *Jungermannia pinguis* L., Sp. Pl. 1136. 1753. [Aneuraceae].

This species is recently recorded in Assam from Borail Wild Life Sanctuary by Barbhuiya and Singh (2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, Near Khasia Punjee, terrestrial, in association with *Heteroscyphus hyalinus*, 16.02.2012, H.A.Barbhuiya 124368a.

**2. *Archilejeunea minutilobula*** Udar & U.S. Awasthi, Geophytology 11: 77. 1981. [Lejeuneaceae].

This is an endemic species, earlier reported from Arunachal Pradesh, Maharashtra and Tamil Nadu (Udar & Awasthi, 1981; Das & Singh, 2007). This species is recently reported from Borail Wild Life Sanctuary (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, in association with *Heteroscyphus hyalinus*, *Riccardia multifida*, 10.11.2011, H.A.Barbhuiya 124402a.

**3. *Asterella multiflora*** (Steph.) Pande, K.P.Srivast. & Sultan Khan ex Kachroo in J. Hattori Bot. Lab. 19: 3. 1958. *Fimbriaria multiflora* Steph., Sp. Hepat. 1: 124. 1900. [Aytoniaceae].

Guwahati (Long, 2006; Kachroo, 1954c as *Asterella sanguinea* (Lehm & Lindenb) Kachroo).

**4. *Bazzania appendiculata*** (Mitt.) S.Hatt. in H. Hara, Fl. E. Himal.: 505. 1966. *Mastigobryum appendiculatum* Mitt. in Proc. J. Linn. Soc., Bot. 5: 105. 1861. [Lepidoziaceae].

Upper Assam (Mitten, 1861; Sharma & Srivatsava, 1993).

**5. *Bazzania assamica*** (St.) S.Hatt. in J. Hattori Bot. Lab. 2: 15. 1947. *Mastigobryum assamicum* Steph. in Hedwigia 24: 216. 1885. [Lepidoziaceae].

Assam (Sharma & Srivatsava, 1993).

**6. *Bazzania tridens*** (Reinw., Blume & Nees) Trevis. in Mem. Reale Ist. Lombardo Sci., Ser.3, Cl. Sci. Mat. 4: 415. 1877. *Jungermannia tridens* Reinw., Blume & Nees in Nova Acta Phys.-Med. Acad. Caes. Leopold.-Carol. Nat. Cur. 12: 228 [Hepat. Jav.]. 1825. [Lepidoziaceae].

This species is earlier reported in India from Arunachal Pradesh, Manipur, Meghalaya, Sikkim, Tamil Nadu and West Bengal (Sharma & Srivastava, 1993; Singh, 1996; Singh et al., 2010a; Daniels, 2010). This species is recently recorded in Assam from Borail Wild Life Sanctuary (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, Near Khasia Punjee, terrestrial, 16.02.2012, H.A.Barbhuiya 124370.

**7. *Calypogeia arguta*** Mont & Nees, Naturg. Eur. Leberm. 3: 24. 1838. [Calypogeiaceae].

Jorhat (Robinson, 1964; Sharma & Srivatsava, 1993).

*Specimen examined:* Lakhimpur, Kakoi R.F., terrestrial in association with *Pallavicinia lyellii*, *Heteroscyphus palniensis*, 05.02.2011, N.Odyuo 118712a.

**8. *Calypogia lunata*** Mitt. in J. Proc. Linn. Soc., Bot. 5: 107. 1861. [Calypogeiaceae].

Upper Assam (Mitten, 1861; see also Sharma & Srivastav, 1993).

**9. *Caudalejeunea reniloba*** (Gottsche) Steph., Sp. Hepat. 5: 16. 1912. *Phragmicoma reniloba* Gottsche in Gottsche et al., Syn. Hepat. 301. 1844. [Lejeuneaceae].

This species is earlier reported in India from Andaman & Nicobar, Karnataka, Kerala (Udar et al., 1982 as *C. pluriplicata* Udar, U. S. Awasthi & Shaheen; Joshi et al., 1989; Pócs et al., 2007). It was recently recorded in North-east India from Borail Wild Life Sanctuary, Assam (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, Near Khasia Punjee, epiphytic, 16.02.2012, H.A.Barbhuiya 124365; Lakhimpur, Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula assamica*, *Cololejeunea denticulata*, *Cheilolejeunea trapezia*, 18.09.2011, N.Odyuo 124338a.

**10. *Cephalozia gollanii*** Steph., Sp. Hepat. 3: 304. 1908. [Cephaloziaceae].

This species was earlier recorded in India from West Bengal, Uttarakhand (Kashyap & Chopra, 1932; Udar & Kumar, 1976). Recently, Singh and Barbhuiya (2011) have recoded it from Assam as new record based on the cited specimens only.

*Specimen examined:* Lakhimpur, Kakoi R.F., on wood logs, 07.02.2011, N.Odyuo 118721.

**11. *Cheilolejeunea longiloba*** (Steph. ex G. Hoffm.) J.J.Engel & B.C. Tan in J. Hattori Bot. Lab. 60.294. 1986. *Pycnolejeunea longiloba* G.Hoffm. Ann. Bryol. 8: 1935. [Lejeuneaceae].

This species was recorded from Andaman based on a collection by Kurz from South Andaman Islands and deposited at JE. This specimen was determined as *Cheilolejeunea meyeniana* (Gottsche et al.) R.M. Schust. & Kachroo by Stephani (Zhu & So, 2001). This species is similar to *Cheilolejeunea trapezia* but differs in having comparatively smaller leaf lobule which

apical portion are 5-8 cells wide, (8-10-(15) cells wide in *Cheilolejeunea trapezia* (Zhu & So, *l.c.*). The occurrence of this species from Assam constitutes new record for Eastern Himalaya.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Cololejeunea gottschei*, 04.02.2011, *N.Odyuo* 118707a; Kakoi R.F., epiphyllous, 06.02.2011, *N.Odyuo* 118717; Kakoi R.F., epiphyllous, in association with *Cololejeunea lanciloba*, 07.02.2011, *N.Odyuo* 118723b; Kakoi R.F., epiphyllous, in association with *Cololejeunea appresa*, 07.02.2011, *N.Odyuo* 118724a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Cololejeunea siangensis*, 16.09.2011, *N.Odyuo* 124474c; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, *Radula acuminata*, 16.09.2011, *N.Odyuo* 124482a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Radula assamica*, 16.09.2011, *N.Odyuo* 124483d.

**12. *Cheilolejeunea mariana*** (Gottsche) B.Thiers & Gradst. in Mem. New York Bot. Gard. 52: 75. 1989. *Lejeunea mariana* Gottsche in Gottsche et al., Syn. Hepat. 337. 1845. [Lejeuneaceae].

Chabua, Kaziranga National Park (Robinson, 1964; Barukial & Gogoi, 2003 as *Archilejeunea mariana* (Gottsche) Steph.).

*Specimen examined:* Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea latilobula*, *C. lanciloba*, 21.08.2011, *B.K.Sinha* 124450d; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea kashyapii*, 21.08.2011, *B.K.Sinha* 124463a; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Microlejeunea ulicina*, *Cheilolejeunea trapezia*, *Cololejeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124451c. Lakhimpur, Kakoi R.F., epiphyllous, in association with *Radula assamica*, *Chilolejeunea serpentina*, *Cololejeunea mizutaniana*, 04.02.2011, *N.Odyuo* 118711b; Dullung R.F., epiphyllous, in association with *Lejeunea anisophylla*, *Leptolejeunea balansae*, 27.04.2011, *N.Odyuo* 118729c; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cololejeunea siangensis*, *Lejeunea tuberculosa*, 18.09.2011, *N.Odyuo* 124335a.

**13. *Cheilolejeunea serpentina*** (Mitt.) Mizut. in J. Hattori Bot. Lab. 26: 171. 1963. *Lejeunea serpentina* Mitt. in J. Proc. Linn. Soc., Bot. 5: 112.1861. [Lejeuneaceae].

This species was earlier reported in India from Andaman and Nicobar Islands, Kerala, Madhya Pradesh, Meghalaya, Sikkim and Tamil Nadu (Mizutani, 1963; Asthana et al., 1995; Singh & Nath, 2007). This is reported here for the first time from Assam

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Radula assamica*, *Cheilolejeunea mariana*, *Cololejeunea mizutaniana*, 04.02.2011, *N.Odyuo* 118711c.

**14. *Cheilolejeunea subopaca*** (Mitt.) Mizut. in J. Hattori Bot. Lab. 26: 183. 1963. *Lejeunea subopaca* Mitt. in J. Proc. Linn. Soc., Bot. 5: 116. 1861. [Lejeuneaceae].

Assam (Zhu & So, 2001).

**15. *Cheilolejeunea trapezia*** (Nees) Kachroo & R.M. Schust. in J. Inn. Soc., London, Bot. 56: 509.1961. *Jungermannia trapezia* Nees, Enum. Pl. Crypt. Jav. 41. 1830. [Lejeuneaceae].

This species was earlier reported in India from Arunachal Pradesh, Karnataka Meghalaya, Manipur, Sikkim, Tamil Nadu and West Bengal (Asthana et al., 1995; Dey et al., 2009; Singh et al., 2008, 2010a, all as *C. imbricata*). This is reported here for the first time from Assam.

*Specimen examined:* Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cheilolejeunea mariana*, *Microlejeunea ulicina*, *Cololejeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124451a; Lakhimpur, Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124486a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124342a, 124346a, 124347a, 124348a,

124490a, 124491a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cololejeunea pseudoplagiophylla*, *Radula acuminata*, *N.Odyuo* 124481a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, 16.09.2011, *N.Odyuo* 124484b, 124485b; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, 17.09.2011, *N.Odyuo* 124498a, 124499a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124345a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124478a, 124487a, 124488a; Dullung R.F., epiphyllous, in association with *Colura ari*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124477c; Dullung R.F., epiphyllous, in association with *Radula assamica*, *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124337a; Dullung R.F., epiphyllous, in association with *Caudalejeunea reniloba*, *Leptolejeunea balansae*, *Radula assamica*, *Cololejeunea denticulata*, 18.09.2011, *N.Odyuo* 124338e; Dullung R.F., epiphyllous, in association with *Plagiochila furcifolia*, *Leptolejeunea balansae*, *Lejeunea anisophylla*, *Cloura ari*, 16.09.2011, *N.Odyuo* 124480b; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula acuminata*, *Lejeunea parva*, *Plagiochila fordiana*, *Lejeunea tuberculosa*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473d; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341c; Dullung R.F., epiphyllous in association with *Radula assamica*, *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Colura ari*, 17.09.2011, *N.Odyuo* 124492b; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, *Colura ari*, 17.09.2011, *N.Odyuo* 124479d; Dullung R.F., epiphyllous, in association with *Colura ari*, *Radula assamica*, *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124476d; Dullung R.F., epiphyllous, in association with *Radula assamica*, *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, *Colura ari*, 16.09.2011, *N.Odyuo* 124475c; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a. Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Colura ari*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124340e; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Lopholejeunea eulopha*, *Drepanolejeunea yunnanensis*, *Colura ari*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124339d.

**16. *Cheilolejeunea trifaria*** (Reinw., Blume & Nees) Mizut. in J. Hattori Bot. Lab. 27: 132. 1964. *Jungermannia trifaria* Reinw., Blume & Nees in Nova Acta Phys. Med. Acad. Caes. Leop. Carol. Nat. Cur. 12: 226. 1825. "1924". [Lejeuneaceae].

This is one of the common, pantropical species of the genus *Cheilolejeunea*. It was earlier reported in India from Andaman, Tamil Nadu and Sikkim (Joshi et al., 1989; Daniels & Mabel, 2010; Singh, 2012). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Cololejeunea inflata*, *Radula acuminata*, *Leptolejeunea balansae*, 04.02.2011, *N.Odyuo* 118710a.

**17. *Cololejeunea appressa*** (A.Evans) Benedix in Feddes Repert. Beih. 134: 31.1953. *Leptocolea appressa* A. Evans. in Bull. Torrey Bot. Club 39: 606.1912. [Lejeuneaceae].

This species was earlier reported from Andaman, Karnataka, Kerala, Meghalaya, Tamil Nadu and West Bengal; (Asthana & Srivastava, 2003; Manju et al., 2012). This is reported here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Cheilolejeunea longiloba*, 07.02.2011, *N.Odyuo* 118724b.

**18. Cololejeunea ceratilobula** (P.C.Chen) R.M.Schust. in Beih. Nova Hedwigia 9: 179. 1963. *Leptocolea ceratilobula* P.C. Chen in Feddes Repert. Spec. Nov. Regni Veg. 58: 49. f. 18. 1955. [Lejeuneaceae].

This species was earlier reported in India from Arunachal Pradesh, Tamil Nadu and Assam (Asthana & Srivastava, 2003; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphyllous, 10.11.2011, H.A.Barbhuiya 124405; Lakhimpur, Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, 17.09.2011, N.Odyuo 124435a; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, *Leptolejeunea balabsae*, 16.09.2011, N.Odyuo 124437a.

**19. Cololejeunea denticulata** (Horik.) S. Hatt. in Bull. Tokyo Sci. Mus. 11: 99. 1944. *Physocolea denticulata* Horik. J. Sci. Hiroshima Univ., Ser. B, Div. 2, Bot. 2: 287. 1934. [Lejeuneaceae].

This species, earlier reported from Bangladesh, China, Taiwan Japan and Korea (Mizutani, 1961; Hong, 1998; Zhu & So, 2001), is recorded here for the first time from India. It is closely related to *Cololejeunea serrulata*, but differ in having obovate or spatulate leaves.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Caudalejeunea reniloba*, *Leptolejeunea balansae*, *Radula assamica*, *Cheilolejeunea trapezia*, 18.09.2011, N.Odyuo 124338d.

**20. Cololejeunea desciscens** Steph. in Hedwigia 34: 248. 1895. [Lejeuneaceae].

The species was earlier reported in India from Andaman (Singh et al., 2006; Singh et al., 2010b). This constitutes the first record from Indian mainland in general and Eastern Himalaya in particular.

*Specimen examined:* Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea latilobula*, 21.08.2011, B.K.Sinha 124452a.

**21. Cololejeunea floccosa** (Lehm. & Lindenb.) Schiffn., Consp. Hepat. Arch. Ind.: 243. 1898. *Jungermannia floccosa* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 5: 26. 1833. [Lejeuneaceae].

The species was earlier reported in India from Arunachal Pradesh, Karnataka, Meghalaya, Sikkim (Asthana & Srivastava, 2003; Singh & Nath, 2007; Singh et al., 2008; Dey et al., 2009). This is recorded here for the first time from Assam.

*Specimen examined:* Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea latilobula*, 21.08.2011, B.K.Sinha 124461a.

**22. Cololejeunea foliicola** S.C. Srivast. & G. Srivast. in Proc. Indian Acad. Sci., Pl. Sci. 99: 86. 1989. [Lejeuneaceae].

This is an endemic species, earlier reported from Karnataka and Kerala (Asthana & Srivastava, 2003; Manju et al., 2012). The species is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, 18.09.2011, N.Odyuo 124438.

**23. Cololejeunea furcilobulata** (Berrie & E.W. Jones) R.M. Schust. in Beih. Nova Hedwigia 9: 178. 1963. *Leptocolea furcilobulata* Berrie & E.W. Jones in Trans. Brit. Bryol. Soc. 2: 417. 1954. [Lejeuneaceae].

The species was earlier reported in India from Karnataka, Kerala and Tamil Nadu (Asthana & Srivastava, 2003; Daniels, 2010). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Barpeta, Manas National Park, epiphytic, 26.12.2009, S.Dey 118781.

**24. Cololejeunea gottschei** (Steph.) Mizut. in J. Hattori Bot. Lab. 28:117.1965. *Physocolea gottschei* Steph., Sp. Hepat. 5: 894. 1916. [Lejeuneaceae].

The species was earlier reported in India from Andaman and Karnataka (Asthana & Srivastava, 2003; Singh et al., 2010b). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Chielolejeunea longiloba*, 04.02.2011, N.Odyuo 118707b.

**25. Cololejeunea haskarlina** (Lehm. & Lindenb.) Schiffn., Consp. Hepat. Arch. Ind.: 244. 1898. *Lejeunea haskarlina* Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 8: 26. 1844. [Lejeuneaceae].

Kulsi-Assam (Pande et al., 1957 as *Cololejeunea venusta* (Sande Lac.) Schiffn).

**26. Cololejeunea inflata** Steph. in Hedwigia 34: 249. 1895. [Lejeuneaceae].

The species, earlier reported from Cambodia, China, Taiwan, Japan, Laos, Malaysia, New Caledonia, Phillipines, Sri Lanka, Thailand, Vietnam (Zhu & So, 2001), is a new record for India. It is clearly distinct from the other known species of the genus recorded from India in having 2-4 layers of marginal hyaline cells, 4-6-celled basal ocelli of leaf lobe and with minor papilosity in the cells.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, in association with *Cheilolejeunea trifaria*, *Radula acuminata*, *Leptolejeunea balansae*, 04.02.2011, N.Odyuo 118710b; Kakoi R.F., epiphyllous, *Lejeunea parva*, *Radula assamica*, 07.02.2011, N.Odyuo 118725a.

**27. Cololejeunea kashyapii** Udar & G. Srivast. in Geophytology 15: 64. 1985. [Lejeuneaceae].

This is an endemic species, earlier reported from Karnataka and Kerala (Asthana & Srivastava, 2003; Manju et al., 2012). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, 21.08.2011, B.K.Sinha 124462a; Gibbon WLS, epiphyllous, in association with *Cheilolejeunea mariana*, *Leptolejeunea elliptica*, 21.08.2011, B.K.Sinha 124463b; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, 21.08.2011, B.K.Sinha 124468a; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cheilolejeunea mariana*, 21.08.2011, B.K.Sinha 124463b.

**28. Cololejeunea lanciloba** Steph. in Hedwigia 34: 250. 1895. [Lejeuneaceae].

Kaziranga National Park (Barukial & Gogoi, 2003), Borail WLS (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphyllous, 10.11.2011, H.A.Barbhuiya 124411; Borail WLS, Near Malidar, epiphytic, 10.09.2010, H.A.Barbhuiya 118734, 118738; Lakhimpur, Kakoi R.F., epiphyllous, in association with *Chielolejeunea longiloba*, 07.02.2011, N.Odyuo 118723a; Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea latilobula*, *Cheilolejeunea mariana*, 21.08.2011, B.K.Sinha 124450; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea latilobula*, *C. mariana*, 21.08.2011, B.K.Sinha 124450a.

**29. Cololejeunea latilobula** (Herzog) Tixier in Bryophyt. Biblioth. 27: 156. 1985. *Leptocolea latilobula* Herzog in Handel-Mazzetti, Symb. Sin. 5: 54. 1930. [Lejeuneaceae].

Assam (Barukial, 2011), Borail WLS (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Near Kalaincherra, epiphyllous, in association with *Cololejeunea trichomanis*, 08.10.2011, H.A.Barbhuiya 124444b; near Malidar, epiphytic, 10.09.2010, H.A.Barbhuiya 118739; Kalain Range, 15 No Hill, epiphyllous, in association with *Cololejeunea trichomanis*, *Lejeunea anisophylla*, 10.11.2011, H.A.Barbhuiya 124407b; Lakhimpur, Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, 16.09.2011, N.Odyuo 124430a; Jorhat, Gibbon WLS, epiphyllous, in association with *Cololejeunea descisens*, *Cololejeunea floccosa*, *Cololejeunea lanciloba*, *Leptolejeunea elliptica*, *Cheilolejeunea mariana*, 21.08.2011, B.K.Sinha 124450b; Gibbon WLS, epiphyllous, in association with *Cololejeunea desciscens*, *Leptolejeunea elliptica*, 21.08.2011, B.K.Sinha 124452c; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea floccosa*, 21.08.2011, B.K.Sinha 124461b; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea lanciloba*, *Cheilolejeunea mariana*, 21.08.2011, B.K.Sinha 124450b.

**30. Cololejeunea longifolia** (Mitt.) Benedix [in Feddes Repert. Spec. Nov. Regni Veg. Beih. 134: 15. 1953] ex Mizut. in J. Hattori Bot. Lab. 26: 184. 1963. *Lejeunea longifolia* Mitt. in J. Proc. Linn. Soc., Bot. 5: 117. 1861. [Lejeuneaceae].

Assam (Barukial, 2011 as *Lejeunea longifolia*).

**31. Cololejeunea madothecoides** (Steph.) Benedix in Feddes Repert. Spec. Nov. Regni Veg. Beih. 134: 81. 1953. *Physocolea madothecoides* Steph., Sp. Hepat. 5: 898. 1916. [Lejeuneaceae].

Jorhat (Tixier, 1985; see also Asthana & Srivastava, 2003).

**32. Cololejeunea mizutaniana** Udar & G. Srivast. in Misc. Bryol. Lichenol. 9: 137. 1983. [Lejeuneaceae].

This is an endemic species earlier reported from Karnataka and Kerala (Asthana & Srivastava, 2003; Manju et al., 2012). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Lakhimpur, Dullung R.F., 27.04.2011, N.Odyuo 118732; Dullung R.F., in association with *Leptolejeunea balansae*, *Radula acuminata*, *Plagiochila bantamensis*, 17.09.2011, N.Odyuo 124336a; Dullung R.F., in association with *Leptolejeunea balansae*, *Lejeunea cavifolia*, 17.09.2011, N.Odyuo 124428c; Kakoi R.F., epiphyllous, 06.02.2011, N.Odyuo 118718; Kakoi R.F., epiphyllous, in association with *Radula assamica*, 05.02.2011, N.Odyuo 118713a, 124334a; Kakoi R.F., epiphyllous, in association with *Radula tjibodensis*, 05.02.2011, N.Odyuo 12607b; Kakoi R.F., epiphyllous in association with *Radula acuminata*, 05.02.2011, N.Odyuo 118714b; Kakoi R.F., epiphyllous in association with *Radula obscura*, 05.02.2011, N.Odyuo 126010b; Kakoi R.F., epiphyllous, in association with *Radula assamica*, *Cheilolejeunea mariana*, *Cheilolejeunea serpentina*, 04.02.2011, N.Odyuo 118711d.

**33. Cololejeunea planissima** (Mitt.) Abeyw. in Ceylon J. Sci., Bio. Sci. 2 (1): 73. 1959. *Lejeunea planissima* Mitt. in J. Proc. Linn. Soc., Bot. 5: 117. 1861. [Lejeuneaceae].

Jorhat (Robinson, 1964 as *C. lanciloba*; see also Asthana & Srivastava, 2003).

**34. Cololejeunea pseudoplagiophylla** P.C. Wu & J. S. Lou in Acta Phytotax. Sin. 16: 105. 1978. [Lejeuneaceae].

This species is earlier reported in India from Arunachal Pradesh (Singh, 1996; Asthana & Srivastava, 2003). This is recorded here for the first time from Assam.



*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Cololejeunea latilobula*, 16.09.2011, *N.Odyuo* 124436; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Radula acuminata*, *N.Odyuo* 124481c; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, 17.09.2011, *N.Odyuo* 124498b, 124499b; Dullung R.F., epiphyllous, 16.09.2011, *N.Odyuo* 124436; Dullung R.F., epiphyllous, in association with *Radula acuminata*, 16.09.2011, *N.Odyuo* 124418a, 124419a, 124420a, 124422a; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124349b, 124352b, 124353b; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124429a, 124432a, 124433a; Dullung R.F., epiphyllous, in association with *Cololejeunea latilobula*, 16.09.2011, *N.Odyuo* 124430b; Dullung R.F., epiphyllous, in association with *Cololejeunea ceratilobula*, 17.09.2011, *N.Odyuo* 124435b; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Lejeunea cavifolia*, 16.09.2011, *N.Odyuo* 124431b; Dullung R.F., epiphyllous, in association with *Cololejeunea ceratilobula*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124437b; Dullung R.F., in association with *Radula assamica*, *Leptolejeunea balansae*, 18.09.2011, *N.Odyuo* 124493c.

**35. *Cololejeunea raduliloba*** Steph. in Hedwigia 34: 251. 1895. [Lejeuneaceae].

Assam (Zhu & So, 2001). Asthana and Srivastava (2003) kept it in excluded category due to the reason of non collection of specimens by them from India.

**36. *Cololejeunea serrulata*** Steph. in Hedwigia 34: 252. 1895. [Lejeuneaceae].

This species is earlier reported in India from Arunachal Pradesh and West Bengal (Dey et al., 2011). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung, R.F., epiphyllous, in association with *Leptolejeunea balansae* 16.09.2011, *N.Odyuo* 124351a Jorhat, Gibbon WLS, epiphyllous, in association with *Cololejeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124449a; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124470b

**37. *Cololejeunea siangensis*** G. Asthana & S.C. Srivast. in Bryophyt. Biblioth. 60: 57. 2003. [Lejeuneaceae].

This is an endemic species, described from Arunachal Pradesh (Asthana & Srivastava, 2003). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R. F., in association with *Radula acuminata*, *Lejeunea tuberculosa*, 18.09.2011, *N.Odyuo* 124343, Dullung R. F., in association with *Lejeunea cavifolia*, 18.09.2011, *N.Odyuo* 124343a; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Lejeunea tuberculosa* 16.09.2011, *N.Odyuo* 124350a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula acuminata*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Cololejeunea siangensis*, 16.09.2011, *N.Odyuo* 124474e; Dullung R.F., epiphyllous, in association with *Cheilolejeunea mariana*, *Leptolejeunea balansae*, *Lejeunea tuberculosa*, 18.09.2011, *N.Odyuo* 124335c; Jorhat, Gibbon WLS, epiphyllous, 21.08.2011, *B.K.Sinha* 124448.

**38. *Cololejeunea spinosa*** (Horik.) Pande & Misra in J. Indian Bot. Soc. 22: 166. 1943. *Physocolea spinosa* Horik. in J. Sci. Hiroshima Univ., Ser. B, Div. 2, Bot. 1: 70. 1931. [Lejeuneaceae].

This species is earlier reported in India from Arunachal Pradesh, Sikkim, Tamil Nadu and West Bengal (Srivastava & Srivastava, 1989; Asthana & Srivastava, 2003; Singh et al., 2008; Daniels, 2010). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Lopholejeunea nigricans*, *Plagiochila fordiana*, *Lejeunea cavifolia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124489f.

**39. *Cololejeunea trichomanis*** (Gottsche) Steph. in Hedwigia 34: 252. 1895. *Lejeunea trichomanis* Gottsche in Abh. Naturw. Ver. Bremen 7: 362. 1882. [Lejeuneaceae].

This species was reported earlier as *Cololejeunea goeblii* (Gottsche & Schiffn.) Schiffn. by Robinson (1964) from Upper Assam which is now treated as *C. trichomanis* (Gottsche) Steph., as the later has priority over the former (Grolle, 2001; see also Asthana & Srivastava, 2003). Barukial and Gogoi (2003) reported it as *Cololejeunea goeblii* (Gottsche & Schiffn.) Schiffn. from Kaziranga National Park.

*Specimen examined:* Cachar, Borail WLS, Near Kalaincherra, epiphyllous, in association with *Cololejeunea latilobula*, 08.10.2011, *H.A.Barbhuiya* 124444a; Kalain Range, Near Khasia Punjee, epiphyllous, in association with *Leptolejeunea balansae*, 16.02.2012, *H.A.Barbhuiya* 124373a; Kalain Range, Near Khasia Punjee, epiphyllous, 16.02.2012, *H.A.Barbhuiya* 124374; Kalain Range, 15 No Hill, epiphyllous, in association with *Cololejeunea latilobula*, *Lejeunea anisophylla*, 10.11.2011, *H.A.Barbhuiya* 124407c; Kalain Range, 15 No Hill, epiphyllous, in association with *Lejeunea anisophylla*, 10.11.2011, *H.A.Barbhuiya* 124408b; Kalain Range, Near Khasia Punjee, epiphyllous, in association with *Leptolejeunea balansae*, 16.02.2012, *H.A.Barbhuiya* 124371b, 124372b; Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, 21.08.2011, *B.K.Sinha* 124453a, 124458a, 124467a; Gibbon WLS, epiphyllous, in association with *Cololejeunea serrulata*, 21.08.2011, *B.K.Sinha* 124449b; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cololejeunea serrulata*, 21.08.2011, *B.K.Sinha* 124470a; Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cheilolejeunea mariana*, *Microlejeunea ulicina*, *Cheilolejeunea trapezia*, 21.08.2011, *B.K.Sinha* 124451d; Lakhimpur, Dullung R.F., epiphyllous, 27.04.2011, *N.Odyuo* 118726; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Lejeunea anisophylla*, 17.09.2011, *N.Odyuo* 124426a.

**40. *Cololejeunea udarii*** G. Asthana & S.C. Srivast. in Bryophyt. Biblioth. 60: 40. 2003. [Lejeuneaceae].

Kulsi-Kamrup (Kachroo, 1951 as *Leptocolea lanciloba*, see also Asthana & Srivastava, 2003).

**41. *Colura ari*** (Steph.) Steph., Sp. Hepat. 5: 936. 1916. *Colurolejeunea ari* Steph. in Hedwigia 35: 73. 1896. [Lejeuneaceae].

This species was earlier reported from Andamans (Lal, 1980) in India. This is recorded here for the first time from mainland in general and Eastern Himalaya in particular.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124476a. Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124477a; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Plagiochila fordiana*, *Leptolejeunea balansae*, *Lejeunea parva* 16.09.2011, *N.Odyuo* 124472a; Dullung R.F., epiphyllous, in association with *Plagiochila furcifolia*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Lejeunea anisophylla*, 16.09.2011, *N.Odyuo* 124480e; Dullung R.F., epiphyllous in association with *Radula assamica*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124492e; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, 17.09.2011, *N.Odyuo* 124479e; Dullung R.F., epiphyllous, in association with *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124475e; Dullung R.F., epiphyllous, in

association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Radula assamica*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124340c; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Lopholejeunea eulopha*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124339f.

**42. *Cyathodium aureonitens*** (Griff.) Mitt., J. Linn. Soc. 22: 298. 1887. *Synhymenium aureonitens* Griff., Not. Pl. Asiat. 2: 344.1849. [Cyathodiaceae].

Kachroo (1952) reported this species from Pandu, Guwahati but he could not clarify whether this is *C. tuberosum* or *C. aureonitens*. Later, in a revision of the genus *Cyathodium* from India, Srivastava and Dixit (1996) accepted the occurrence of *C. aureonitens* from the state but the report of *C. tuberosum* is not mentioned from Assam.

**43. *Drepanolejeunea foliicola*** Horik., J. Sci. Hiroshima Univ., Ser. B, Div. 2, Bot. 1: 85. 1932. [Lejeuneaceae].

Misamari, Bramhaputra Valley, Kaziranga National Park (Robinson, 1964; Barukial et al., 2002; Barukial & Gogoi, 2003).

**44. *Drepanolejeunea spicata*** (Steph.) Grolle & R.L. Zhu in Nova Hedwigia 70: 384. 2000. *Leptolejeunea spicata* Steph. in Hedwigia 35: 108. 1896. [Lejeuneaceae].

Assam (Grolle & Zhu, 2000).

**45. *Drepanolejeunea yunnanensis*** (P.C. Chen) Grolle & R.L. Zhu in Nova Hedwigia 70: 388. 2000. *Rhaphidolejeunea yunnanensis* P.C.Chen in Feddes Repert. Spec. Nov. Regni Veg. 58: 44. 1955. [Lejeuneaceae].

This species was reported in India as *R. yunnanensis* from Arunachal Pradesh, Karnataka, Manipur and West Bengal (Udar & Awasthi, 1984; Singh et al., 2010a). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Radula assamica*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Colura ari*, 16.09.2011, *N.Odyuo* 124475b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124342b, 124346b, 124347b, 124348b, 124490b, 124491b; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, 16.09.2011, *N.Odyuo* 124484a, 124485a; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124478c, 124487c, 124488c; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula acuminata*, *Cheilolejeunea trapezia*, *Cololejeunea siangensis*, 16.09.2011, *N.Odyuo* 124474d; Dullung R.F., epiphyllous, in association with *Cheilolejeunea longiloba*, *Leptolejeunea balansae*, *Radula acuminata*, 16.09.2011, *N.Odyuo* 124482b; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Lejeunea parva*, *Cheilolejeunea trapezia*, *Plagiochila fordiana*, *Lejeunea tuberculosa*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473a; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124341e; Dullung R.F., epiphyllous in association with *Radula assamica*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Colura ari*, 17.09.2011, *N.Odyuo* 124492d; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Colura ari*, 17.09.2011, *N.Odyuo* 124479b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Radula acuminata*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124486d;

Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Radula assamica*, *Cheilolejeunea longiloba*, 16.09.2011, *N.Odyuo* 124483b; Dullung R.F., epiphyllous, in association with *Lopholejeunea nigricans*, *Plagiochila fordiana*, *Lejeunea cavifolia*, *Radula assamica*, *Cololejeunea spinosa*, 17.09.2011, *N.Odyuo* 124489e; Dullung R.F., epiphyllous, in association with *Colura ari*, *Radula assamica*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124476c; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Colura ari*, *Radula assamica*, *Cheilolejeunea trapezia*, 18.09.2011, *N.Odyuo* 124340f; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Lopholejeunea eulopha*, *Cheilolejeunea trapezia*, *Colura ari*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124339e.

**46. *Dumortiera hirsuta*** (Sw.) Nees, Nova Acta Phys.-Med Acad. Caes. Leop.-Carol. Nat. Cur. 7: 410. 1825. *Marchantia hirsuta* Sw., Prodr. Fl. Ind. Occid. 145. 1788. [Dumortieraceae].

Sibsagar (Bapna & Kachroo, 2000; Barukial, 2011), Borail WLS (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, 10.11.2011, *H.A.Barbhuiya* 124401; Kalain Range, Near Khasia Punjee, terrestrial, in association with *Heteroscyphus hyalinus*, 16.02.2012, *H.A.Barbhuiya* 124366a; Kalain Range, 15 No Hill, terrestrial, in association with *Riccardia multifida*, *Heteroscyphus hyalinus*, 10.11.2011, *H.A.Barbhuiya* 124410a; Borail WLS, East Block, terrestrial, in association with *Solenostoma tetragonum*, *Pallavicinia lyellii*, 10.12.2010, *H.A.Barbhuiya* 118745a; Karimganj, Dohalia R.F., in association with *Solenostoma tetragonum*, 11.12.2010, *H.A.Barbhuiya* 118744a.

**47. *Dumortiera hirsuta*** (Sw.) Nees subsp. ***nepalensis*** (Taylor) R.M. Schust., Hep. Anth. N. Amer. 6: 386. 1992. *Hygrophila nepalensis* Taylor in Trans. Linn. Soc. London 17: 392. 1837. [Dumortieraceae].

Misamari (Robinson, 1964 as *D. nepalensis*), Kaziranga NP (Barukial & Gogoi, 2003 as *D. nepalensis*).

**48. *Frullania apiculata*** (Reinw., Blume & Nees) Dumort., Recueil Observ. Jungerm. 13. 1835. *Jungermannia apiculata* Reinw., Blume & Nees in Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 12: 222 [Hepat. Jav.]. 1825. [Frullaniaceae].

This species was earlier reported in India from Andaman and Nicobar, Meghalaya, Mizoram, Tamil Nadu and West Bengal (see Barbhuiya & Singh, 2011). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Plagiochila furcifolia*, *Lejeunea parva*, *Lopholejeunea nigricans*, 17.09.2011, *N.Odyuo* 124496a.

**49. *Frullania berthoumieui*** Steph. in Hedwigia 33: 140. 1894. [Frullaniaceae].

The species, earlier reported from Nepal, Myanmar, Thailand and Philippines (Hattori, 1974), was only recently recorded in Indian bryoflora from Borail Wild Life Sanctuary (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphytic, in association with *Lejeunea tuberculosa*, *Lopholejeunea sikkimensis*, 10.11.2011, *H.A.Barbhuiya* 124409a.

**50. *Frullania hampeana*** Nees in Gottsche et al., Syn. Hepat. 426. 1835. [Frullaniaceae].

Misamari (Robinson, 1964).

- 51. *Frullania musicola*** Steph. in Hedwigia 33: 146. 2008. [Frullaniaceae].  
 Jorhat (Robinson, 1964), Borail WLS (Barbhuiya & Singh, 2012).  
*Specimen examined:* Cachar, Borail WLS, Near Malidar, epiphytic, 10.09.2010, *H.A.Barbhuiya* 118735.
- 52. *Heteroscyphus argutus*** (Reinw., Blume & Nees) Schiffn. in Osterr. Bot. Z. 60: 172. 1910.  
*Jungermannia arguta* Reinw., Nees & Blume in Nova Acta Phys.-Med. Acad. Caes. Leopold.-Carol.  
 Nat. Cur. 12: 206 [Hepat. Jav.]. 1825. [Lophocoleaceae].  
 Misamari (Robinson, 1964 as *Chiloscyphus argutus* Nees), Borail WLS (Barbhuiya & Singh, 2012).  
*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphytic, 10.11.2011, *H.A.Barbhuiya* 126008; Kalain Range, Near Khasia Punjee, terrestrial or on wood logs 16.02.2012, *H.A.Barbhuiya* 124357, 124363, 124367; Karimganj, Dohalia R.F., terrestrial, in association with *Solenostoma tetragonum*, *Riccardia multifida*, *Pallavicinia lyellii*, 11.12.2010, *H.A.Barbhuiya* 118740a; Lakhimpur, Kakoi R.F., terrestrial, 04.02.2011, *N.Odyuo* 118705.
- 53. *Heteroscyphus hyalinus*** (Steph.) A. Srivast. & S.C. Srivast., Indian Geocalycaceae 118. 2002. *Lophocolea hyalina* Steph., Bull. Soc. Roy. Bot. Belgique 38: 46. 1899. [Lophocoleaceae].  
 This species is earlier reported in India from Arunachal Pradesh, Manipur, Meghalaya Sikkim, West Bengal (Srivastava & Srivastava, 2002; Singh & Nath, 2007; Dey et al., 2009; Singh et al., 2010a). Recently, Barbhuiya and Singh (2012) reported it from Borail Wild Life Sanctuary.  
*Specimen examined:* Cachar, Borail WLS, Kalain Range, Kalain Range, Near Khasia Punjee, terrestrial, in association with *Aneura pinguis*, 16.02.2012, *H.A.Barbhuiya* 124368b; Kalain Range, 15 No Hill, terrestrial, in association with *Archilejeunea minutilobula*, *Riccardia multifida*, 10.11.2011, *H.A.Barbhuiya* 124402c; 15 No Hill, lithophytic, 10.11.2011, *H.A.Barbhuiya* 124404; on wood logs, 10.11.2011, *H.A.Barbhuiya* 124413, 124415; 15 No Hill, terrestrial, in association with *Dumortiera hirsuta*, *Riccardia multifida*, 10.11.2011, *H.A.Barbhuiya* 124410c; Kalain Range, 15 No Hill, terrestrial, in association with *Riccardia multifida*, 10.11.2011, *H.A.Barbhuiya* 124412b; Kalain Range, Near Khasia Punjee, terrestrial, 16.02.2012, *H.A.Barbhuiya* 124358; near Khasia Punjee, terrestrial, in association with *Dumortiera hirsuta*, 16.02.2012, *H.A.Barbhuiya* 124366b; 15 No Hill, terrestrial in association with *Lejeunea anisophylla*, 10.11.2011, *H.A.Barbhuiya* 126009b; Lakhimpur, Dullung R.F., terrestrial in association with *Lejeunea tuberculosa*, 18.09.2011, *N.Odyuo* 124344a.
- 54. *Heteroscyphus palniensis*** A. Srivast. & S.C. Srivast., Indian Geocalycaceae 130. 2002. [Lophocoleaceae].  
 This is an endemic species, reported earlier from Tamil Nadu and Sikkim (Srivastava & Srivastava, 2002; Dey et al., 2009). This is recorded here for the first time from Assam.  
*Specimen examined:* Lakhimpur, Kakoi R.F., terrestrial in association with *Pallavicinia lyellii*, *Calypogeia arguta*, 05.02.2011, *N.Odyuo* 118712b.
- 55. *Lejeunea anisophylla*** Mont. in Ann. Sci. Nat. Bot. sér. 2, 5: 116. 1861. [Lejeuneaceae].  
 Jorhat, Misamari (Robinson, 1964 as *Lejeunea boninensis* Horik.), Bramhaputra Valley, Kaziranga (Barukial et al., 2002 & Barukial & Gogoi, 2003 as *Lejeunea boninensis* Horik.), Borail WLS (Barbhuiya & Singh, 2012).  
*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial in association with *Heteroscyphus hyalinus*, 10.11.2011, *H.A.Barbhuiya* 126009a; Kalain Range, 15 No Hill, epiphyllous, in association with *Cololejeunea trichomanis*, 10.11.2011, *H.A.Barbhuiya* 124408a; Kalain Range, 15 No Hill, epiphyllous, in association with *Cololejeunea latilobula*, *C. trichomanis*, 10.11.2011, *H.A.Barbhuiya* 124407a; Lakhimpur, Dullung R.F., epiphyllous,

27.04.2011, *N.Odyuo* 118731; Dullung R.F., epiphyllous, in association with *Cololejeunea trichomanis*, *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124426c; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea mariana*, 27.04.2011, *N.Odyuo* 118729a; Dullung R.F., epiphyllous, in association with *Plagiochila furcifolia*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Cloura ari*, 16.09.2011, *N.Odyuo* 124480d; Kakoi R.F., epiphyllous, in association with *Microlejeunea ulicina*, *Lejeunea tuberculosa*, *Radula acuminata*, 07.02.2011, *N.Odyuo* 118722b.

**56. *Lejeunea cavifolia*** (Ehrh.) Lindb. in Acta Soc. Sci. Fenn. 10: 43. 1871. *Jungermannia cavifolia* Ehrh., Hannover. Mag. 4: 45. 1789. [Lejeuneaceae].

This species was earlier reported in India from Meghalaya, Tamil Nadu, Uttarakhand and West Bengal (Chopra, 1938; Mizutani, 1971). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Lopholejeunea nigricans*, *Plagiochila fordiana*, *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cololejeunea spinosa*, 17.09.2011, *N.Odyuo* 124489c; Dullung R. F., in association with *Cololejeunea siangensis*, 18.09.2011, *N.Odyuo* 124343b; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124431a; Dullung R.F., in association with *Leptolejeunea balansae*, *Cololejeunea mizutaniana*, 17.09.2011, *N.Odyuo* 124428b.

**57. *Lejeunea curviloba*** Steph., Sp. Hepat. 5: 774. 1915. [Lejeuneaceae].

Assam (Zhu & So, 2001).

**58. *Lejeunea flava*** (Sw.) Nees, Naturgesch. Eur. Leberm. 3: 277. 1838. *Jungermannia flava* Sw., Prodr. 144. 1788. [Lejeuneaceae].

This species is earlier reported in India from Anadaman, Arunachal Pradesh, Himachal Pradesh, Karnataka, Kerala, Meghalaya, Manipur, Sikkim, Tamil Nadu and West Bengal (Chopra, 1938; Joshi et al., 1989; Mizutani, 1971; Srivastava & Sharma, 2000; Singh & Singh, 2004; Dey et al., 2009; Singh et al., 2010a). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Cololejeunea trichomanis*, *Leptolejeunea elliptica*, 27.04.2011, *N.Odyuo* 118727b.

**59. *Lejeunea parva*** (S. Hatt.) Mizut. in Misc. Bryol. Lichenol. 5: 178. 1971. *Microlejeunea rotundistipula* f. *parva* S. Hatt. in Bull. Tokyo Sci. Mus. 11: 123. 1944. [Lejeuneaceae].

Recently, this species has been recorded from Arunachal Pradesh (D.K.Singh, pers. comm.). This is reported here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, *Colejeunea inflata*, *Radula assamica*, 07.02.2011, *N.Odyuo* 118725b; Dullung, R.F., epiphytic, in association with *Plagiochila parvifolia*, *Lopholejeunea sikkimensis*, 18.09.2011, *N.Odyuo* 124440c; Dullung R.F., epiphyllous, in association with *Frullania apiculata*, *Plagiochila furcifolia*, *Lopholejeunea nigricans*, 17.09.2011, *N.Odyuo* 124496c; Dullung R.F., epiphyllous, in association with *Cloura ari*, *Radula acuminata*, *Plagiochila fordiana*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124472e; Dullung R.F., epiphytic in association with *Plagiochila bantamensis*, *Plagiochila furcifolia*, *Lopholejeunea nigricans*, 17.09.2011, *N.Odyuo* 124494e; Dullung R. F., epiphyllous, in association with *Plagiochila nepalensis*, *Plagiochila furcifolia*, *Lopholejeunea nigricans*, 17.09.2011, *N.Odyuo* 124495e; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula acuminata*, *Chielolejeunea trapezia*, *Plagiochila fordiana*, *Lejeunea tuberculosa*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473c; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Radula acuminata*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124486e.

**60. *Lejeunea tuberculosa* Steph., Sp.Hepat. 5: 790. 1915. [Lejeuneaceae].**

This species is reported in India from Arunachal Pradesh, Assam, Kerala, Meghalaya, Manipur, Sikkim, Uttarakhand, Tamil Nadu and West Bengal (Mizutani, 1971; Nair et al., 2005; Singh & Nath, 2007; Dey et al., 2009; Daniels, 2010; Singh et al., 2010a; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphytic, in association with *Frullania berthoumieui*, *Lopholejeunea sikkimensis*, 10.11.2011, *H.A.Barbhuiya* 124409b; Lakhimpur, Kakoi R.F., epiphyllous, in association with *Lejeunea anisophylla*, *Microlejeunea ulicina*, *Radula acuminata*, 07.02.2011, *N.Odyuo* 118722c; Kakoi R.F., epiphyllous, in association with *Radula acuminata*, 07.02.2011, *N.Odyuo* 124443b; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula acuminata*, *Lejeunea parva*, *Chielolejeunea trapezia*, *Plagiochila fordiana*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473f; Dullung R.F., epiphyllous, in association with *Cheilolejeunea mariana*, *Leptolejeunea balansae*, *Cololejeunea siangensis*, 18.09.2011, *N.Odyuo* 124335d; Dullung R.F., terrestrial, in association with *Heteroscyphus hyalinus*, 18.09.2011, *N.Odyuo* 124344b; Dullung R.F., epiphyllous, in association with *Cololejeunea siangensis*, *Radula acuminata*, 16.09.2011, *N.Odyuo* 124350c.

**61. *Lejeunea wightii* Lindenb. in Gottsche et al., Syn. Hepat. 379. 1845. [Lejeuneaceae].**

This species was earlier reported in India from Karnataka, Sikkim, Tamil Nadu, Uttarakhand and West Bengal (Mizutani, 1964; Hattori, 1966). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphytic, in association with *Lopholejeunea javanica*, 06.02.2011, *N.Odyuo* 118719a.

**62. *Leptolejeunea balansae* Steph. in Hedwigia 35: 105. 1896. [Lejeuneaceae].**

This species is reported in India from Andaman, Arunachal Pradesh, Assam, Kerala, Manipur, Sikkim, Tamil Nadu and West Bengal (Awasthi, 1986; Pócs et al., 2007; Singh et al., 2008; Dey et al., 2009; Singh et al., 2010a, b; Daniels, 2010; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, Near Khasia Punjee, epiphyllous, 16.02.2012, *H.A.Barbhuiya* 124375; Kalain Range, Near Khasia Punjee, epiphyllous, in association with *Cololejeunea trichomanis*, 16.02.2012, *H.A.Barbhuiya* 124371a, 124372a; Kalain Range, Near Khasia Punjee, epiphyllous, in association with *Cololejeunea trichomanis* 16.02.2012, *H.A.Barbhuiya* 124373b; Lakhimpur, Kakoi R.F., epiphyllous, 04.02.2011, *N.Odyuo* 118702, 118703, 118715; Dullung R.F., 27.04.2011, *N.Odyuo* 118728, 118730; Dullung R.F., 18.09.2011, *N.Odyuo* 124421, 124423, 124424, 124425, 124427, 124434, 124439, 124441, 124442; Dullung R.F. in association with *Radula assamica*, *Cololejeunea pseudoplagiophylla*, 18.09.2011, *N.Odyuo* 124493a; Dullung R.F., epiphyllous, in association with *Lejeunea anisophylla*, *Cheilolejeunea mariana*, 27.04.2011, *N.Odyuo* 118729b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Cololejeunea pseudoplagiophylla*, *Radula acuminata*, *N.Odyuo* 124481b; Dullung, R.F., epiphyllous, in association with *Cololejeunea serrulata* 16.09.2011, *N.Odyuo* 124351b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124342c, 124346c, 124347c, 124348c, 124490c, 124491c; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Chielolejeunea trapezia*, 16.09.2011, *N.Odyuo* 124484b, 124485b; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Cololejeunea pseudoplagiophylla* 16.09.2011, *N.Odyuo* 124349c, 124352c, 124353c; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, 16.09.2011, *N.Odyuo* 124429b, 124432b, 124433b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, 17.09.2011, *N.Odyuo* 124345b; Dullung R.F., epiphyllous, in association with *Radula acuminata*, 18.09.2011, *N.Odyuo* 124497a;

Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 17.09.2011, *N.Odyuo* 124478b, 124487b, 124488b; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, *Lejeunea cavifolia*, 16.09.2011, *N.Odyuo* 124431c; Dullung R.F., epiphyllous, in association with *Cololejeunea ceratilobula*, *Cololejeunea pseudoplagiophylla*, 16.09.2011, *N.Odyuo* 124437c; Dullung R.F., epiphyllous, in association with *Colura ari*, *Cheilolejeunea trapezia*, 16.09.2011, *N.Odyuo* 124477b. Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Radula assamica*, 17.09.2011, *N.Odyuo* 124337c; Dullung R.F., in association with *Lejeunea cavifolia*, *Cololejeunea mizutaniana*, 17.09.2011, *N.Odyuo* 124428a; Dullung R.F., epiphyllous, in association with *Cololejeunea trichomanis*, *Lejeunea anisophylla*, 17.09.2011, *N.Odyuo* 124426b; Kakoi R.F., epiphyllous, in association with *Cheilolejeunea triferia*, *Cololejeunea inflata*, *Radula acuminata*, 04.02.2011, *N.Odyuo* 118710d; Dullung R.F., epiphyllous, in association with *Colura ari*, *Radula acuminata*, *Plagiochila fordiana*, *Lejeunea parva*, 16.09.2011, *N.Odyuo* 124472d; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Cololejeunea siangensis*, 16.09.2011, *N.Odyuo* 124474a; Dullung R.F., epiphyllous, in association with *Caudalejeunea reniloba*, *Radula assamica*, *Cololejeunea denticulata*, *Cheilolejeunea trapezia*, 18.09.2011, *N.Odyuo* 124338b; Dullung R.F., epiphyllous, in association with *Plagiochila furcifolia*, *Cheilolejeunea trapezia*, *Lejeunea anisophylla*, *Cloura ari*, 16.09.2011, *N.Odyuo* 124480c; Dullung R.F., epiphyllous, in association with *Cheilolejeunea longiloba*, *Drepanolejeunea yunnanensis*, *Radula acuminata*, 16.09.2011, *N.Odyuo* 124482c; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula acuminata*, *Lejeunea parva*, *Cheilolejeunea trapezia*, *Plagiochila fordiana*, *Lejeunea tuberculosa*, 16.09.2011, *N.Odyuo* 124473g; Dullung R.F., epiphyllous, in association with *Cheilolejeunea mariana*, *Cololejeunea siangensis*, *Lejeunea tuberculosa*, 18.09.2011, *N.Odyuo* 124335b. Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341b; Dullung R.F., epiphyllous, in association with *Radula assamica*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Colura ari*, 17.09.2011, *N.Odyuo* 124492c; Dullung R.F., epiphyllous, in association with *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Colura ari*, 17.09.2011, *N.Odyuo* 124479c; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Radula acuminata*, *Drepanolejeunea yunnanensis*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124486b; Dullung R.F., in association with *Cololejeunea mizutaniana*, *Radula acuminata*, *Plagiochila bantamensis*, 17.09.2011, *N.Odyuo* 124336b; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula assamica*, *Cheilolejeunea longiloba*, 16.09.2011, *N.Odyuo* 124483a; Dullung R.F., epiphyllous, in association with *Colura ari*, *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124476e; Dullung R.F., epiphyllous, in association with *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Colura ari*, 16.09.2011, *N.Odyuo* 124475d; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a. Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Colura ari*, *Radula assamica*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124340b; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Lopholejeunea eulopha*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Colura ari*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124339b.

**63. *Leptolejeunea elliptica*** (Lehm. & Lindenb.) Schiffn. in Engler & Prantl, Nat. Pflanzenfam. 1 (3): 126. 1895. *Jungermannia elliptica* Lehm. & Lindenb., Nov. Stirp. Pug. 5: 13. 1833. [Lejeuneaceae].



Bramhaputra Valley, Kaziranga NP (Barukial et al., 2002 and Barukial & Gogoi, 2003 as *Leptolejeunea subacuta* Steph. ex A.Evans); Jorhat, Kaziranga National Park (Robinson, 1964, Bapna & Kachroo, 2000; Barukial & Gogoi, 2003 as *Leptolejeunea subacuta*).

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Cololejeunea trichomanis*, *Lejeunea flava*, 27.04.2011, *N.Odyuo* 118727a; Jorhat, Gibbon WLS, 21.08.2011, *B.K.Sinha* 124447, 124450c, 124454, 124455, 124456, 124457, 124460, 124464, 124465, 124466, 124469; Gibbon WLS, epiphyllous, in association with *Cololejeunea floccosa*, *C. latilobula*, 21.08.2011, *B.K.Sinha* 124461c; Gibbon WLS, epiphyllous, in association with *Cololejeunea desciscens*, *C. latilobula*, 21.08.2011, *B.K.Sinha* 124452b; Gibbon WLS, epiphyllous, in association with *Cololejeunea kashyapii*, 21.08.2011, *B.K.Sinha* 124462b; Gibbon WLS, epiphyllous, in association with *Cololejeunea trichomanis*, *C. serrulata*, 21.08.2011, *B.K.Sinha* 124470c; Gibbon WLS, epiphyllous, in association with *Cololejeunea trichomanis* 21.08.2011, *B.K.Sinha* 124453b, 124458b, 124467b; Gibbon WLS, epiphytic, in association with *Plagiochila bantamensis*, 21.08.2011, *B.K.Sinha* 124459b; Gibbon WLS, epiphyllous, in association with *Cololejeunea kashyapii*, 21.08.2011, *B.K.Sinha* 124468b; Gibbon WLS, epiphyllous, in association with *Cololejeunea kashyapii*, *Cheilolejeunea mariana*, 21.08.2011, *B.K.Sinha* 124463c; Gibbon WLS, epiphyllous, in association with *Cheilolejeunea mariana*, *Microlejeunea ulicina*, *Cheilolejeunea trapezia*, *Cololejeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124451e; Gibbon WLS, epiphyllous, in association with *Cololejeunea latilobula*, *C. lanciloba*, *C. mariana*, 21.08.2011, *B.K.Sinha* 124450c.

**64. *Lopholejeunea eulopha*** (Taylor) Schiffn. in Engler & Prantl, Nat. Pflanzenfam. 1(3): 129. 1893. [Lejeuneaceae].

This species was earlier reported in India from Andaman (Joshi et al., 1989; Joshi, 2001). This is recorded here for the first time from Indian mainland in general and Eastern Himalaya in particular.

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, 16.02.2012, *H.A.Barbhuiya* 126005; Lakhimpur, Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Colura ari*, *Radula assamica*, 18.09.2011, *N.Odyuo* 124339c.

**65. *Lopholejeunea javanica*** (Nees) Schiffn. in Engler & Prantl, Nat. Pflanzenfam. 1(3): 129. 1893. *Lejeunea javanica* Nees in Gottsche et al., Syn. Hepat. 320. 1845. [Lejeuneaceae].

This species was earlier reported in India from Kerala (Awasthi et al., 2000). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphytic, in association with *Lejeunea wightii*, 06.02.2011, *N.Odyuo* 118719b.

**66. *Lopholejeunea nigricans*** (Lindenb.) Schiffn., Consp. Hepat. Arch. Ind. 293. 1898. *Lejeunea nigricans* Lindenb. in Gottsche et al., Syn. Hepat. 316. 1845. [Lejeuneaceae].

This species was earlier reported in India from Kerala, Meghalaya and Manipur (Awasthi et al., 2000; Pócs et al., 2007; Singh et al., 2010a). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Frullania apiculata*, *Plagiochila furcifolia*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124496d; Dullung R.F., epiphytic in association with *Plagiochila bantamensis*, *Plagiochila furcifolia*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124494c; Dullung R. F., epiphyllous, in association with *Plagiochila nepalensis*, *Plagiochila furcifolia*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124495c; Dullung R.F., epiphyllous, in association with *Plagiochila fordiana*, *Lejeunea cavifolia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cololejeunea spinosa*, 17.09.2011, *N.Odyuo* 124489a.

**67. Lopholejeunea sikkimensis** Steph., Sp. Hepat. 5: 87. 1912. [Lejeuneaceae].

This species is reported in India from Assam, Chattishgarh, Jammu & Kashmir, Karnataka, Kerala, Manipur, Meghalaya, Uttarakhand, Tamil Nadu and West Bengal (Lal & Parihar, 1979; Awasthi et al., 2000; Langer & Tanwir, 2002; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, lithophytic, 10.11.2011, *H.A.Barbhuiya* 124416; Near Khasia Punjee, 16.02.2012, *H.A.Barbhuiya* 124369; Near Malidar, epiphytic, 10.09.2010, *H.A.Barbhuiya* 118736; 15 No Hill, epiphytic, in association with *Frullania berthoumieui*, *Lejeunea tuberculosa*, 10.11.2011, *H.A.Barbhuiya* 124409c; Lakhimpur, Dullung, R.F., epiphytic, in association with *Plagiochila parvifolia*, *Lejeunea parva*, 18.09.2011, *N.Odyuo* 124440b.

**68. Marchantia hartlessiana** Steph. in Candollea 14: 107. 1953. [Marchantiaceae].

Assam (Bischler, 1989).

**69. Marchantia paleacea** Bertol., Opusc. Sci. 1: 242. 1817. [Marchantiaceae].

Guwahati (Singh, 1966; Bapna & Kachroo, 2000).

**70. Marchantia papillata** Raddi subsp. **grossibarba** (Steph.) Bischl. in Cryptog. Bryol. Lichénol. 10: 78. 1989. *Marchantia grossibarba* Steph. in Mém. Soc. Sci. Nat. Cherbourg 29: 221. 1894. [Marchantiaceae].

Tezpur, Jorhat, Dibrugarh, Sibsagar (Singh, 1966 as *M. palmate* Nees), Bramhaputra Valley (Barukial et al., 2002 as *M. palmata*).

**71. Marchantia polymorpha** L., Sp. Pl. 1137. 175 subsp. **polymorpha** [Marchantiaceae].

Bramhaputra Valley (Barukial et al., 2002), Kaziranga NP (Barukial & Gogoi, 2003).

**72. Marchantia subintegra** Mitt. in J. Proc. Linn. Soc., Bot. 5: 125. 1861. [Marchantiaceae].

Assam (Bischler, 1989), Borail WLS (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, 10.11.2011, *H.A.Barbhuiya* 124417.

**73. Microlejeunea ulicina** (Taylor) Steph. in Hedwigia 29: 88. 1890. *Jungermannia ulicina* Taylor in Trans. & Proc. Bot. Soc. Edinburgh 1: 115. 1844. [Lejeuneaceae].

Assam, Borail WLS (Barukial, 2011; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Near Malidar, epiphytic, 10.09.2010, *H.A.Barbhuiya* 118737; Barpata, Manas National Park, epiphytic, 26.12.2009, *S.Dey* 118778. Jorhat, Gibbon WLS, epiphyllous, in association with *Leptolejeunea elliptica*, *Cheilolejeunea mariana*, *Cheilolejeunea trapezia*, *Colojeunea trichomanis*, 21.08.2011, *B.K.Sinha* 124451b; Lakhimpur, Kakoi R.F., epiphyllous, in association with *Lejeunea anisophylla*, *Lejeunea tuberculosa*, *Radula acuminata*, 07.02.2011, *N.Odyuo* 118722a.

**74. Monosolenium tenerum** Griff., Not. Plant. Asiat. 2: 331. 1849. [Monosoleniaceae].

Sadiya 'Suddya', Tingrai 'Tingrei' (Griffith, 1849a, b).

**75. Pallavicinia lyellii** (Hook.) Carruth, Nat. Arr. Brit. Pl. 1: 685, 775 [errata]. 1821. *Jungermannia lyellii* Hook., Brit. Jungerm. t. 77. 1816. [Pallaviciniaceae].

Guwahati 'Gauhati' (Srivastava, 1961), Borail WLS (Barbhuiya & Singh, 2012);

*Specimen examined:* Cachar, Borail WLS, Kalain Range, Near Khasia Punjee, terrestrial, 16.02.2012, *H.A.Barbhuiya* 124359; Near Khasia Punjee, terrestrial, in association with *Heteroscyphus hyalinus*, *Solenostema tetragonum*, 16.02.2012, *H.A.Barbhuiya* 124355b; Borail

WLS, East Block, terrestrial, 10.12.2010, *H.A.Barbhuiya* 118743; East Block, terrestrial, in association with *Dumortiera hirsuta*, *Solenostomma tetragonum*, 10.12.2010, *H.A.Barbhuiya* 118745c; Karimganj, Dohalia R.F., terrestrial, in association with *Heteroscyphus argutus*, *Solenostoma tetragonum*, *Riccardia multifida*, 11.12.2010, *H.A.Barbhuiya* 118740d; Dohalia R.F., terrestrial, in association with *Solenostomma tetragonum*, 11.12.2010, *H.A.Barbhuiya* 118741b; Lakhimpur, Dullung R.F., in association with *Solenostema tetragonum*, 17.09.2011, *N.Odyuo* 124333a, 124500a; Kakoi R.F., terrestrial in association with *Calypogeia arguta*, *Heteroscyphus palniensis*, 05.02.2011, *N.Odyuo* 118712c.

**76. *Pellia endiviifolia*** (Dicks) Dumort., Recueil. Observ. Jungerm. 27. 1835. *Jungermannia endiviifolia* Dicks., Fasc Pl. Crypt. Brit. 4: 19. 1801. [Pelliaceae].  
Assam -without any definite locality (Barukial, 2011).

**77. *Pellia epiphylla*** (L.) Corda, in Opiz, Naturalientausch 12: 654. 1829. *Jungermannia epiphylla* L., Sp. Pl. 1135. 1753. [Pelliaceae].  
Assam - without any definite locality (Barukial, 2011).

**78. *Plagiochasma appendiculatum*** Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 14. 1832. [Aytoniaceae].  
Dibrugarh, Guwahati (Kachroo, 1954; Bischler, 1979).

**79. *Plagiochasma cordatum*** Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 13. 1832. [Aytoniaceae].  
Assam (Bischler, 1979).

**80. *Plagiochila bantamensis*** (Reinw., Blume & Nees) Mont. in d'Orbigny, Voy. Amer. Merid 7, Bot (2): 82: 1839. *Jungermannia bantamensis* Reinw., Blume & Nees in Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 12: 235 [Hepat. Jav.]. 1825. [Plagiochilaceae].

This species is very rare in distribution particularly in India, and is known only from Nicobar (see So, 2001; Rawat & Srivastava, 2007). This is recorded here for the first time from Eastern Himalaya.

*Specimen examined:* Jorhat, Gibbon WLS, epiphytic, in association with *Leptolejeunea elliptica*, 21.08.2011, *B.K.Sinha* 124459a. Lakhimpur, Kakoi R.F., terrestrial, 04.02.2011, *N.Odyuo* 118704; Dullung R.F., epiphytic in association with *Plagiochila furcifolia*, *Lopholejeunea nigricans*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124494a; Dullung R.F., in association with *Cololejeunea mizutaniana*, *Leptolejeunea balansae*, *Radula acuminata*, 17.09.2011, *N.Odyuo* 124336d..

**81. *Plagiochila fordiana*** Steph., Sp. Hepat. 2: 284. 1902. [Plagiochilaceae].

This species is reported earlier from Himachal Pradesh in India (Zhu & So, 2001; Inoue, 1967 as *P. dichotomoramosa* Inoue). This is recorded for the first time from Eastern Himalaya.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, 04.02.2011, *N.Odyuo* 118706; Kakoi R.F., epiphyllous, in association with *Radula assamica*, 04.02.2011, *N.Odyuo* 118709a; Dullung R.F., epiphyllous, in association with *Colura ari*, *Radula acuminata*, *Leptolejeunea balansae*, *Lejeunea parva* 16.09.2011, *N.Odyuo* 124472c; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Radula acuminata*, *Lejeunea parva*, *Chielolejeunea trapezia*, *Lejeunea tuberculosa*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473e; Dullung R.F., epiphyllous, in association with *Lopholejeunea nigricans*, *Lejeunea cavifolia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, *Cololejeunea spinosa*, 17.09.2011, *N.Odyuo* 124489b.

**82. *Plagiochila furcifolia*** Mitt. in Trans. Linn. Soc. London, Bot. Ser 2, 3: 194. 1891. [Plagiochilaceae].

The species, reported earlier from China, Japan and Vietnam (So, 2001), is recorded here for the first time in India. It is characterized by moderately to highly branched shoots and predominantly terminal branches; oblong-ovate leaves with the apex bilobed to 1/5-3/5 the leaf length; leaf cells with triradiate smaller trigones.

*Specimen examined:* Lakhimpur, Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Lejeunea anisophylla*, *Cloura ari*, 16.09.2011, *N.Odyuo* 124480a; Dullung R.F., epiphyllous, in association with *Frullania apiculata*, *Lejeunea parva*, *Lopholejeunea nigricans*, 17.09.2011, *N.Odyuo* 124496b; Dullung R.F., epiphytic in association with *Plagiochila bantamensis*, *Lopholejeunea nigricans*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124494b; Dullung R. F., epiphyllous, in association with *Plagiochila nepalensis*, *Lopholejeunea nigricans*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124495b.

**83. *Plagiochila nepalensis*** Lindenb., Sp. Hepat. (Plagiochila fasc. 2-4): 93. 1840. [Plagiochilaceae].

Assam (Rawat & Srivastava, 2007).

*Specimen examined:* Lakhimpur, Dullung R. F., epiphyllous, in association with *Plagiochila furcifolia*, *Lopholejeunea nigricans*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124495a.

**84. *Plagiochila parvifolia*** Lindenb. Sp. Hepat. (Plagiochila fasc. 1): 28. 1839. [Plagiochilaceae].

Assam (Rawat & Srivastava, 2007).

*Specimen examined:* Lakhimpur, Dullung, R.F., epiphytic, in association with *Lopholejeunea sikkimensis*, *Lejeunea parva*, 18.09.2011, *N.Odyuo* 124440a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Lopholejeunea eulopha*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Colura ari*, *Radula assamica*, 18.09.2011, *N.Odyuo*124339a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Colura ari*, *Radula assamica*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124340a.

**85. *Plagiochila uniformis*** Mitt. in J. Proc. Linn. Soc., Bot. 5: 98. 1861. [Plagiochilaceae].

Assam (Rawat & Srivastava, 2007).

**86. *Ptychanthus striatus*** (Lehm. & Lindenb.) Nees in Naturgesch. Eur. Leberm. 3: 212. 1838. *Jungermannia striata* Lehm. & Lindenb. in Lehm., Nov. Stirp. Pug. 4: 16. 1832. [Lejeuneaceae].

This species was earlier reported in India from Arunachal Pradesh, Andaman, Chattishgarh, Goa, Himachal Pradesh, Karnataka; Kerala, Manipur, Maharashtra, Meghalaya, Madhya Pradesh, Sikkim, Uttarakhand, Tamil Nadu and West Bengal (Hattori, 1966; Lal & Parihar, 1979; Joshi & Biradar, 1984; Awasthi & Srivastava, 1987; Singh, 1996; Joshi, 2001; Vijayan et al., 2007; Singh & Singh, 2007, 2009; Singh et al., 2010b). This is recorded here for the first time from Assam.

*Specimen examined:* Barpeta, Manas National Park, terrestrial, 26.12.2009, *S.Dey* 118777, 118782; Lakhimpur, Dullung R.F., epiphytic, 21.04.2011, *N.Odyuo* 118733.

**87. *Radula acuminata*** Steph., Sp. Hepat. 4: 230. 1910. [Radulaceae].

This species is reported in India from Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim (Udar & Kumar, 1984a; Singh, 1996; Dey et al., 2009; Singh et al., 2010a; Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, epiphyllous, 10.11.2011, *H.A.Barbhuiya* 124406, 124414; Lakhimpur, Kakoi R.F., epiphyllous, in

association with *Cheilolejeunea triferia*, *Cololejeunea inflata* *Leptolejeunea balansae*, 04.02.2011, *N.Odyuo* 118710c; Kakoi R.F., epiphyllous, in association with *Lejeunea tuberculosa*, 07.02.2011, *N.Odyuo* 124443a; Kakoi R.F., epiphyllous in association with *Cololejeunea mizutaniana*, 05.02.2011, *N.Odyuo* 118714a; Kakoi R.F., epiphyllous, in association with *Microlejeunea ulicina*, *Lejeunea anisophylla*, *L. tuberculosa*, 07.02.2011, *N.Odyuo* 118722d; Dullung R.F., epiphyllous, in association with *Cololejeunea siangensis* *Lejeunea tuberculosa* 16.09.2011, *N.Odyuo* 124350b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Cololejeunea pseudoplagiophylla*, *N.Odyuo* 124481d; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, 16.09.2011, *N.Odyuo* 124418b, 124419b, 124420b, 124422b; Dullung R.F., epiphyllous, in association with *Cololejeunea pseudoplagiophylla*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124349a, 124352a, 124353a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, 18.09.2011, *N.Odyuo* 124497b; Dullung R.F., epiphyllous, in association with *Colura ari*, *Plagiochila fordiana*, *Leptolejeunea balansae*, *Lejeunea parva*, 16.09.2011, *N.Odyuo* 124472b; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Cololejeunea siangensis*, 16.09.2011, *N.Odyuo* 124474d; Dullung R.F., epiphyllous, in association with *Cheilolejeunea longiloba*, *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124482d; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Lejeunea parva*, *Cheilolejeunea trapezia*, *Plagiochila fordiana*, *Lejeunea tuberculosa*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124473b; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Colura ari*, 17.09.2011, *N.Odyuo* 124479a; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Lejeunea parva*, 17.09.2011, *N.Odyuo* 124486c; Dullung R.F., in association with *Cololejeunea mizutaniana*, *Leptolejeunea balansae*, *Plagiochila bantamensis*, 17.09.2011, *N.Odyuo* 124336c.

**88. *Radula assamica*** Steph. in Hedwigia 23: 151. 1884. [Radulaceae].

Assam (Yamada, 1979; Zhu & So, 2001)

*Specimen examined*: Lakhimpur, Kakoi R.F., epiphyllous, in association with *Cheilolejeunea mariana*, *Cheilolejeunea serpentina*, *Cololejeunea mizutaniana*, 04.02.2011, *N.Odyuo* 118711a; Kakoi R.F., epiphyllous, in association with *Cololejeunea mizutaniana*, 05.02.2011, *N.Odyuo* 118713b, 124334b; Kakoi R.F., epiphyllous, in association with *Plagiochila fordiana*, 04.02.2011, *N.Odyuo* 118709b; Kakoi R.F., epiphyllous, *Colejeunea inflata*, *Lejeunea parva*, 07.02.2011, *N.Odyuo* 118725c; Dullung R.F., epiphyllous in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Colura ari*, 17.09.2011, *N.Odyuo* 124492a; Dullung R.F., in association with *Leptolejeunea balansae*, *Cololejeunea pseudoplagiophylla*, 18.09.2011, *N.Odyuo* 124493b; Dullung R.F., epiphyllous, in association with *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 17.09.2011, *N.Odyuo* 124337b; Dullung R.F., epiphyllous, in association with *Caudalejeunea reniloba*, *Leptolejeunea balansae*, *Cololejeunea denticulata*, *Cheilolejeunea trapezia*, 18.09.2011, *N.Odyuo* 124338c; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341d; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea longiloba*, 16.09.2011, *N.Odyuo* 124483c; Dullung R.F., epiphyllous, in association with *Lopholejeunea nigricans*, *Plagiochila fordiana*, *Lejeunea cavifolia*, *Drepanolejeunea yunnanensis*, *Cololejeunea spinosa*, 17.09.2011, *N.Odyuo* 124489d; Dullung R.F., epiphyllous, in association with *Colura ari*, *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, 16.09.2011, *N.Odyuo* 124476b; Dullung R.F., epiphyllous, in association with *Drepanolejeunea yunnanensis*, *Cheilolejeunea trapezia*, *Leptolejeunea balansae*, *Colura ari*, 16.09.2011, *N.Odyuo* 124475a; Dullung R.F., epiphyllous, in association with *Leptolejeunea balansae*, *Cheilolejeunea*

*trapezia*, *Radula assamica*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124341a. Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Colura ari*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, 18.09.2011, *N.Odyuo* 124340d; Dullung R.F., epiphyllous, in association with *Plagiochila parvifolia*, *Leptolejeunea balansae*, *Lopholejeunea eulopha*, *Cheilolejeunea trapezia*, *Drepanolejeunea yunnanensis*, *Colura ari*, 18.09.2011, *N.Odyuo* 124339g.

**89. *Radula obscura*** Mitt. in J. Proc. Linn. Soc., Bot. 5: 107. 1861. [Radulaceae].

This species was earlier reported in India from Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Udar & Kumar, 1984b; Singh & Singh, 2003; Singh & Nath, 2007; Dey et al., 2009). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous in association with *Cololejeunea mizutaniana*, 05.02.2011, *N.Odyuo* 126010a.

**90. *Radula tjibodensis*** K.I. Goebel in Ann. Jard. Bot. Buitenzorg 7: 53. 1888. [Radulaceae].

This species was earlier reported in India from Arunachal Pradesh, Manipur, Meghalaya, Sikkim and West Bengal (Udar & Kumar, 1984a; Singh et al., 2008, 2010a). This is recorded here for the first time from Assam.

*Specimen examined:* Lakhimpur, Kakoi R.F., epiphyllous, 04.02.2011, *N.Odyuo* 126006; Kakoi R.F., epiphyllous, 06.02.2011, *N.Odyuo* 118716, 124400; Kakoi R.F., epiphyllous, 04.02.2011, *N.Odyuo* 126006; Kakoi R.F., epiphyllous, in association with *Cololejeunea mizutaniana*, 05.02.2011, *N.Odyuo* 12607a.

**91. *Riccardia multifida*** (L.) Gray in Nat. Arr. Brit. Pl. 1: 684. 1821. *Jungermannia multifida* L., Sp. Pl. 1136. 1753. [Aneuraceae].

This species was recently recorded from Borail Wild Life Sanctuary (Barbhuiya & Singh, 2012).

*Specimen examined:* Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, in association with *Archilejeunea minutilobula*, *Heteroscyphus hyalinus* 10.11.2011, *H.A.Barbhuiya* 124402b; 15 No Hill, terrestrial, in association with *Dumortiera hirsuta*, *Heteroscyphus hyalinus*, 10.11.2011, *H.A.Barbhuiya* 124410b; 15 No Hill, Terrestrial, in association with *Heteroscyphus hyalinus*, 10.11.2011, *H.A.Barbhuiya* 124412a; Karimganj, Dohalia R.F., terrestrial, in association with *Solenostoma tetragonum*, 11.12.2010, *H.A.Barbhuiya* 118746a; Dohalia R.F., terrestrial, in association with *Heteroscyphus argutus*, *Solenostoma tetragonum*, *Pallavicinia lyellii*, 11.12.2010, *H.A.Barbhuiya* 118740c.

**92. *Riccia attenuata*** Pande in Pande & Udar in Proc. Natl. Inst. Sci. India 25 B: 92. 1959. [Ricciaceae].

Kamakhya Hills, Guwahati (Pande & Udar, 1959).

**93. *Riccia billardieri*** Mont. & Nees in Gottsche, Lindenb. & Nees, Syn. Hepat. 4: 602. 1846. [Ricciaceae].

Kamakhya Hills, Guwahati, Cotton College (Pande & Udar, 1959).

**94. *Riccia discolor*** Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 1. 1832. [Ricciaceae].

Jorhat, Guwahati 'Gauhati', Kamakhya Hills (Kachroo, 1952; Srivastava, 1964), Bramhaputra Valley (Barukial et al., 2002), Kaziranga NP (Barukial & Gogoi, 2003).

**95. *Riccia frostii*** Austin in Bull. Torrey Bot. Club 6: 17. 1875. [Ricciaceae].

Guwahati 'Gauhati' (Kachroo, 1952).

- 96. *Riccia glauca*** L., Sp. Pl.: 1139. 1753. var. **glauca** [Ricciaceae].  
Chandmari, Guwahati 'Gauhati' (Kachroo, 1954), Borail WLS (Barbhuiya & Singh, 2012).  
*Specimen examined*: Cachar, Borail WLS, Near Kalaincherra, terrestrial, 08.10.2011, H.A.Barbhuiya 124446; Udalguri, Barnadi, Garodong, terrestrial, 08.09.2011, S.R. Talukdar 124471.
- 97. *Riccia huebeneriana*** Lindenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18: 504d. "1836" 1837. [Ricciaceae].  
Guwahati 'Gauhati', Kulsu (Kachroo, 1954a as *R. kashyapii*; Srivastava, 1964), Borail WLS (Barbhuiya & Singh, 2012).  
*Specimen examined*: Cachar, Borail WLS, Near Kalaincherra, terrestrial, 08.10.2011, H.A.Barbhuiya 124445.
- 98. *Ricciocarpos natans*** (L.) Corda, Naturalientausch 12: 651. 1829. *Riccia natans* L., Syst. Nat., 10<sup>th</sup> edn, 2: 1339. 1759. [Ricciaceae].  
Guwahati 'Gauhati' (Srivastava, 1964).
- 99. *Solenostoma comatum*** (Nees) C.Gao, Fl. Hepat. Chin. Boreali-Orient. 73. 1981. *Jungermannia comata* Nees, Enum. Pl. Crypt. Jav. 78. 1830. [Jungermanniaceae].  
Assam (Amakawa, 1970 and Vána, 1972 as *Jungermannia comata*).  
*Specimen examined*: Lakhimpur, Kakoi R.F., terrestrial, 06.02.2011, N.Odyuo 118720.
- 100. *Solenostoma hasskarlianum*** (Nees) R.M. Schust. ex Vána & D.G. Long in Nova Hedwigia 89: 502. 2009. *Alicularia hasskarliana* Nees in Gottsche et al., Syn. Hepat 12. 1844. [Jungermanniaceae].  
Assam (Vána, 1972 as *Jungermannia hasskarliana* (Nees) Mitt.; see Vána & Long, 2009).
- 101. *Solenostoma infusum*** (Mitt.) J.Hentschel in Pl. Syst. Evol. 268: 152. 2007. *Plectocolea infusca* Mitt. in Trans. Linn. Soc. London, Bot. Ser.2, 3: 196. 1891. [Jungermanniaceae].  
Jorhat, Misamari (Robinson, 1964 as *Plectocolea infusca*), Kaziranga National Park (Barukial & Gogoi, 2003 as *Plectocolea infusca*).
- 102. *Solenostoma purpuratum*** (Mitt.) Steph., Sp. Hepat. 2: 51. 1901. *Jungermannia purpurata* Mitt. in J. Proc. Linnean Soc., Bot. 5: 91. 1861. [Jungermanniaceae].  
Assam (Vána, 1972 as *Jungermannia purpurata* Mitt.; see also Vána & Long, 2009).
- 103. *Solenostoma sanguinolentum*** (Griff.) Steph., Sp. Hepat. 2: 51. 1901. *Jungermannia sanguinolenta* Griff., Not. Pl. Asiat. 302. 1849. [Jungermanniaceae].  
Assam (Mitten, 1861 & Vána, 1972 as *Jungermannia sanguinolenta* Griff.; see Vána & Long, 2009).
- 104. *Solenostoma schaulianum*** (Steph.) Vána et D.G.Long in Nova Hedwigia 89: 508. 2009. *Jungermannia schauliana* Steph., Sp. Hepat. 6: 90. 1917. [Jungermanniaceae].  
Assam (Vána, 1972 as *Jungermannia schauliana* Steph.; see Vána & Long, 2009)

**105. *Solenostoma tetragonum*** (Lindenb.) R.M. Schust. ex Váňa & D.G. Long in *Nova Hedwigia* 89: 509. 2009. *Jungermannia tetragona* Lindenb., *Bot. Zeitung* (Berlin) 6: 462. 1848. [Jungermanniaceae].

Recently, Barbhuiya and Singh (2012) reported it from Borail Wild Life Sanctuary.

*Specimen examined*: Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, 10.11.2011, *H.A.Barbhuiya* 124403b; Kalain Range, Near Khasia Punjee, terrestrial, 16.02.2012, *H.A.Barbhuiya* 124360, 124361, 124362, 124364; East Block, terrestrial, in association with *Dumortiera hirsuta*, *Pallavicinia lyellii*, 10.12.2010, *H.A.Barbhuiya* 118745b; Karimganj, Dohalia R.F., terrestrial, in association with *Pallavicinia lyellii*, 11.12.2010, *H.A.Barbhuiya* 118741a; Dohalia R.F., terrestrial, 11.12.2010, *H.A.Barbhuiya* 118742; Dohalia R.F., terrestrial in association with *Dumortiera hirsuta*, 11.12.2010, *H.A.Barbhuiya* 118744b; Dohalia R.F., terrestrial, in association with *Heteroscyphus argutus*, *Riccardia multifida*, *Pallavicinia lyellii*, 11.12.2010, *H.A.Barbhuiya* 118740b; Dohalia R.F., terrestrial, in association with *Riccardia multifida*, 11.12.2010, *H.A.Barbhuiya* 118746b; Lakhimpur, Dullung R.F., terrestrial in association with *Pallavicinia lyellii* 17.09.2011, *N.Odyuo* 124333b; 124500b.

**106. *Solenostoma truncatum*** (Nees) R.M.Schust. [Austral Hapat. 2: 378, 2002, nom. inval.] ex Váňa et D.G.Long in *Nova Hedwigia* 509. 2009. *Jungermannia truncata* Nees, *Enum. Pl. Crypt. Jav.* 29. 1830. [Jungermanniaceae].

Assam (Mitten, 1861 as *J. polyrhiza*; Váňa, 1973 as *Jungermannia truncata* Nees; see also Váňa & Long, 2009).

**107. *Trocholejeunea sandvicensis*** (Gottsche) Mizut. *Misc. Bryol. Lichenol.* 2: 169. 1962. *Phragmicoma sandvicensis* Gottsche in *Ann. Sci. Nat., Bot., Ser. 4*, 8: 344. 1857. [Lejeuneaceae].

Tezpur, Misamari, Kaziranga National Park (Robinson, 1964, Barukial & Gogoi, 2003 as *Brachiolejeunea sandvicensis* (Gottsche) A.Evans.).

## ANTHOCEROTOPHYTA

**108. *Anthoceros punctatus*** L., *Sp. Pl.*: 1139. 1753. [Anthocerotaceae].

Pandu, Guwahati 'Gauhati' (Kachroo, 1952).

**109. *Folioceros appendiculatus*** (Steph.) J. Haseg. in *J. Hattori Bot. Lab.* 60: 382. 1986. *Anthoceros appendiculatus* Steph. in *Bot. Jahrb. Syst.* 23: 315. 1896. [Anthocerotaceae].

North Lakhimpur (Udar & Singh, 1986).

**110. *Folioceros dixitianus*** (Mahab.) D.C. Bhardwaj in *Geophytology* 5: 227. 1975. *Aspiromitus dixitianus* Mahab. in *Curr. Sci.* 10: 532. 1941. [Anthocerotaceae].

Pandu, Guwahati 'Gauhati' (Kachroo, 1952).

**111. *Folioceros glandulosus*** (Lehm. & Lindenb.) D.C. Bharadwaj in *Geophytology* 5: 227. 1975. *Anthoceros glandulosus* Lehm. & Lindenb. in *Lehmann, Nov. Strip. Pug.* 4: 26. 1832. [Anthocerotaceae].

Bramhputra Valley, Kaziranga National Park (Barukial, et al., 2002 & Barukial & Gogoi, 2003 as *Anthoceros glandulosus*), Misamari (Robinson, 1964 as *Anthoceros glandulosus*).

**112. *Folioceros paliformis*** D.K. Singh in *Bull Bot. Surv. India* 29: 176. 1987. [Anthocerotaceae].

This is an endemic species, established by Singh (1987) on the basis of collection made in 1982 from Tipi in West Kameng district of Arunachal Pradesh. The species could not be



collected again since its original collection, neither from type locality nor from elsewhere. Recently, Barbhuiya and Singh (2012) recorded it from Borail Wild Life Sanctuary, Assam.

*Specimens examined*: Cachar, Borail WLS, Kalain Range, 15 No Hill, terrestrial, 10.11.2011, *H.A.Barbhuiya* 124403; Near Khasia Punjee, 16.02.2012, *H.A.Barbhuiya* 124356.

**113. *Notothylas indica*** Kashyap in Kashyap & N.L. Dutt, Proc. Lahore Phil. Soc. 4: 49. 1925. [Notothyladaceae].

Kaziranga National Park (Barukial & Gogoi, 2003).

**114. *Notothylas levieri*** Schiffn. ex Steph., Sp. Hepat. 5: 1021. 1917. [Notothyladaceae].

Guwahati 'Gauhati' (Kachroo, 1952).

**115. *Phaeoceros laevis*** (L.) Prosk. in Bull. Torrey Bot. Club 78: 347. 1951. *Anthoceros laevis* L., Sp. Pl. 1139. 1753. [Notothyladaceae].

Guwahati 'Gauhati' Dibrugarh (Kachroo, 1954a as *A. laevis*).

#### DOUBTFUL RECORDS:

***Anthoceros assamicus*** Kachroo in Sci. & Cult. 20: 98. 1954.

This species was described from Guwahati 'Gauhati' (near Kamakhya Railway station, Chandmari hills, Waterworks hills), Mechagarh and Kulsi (Kachroo, 1954a). However, Asthana and Srivastava (1991) kept it in doubtful category and stated that this approaches *Anthoceros angustus* Steph. in its spore morphology and length of elaters.

***Marchantia assamica*** Griff., Not. Pl. Asiat. 2: 327. 1849.

This species was described from Banks of Brahmaputra at Koondil (Griffith 1849 a,b). Type of this species was not seen by the later workers which lead many erroneous reports of it. Singh (1966) report's from Assam and Darjeeling belongs to *Marchantia linearis* Lehm. & Lindenb. (see Bischler, 1989). Bischler (1989) treated this species in dubious category. The same has been followed here.

***Notothylas javanica*** (Sande Lac.) Gottsche, Bot. Zeitung (Berlin) 16: 20. 1858. *Blasia javanica* Sande Lac., Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk. 5: 94. 1856.

This species was recorded for the first time by Kachroo (1954a) based on a collection from Chandmari near Gauhati. But, kept in excluded category by Singh (2002) in his treatise '*Notothylaceae of India and Nepal*'.

***Notothylas orbicularis*** (Schwein.) Sull., Amer. J. Sci. Arts 1: 75. 1846. *Targionia orbicularis* Schwein., Spec. Fl. Amer. Crypt. 23. 1821.

This species was reported by Kachroo (1954a) from Guwahati. But, kept in excluded category by Singh (2002) in his treatise '*Notothylaceae of India and Nepal*'.

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