

THE BRYOPHYTES OF GANSU PROVINCE, CHINA:
A NEW ANNOTATED CHECKLIST
МОХООБРАЗНЫЕ ПРОВИНЦИИ ГАНЬСУ, КИТАЙ:
НОВЫЙ АННОТИРОВАННЫЙ СПИСОК
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Abstract

The checklist contains bryophyte names reported from Gansu Province of China. It includes 231 specific and subspecific epithets of mosses and hepatics with 164 accepted names in 91 genera and 41 family, i.e., 22 species of liverworts in 9 genera and 9 families, and 134 species and 8 varieties of mosses in 81 genera and 32 families. These taxa are presented separately in an alphabetical list followed by annotations and a synopsis of classification. No hornwort has been recorded from Gansu.

Резюме

Список включает виды мохообразных, которые были указаны для провинции Ганьсу, Китай. Он включает 231 названий видов и внутривидовых таксонов мхов и печеночников, из которых могут быть признаны 164 вида из 91 рода, 41 семейства; их них 22 вида, 9 родов и 9 семейств печеночников, 134 вида и 8 разновидностей из 81 рода и 32 семейств мхов. Печеночники и мхи даны отдельными алфавитными списками; ряд видов снабжен аннотациями. Дано также систематическое расположение таксонов. Антоцеротовые до сих пор из Ганьсу не известны.

INTRODUCTION

Gansu Province in northwestern China is situated between 92°10'-108°43' E and 32°36'-42°27' N, and has a total land area of about 45.4 thousands km². It is adjacent to Shanxi Province to the east, and Qinghai and Xinjiang Provinces on the west, with a longitudinal width of 16 degrees. It shares its northern border with the provinces of Inner Mongolia and Ningxia, and the southern border with Sichuan, with a latitudinal span of 11 degrees.

The geographical location, geology, landform, climate, and soil condition, all contribute to the unique vegetation formation in Gansu. The prevailing climate is of the temperate type except in the south, which is subtropical (or, according to other classifications, warm temperate or meridional). Because of its location far away from the seas, its prevailing climate is arid and cold with a short summer. The dominant vegetations of Gansu are conifer and deciduous broad-leaved forests, grassland,

desert, and meadow (Huang 1997). The province harbours forest in the eastern part, dry grassland in the central part, and desert to the west. Mt. Qilian, the most important mountain range in Gansu, extends from west to east, with its highest peak reaching an altitude of 5,560 m. Being situated at the meeting point of Central Asia, Mongolia, North China, Qinghai-Tibetan Plateau and SW China, the indigenous flora of Gansu include a large number of characteristic elements of these neighboring floristic regions.

BRYOLOGICAL EXPLORATION IN GANSU

The province of Gansu remained bryologically unknown until C. Mueller (1896) and Broth-erius (1929) reported five species, including four new species, *Desmatodon solomensis* Broth., *Distichium papillosum* C. Muell., *Grimmia subterg-estina* C. Muell., and *G. kansuana* C. Muell., based on specimens collected by two early Russian explorers, N.M. Przewalski and G.N. Potanin. From 1914-26, the French Rev. E. Licent made several botanical expeditions to North China. Chinese

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botanist, R.-C. Ching, also collected many plant specimens, including bryophytes, in Kansu in 1923. Based upon their collections, Dixon (1928, 1933) published 33 species of mosses from Gansu, including five new taxa and three new distribution records for China^[8]. Of these, 16 are still recognized as valid species today. In 1936, J.-M. Liu made botanical expeditions to Shanxi, Gansu, Inner Mongolia, and Mt. Qilian.

Since then, the bryophytes of Gansu have been studied, described or mentioned by Bartram (1935), Kabiersch (1937), Chen (1941), Tung (1963), Chen & al. (1963, 1978), Zhang (1978), Li & Zhang (1979), Koponen (1981), Hattori & Lin (1985), Stark (1987), and more recently by Cao, Horton & Gao (1992), Gao (1994, 1996), Li (2000), Zhu & So (2001) and Wu (2002)^[9]. In recent years some Chinese botanists and bryologists, such as Z.-P. Wei, M.-X. Zhang, D.-Z. Zhuo, S.-Z. Hu, Z.-X. Tang, Q.-G. Chen, and Z.-L. Jin, also collected bryophytes from Gansu Province. The specimens were reported mainly by Hattori & Lin (1985), Gao (1994, 1996), Li & al. (2000), and Wu (2002).

Interestingly, probably because of the isolation of the botanical community in Gansu Province from other parts of China, for a number of years, botanists at the Department of Biology of Lanzhou University had collected many bryophytes from Mt. Xinglong and Bailongjiang National Natural Reserves and even managed to publish the new information in books that were not known to other Chinese bryologists until very recently (Zhang 1996; Zhang, Huang & Zhang 1997; Cao & al. 2000)^[9].

PRESENT STATE OF KNOWLEDGE

The present state of knowledge of bryoflora of Gansu (or Kansu) is far from complete. There has been no complete list of Gansu bryophytes. Over the decades, the reports of bryophytes for this province have been scattered and sporadic. One reason behind the poor knowledge of the bryoflora of Gansu is the lack of a resident bryologist in the province. In addition, there has been no active research program looking into the bryophyte diversity of this province. Compared to others provinces in northwest region of China (Table 1), the number of species of bryophytes in Gansu, Qinghai, and Ningxia are much lower than other provinces that have on-going bryological activities.

The two important checklists of Chinese

bryophytes published by Piiippo (1990, for Hepaticae) and Redfearn & al. (1996, for Musci) have included many bryological references for all the provinces in China. For Gansu province, Piiippo (1990) enumerated 14 species of liverworts and hornworts, and Redferan & al. (1996) listed 72 species of mosses. Because nearly all the pertinent Chinese literatures cited in Piiippo (1990) and Redfearn & al (1996) are available at the bryological library of the Institute of Applied Ecology in Shenyang, we have decided to check the old and new literatures one more time for accuracy. In doing so, we have made corrections and additions to the information of Gansu bryophytes obtained from Piiippo (1990) and Redferan & al. (1996)^[5,6]. More importantly, new publications dated after 1996 are sought for and consulted in preparing the present checklist of Gansu bryophytes.

THE CHECKLIST

This first comprehensive checklist of Gansu bryophytes includes 231 specific and subspecific epithets. Of these, 164 valid names in 91 genera and 41 families are in current use. Among the accepted species, there is no record of hornwort. We accept, for now, 22 species of hepatics in 9 genera and 9 families, and 142 species and varieties of mosses in 81 genera and 32 families. The present checklist makes an addition of 70 species of mosses to the provincial records reported in Redfearn & al. (1996) and 8 species of liverworts to that reported by Piiippo (1990). Six moss species are excluded from the Gansu flora because they were shown to be based on erroneous local information (see Redfearn & al. 1996).

All the name entries are arranged alphabetically. Accepted names are printed in boldface and followed by synonyms (if any) placed inside brackets. Literature sources are given inside the parentheses after each entry. Heterotypic or taxonomic synonyms are indicated by an equal sign (=) and homotypic or nomenclatural synonyms are expressed by the identity sign (\equiv). For the taxonomic treatment and nomenclature of Hepaticae, we follow principally Piiippo (1990), and for the mosses, Redfearn & al. (1996). Relevant explanations about the distribution and taxonomic problems are given as annotations. A synopsis of classification of the bryoflora, with the families, genera, and the number of species, is presented as Appendix 1.

Table 1. The statistics of bryophytes in six provinces in northwestern China.

Province	Number of Musci	Number of Hepaticae & Anthocerotae
Gansu	72 (Redfearn <i>et al.</i> 1996)	14 (Piiippo 1990)
Xinjiang	363 (Redfearn <i>et al.</i> 1996)	24 (Piiippo 1990) 56 (Whittimore 1998)
Ningxia	13 (Redfearn <i>et al.</i> 1996) 26 (Wang <i>et al.</i> 2001)	0
Qinghai	4 (Redfearn <i>et al.</i> 1996) 109 (Tan & Jia 1997)	0
Shanxi	583 (Redfearn <i>et al.</i> 1996)	95 (Piiippo 1990)
Inner Mongolia	490 (Redfearn <i>et al.</i> 1996) 428 (Bai 1997)	24 (Piiippo 1990) 83 (Bai 1997)

We hope that this updated bryophyte checklist of Gansu will stimulate further research on the poorly known bryophyte flora of Gansu. Very recently, Gao C., Fu X., and Wu Y.-H., Institute of Applied Ecology, the Chinese Academy of Sciences, had the opportunities to do field study at several localities in Gansu province. Full report of their collected Gansu bryophytes will be published later.

HEPATICAE

Conocephalum Hill, *nom. et. orth. cons.* (Conocephalaceae)

- **conicum** (L.) Dum. (Gao & Zhang 1981; Li & al. 1985; Luo 1986; Piiippo 1990; Zhang 1996)

Frullania Raddi (Frullaniaceae)

- **consociata** Steph. (Hattori & Lin 1985; Piiippo 1990)
- **davurica** Hampe fo. **dorsoblastos** (Hatt.) Hatt. & Lin (Hattori & Lin 1985; Piiippo 1990)
- **davurica** Hampe fo. **microphylla** (Mass.) Hatt. & Lin (Hattori & Lin 1985; Piiippo 1990)
- **ericoides** (Nees) Mont. (Hattori & Lin 1985; Piiippo 1990)
- **sinensis** Steph. (Hattori & Lin 1985; Piiippo 1990)
- **taradakensis** Steph. (Hattori & Lin 1985; Piiippo 1990)
- **tamarisci** (L.) Dum. fo. **minshanensis** (Hatt.) Hatt. [*F. tamarisci* var. *minshanensis*] (Hattori & Lin 1985; Piiippo 1990)
- *tamarisci* var. *minshanensis* Hatt. ≡ ***F. tamarisci*** fo. ***minshanensis*** fide Hattori (1978) (Hattori & Lin 1985; Piiippo 1990) ^[7]

Lejeunea Libert (Lejeuneaceae)

- **anisophylla** Mont. (Zhu & So 2001)

Marchantia L. (Marchantiaceae)

- **paleacea** Bertol. (Zhang, Huang & Zhang 1997)
- **polymorpha** L. (Zhang 1996; Zhang, Huang & Zhang 1997)

Metzgeria Raddi (Metzgeriaceae)

- **conjugata** Lindb. (Zhang 1996)

Pellia Raddi (Pelliaceae)

- **endiviifolia** (Dicks.) Dum. (Zhang 1996)

Plagiochila (Dum.) Dum. (Plagiochilaceae)

- **asplenioides** (L.) Dum. = ***P. major*** (Zhang 1996)
- **major** (Nees.) S. Arnell [*P. asplenioides*] (Zhang 1996)
- **nepalensis** (Spreng.) Lehm. & Lindenb. (Grolle & So 1999; So 2001; Zhu & So 2001)

Porella L. (Porellaceae)

- **caespitans** (Steph.) Hatt. (Hattori & Zhang 1985; Piiippo 1990)
- **chinensis** (Steph.) Hatt. (Hattori & Zhang 1985; Piiippo 1990)
- **cordaeana** (Hueb.) Moore (Luo 1986; Piiippo 1990)
- **densifolia** (Steph.) Hatt. (Hattori & Zhang 1985; Piiippo 1990)
- **oblongifolia** Hatt. (Hattori & Zhang 1985; Piiippo 1990)
- **platyphylla** (L.) Pfeiff. (Zhang, Huang & Zhang 1997)

Ptilidium Nees (Ptilidiaceae)

- **ciliare** (L.) Hampe (Gao & Zhang 1981; Piiippo 1990)

MUSCI

Abietinella C. Muell. (Thuidiaceae)

- **abietina** (Hedw.) Fleisch. (Chen & al. 1978; Zhang M.-X. 1978; Redfearn & al. 1996; Zhang Y.-J. 1996; Wu 2002)
- **histicosa** (Mitt.) Broth. [*Thuidium histicosa*] (Dixon 1933; Redfearn & al. 1996)

Actinothuidium (Besch.) Broth. (Thuidiaceae)

- **hookeri** (Mitt.) Broth. = ***A. hookeri*** var. ***boreale*** (Zhang 1996)
- **hookeri** (Mitt.) Broth. var. ***boreale*** Ignatov, Ignatova, Iwats. & Tan (Zhang 1996; Ignatov & al., 1999)

- Aloina** Kindb. (Pottiaceae)
- *obliquifolia* (C. Muell.) Broth. ≡ ***A. rigida*** var. ***obliquifolia*** (Chen 1941; Chen & al. 1963; Zhang 1978; Redfearn & al. 1996)
 - ***rigida*** (Hedw.) Limpr. var. ***obliquifolia*** (C. Muell.) Delgad. [*A. obliquifolia*] (Chen 1941; Chen & al. 1963; Zhang 1978; Redfearn & al. 1996)
- Amblystegium** Schimp. in B.S.G. (Amblystegiaceae)
- ***campyloopsis*** Dix. (Dixon 1933; Redfearn & al. 1996)
 - ***serpens*** (Hedw.) Schimp. in B.S.G. (Zhang 1978)
- Aulacomnium** Schwaegr. (Aulacomniaceae)
- ***heterostichum*** (Hedw.) B.S.G. (Zhang 1978)
- Barbella** Fleisch. (Meteoriaceae)
- *pendula* (Sull.) Fleisch. ≡ ***Neodicladiella pendula*** (Zhang, Huang & Zhang 1997)
- Barbula** Hedw., *nom. cons.* (Pottiaceae)
- *asperifolia* Mitt. ≡ ***Didymodon asperifolius*** (Zhang 1978; Gao 1996; Zhang 1996; Li, Crosby & He 2001)
 - *constrictus* Mitt. ≡ *Didymodon constrictus* = ***Didymodon vinealis*** fide Sollman (1983) (Zhang 1996)
 - *ditrichoides* Broth. ≡ ***Didymodon rigidulus*** var. ***ditrichoides*** (Zhang 1996)
 - *fallax* Hedw. ≡ ***Didymodon fallax*** (Zhang 1996)
 - *reflexa* (Brid.) Brid. = *Didymodon rigidicaulis* fide Saito (1975) = ***D. ferrugineus*** fide Hill (1981) (Zhang 1978; Gao 1996; Li, Crosby & He 2001)
 - *rigidula* (Hedw.) Milde ≡ ***Didymodon rigidulus*** (Gao 1996)
 - *rivicola* Broth. (Gao 1996; Gansu, Mt. Helan)^[1]
 - *tectorum* C. Muell. ≡ *Didymodon tectorum* = ***D. vinealis*** fide Sollman (1994) (Gao 1996; Zhang 1996; Li, Crosby & He 2001)
 - ***unguiculata*** Hedw. (Gao 1996; Li, Crosby & He 2001)
 - *vinealis* Brid. ≡ ***Didymodon vinealis*** (Zhang 1996)
- Bartramia** Hedw. (Bartramiaceae)
- ***ithyphylla*** Brid. (Zhang M.-X. 1978; Zhang Y.-J. 1996)
- Brachythecium** Schimp. in B.S.G. (Brachytheciaceae)
- ***annicola*** C. Muell. (Dixon 1933; Redfearn & al. 1996)
 - ***buchananii*** (Hook.) Jaeg. (Zhang 1978; Liu & al. 1989; Redfearn & al. 1996; Zhang, Huang & Zhang 1997)
 - ***populeum*** (Hedw.) Schimp. in B.S.G. (Zhang 1996)
- Bryhnia** Kaur. (Brachytheciaceae)
- ***novae-angliae*** (Sull. & Lesq. in Sull.) Grout (Dixon 1933; Redfearn & al. 1996)
- Bryoerythrophyllum** P.-C. Chen (Pottiaceae)
- ***recurvirostrum*** (Hedw.) P.-C. Chen (Gao 1996; Li, Crosby & He 2001)
- Bryum** Hedw. (Bryaceae)
- ***caespiticium*** Hedw. (Zhang 1996)
 - *flexicaule* C. Muell. ≡ ***B. recurvulum*** var. ***flexicaule*** fide Ochi (1985) (Dixon 1933; Redfearn & al. 1996)
 - ***recurvulum*** Mitt. var. ***flexicaule*** (C. Muell.) Ochi [*B. flexicaule*] (Dixon 1933; Redfearn & al. 1996)
- Calliargon** (Sull.) Kindb. (Amblystegiaceae)
- ***cordifolium*** (Hedw.) Kindb. (Zhang 1996)
- Campylium** (Sull.) Mitt. (Amblystegiaceae)
- ***hispidulum*** (Brid.) Mitt. var. ***hispidulum*** (Zhang 1978; Redfearn & al. 1996)
 - ***hispidulum*** var. ***sommerfeltii*** (Myr.) Lindb. (Dixon 1933; Redfearn & al. 1996)
 - ***stellatum*** (Hedw.) C. Jens (Zhang 1978; Redfearn & al. 1996)
- Campylopus** Brid. (Dicranaceae)
- ***atrovirens*** De Not. (Zhang 1978)
- Cirriphyllum** Grout (Brachytheciaceae)
- ***cirrhosum*** (Schwaegr. in Schultes) Grout (Dixon 1933; Redfearn & al. 1996; Zhang 1996)
 - ***piliferum*** (Hedw.) Grout (Zhang 1996)
- Claopodium** (Lesq. et James) Ren. & Card. (Thuidiaceae)
- ***pellucinerve*** (Mitt.) Best [*C. tenuissimum*] (Dixon 1933; Redfearn & al. 1996)
 - *tenuissimum* Dix. = ***C. pellucinerve*** fide Watanabe (1972) (Dixon 1933; Redfearn & al. 1996)
- Climacium** Web. & Mohr (Climaciaceae)
- ***dendroides*** (Hedw.) Web. & Mohr (Zhang 1996; Zhang, Huang & Zhang 1997)
 - ***japonicum*** Lindb. (Zhang 1978; Redfearn & al. 1996)
- Cratoneuron** (Sull.) Spruce (Amblystegiaceae)
- ***filicinum*** (Hedw.) Spruce (Zhang M.-X. 1978; Redfearn & al. 1996; Zhang Y.-J. 1996)
- Crossidium** Jur., *nom. cons.* (Pottiaceae)
- *chloronotos* (Brid.) Limpr. = ***C. squamiferum*** (Chen & al. 1963; Tung 1963; Redfearn & al. 1996; Gao 1996)^[2]
 - ***crassinerve*** (De Not.) Jur. (Tan & Zhao 1997)
 - ***squamiferum*** (Viv.) Jur. [*C. chloronotos*] (Chen & al. 1963; Tung 1963; Redfearn & al. 1996)^[2]

- Ctenidium* (Schimp.) Mitt. (Hypnaceae)
 – *procerrimum* (Mol.) Lindb. ≡ *Pseudostereodon procerrimum* (Dixon 1933)
- Cyrtomnium** Holm. (Mniaceae)
 – **hymenophylloides** (Hueb.) Nyh. ex T. Koponen (Koponen 1981; Redfearn & al. 1996)
- Desmatodon** Brid. (Pottiaceae)
 – **gemmascens** P.-C. Chen [*D. gemmascens* var. *hopeiensis*] (Chen 1941; Redfearn & al. 1996)
 – *gemmascens* var. *hopeiensis* (P.-C. Chen) Zand. = ***D. gemmascens*** (Chen 1941; Redfearn & al. 1996)
 – *solomensis* Broth. ≡ *Tortula sinensis* = ***Syntrichia sinensis*** fide Ochyra (1992) (Brotherus 1929; Redfearn & al. 1996)
- Dicranella** (C. Muell.) Schimp. (Dicranaceae)
 – **coarctata** (C. Muell.) Bosch & Sande Lac. (Zhang, Huang & Zhang 1997)
- Dicranum** Hedw. (Dicranaceae)
 – **japonicum** Mitt. (Zhang, Huang & Zhang 1997)
 – **lorifolium** Mitt. (Gao 1994; Gao, Crosby & He 1999)
- Didymodon** Hedw. (Pottiaceae)
 – **asperifolius** (Mitt.) Crum, Steere & Anderson [*Barbula asperifolia*] (Zhang M.-X. 1978; Gao 1996; Zhang Y.-J. 1996; Li, Crosby & He 2001)
 – *constrictum* Mitt. Saito [*Barbula constrictus*] = ***D. vinealis*** fide Sollman (1983) (Zhang 1996)
 – **ferrugineus** (Schimp. ex Besch.) Hill [*Barbula reflexa*, *D. rigidicaulis*] (Zhang 1978; Gao 1996; Li, Crosby & He 2001)
 – *rigidicaulis* (C. Muell.) Saito [*Barbula reflexa*] = ***D. ferrugineus*** fide Hill (1981) (Gao 1996; Zhang 1978)
 – **rigidulus** Hedw. [*Barbula rigidula*] (Gao 1996; Li, Crosby & He 2001)
 – **rigidulus** Hedw. var. **ditrichoides** (Broth.) Zand. [*Barbula ditrichoides*] (Zhang 1996)
 – *tectorum* (C. Muell.) Saito = ***D. vinealis*** fide Sollman (1994) (Gao 1996; Zhang 1996; Li, Crosby & He 2001)
 – **vinealis** (Brid.) Zand. [*Barbula tectorum*, *D. tectorum*, *Barbula vinealis*] (Gao 1996; Zhang 1996; Li, Crosby & He 2001)
- Distichium** Bruch et Schimp. in B.S.G. (Ditrichaceae)
 – **capillaceum** (Hedw.) B.S.G. (Gao 1994; Redfearn & al. 1996; Zhang 1996; Gao, Crosby & He 1999)
 – **papillosum** C. Muell. (Mueller 1896)
- Ditrichum** Hampe (Ditrichaceae)
 – **flexicaule** (Schwaegr.) Hampe (Zhang 1996)
- Drepanocladus* (C. Muell.) Roth (Amblystegiaceae)
 – *lycopodioides* (Brid.) Warnst. ≡ ***Pseudo-***
- calliergon lycopodioides*** (Zhang 1996)
 – *uncinatus* (Hedw.) Warnst. ≡ ***Sanionia uncinata*** (Zhang 1996)
- Encalypta** Schreb. ex Hedw. (Encalyptaceae)
 – **rhabdocarpa** Schwaegr. (Cao, Horton & Gao 1992; Gao 1996; Redfearn & al. 1996; Li, Crosby & He 2001)
- Entodon** C. Muell. (Entodontaceae)
 – **caliginosus** (Mitt.) Jaeg. [*E. pseudo-orthocarpus*] (Dixon 1933; Redfearn & al. 1996)
 – **cladorrhizans** (Hedw.) C. Muell. (Zhang 1996)
 – **concinus** (De Not.) Par. (Zhang M.-X. 1978; Redfearn & al. 1996; Zhang Y.-J. 1996)
 – *pseudo-orthocarpus* C. Muell. = ***E. caliginosus*** fide Hu (1983) (Dixon 1933; Redfearn & al. 1996)
- Erythrodonium* Hampe (Entodontaceae)
 – *leptothallum* (C. Muell.) Nog. ≡ ***Eurohypnum leptothallum*** (Zhang, Huang & Zhang 1997)
- Eurhynchium** Schimp. in B.S.G. (Brachytheciaceae)
 – **angustirete** (Broth.) T. Kop. (Zhang 1978; Redfearn & al. 1996)
 – **praelongum** (Hedw.) Schimp. in B.S.G. [*Oxyrrhynchium praelongum*] (Zhang 1978)
 – *striatum* auct. Fl. Sin., non (Hedw.) Schimp. = ***E. angustirete*** (Zhang 1978; Redfearn & al. 1996)
- Eurohypnum** Ando (Entodontaceae)
 – **leptothallum** (C. Muell.) Ando [*Erythrodonium leptothallum*] (Zhang, Huang & Zhang 1997)
- Fissidens** Hedw. (Fissidentaceae)
 – *cristatus* Wils. ex Mitt. = *F. dubius* fide Karttunen (1987) (Zhang 1978)
 – **dubius** P. Beauv. [*F. crisatus*] (Zhang 1978)
 – **grandifrons** Brid. (Zhang 1978; Redfearn & al. 1996)
 – **taxifolius** Hedw. (Zhang 1996)
- Forsstroemia** Lindb. (Cryphaeaceae)
 – *cryphaeopsis* Dix. = ***F. producta*** fide Stark (1987) (Dixon 1933; Stark 1987; Redfearn & al. 1996)
 – **producta** (Hornsch.) Par. [*F. cryphaeopsis*] (Dixon 1933; Stark 1987; Redfearn & al. 1996)
 – *tripinnata* (Dix.) Nog. = ***Pseudopterobryum temicuspis*** fide Noguchi & Li (1988) (Stark 1987; Redfearn & al. 1996)
- Funaria** Hedw. (Funariaceae)
 – **hygrometrica** Hedw. (Li 2000; Zhang 1996; Zhang, Huang & Zhang 1997)
 – **sinensis** Dix. (Li 2000)
- Gollania** Broth. (Hypnaceae)
 – *densepinnata* Dix. = ***G. turgens*** fide Higuchi (1985) (Dixon 1933; Higuchi 1985, 1991;

- Redfearn & al. 1996)
- **schensiana** Higuchi (Higuchi 1991; Redfearn & al. 1996)
 - **turgens** (C. Muell.) Ando [*G. densepinnata*] (Dixon 1933; Higuchi 1985, 1991; Redfearn & al. 1996)
- Grimmia** Ehrh. ex Hedw. (Grimmiaceae)
- **elatio**r Bruch ex Bals. et De Not. (Cao & Vitt 1986; Redfearn & al. 1996; Li 2000)
 - **kansuana** C. Muell. (Mueller 1896; Redfearn & al. 1996, mistaken to be from Shanxi) ^[10]
 - **hartmanii** Schimp. (Zhang 1996) ^[10]
 - **laevigata** (Brid.) Brid. (Dixon 1928; Cao & Vitt 1986; Redfearn & al. 1996; Li 2000)
 - **pulvinata** (Hedw.) Sm. (Zhang 1996)
 - **tergestina** Tomm. ex B.S.G. (Cao & Vitt 1986; Redfearn & al. 1996; Li 2000)
 - **subtergestina** C. Muell. (Mueller 1896; Redfearn & al. 1996, mistaken to be from Shanxi) ^[10]
- Gymnostomum** Nees & Hornsch. (Pottiaceae)
- **aurantiacum** (Mitt.) Jaeg. = **Hymenostylium recurvirostre** var. **cylindricum** fide Zander (1993) (Liu & al. 1989; Redfearn & al. 1996)
- Hedwigia** P. Beauv. (Hedwigiaceae)
- **ciliata** (Hedw.) Ehrh. ex P. Beauv. (Zhang 1978)
- Homalia** (Brid.) Bruch. et Schimp. in B.S.G. (Neckeraceae)
- **spathulata** Dix. = **H. trichomanoides** (Dixon 1933; Redfearn & al. 1996)
 - **trichomanoides** (Hedw.) Bruch. et Schimp. in B.S.G. [*Neckera spathulata*, *Homalia spathulata*] (Dixon 1933; He 1992; Redfearn & al. 1996)
- Homali dendron** Fleisch. (Neckeraceae)
- **papillosum** Broth. [*Porotrichum perplexans*] (Dixon 1933; Redfearn & al. 1996)
- Hymenostylium** Brid. (Pottiaceae)
- **curvirostre** var. **commutatum** (Mitt.) Hag. = **H. recurvirostre** var. **commutatum** (Dixon 1933; Redfearn & al. 1996)
 - **recurvirostre** (Hedw.) Dix. var. **commutatum** (Mitt.) Podp. [*H. curvirostre* var. **commutatum**] (Dixon 1933; Redfearn & al. 1996)
 - **recurvirostre** var. **cylindricum** (Bartr.) Zand. [*Gymnostomum aurantiacum*] (Liu & al. 1989; Redfearn & al. 1996)
- Hypnum** Hedw. (Hypnaceae)
- **callichroum** Funck ex Brid. (Zhang 1996)
 - **cupressiforme** Hedw. (Zhang 1996)
 - **revolutum** (Mitt.) Lindb. (Zhang 1996; Zhang, Huang & Zhang 1997)
 - **vaucheri** Lesq. (Dixon 1933; Ando 1976; Redfearn & al. 1996)
- Leskeella** (Limpr.) Loeske (Leskeaceae)
- **tectorum** (Funck ex Brid.) Hag. = **Pseudoleskeella tectorum** (Funck ex Brid.) Kindb. in Broth. (Zhang 1996)
- Leucodon** Schwaegr. (Leucodontaceae)
- **denticulatus** Broth. (Muller 1896)
- Lindbergia** Kindb. (Leskeaceae)
- **sinensis** (C. Muell.) Broth. (Dixon 1933; Redfearn & al. 1996)
- Merceyopsis** (Pottiaceae)
- **sikkimensis** (C. Muell.) Broth. = **Scopelophila cataractae** fide Zander (1967) (Gao 1996; Li, Crosby & He 2001)
- Meteorium** (Brid.) Dozy & Molk. (Meteororiaceae)
- **buchananii** (Brid.) Broth. ssp. **helminthocladulum** (Card.) Nog. [*M. helminthocladulum*] (Zhang 1978)
 - **helminthocladulum** (C. Muell.) Fleisch. = **Meteorium buchananii** ssp. **helminthocladulum** fide Noguchi (1976) (Zhang 1978)
- Mielichhoferia** Nees & Hornsch. in Nees & al. (Bryaceae)
- **sinensis** Dix. (Dixon 1933; Redfearn & al. 1996)
- Mnium** Hedw., *nom. cons.* (Mniaceae)
- **affine** Bland. ex Funck = **Plagiomnium affine** (Dixon 1933; Kabiersch 1937; Chen & al. 1963; Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)
 - **affine** var. **elatum** B.S.G. (Li & Zhang 1979; Redfearn & al. 1996) ^[3]
 - **arbusculum** C. Muell. = **Plagiomnium arbusculum** fide Koponen (1968) (Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)
 - **confertidens** Lindb. & H. Arn. = **Plagiomnium confertidens** (Dixon 1933; Redfearn & al. 1996)
 - **curvulum** C. Muell. = **Trachycystis ussuriensis** fide Koponen (1977) (Dixon 1933; Kabiersch 1937; Zhang 1978; Redfearn & al. 1996)
 - **cuspidatum** Hedw. ssp. **trichomanes** (Mitt.) Kab. = **Plagiomnium acutum** fide Koponen (1981) (Kabiersch 1937; Li & Zhang 1979; Redfearn & al. 1996; Zhang 1996; Zhang, Huang & Zhang 1997)
 - **heterophyllum** (Hook.) Schwaegr. (Dixon 1933; Zhang 1978; Kabiersch 1937; Li & Zhang 1979; Redfearn & al. 1996)
 - **integrum** Besch & Sande Lac. = **Plagiomnium integrum** fide Koponen (1981) (Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)
 - **inmarginatum** Broth. = **Trachycystis ussuriensis** fide Koponen (1977) (Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996; Zhang 1996)
 - **japonicum** Lindb. = **Plagiomnium japonicum**

- fide Koponen (1968) (Zhang 1978)
- *laevinerve* Card. = ***M. lycopodioides*** fide Koponen (1994) (Zhang 1996)
 - ***lycopodioides*** Schwaegr. [*M. laevinerve*] (Zhang 1996)
 - *lycopodioides* Schwaegr. ssp. *orthorrhynchum* (Lindb.) Wijk & Marg. = ***M. thomsonii*** fide Koponen (1968) (Zhang 1978; Koponen 1981)
 - *magnirete* (Lindb. & H. Arn.) Kindb. = ***M. marginatum*** (Li & Zhang 1979; Redfearn & al. 1996)
 - ***marginatum*** (With.) P. Beauv. [*M. magnirete*] (Li & Zhang 1979; Redfearn & al. 1996)
 - *orthorrhynchum* (Brid.) Kab. = ***M. thomsonii*** fide Koponen (1968) (Kabiersch 1937; Li & Zhang 1979; Redfearn & al. 1996)
 - *rostratum* Schrad. ≡ ***Plagiomnium rostratum*** (Kabiersch 1937; Zhang M.-X. 1978; Li & Zhang 1979; Koponen & Luo 1982; Redfearn & al. 1996; Zhang Y.-J. 1996)
 - ***spinosum*** (Voit.) Schwaegr. (Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)
 - *succulentum* Mitt. ≡ ***Plagiomnium succulentum*** fide Koponen (1968) (Zhang 1978)
 - ***thomsonii*** Schimp. [*M. lycopodioides* ssp. *orthorrhynchum*, *M. orthorrhynchum*] (Kabiersch 1937; Zhang 1978; Li & Zhang 1979; Koponen 1981; Redfearn & al. 1996)
 - ***undulatum*** Hedw. (Zhang 1996)
 - *vesicatum* Besch. ≡ ***Plagiomnium vesicatum*** fide Koponen (1968) (Chen & al. 1963; Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)^[3]
- Molendoa** Lindb. (Pottiaceae)
- ***sendtneriana*** (Bruch. et Schimp. in B.S.G.) Limpr. (Chen 1941; Zhang 1978; Redfearn & al. 1996)
- Myurella** Schimp. in B.S.G. (Theliaceae)
- *gracilis* Lindb. = ***M. sibirica*** (Dixon 1933; Redfearn & al. 1996)
 - ***julacea*** (Schwaegr.) Schimp. in B.S.G. (Gao & Cao 1992; Redfearn & al. 1996; Wu 2002)
 - ***sibirica*** (C. Muell.) Reim. [*M. gracilis*] (Dixon 1933; Redfearn & al. 1996)
- Myuroclada** Besch. (Brachytheciaceae)
- ***maximowiczii*** (Borszcz.) Steere & Schof. (Zhang M.-X. 1978; Zhang Y.-J. 1996; Zhang, Huang & Zhang 1997)
- Neckera** Hedw., *nom. cons.* (Neckeraceae)
- ***complanata*** (Hedw.) Hueb. (Zhang 1996)
 - ***pennata*** Hedw. var. ***pennata*** (Dixon 1933; Redfearn & al. 1996; Zhang 1996)
 - ***pennata*** var. ***leiophylla*** Dix. (Dixon 1933; Redfearn & al. 1996)
 - *spatulata* (Dix.) Dix. ≡ ***Homalia spatulata***
- = ***Homalia trichomanoides*** (Dixon 1933; Redfearn & al. 1996)
- Neodiciadiella** (Nog.) W.R. Buck (Metetoriaceae)
- ***pendula*** (Sull.) W.R. Buck [*Barbella pendula*] (Zhang, Huang & Zhang 1997)
- Oncophorus** (Brid.) Brid. (Dicranaceae)
- ***wahlenbergii*** Brid. (Zhang 1996)
- Oreowesia** (Bruch & Schimp. in B. S. G.) De Not. (Dicranaceae)
- ***laxifolia*** (Hook. f.) Kindb. (Zhang 1996)
- Orthotrichum** Hedw. (Orthotrichaceae)
- ***obtusifolium*** Brid. (Lewinsky 1992; Redfearn & al. 1996)
- Oxyrrhynchium* (Brachytheciaceae)
- *praelongum* (Hedw.) Warnst. ≡ *Eurhynchium praelongum* (Zhang 1978)
- Plagiomnium** T. Kop. (Mniaceae)
- ***acutum*** (Lindb.) T. Kop. [*Mnium cuspidatum* ssp. *trichomanes*] (Kabiersch 1937; Li & Zhang 1979; Redfearn & al. 1996)
 - ***affine*** (Bland.) T. Kop. [*Mnium affine*] (Dixon 1933; Kabiersch 1937; Chen & al. 1963; Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)^[3]
 - ***arbusculum*** (C. Muell.) T. Kop. [*Mnium arbusculum*] (Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)
 - ***confertidens*** (Lindb. & H. Arn.) T. Kop. [*Mnium confertidens*] (Dixon 1933; Redfearn & al. 1996)
 - ***ellipticum*** (Brid.) T. Kop. (Koponen & Luo 1982; Redfearn & al. 1996)
 - ***integrum*** (Besch. & Sande Lac.) T. Kop. [*M. integrum*] (Zhang 1978; Li & Zhang 1979; Koponen & Luo 1982; Redfearn & al. 1996)
 - ***japonicum*** (Lindb.) T. Kop. [*Mnium japonicum*] (Zhang 1978)
 - ***rostratum*** (Schrad.) T. Kop. [*Mnium rostratum*] (Kabiersch 1937; Zhang 1978; Li & Zhang 1979; Koponen & Luo 1982; Redfearn & al. 1996)
 - ***succulentum*** (Mitt.) T. Kop. [*Mnium succulentum*] (Zhang 1978; Redfearn & al. 1996)
 - ***vesicatum*** (Besch.) T. Kop. [*Mnium vesicatum*] (Chen & al. 1963; Zhang 1978; Li & Zhang 1979; Redfearn & al. 1996)^[3]
- Pogonatum** P. Beauv. (Polytrichaceae)
- ***inflexum*** (Lindb.) Sande Lac. (Zhang, Huang & Zhang 1997)
 - ***nudiusculum*** Mitt. (Zhang, Huang & Zhang 1997)
 - ***urnigerum*** (Hedw.) P. Beauv. (Zhang 1978; Zhang, Huang & Zhang 1997)
- Porotrichum* (Brid.) Hampe (Neckeraceae)
- *perplexans* Dix. = ***Homaliodendron papillosum*** fide Enroth (1992) (Dixon 1933; Redfearn & al. 1996)

- *tripinnatum* Dix. ≡ *Forsstroemia tripinnata* = ***Pseudopterobryum tenuispis*** fide Noguchi & Li (1988) (Dixon 1933; Redfearn & al. 1996)
- Pseudocalliergon** (Limpr.) Loeske (Amblystegiaceae)
 - **lycopodioides** (Brid.) Hedenäs [*Drepanocladus lycopodioides*] (Zhang 1996)
- Pseudoleskeella** Kindb. (**Leskeaceae**)
 - **tectorum** (Funck ex Brid.) Kindb. in Broth. [*Leskeella tectorum*] (Zhang 1996)
- Pseudopterobryum** Broth. (Pterobryaceae)
 - **tenuispis** Broth. [*Porotrichum tripinnatum*, *Forsstroemia tripinnata*] (Dixon 1933; Stark 1987; Redfearn & al. 1996) ^[4]
- Pseudostereodon** (Broth.) Fleisch. (Hypnaceae)
 - **procerrimus** (Mol.) Fleisch. [*Ctenidium procerrimum*] (Dixon 1933; Redfearn & al. 1996)
- Pseudosymblepharis** Broth. (Pottiaceae)
 - **angustata** (Mitt.) Chen (Li & Iwatsuki 1996)
- Ptychomitrium** Fuernr. (Ptychomitriaceae)
 - **dentatum** (Mitt.) Jaeg. (Zhang 1978)
 - **linearifolium** Reim. & Sak. (Zhang, Huang & Zhang 1997)
- Pylaisia** Schimp., *nom. cons.* (Hypnaceae)
 - **brotheri** Besch. [= *Pylaisiella brotheri*] (Zhang, Huang & Zhang 1997)
- Pylaisiella* Kindb. (Hypnaceae)
 - *brotheri* (Besch.) Iwats. & Nog. ≡ ***Pylaisia brotheri*** (Zhang, Huang & Zhang 1997)
- Racomitrium** Brid. (Grimmiaceae)
 - **canescens** (Hedw.) Brid. (Zhang, Huang & Zhang 1997)
 - **ericoides** (Hedw. ex Brid.) Brid. (Li 2000)
- Rhabdoweisia** Bruch et Schimp. in B.S.G. (Dicranaceae)
 - **crispata** (Dicks. ex With.) Lindb. (Gao 1994; Gao, Crosby & He 1999)
- Rhodobryum** (Schimp.) Hampe (Bryaceae)
 - **giganteum** (Schwaegr.) Par. (Koponen, Li & Zhang 1982; Redfearn & al. 1996; Zhang, Huang & Zhang 1997)
 - **roseum** (Hedw.) Limpr. (Zhang M.-X. 1978; Zhang Y.-J. 1996; Zhang, Huang & Zhang 1997)
- Sanionia** Loeske (Amblystegiaceae)
 - **uncinata** (Hedw.) Loeske [*Drepanocladus uncinatus*] (Zhang 1996)
- Scopelophila** (Mitt.) Lindb. (Pottiaceae)
 - **catractae** (Mitt.) Broth. [*Merceyopsis sikkimensis*] (Gao 1996; Li, Crosby & He 2001)
- Stegonia** Vent. (Pottiaceae)
 - **latifolia** (Schwaegr. in Schultes) Vent. ex Broth. (Gao 1996)
- Symblepharis** Mont. (Dicranaceae)
 - **vaginata** (Hook.) Wijk et Marg. (Zhang 1996)
- Syntrichia** Brid. (Pottiaceae)
 - *alpina* (Bruch et Schimp. in B.S.G.) Jur., *hom. illeg.* = *Syntrichia sinensis* fide Ochyra (1992) (Chen 1941; Redfearn & al. 1996)
 - **ruralis** (Hedw.) Web. & Mohr [*Tortula ruralis*] (Gao 1996; Li, Crosby & He 2001)
 - **sinensis** (C. Muell.) Ochyra [*Desmaton solomensis*, *Syntrichia alpina*, *Tortula sinensis*] (Brotherus 1929; Chen 1941; Anonymous 1972; Redfearn & al. 1996)
- Tetraplodon** Bruch et Schimp. in B.S.G. (Splachnaceae)
 - **angustatus** var. **integerrimus** C. Gao (Li 2000)
 - **nnioides** (Hedw.) Bruch et Schimp. in B.S.G. (Li 2000)
 - **urceolatus** (Hedw.) Bruch et Schimp. in B.S.G. (Dixon 1933; Redfearn & al. 1996)
- Thamnium* Bruch & Schimp. in B.S.G. (Neckeraceae)
 - *laevinerve* Broth. = ***Thamnobryum subserratum*** fide Tan, Lin, Crosby & Wu (1994) (Dixon 1933; Redfearn & al. 1996)
- Thamnobryum** Nieuwl. (Neckeraceae)
 - **subserratum** (Hook.) Nog. & Iwats. [*Thamnium laevinerve*] (Dixon 1933; Redfearn & al. 1996)
- Thuidium** Bruch. & Schimp. in B.S.G. (Thuidiaceae)
 - **assimile** (Mitt.) Jaeg. (Zhang 1978; Redfearn & al. 1996; Zhang, Huang & Zhang 1997)
 - **cymbifolium** (Dozy & Molk.) Dozy & Molk. (Zhang 1978)
 - *delicatulum* (Hedw.) Mitt., *hom. illeg.* ≡ ***T. recognitum*** var. ***delicatulum*** (Zhang 1978; Zhang 1996; Zhang, Huang & Zhang 1997)
 - *histicosa* Mitt. ≡ ***Abietinella histicosa*** (Dixon 1933; Redfearn & al. 1996)
 - **recognitum** (Hedw.) Lindb. var. ***delicatulum*** (Hedw.) Warnst [*T. delicatulum*] (Zhang M.-X. 1978; Zhang Y.-J. 1996; Zhang, Huang & Zhang 1997)
 - *philibertii* Limpr. = ***T. assimile*** fide Touw (2001) (Zhang 1978; Redfearn & al. 1996; Zhang, Huang & Zhang 1997)
- Timmia** Hedw., *nom. cons.* (Timmiaceae)
 - *bavarica* Hessel. ≡ ***T. megapolitana*** var. ***bavarica*** fide Brassard (1984) (Dixon 1933; Zhang 1978; Redfearn & al. 1996; Zhang 1996; Zhao & Han 1999)
 - **megapolitana** var. ***bavarica*** (Hessel.) Brid. (Dixon 1933; Redfearn & al. 1996)
- Timmiella** (De Not.) Limpr. (Pottiaceae)
 - **diminuta** (C. Muell.) Chen (Gao 1996; Li, Crosby & He 2001)
- Tortella** (Lindb.) Limpr. (Pottiaceae)
 - **fragilis** (Hook. et Wils. in Drumm.) Limpr. (Gao 1996; Li, Crosby & He 2001)

- **tortuosa** (Hedw.) Limpr. (Gao 1996; Li, Crosby & He 2001)
- Tortula** Hedw. (Pottiaceae)
- *ruralis* (Hedw.) Gaertn., Meyer & Scherb. ≡ ***Syntrichia ruralis*** (Gao 1996)
- *sinensis* (C. Muell.) Borth. in Levier ≡ ***Syntrichia sinensis*** fide Ochyra (1992) (Brotherus 1929; Chen 1941; Redfearn & al. 1996)
- **subulata** Hedw. (Gao 1996)
- Trachycystis** Lindb. (Mniaceae)
- **ussuriensis** (Maack & Regel in Regel) T. Kop. [*Mnium curvulum*, *M. immarginatum*] (Dixon 1933; Kabiersch 1937; Zhang 1978; Redfearn & al. 1996)
- Trachypodopsis** Fleisch. (Trachypodaceae)
- *crispatula* (Hook.) Fleish. ≡ ***T. serrulata*** var. ***crispatula*** (Dixon 1933; Wu 1992; Redfearn & al. 1996)
- **serrulata** (Beauv.) Fleisch. var. ***crispatula*** (Hook.) Zand. [*T. crispatula*] (Dixon 1933; Redfearn & al. 1996)
- Venturiella** C. Muell. (Erpodiaceae)
- **sinensis** (Vent.) C. Muell. (Zhang 1978)
- Weissia** Hedw. (Pottiaceae)
- **controversa** Hedw. (Liu & al. 1989)

ANNOTATIONS

(1). The record of *Barbula rivicola* Broth. in Gansu is an error because Mt. Helan is not located in Gansu province.

(2). Tan & Zhao (1997) stated that the reports of *Crossidium chloronotos* (Brid.) Jur. from Gansu, Xinjiang and Inner Mongolia should be corrected to *C. crassinerve* (De Not.) Jur.

(3). Koponen (1981) reported that *Mnium affine* and *M. elatum* are basically European in range and their Asian reports are based on misidentification. He also doubted the occurrence of *P. vesicatum* (Besch.) T. Kop. [*Mnium vesicatum*] in China (Koponen 1994).

(4). The distribution and records of *Pseudopterygium tenuicuspis* Broth. in Gansu and Jiangsu are still uncertain (Noguchi & Li 1988).

(5): Redfearn & al. (1996) failed to include the following 19 species and 3 subspecies for Gansu, although these taxa (or their taxonomic synonyms) were reported from the province by Mueller (1896), Zhang (1978) and Gao (1994):

Amblystegium serpens
Aulacomnium heterostichum
Barbula asperifolia
Bartramia ithyphylla
Campylopus atrovirens
Distichium capillaceum
Fissidens cristatus
Grimmia subtergestina

Hedwigia ciliata
Leucodon denticulatus
Meteorium buchananii ssp. *helminthocladulum*
Mnium japonicum
Mnium cuspidatum ssp. *trichomanes*
Mnium lycopodioides ssp. *orthorrhynchum*
Myuroclada maximowiczii
Oxyrrhynchium praelongum
Pogonatum urnigerum
Ptychomitrium dentatum
Rhabdoweisia crispata
Rhodobryum roseum
Thuidium cymbifolium
Thuidium delicatulum
Venturiella sinensis

(6): The following six species should be excluded from Gansu. Their records in Redfearn & al. (1996) are based on erroneous locality information –

Platyhypnidium esquirolii
Tortula leucostoma
Distichophyllum collenchymatosum
Hymenostylium recurvirostre var. *recurvirostre*
Mnium maximowiczii
Trachypodopsis serrulata var. *serrulata*

(7): The following variety of liverwort is based on a type specimen from Gansu and is known only from the type locality: *Frullania tamarisci* var. *minshanensis* Hatt. [Holotype: China. Gansu, Wenxian, May 1964, Z.-P. Wei 6799].

(8): The following 6 species and 1 subspecies of mosses are based on type specimens collected from Gansu:

Amblystegium campyloopsis Dix., Hong Kong Natural Suppl. 2: 2. 1933. [Holotype: near Lan tcheou, W Kansu, 13 July 1918, coll. Rev. E. Licent 250 (BM)].
Desmatodon solomensis Broth., Rev. Bryol. n. ser. 2: 2. 1929. [Holotype: Prov. Kansu occ. ad. fl. *Solomo*, affl. fl. *Bardum*, G. N. Potanin (H-BR)].
Distichium papillosum C. Muell., Nuov. Giorn. Bot. Ital. n. ser. 3: 90. 1896. [Holotype: *in provincia Kansu ad latera septentrionalia montium Rdonsug legit primus, Potanin, anno 1886*].

Forsstroemia cryphaeopsis Dix., Hong Kong Natural Suppl. 2: 18. 1933. [Holotype: Pei la hia, SE Kansu, 28th April, 1919, coll. Rev. E. Licent 298 (BM)].

Grimmia kansuana C. Muell., Nuov. Giorn. Bot. Ital. n. ser. 3: 109. 1896. [Holotype: prov. Kansu, *Alpes ad captantes a flumine Tatung, 8000-9000 ped., in molis vetustis vulgaris, Augusto 1880: N. M. Przewalski*].

Grimmia subtergestina C. Muell., Nuov. Giorn. Bot. Ital. n. ser. 3: 109. 1896. [Holotype: *Prov. Kansu, ad flumen Bardun prope ostium fluminis Solomo, Majo 1886, G. N. Potanin legit sterilem*].

Mielichhoferia sinensis Dix., Hong Kong Natural Suppl. 2: 15. 1933. [Holotype: Lou Kia Wa Seu, W Kansu, 28 Aug 1918, coll. Rev. E. Licent 269 (BM)].

Mnium cuspidatum Hedw. ssp. *trichomanes* (Mitt.) Kab., Hedwigia 76: 34. 1937. [Holotype: Kansu, reg.

Tangut, 8500 f., VIII. 1880, *N. M. Przewalski 681*].

Porotrichum perplexans Dix., Hong Kong Natural Suppl. 2: 21. 1933. [Holotype: Cheu Menn, SE Kansu, 10 May 1919, coll. *Rev. E. Licent 314b* (BM)].

Porotrichum tripinnatum Dix., Hong Kong Natural Suppl. 2: 20. 1933. [Type: near Hoei Hien, SE Kansu, 17 April 1919, coll. *Rev. E. Licent 286* (BM); Paratypes: *Rev. E. Licent 290, 291* (BM)].

(9): Except for the mention of the province, citation of a specific Gansu specimen is lacking in the following publications: Chen & al. (1963, 1978), Zhang M.-X. (1978, 1987), Li & Zhang (1979), Li & al. (1985), Liu & al. (1989), Zhang Y.-J. (1996), and Zhang, Huang, & Zhang (1997).

(10): Failing to find the type specimens, Cao &

Vitt (1986) pointed out that *Grimmia kansuana* and *G. subtergestina* may be conspecific with *G. laevigata* and *G. tergestina*, respectively. The distribution of *G. hartmanii* Schimp. in China should be excluded due to misidentification (Li 2000).

ACKNOWLEDGEMENTS

We appreciate the National Natural Science Foundation of China (Project: 30100025) and Chinese Academy of Sciences for support of the present project. Thanks are due to Dr. Feng Huyuan of Lanzhou University for providing the local bryological literatures. We also thank the editor of *Arctoa* for help in updating and standardizing further the nomenclatures of some taxa in the list.

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Appendix 1. A synopsis of the bryophytes of Gansu Province in China. The number inside the parenthesis (n) indicates the number of taxa accepted.

HEPATICAE	<i>Forsstroemia</i> (1)	<i>Trachycystis</i> (1)
Conocephalaceae	Dicranaceae	Neckeraceae
<i>Conocephalum</i> (1)	<i>Campylopus</i> (1)	<i>Homalia</i> (1)
Frullaniaceae	<i>Dicranum</i> (2)	<i>Homaliidendron</i> (1)
<i>Frullania</i> (7)	<i>Dicranella</i> (1)	<i>Neckera</i> (3)
Lejeuneaceae	<i>Oncophorus</i> (1)	<i>Thamnobryum</i> (1)
<i>Lejeunea</i> (1)	<i>Oreoweisia</i> (1)	Orthotrichaceae
Marchantiaceae	<i>Rhabdoweisia</i> (1)	<i>Orthotrichum</i> (1)
<i>Marchantia</i> (1)	<i>Symblepharis</i> (1)	Polytrichaceae
Metzgeriaceae	Ditrichaceae	<i>Pogonatum</i> (3)
<i>Metzgeria</i> (1)	<i>Distichium</i> (2)	Pottiaceae
Pelliaceae	<i>Ditrichum</i> (1)	<i>Aloina</i> (1)
<i>Pellia</i> (1)	Encalyptaceae	<i>Barbula</i> (1)
Plagiochilaceae	<i>Encalypta</i> (1)	<i>Bryoerythrophyllum</i> (1)
<i>Plagiochila</i> (2)	Entodontaceae	<i>Crossidium</i> (2)
Porellaceae	<i>Entodon</i> (3)	<i>Desmatodon</i> (1)
<i>Porella</i> (6)	<i>Eurohypnum</i> (1)	<i>Didymodon</i> (5)
Ptilidiaceae	Erpodiaceae	<i>Hymenostylium</i> (2)
<i>Ptilidium</i> (1)	<i>Venturiella</i> (1)	<i>Molendoa</i> (1)
MUSCI	Fissidentaceae	<i>Pseudosymblepharis</i> (1)
Amblystegiaceae	<i>Fissidens</i> (3)	<i>Scopelophila</i> (1)
<i>Amblystegium</i> (2)	Funariaceae	<i>Stegonia</i> (1)
<i>Calliargon</i> (1)	<i>Funaria</i> (2)	<i>Syntrichia</i> (2)
<i>Campylium</i> (3)	Grimmiaceae	<i>Timmiella</i> (1)
<i>Cratoneuron</i> (1)	<i>Grimmia</i> (7)	<i>Tortella</i> (2)
<i>Pseudocalliargon</i> (1)	<i>Racomitrium</i> (2)	<i>Tortula</i> (1)
<i>Sanionia</i> (1)	Hedwigiaceae	<i>Weissia</i> (1)
Aulacomniaceae	<i>Hedwigia</i> (1)	Pterobryaceae
<i>Aulacomnium</i> (1)	Hypnaceae	<i>Pseudopterobryum</i> (1)
Bartramiaceae	<i>Gollania</i> (2)	Ptychomitriaceae
<i>Bartramia</i> (1)	<i>Hypnum</i> (4)	<i>Ptychomitrium</i> (2)
Brachytheciaceae	<i>Pseudostereodon</i> (1)	Splachnaceae
<i>Brachythecium</i> (3)	<i>Pylaisia</i> (1)	<i>Tetraplodon</i> (3)
<i>Bryhnia</i> (1)	Leucodontaceae	Theliaceae
<i>Cirriphyllum</i> (2)	<i>Leucodon</i> (1)	<i>Myurella</i> (2)
<i>Eurhynchium</i> (2)	Leskeaceae	Thuidiaceae
<i>Myuroclada</i> (1)	<i>Lindbergia</i> (1)	<i>Abietinella</i> (2)
Bryaceae	<i>Pseudoleskeella</i> (1)	<i>Actinothidium</i> (1)
<i>Bryum</i> (2)	Meteroriaceae	<i>Claopodium</i> (1)
<i>Mielichhoferia</i> (1)	<i>Meteorium</i> (1)	<i>Thuidium</i> (3)
<i>Rhodobryum</i> (2)	<i>Neodiciadiella</i> (1)	Timmiaceae
Climaciaceae	Mniaceae	<i>Timmia</i> (1)
<i>Climacium</i> (2)	<i>Cyrtomnium</i> (1)	Trachypodaceae
Cryphaeaceae	<i>Mnium</i> (6)	<i>Trachypodopsis</i> (1)
	<i>Plagiomnium</i> (10)	