

## Nepalese Genera and Species of the Parmeliaceae with Notes on Three Additional and One Rare Species

by

Syo KUROKAWA\*

黒川 遼\* : ウメノキゴケ科のネパール産の属と種ならびに  
追加すべき3種と1稀産種

In 1985, Sharma enumerated 352 species of lichens known at that time in Nepal. His list included 63 species belonging to the Parmeliaceae, viz. 12 species of *Cetraria*, 6 species of *Cetrelia*, 1 species of *Nephromopsis*, and 44 species of *Parmelia*. However, it should be noted here that the following seven species of the family had been recorded also from Nepal in various monographic works published before 1985: *Cetrelia nuda* (Hue) W. Culb. et C. Culb., *Platismatia erosa* W. Culb. et C. Culb. (Culberson & Culberson 1968), *Bulbothrix tabacina* (Mont. et v. d. Bosch) Hale (Hale 1976a), *Parmelina quercina* (Willd.) Hale, *P. rhytidodes* Hale, *P. xantholepis* (Mont. et v. d. Bosch) Hale (Hale 1976b), and *Parmelia substygia* Räs. (Esslinger 1977). After 1985, in addition, the following five species belonging to the family have been added to the lichen flora of Nepal: *Melanelia poeltii* Essl. (Esslinger 1987), *Xanthoparmelia tuberculiformis* Kurok. (Kurokawa 1989), *X. mexicana* (Gyeln.) Hale (Hale 1990), *Parmelia erumpens* Kurok. and *P. sinuosa* (Sm.) Ach. (Sharma & Kurokawa 1990). Even though some of them have been reported under modern names, most of them have been recorded under *Parmelia*, *Cetraria*, and *Parmelina* in wide senses. As widely known at present, they have been transferred to genera resurrected or segregated from *Parmelia* sens. lat., *Cetraria* sens. lat., and *Parmelina* sens. lat. by the results of recent taxonomic revisions based on chemical, morphological, anatomical, and geographical characters.

After having carefully revised the taxa reported before, the following 75 species are recognized as members of the Parmeliaceae of Nepal. They are enumerated below following generic names proposed by the end of 1992.

**Allocetraria** Kurok. et Lai, Bull. Natn. Sci. Mus. Tokyo, Ser. B, **17**: 60. 1991.

*Allocetraria ambigua* (Bab.) Kurok. et Lai, Bull. Natn. Sci. Mus. Tokyo, Ser. B, **17**: 62. 1991.

*Allocetraria cucullata* (Bell.) Rndl. et Saag, Mycotaxon **44**: 492. 1992.

*Allocetraria stracheyi* (Bab.) Kurok. et Lai, Bull. Natn. Sci. Mus. Tokyo, Ser. B, **17**: 62. 1991.

**Bulbothrix** Hale, Phytologia **28**: 479. 1974.

*Bulbothrix isidiza* (Nyl.) Hale, Phytologia **28**: 480. 1974.

*Bulbothrix meizospora* (Nyl.) Hale, Phytologia **28**: 480. 1974.

*Bulbothrix setschwanensis* (Zalbr.) Hale, Phytologia **28**: 481. 1974.

*Bulbothrix tabacina* (Mont. et v. d. Bosch) Hale, Phytologia **28**: 481. 1974.

\* 1101 Kurose 47, Toyama 939. 〒939 富山市黒瀬 47-1101.

- Canoparmelia** Elix et Hale in Elix et al., *Mycotaxon* **27**: 277. 1986.  
*Canoparmelia aptata* (Krempelh.) Elix et Hale in Elix et al., *Mycotaxon* **27**: 278. 1986.  
*Canoparmelia ecaperata* (Müll. Arg.) Elix et Hale in Elix et al., *Mycotaxon* **27**: 278. 1986.
- Cetraria** Ach., *Meth. Lich.* 292. 1803.  
*Cetraria laevigata* Rassad., *Bot. Materialy. Natul. System. Sect. Crypt. Inst. Bot. Nomine V. L. Komarovii Acad. Sci. USSR* **5**: 133. 1945.  
*Cetraria leucostigma* Lév. in Jaquemont, *Voy. l'Inde, Bot.* 180. 1841-44.  
*Cetraria nepalensis* Awasthi, *Proc. Ind. Acad. Sci.* **45**: 130. 1957.  
*Cetraria nigricans* Nyl. in Nylander & Saelan, *Herb. Mus. Fenn.* 109. 1859.  
*Cetraria pallida* Awasthi, *Proc. Ind. Acad. Sci.* **45**: 130. 1957.
- Cetrariastrum** Sipman, *Proc. Kon. Nederl. Akad. Wetensch., Ser. C*, **83**(4): 335. 1980.  
*Cetrariastrum cirrhatum* (Fr.) W. Culb. et C. Culb., *Bryologist* **84**: 283. 1981.  
*Cetrariastrum nepalense* (Tayl.) W. Culb. et C. Culb., *Bryologist* **84**: 301. 1981.
- Cetrariopsis** Kurok., *Mem. Natn. Sci. Mus. Tokyo* **13**: 140. 1980.  
*Cetrariopsis wallichiana* (Tayl.) Kurok., *Mem. Natn. Sci. Mus. Tokyo* **13**: 140. 1980.
- Cetrelia** W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 490. 1968.  
*Cetrelia braunsiana* (Müll. Arg.) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 493. 1968.  
*Cetrelia cetrarioides* (Del. ex Duby) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 498. 1968.  
*Cetrelia collata* (Nyl.) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 505. 1968.  
*Cetrelia isidiata* (Asah.) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 510. 1968.  
*Cetrelia nuda* (Hue) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 513. 1968.  
*Cetrelia olivetorum* (Nyl.) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 515. 1968.  
*Cetrelia pseudolivetorum* (Asah.) W. Culb. et C. Culb., *Contr. U. S. Natn. Herb.* **34**: 519. 1968.
- Cetreliopsis** Lai, *Quart. J. Taiwan Mus.* **33**: 218. 1980.  
*Cetreliopsis rhytidocarpa* (Mont. et v. d. Bosch) Lai, *Quart. J. Taiwan Mus.* **33**: 218. 1980.
- Flavoparmelia** Hale, *Mycotaxon* **25**: 604. 1986.  
*Flavoparmelia caperata* (L.) Hale, *Mycotaxon* **25**: 604. 1986.
- Flavopunctelia** (Krog) Hale, *Mycotaxon* **20**: 682. 1984.  
*Flavopunctelia flaventior* (Stirt.) Hale, *Mycotaxon* **20**: 682. 1984.
- Hypotrachyna** (Vain.) Hale, *Phytologia* **28**: 340. 1974.  
*Hypotrachyna adducta* (Nyl.) Hale, *Phytologia* **28**: 340. 1974.  
*Hypotrachyna crenata* (Kurok.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna exsecta* (Tayl.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna flexilis* (Kurok.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna incognita* (Kurok.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna infirma* (Kurok.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna koyaensis* (Asah.) Hale, *Smiths. Contr. Bot.* **25**: 44. 1975.  
*Hypotrachyna majoris* (Vain.) Hale, *Phytologia* **28**: 341. 1974.  
*Hypotrachyna revoluta* (Flörke) Hale, *Smiths. Contr. Bot.* **25**: 60. 1975.  
*Hypotrachyna scytophylla* (Kurok.) Hale, *Phytologia* **28**: 342. 1974.  
*Hypotrachyna sinuosa* (Sm.) Hale, *Smiths. Contr. Bot.* **25**: 63. 1975.
- Melanelia** Essl., *Mycotaxon* **7**: 46. 1978.  
*Melanelia poeltii* Essl., *Mycotaxon* **28**: 215. 1987.

- Melanelia substygia* (Räs.) Essl., Mycotaxon **7**: 47. 1978.
- Myelochroa** (Asah.) Elix et Hale, Mycotaxon **29**: 240. 1987.
- Myelochroa aurulenta* (Tuck.) Elix et Hale, Mycotaxon **29**: 240. 1987.
- Myelochroa rhytidodes* (Hale) Elix et Hale, Mycotaxon **29**: 241. 1987.
- Myelochroa xantholepis* (Mont. et v. d. Bosch) Elix et Hale, Mycotaxon **29**: 241. 1987.
- Nephromopsis** Müll. Arg., Flora **74**: 374. 1891.
- Nephromopsis ectocarpisma* (Hue) Gyeln., Ann. Crypt. Exot. **4**: 169. 1931.
- Nephromopsis pallescens* (Schaer. in Moritzi) Park, Bryologist **93**: 122. 1990.
- Nephromopsis stracheyi* (Bab.) Müll. Arg., Flora **74**: 374. 1891.
- Parmelaria** Awasthi, J. Hattori Bot. Lab. **63**: 368. 1987.
- Parmelaria thomsonii* (Stirt.) Awasthi, J. Hattori Bot. Lab. **63**: 368. 1987.
- Parmelia** Ach., Meth. Lich. 153. 1803.
- Parmelia adaugescens* Nyl., Lich. Jap. 28. 1890.
- Parmelia erumpens* Kurok., Lich. Rar. Crit. Exs. no. 74. 1969.
- Parmelia submutata* Hue, Nuov. Arch. Mus. Paris, Ser. 3, **1**: 172. 1899.
- Parmelina** Hale, Phytologia **28**: 481. 1974.
- Parmelina quercina* (Willd.) Hale, Phytologia **28**: 483. 1974.
- Parmelina tiliacea* (Hoffm.) Hale, Phytologia **28**: 481. 1974.
- Parmelinella** Elix et Hale, Mycotaxon **29**: 241. 1987.
- Parmelinella wallichiana* (Tayl.) Elix et Hale, Mycotaxon **29**: 242. 1987.
- Parmelinopsis** Elix et Hale, Mycotaxon **29**: 242. 1987.
- Parmelinopsis expallida* (Kurok.) Elix et Hale, Mycotaxon **29**: 242. 1987.
- Parmelinopsis minarum* (Vain.) Elix et Hale, Mycotaxon **29**: 242. 1987.
- Parmotrema** Mass., Atti I. R. Ist. Veneto. Sci., III, **5**: 248. 1860.
- Parmotrema austrosinense* (Zahlbr.) Hale, Phytologia **28**: 335. 1974.
- Parmotrema cooperi* (Stein. et Zahlbr.) Serus., Bryologist **87**: 4. 1984.
- Parmotrema dilatatum* (Vain.) Hale, Phytologia **28**: 335. 1974.
- Parmotrema hababianum* (Gyeln.) Hale, Phytologia **28**: 336. 1974.
- Parmotrema lobulascens* (Stein.) Hale, Phytologia **28**: 337. 1974.
- Parmotrema maclayanum* (Müll. Arg.) Hale, Phytologia **28**: 337. 1974.
- Parmotrema mellissii* (Dodge) Hale, Phytologia **28**: 337. 1974.
- Parmotrema nilgherense* (Nyl.) Hale, Phytologia **28**: 338. 1974.
- Parmotrema praesorediosum* (Nyl.) Hale, Phytologia **28**: 338. 1974.
- Parmotrema sancti-angelii* (Lynge) Hale, Phytologia **28**: 339. 1974.
- Parmotrema tinctorum* (Nyl.) Hale, Phytologia **28**: 339. 1974.
- Parmotrema ultralucens* (Krog) Hale, Mycotaxon **1**: 108. 1974.
- Parmotrema yodae* (Kurok.) Hale, Mycotaxon **5**: 436. 1977.
- Platismatia** W. Culb. et C. Culb., Contr. U. S. Natn. Herb. **34**: 524. 1968.
- Platismatia erosa* W. Culb. et C. Culb., Contr. U. S. Natn. Herb. **34**: 526. 1968.
- Rimelia** Hale et Flechter, Bryologist **93**: 23. 1990.
- Rimelia clavulifera* (Räs.) Kurok., J. Jpn. Bot. **66**: 158. 1991.
- Rimelia reticulata* (Tayl.) Hale et Flechter, Bryologist **93**: 28. 1990.
- Rimeliella** Kurok., Ann. Tsukuba Bot. Gard. **10**: 1. 1991.

*Rimeliella subsumpta* (Nyl.) Kurok., Ann. Tsukuba Bot. Gard. **10**: 9. 1991.

*Rimeliella subtinctoria* (Zahlbr.) Kurok., Ann. Tsukuba Bot. Gard. **10**: 19. 1991.

**Xanthoparmelia** (Vain.) Hale, Phytologia **28**: 485. 1974.

*Xanthoparmelia mexicana* (Gyeln.) Hale, Phytologia **28**: 488. 1974.

*Xanthoparmelia tuberculiformis* Kurok., J. Jpn. Bot. **64**: 291. 1989.

My recent study has revealed that the following three species, *Cetrariastrum rhizodendroideum*, *Myelochroa galbina*, and *Parmotrema indicum* are added to the lichen flora of Nepal. Although *Parmotrema yodae* has been known only from the type locality, three specimens collected in other localities in Nepal are also identical with the species.

***Cetrariastrum rhizodendroideum*** Wei et Jiang, Act. Phytotax. Sin. **20**: 496. 1982.

This species has been known from only two localities in Xizang, China. New to Nepal.

When this species was described, Wei & Jiang (1982) briefly mentioned that it can be distinguished from *C. cirrhatum* by the well branched rhizines. This species may be more closely related to *C. nepalense* than to *C. cirrhatum*, because the lower surface is also rhizinate. In *C. rhizodendroideum*, however, the rhizines are densely furcate or subsquarrosely branched. The marginal rhizines are moderate to dense and are usually projecting beyond the lobe margins to form a thick mat sometimes. They are variable in length, being usually 0.5 mm but rarely more than 2 mm long. Rhizines on the lower surface are rather sparse and less than 0.5 mm long. Fertile specimens of the present species have been not known yet.

Chemical ingredients of the present species are atranorin, salazinic acid, and protolichesterinic acid and traces of galbinic ( $\pm$ ) and protocetraric ( $\pm$ ) acids, all of which are also known in *C. cirrhatum* and *C. nepalense*.



Fig. 1. *Cetrariastrum rhizodendroideum* (Yoneyama 144).  $\times 3/4$ .



This species is apparently endemic to the Himalayas and Xizang in China. In Nepal, it seems to be rather common in subalpine areas 3000–3800 m above the sea level.

Specimens examined. Langtang Valley, S. Yoneyama 144, 145 (TNS). Langtang Valley, Begmati, elevation 3750 m, T. Iwashina 532 (TNS). Near the forest line between Junbesi and Charamka, elevation 3650 m, T. Iwashina 189 (TNS). Khumbu, Langmoche, T. Ogata 29-e (TNS). Between Namche Bazar (3440 m) and Ghat (2490 m), Khumbu Himal, S. Remus & M. Menzel 147 (TNS).

***Myelochroa galbina*** (Ach.) Elix et Hale, *Mycotaxon* **29**: 240. 1987.

Based on analysis of the distribution and comparative morphology, *M. galbina* (= *Parmelia galbina* Ach.) was considered to have an arctic origin and to have migrated southward into southeastern United States and Japan (Kurokawa 1972). At present, consequently, it is considered to have a typical disjunctive distribution between Japan and eastern North America. In eastern Asia, however, the range is now extended to Nepal as shown below. Thus, the occurrence of the species in southern China, Taiwan, or northern India to Thailand may be suspected.

Specimen examined. Langtang Valley, S. Yoneyama 59-b (TNS).

***Parmotrema indicum*** Hale, *Mycotaxon* **5**: 436. 1977.

This species is known from only four localities in Western Ghats region of India. New to Nepal.

*Parmotrema indicum* may be easily confused with *P. yodae* (Kurok.) Hale, which was described from Nepal. These two species have emaculate upper surface, rather coarse marginal soredia, and

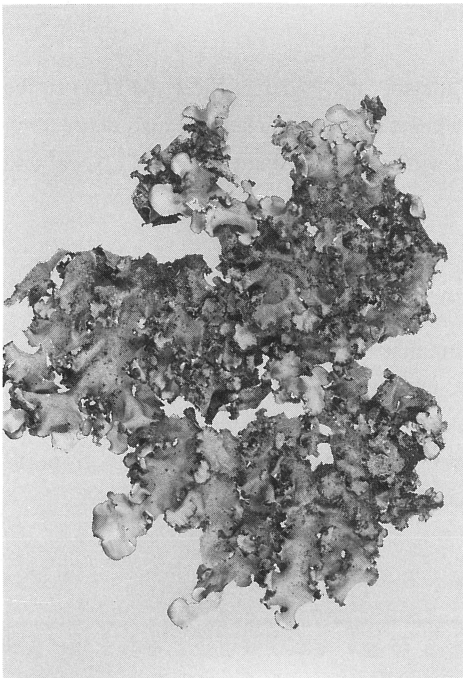


Fig. 2. *Parmotrema indicum* (Iwashina 359). Scale indicates mm.

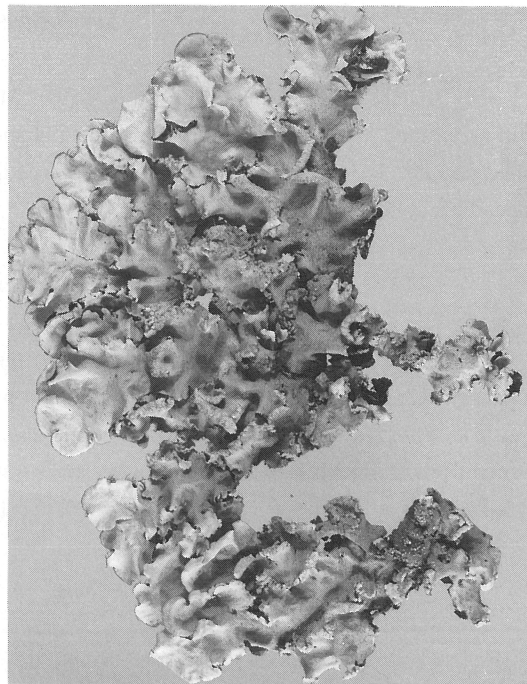


Fig. 3. *Parmotrema yodae* (Iwashina 586). Scale indicates mm.

rather adnate thalli in common. However, *P. indicum* contains gyrophoric acid and norlobaridone in the medulla, while *P. yodae* contains norlobaridone and loxodine but lacks gyrophoric acid. Lower surface of the thalli is jet black excepting for very narrow dark brown zone near the tips in *P. indicum*. In contrast, it is dark to blackish brown in rather wide zone near the tips in *P. yodae*. In addition, lower surface of sorediate lobes is often ivory to dark brown in *P. yodae*, whereas it is usually jet black in *P. indicum*.

Specimens examined. Kenja, along Likhu River, Janakpur, elevation about 1600 m, T. Iwashina 358, 359 (TNS, KATH).

***Parmotrema yodae* (Kurok.) Hale, Mycotaxon 5: 436. 1977.**

Since this species was described from the Rolwaling Himal, Nepal (Kurokawa 1967), no other collection has been reported. Three specimens collected by Dr. T. Iwashina (see below), however, are identified with this species. Although two of the three (Iwashina 586 and 587) have a little wider lobes (5–15 mm wide) and a little longer (upto 2 mm long) moderate cilia, they still have morphological features principally characteristic of *P. yodae* and produce norlobaridone and loxodin, which are rare medullary products in *Parmotrema*.

Although this species is apparently rather common in higher elevation (2300–3350 m), it is still known only from Nepal.

Specimens examined. Lama Hotel, Langtang Valley, Bagmati, elevation about 2400 m, T. Iwashina 447 (TNS, KATH). Langtang, Langtang Valley, Bagmati, elevation 3050–3350 m, T. Iwashina 586, 587 (TNS).

### Acknowledgement

My sincere appreciation is expressed to Dr. M. Watanabe, the leader of the Expedition to the Himalayas and adjacent areas, who gave me a chance to study Nepalese lichens. I also express my thanks to Dr. T. Iwashina, a member of the Expedition, who collected many lichens in Nepal and placed his collections at my disposal.

### Summary

Seventy five Nepalese species belonging to the Parmeliaceae reported before are enumerated, following generic names resurrected or proposed by the end of 1992. Furthermore, three species, *Cetrariastrum rhizodendroideum*, *Myelochroa galbina*, and *Parmotrema indicum* are added to the lichen flora of Nepal. It is also noted that *Parmotrema yodae*, which has been known only from the type collection, is rather common in montane areas but is still known only from Nepal.

### 摘 要

ネパールから報告されているウメノキゴケ科に属する 75 種の地衣を最近提示された属に配列しながら列挙した。また、新たに 3 種 (*Cetrariastrum rhizodendroideum*, *Myelochroa galbina*, *Parmotrema indicum*) をネパール地衣フロラの構成員として加え、タイプ標本しか知られていなかった *Parmotrema yodae* は山地帯に普通に産することを報告した。

---

**Literature Cited**

- Culberson, W.L. & C.F. Culberson, 1968. The lichen genera *Cetrelia* and *Platismatia* (Parmeliaceae). *Contr. U. S. Natn. Herb.* **34**: 449–558.
- Esslinger, T.L., 1977. A chemosystematic revision of the brown *Parmeliae*. *J. Hattori Bot. Lab.* **42**: 1–211.
- , 1987. A new species of *Melanelia* from Nepal. *Mycotaxon* **28**: 215–217.
- Hale, M.E., Jr., 1976a. A monograph of the lichen genus *Bulbothrix* Hale (Parmeliaceae). *Smiths. Contr. Bot.* **31**: 1–29.
- , 1976b. A monograph of the lichen genus *Parmelina* Hale (Parmeliaceae). *Smiths. Contr. Bot.* **33**: 1–60.
- , 1977. New species in the lichen genus *Parmotrema* Mass. *Mycotaxon* **5**: 432–448.
- , 1990. A synopsis of the lichen genus *Xanthoparmelia* (Vain.) Hale (Ascomycotina, Parmeliaceae). *Smiths. Contr. Bot.* **74**: 1–250.
- Kurokawa, S., 1967. Foliose lichens collected by Dr. K. Yoda in the Lolwaling Himal, Nepal. *J. Coll. Arts Sci. Chiba Univ.* **5**: 93–97.
- , 1972. Probable mode of differentiation of lichens in Japan and eastern North America. *In* Graham, A. (ed.): *Floristics and Paleofloristics of Asia and Eastern North America*. 139–146.
- , 1989. Studies on Japanese species of *Xanthoparmelia* (Parmeliaceae) (2). *J. Jpn. Bot.* **64**: 289–298.
- Sharma, L. R., 1985. Lichens. *In* Majumuria, T.C. (ed.): *Nepal Nature's Paradise* 212–223.
- & S. Kurokawa, 1990. Species of *Anaptychia* and *Parmelia* collected in Nepal. *In* Watanabe, M. & S.B. Malla (eds.): *Cryptogams of the Himalayas Vol. 2*. 113–116.
- Wei, J.-C. & Y.-M. Jiang, 1982. New materials for lichen flora from Xizang. *Act. Phytotax. Sin.* **20**: 496–501.