

Calicioid Lichens of Korea

Göran Thor¹, Hiroyuki Kashiwadani² and Kwang Hee Moon³

¹Department of Conservation Biology, Swedish University of Agricultural Sciences,
P. O. Box 7002, SE-750 07 Uppsala, Sweden
E-mail: goran.thor@nsv.slu.se

²Department of Botany, National Science Museum, Amakubo 4–1–1,
Tsukuba, Ibaraki 305–0005, Japan

³Natural Science Institute, Sookmyung Women's University, Chungpa-dong 2 ka,
Yosan-ku, Seoul 140–742, Korea

Abstract During a field trip to Cheju Island, *Calicium lenticulare*, new to Korea, was found. Only two calicioid lichens were previously reported from Korea; *Calicium abietinum* and *Chaenotheca chrysocephala*. All collections of calicioid lichens from Korea were examined by us, and two additional species, new to Korea, were found; *Chaenotheca laevigata* coll. and *Microcalicium subpedicellatum*. This means that a total of five calicioid lichens are currently known from Korea. Additional species are, however, very likely to be found in mountain regions.

Key words: Cheju Island, *Calicium*, *Chaenotheca*, *Microcalicium*.

During a field trip to Cheju Island, Korea in 2001, calicioid lichens and fungi were carefully searched for. In spite of this, only *Calicium lenticulare* was found, indicating that calicioid species are rare in the island. No calicioid species were found on bark of *Abies koreana*. Calicioid lichens from Korea are earlier only included in Moon (1999). All collections of calicioid lichens from Korea were examined by us, and two additional species new to Korea were found. This means that a total of five calicioid lichens are currently known from Korea. Additional species are, however, very likely to be found in mountain regions. Results from the field trip to Cheju Island have also been included in Kashiwadani *et al.* (2002).

The species

Calicium abietinum Pers.

Characterized by its non-pruinose apothecia, the frequently brownish to olivaceous stalks, and the large, minutely warty spores.

First reported from Korea by Moon (1999) on lignum of *Pinus* snag in a *Betula ermanii* domi-

nated forest. Widely distributed in Europe, Asia (e.g. Japan), North and South America and Australasia (Tibell & Thor 2003).

Specimen examined. **Korea.** Kangwon Pref.: en route from Mt. Daechongbong to Hiungang hut, Mt. Sorak, Sokcho city, 1400–1708 m, 38°07'N, 127°28'E, 18 July 1996, Y. Ohmura 2414 & K. H. Moon (TNS).

Calicium lenticulare Ach.

Characterized by its obconical, often slightly reddish apothecia, the strong I+ deep blue reaction of the stalk (water-mount of sections or squash preparation), the narrowly clavate asci, and by spores which remain unseptated for a long time in the asci.

Only three collections were made in Cheju Island in 2001, which indicates that the species is rare. It was found on lignum of snags and stumps in mixed deciduous forests dominated by *Acer*, *Carpinus* and *Quercus*, as well as in a *Abies koreana*/deciduous forest. The species is very widely distributed from cold temperate to subtropical areas. It occurs in Eurasia (e.g. Japan), North America, Africa, the Pacific, Australasia, and

Central and South America (Tibell & Thor 2003). New to Korea.

Specimens examined. **Korea.** Cheju Island: along the Songpanak trail to the summit, Mt. Halla, Namwon-up, Namcheju-gun, about 900 m, 33°23'N, 126°37'E, 28 May 2001, H. Kashiwadani 43676 (TNS); Cheju Island: along the Eorimok trail on the NW slope of Mt. Halla, from the timberline below the Witsae Oreum Shelter to the Eorimok National Park Office, 1600–1000 m, 33°23'N, 126°31'E, 24 May 2001, G. Thor 17156 (UPS); Cheju Island: Namcheju-gun, Nomwon-up, along the Songpanak trail on the east slope of Mt. Halla above the Azalea Field Shelter, 1500–1700 m, 33°21'N, 126°32'E, 28 May 2001, G. Thor 17501 (UPS).

Chaenotheca chrysocephala (Turner ex Ach.) Th.Fr.

Characterized by the bright yellow thallus, a yellow pruina on the apothecia, medium-sized apothecia, and non-catenulate asci. The spores are rather small, globose to ellipsoidal, and have a coarse ornamentation.

First reported from Korea by Moon (1999). A second collection, apparently not reported previously, was found in herbarium TNS. The species is found on bark of an unidentified coniferous tree (Asahina) and on bark of *Pinus densiflora* (Ohmura & Moon). The material collected by Asahina is mixed with *Chaenotheca laevigata* and *Microcalicium subpedicellatum* (see below). The species has a very wide distribution in cool temperate to temperate areas of both hemispheres (Eurasia, North America, Africa, Australasia, Central and South America) (Tibell & Thor 2003).

Specimens examined. **Korea.** Kangwon Pref.: en route from Mangyongdae to Mt. Daechongbong, Mt. Sorak, Sokcho city, 1000–1480 m, 38°07'N, 127°28'E, 17 July 1996, Y. Ohmura 2287 & K. H. Moon (TNS); no locality or date, Y. Asahina (TNS).

Chaenotheca laevigata Nád.v. coll.

Characterized by having a yellow pruina, long

and slender ascomata, short cylindrical spores and a trebouxoid photobiont. The spores on the material from Korea are non-septate, 5–9 × 3–4 μm, with a rough and irregular ornamentation formed by irregular cracks.

The material is similar to material of *Chaenotheca laevigata* coll. from North America, having a distinct thallus and growing on bark of coniferous trees. Material from North Europe has an indistinct thallus and mainly grows on lignum, rarely on bark of deciduous trees. The species is mixed with *Chaenotheca chrysocephala* and *Microcalicium subpedicellatum* on bark of a unidentified coniferous tree. It is widespread but rare in Europe and North America (Tibell 1999). New to Korea and Asia.

Specimen examined. **Korea.** No locality or date, Y. Asahina (TNS, in collection of *Chaenotheca chrysocephala*).

Microcalicium subpedicellatum (Ach.) Vain.

Characterized by its sessile ascomata and the cylindrical, often multiseptate spores. Often recognized by the protruding, aeruginose mazaedia.

The species is mixed with *Chaenotheca chrysocephala* and *C. laevigata* on bark of a unidentified coniferous tree. It occurs in Europe, Asia and North America (Tibell 1999). It is not reported from Japan (Tibell & Thor 2003). New to Korea.

Specimen examined. **Korea.** No locality or date, Y. Asahina (TNS, in collection of *Chaenotheca chrysocephala*).

Acknowledgements

The authors wish to express their sincere thanks to Prof. Yun-Shik Kim, Korea University, Seoul, Dr. Jjung-Gonn Koh, Mr. Woo-Seong Yang and Mr. Yong-Man Shin of the Research Institute for Mt. Halla, and Mr. Bong-Taek Yoon, Seogwipo for their kind help during our fieldwork on the Cheju Island. We also wish to thank L. Tibell for kindly determining or confirming some collections.

References

- Kashiwadani, H., K. H. Moon, M. Inoue, G. Thor and Yun-Shik Kim, 2002. Lichens of the Cheju Island, Republic of Korea. I. The Macrolichens. *Natn. Sci. Mus. Monogr.*, (22): 115–135.
- Moon, K. H. 1999. Lichens of Mt. Sorak in Korea. *J. Hattori Bot. Lab.*, **86**: 187–220.
- Tibell, L. 1999. Caliciales. *Nordic Lichen Flora*, **1**: 20–94. Bohuslän '5', Uddevalla.
- Tibell, L. & Thor, G. 2003. Calicioid lichens and fungi of Japan. *J. Hattori Bot. Lab.*, **94**: 205–259.