*Arctoa* (2002) **11**: *23-26*

# THE GENUS *MNIOLOMA* (HEPATICAE, CALYPOGEIACEAE) NEW TO CHINA DISCOVERED FROM TAIWAN

# РОД *MNIOLOMA* (HEPATICAE, CALYPOGEIACEAE) – НОВОСТЬ ДЛЯ КИТАЯ, НАЙДЕН НА ТАЙВАНЕ

CHIEN GAO[1,2], TONG CAO[1,2,*] JUN SUN[1,3]

ЧЬЕН ГАО[1,2], ТОНГ ЧАО[1,2,*] ЮН СУН[1,3]

Abstract

The Hepatic genus *Mnioloma* Herzog, Calypogieaceae, with species of *M. fuscum* (Lehm.) Schust. is discovered from Taiwan and new to China. The world distribution of the genus shows that *M. fuscum* is the only species widely distributed in paleotropical and pacific regions and the new locality in Taiwan is the most northern station of the genus.

Резюме

Род печеночников *Mnioloma* Herzog, Calypogieaceae, и вид *M. fuscum* (Lehm.) Schust. найдены на Тайване, и это первая находка для Китая. Данный вид является единственным палеотропическим представителем рода; он широко распространен в тропиках Старого Света и тихоокеанском регионе. Новое местонахождение вида – самое северное для рода в целом.

According to Piippo (1990), two genera *Metacalypogeia* and *Calypogeia* with 12 species in family Calypogeiaceae have been reported in China. During our recent study of the specimens collected from Taiwan in 1998, we discovered another genus *Mnioloma* with species of *M. fuscum* (Lehm.) Schust. belonging to Calypogeiaceae, which is new record for bryoflora of China. And the new locality of *M. fuscum* in Taiwan is the most northern station of the genus. Therefore, the genus *Mnioloma* and *M. fuscum* is reported and its distribution is discussed here.

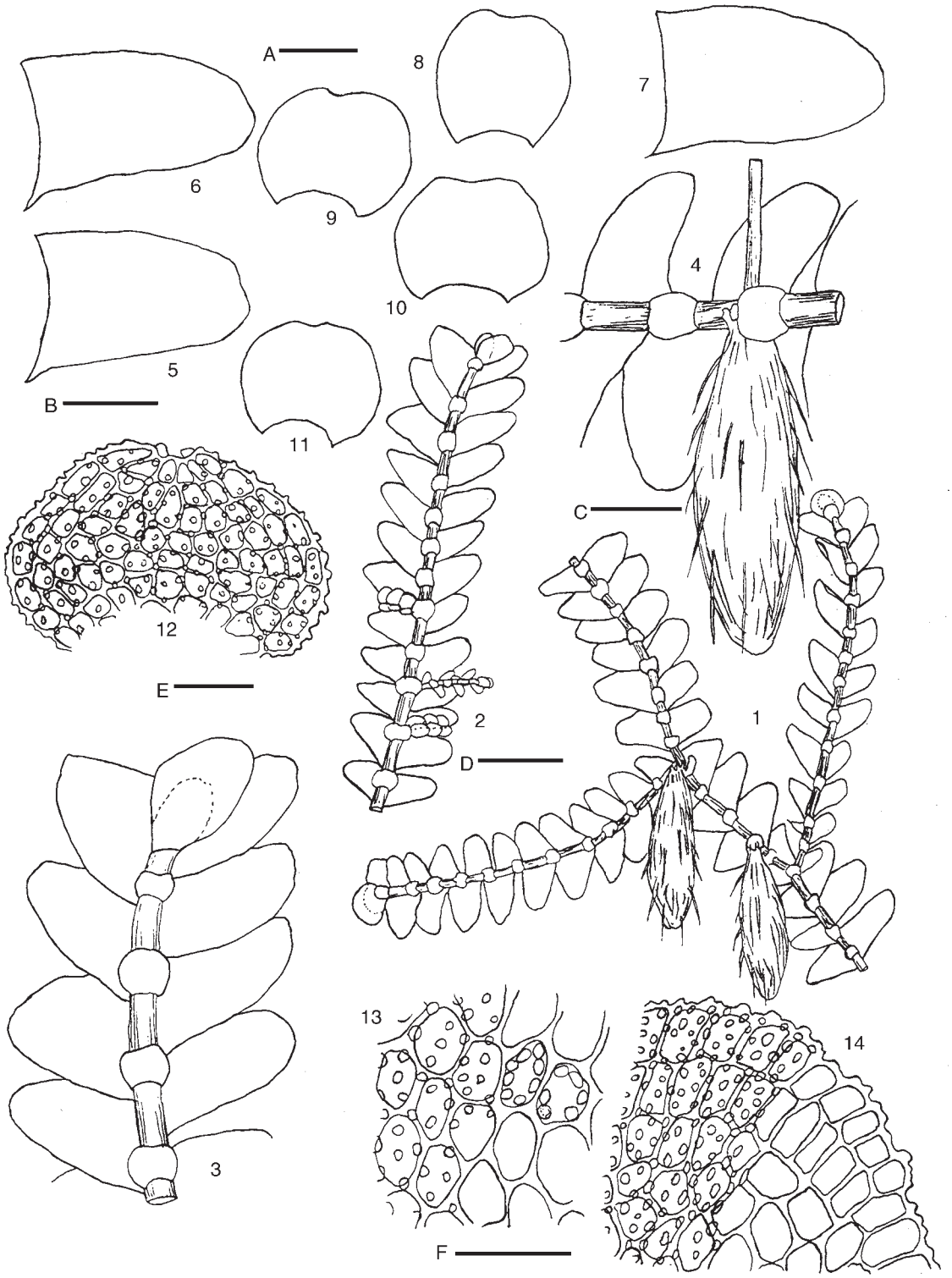
**MNIOLOMA** Herzog, Ann. Bryol. 3: 119. 1930.

*Calypogeia* subgen. *Mnioloma* (Herzog) Bischl., Candollea 18: 25. 1963.

The genus *Mnioloma* belonging to family Calypogeiaceae was established by Herzog in 1930. It had not been restudied until Bischler (1963) reduced it to a subgenus *Mnioloma* of genus *Calypogeia*. According to Schuster's concept, the genus *Mnioloma* is mainly characterized by having: 1) plants generally brownish and stem dark-brown with one layer of smaller and firm-walled cortical cells; 2) branches uniformly ventral-intercalary from axils of underleaves; 3) leaves flat, dull, with obtuse to pointed apex, but never bidentate or bilobed; 4) underleaves minutely emarginated at apex; 5) intermarginal leaf cells conspicuously verruculose and margin cells slightly to distinctly elongated, often forming a differentiated border; 6) oil-bodies finely granular-segmented rather than botryoidal; and 7) lack of ability to form gemmae.

According to Schuster (1995), the genus *Mnioloma* was divided into two subgenera, namely subg. *Caracoma* and subg. *Mnioloma*, with 12 species in the world. Among these species, 11 species are neotropical taxa and restrictly distributed in Central and South America. Only one species, *M. fuscum*, is paleotropical taxon and widely distributed in paleotropical and pacific regions.

[1] – Institute of Applied Ecology, Academia Sinica, Shenyang, Liaoning 110016, China
[2] – College of Life and Environmental Science, Shanghai Teachers University, Shanghai 200234, China
[3] – College of Life Science, Liaoning University, Shenyang, Liaoning 110016, China
[*] – Corresponding author




Figs. 1-14. *Mnioloma fuscum* (Lehm.) Schust.: 1 – habit with marsupium; 2 – portion of plant with androecium; 3 – portion of plant, ventral view; 4 – portion of stem with marsupium; 5-7 – leaves; 8-11 – underleaves; 12 – underleaf and cells; 13 – median leaf cells; 14 – stem-leaf margin cells (drawn from specimen from Taiwan, Gao & Cao 980487, by Chien Gao). Scale bars: A = 0.1 mm for 8-11; B = 0.25 mm for 5-7; C = 0.5 mm for 3-4; D = 1 mm for 1-2; E = 20 µm for 12; F = 50 µm for 13-14).

**Mnioloma fuscum** (Lehm.) Schust., Fragm. Flor. Geobot. Ann. 40, Pars 2: 848. *fig.7*. 1995. — *Jungermannia fusca* Lehm., Linnaea 4: 360. 1829. — *Kantia fusca* (Lehm.) Steph., Hedwigia 27: 380. 1888. — *Calypogeia fusca* (Lehm.) Steph., Spec. Hep. 3: 398. 1908. Figs. 1-14

Plants olive-green to fuscous, 1.5~2.0 cm long, 1.0~1.5 mm wide with leaves, creeping on rotten wood. Stems elliptical in cross section, 4-6 cells high, with a rather ill-defined cortex of moderately thickened cells, freely but irregularly branched; branching uniformly ventral-intercalary. Rhizoids few or sporadic on normally-leaved axes, in ill-defined fasciles. Leaves flat, contiguous to weakly imbricated, incubous, widely to somewhat obliquely spreading, obliquely inserted, broad-ovate to short rounded-oblong, 0.5-0.6 mm long, 0.3-0.4 mm wide, apex rounded, entire or crenulated, but not toothed; margins virtually entire, locally and sporadically, feebly crenulate with cells whose edges bow out. Underleaves broad-ovate, width wider than length, as wide as stem or slightly wider than stem; margins entire to feebly sinuous; apices minutely notched, vestigial lobes reduced to two juxtaposed slime papillae. Leaf cells round to subround polygonal, variable, faintly to perceptibly thick-walled and with distinct, sometimes feebly convex-sided trigones; apex cells 24-28 x 24-30 μm, basal cells 35-70 x 30-40 μm, marginal cells frequently somewhat radially elongated; cuticle densely papillose, papillae low. Oil-bodies finely granular-segmented. Dioecious. Gynoecia on short ventral-intercalary branches from underleaf axes, budlike when unfertilized, formed of two gyres of thin, delicate, bilobed bracts, with crenulate margins. Marsupia pendent, long-oblong, 2-2.5 mm long, 0.8-1.0 mm wide. Androecia on short ventral-intercalary branches, from underleaf axes; male bracts closely imbricate, usually in 3-5 pairs. Sporophytes unknown.

Specimens examined: TAIWAN. Xinzhu County. Yuanyang Lake Nature Reserve, 121°25'E, 24°35'N, elev. 1 670m, on rotten wood, *Gao Chien & Cao Tong 980449, 980487*, 19 October 1998 (IFSBH).

*Mnioloma fuscum* is easily recognized by having: 1) plants olive-green to brown, with uniformly ventral-intercalary branches from axis of underleaves; 2) leaves incubous, broad-ovate to short rounded-oblong with rounded, entire to crenulate apex; 3) underleaves broad-ovate with minutely notched apices, the vestigial lobes reduced to two juxtaposed slime papillae; 4) cells of leaves and underleaves conspicuously verruculose and margin cells slightly differentiated.

The world distribution of *Mnioloma fuscum* based on literature citations (Bischler 1963, 1970; Geissler & Bischler 1985; Grolle 1977; Grolle & Schwltze-Motel 1972; Kitagawa 1988; Schuster 1972, 1995) shows that this species is widely distributed in paleotropical and pacific regions. It has been recorded from Africa (Ethiopia, Uganda, Seychelles, Swaziland, Tanzania), Southwest Asia (Indonesia [Borneo, Java, Sumatra], Thailand, Sri Lanka) and islands on the Atlantic Ocean (Azores, St. Helena), Solomon, New Guinea, Samoa and Hawaii. The new locality of *M. fuscum* found in Taiwan (24°35'N), north of the tropic of Cancer, is the most northern station of the species as well as of the genus *Mnioloma* as a whole.

ACKNOWLEDGEMENTS

We appreciate the National Nature Science Foundation of China (no. 30170076), Chinese Academy of Sciences, Shanghai Teachers University and Finnish-Chinese Botanical Foundation for support of the present research. Thanks are also due to R. Grolle, Friedrich-Schiller-Universitata, Jena for his identification of the specimens and critical comments. We thank Lai Mingjou for his hospitality during our visiting Taiwan in October 1998 and S. He, Missouri Botanical Garden and X. L. He, Helsinki University for their help in literature.

## LITERATURE CITED

BISCHLER, H. 1963. The genus *Calypogeia* Raddi in Central and South America. I-III. — *Candollea* **18**: *19-128.*

BISCHLER, H. 1970. Les especes du genre *Calypogeia* sur le continent africain et les iles africaines. — *Rev. Bryol. Lichénol.* **37**: *63-134.*

GEISSLER, P. & H. BISCHLER 1985. Index Hepaticarum vol. 10. *Lembidium* to *Mytilopsis*. *Genéve: Conservatoire et Jardin Botanique, 352.*

GROLLE, R. 1977. Lebermoose aus Neuguinea 14-15. *Calypogeia + Trichocolea*. — *J. Hattori Bot. Lab.* **43**: *63-67.*

GROLLE, R. & W. SCHULTZE-MOTEL 1972. Vorlaufiges Verzeichnis der Lebermooser von Samoa. — *J. Hattori Bot. Lab*. **36**: *75-89.*

HERZOG, TH. 1930. *Mnioloma* Herzog, nov. gen. Hepaticarum. — *Ann. Bryol*. **3**: *115-120.*

KITAGAWA, N. 1988. Studies on the Hepaticae of Thailand V. The family Calypogeiaceae. — *Nova Hedwigia* **90**: *163-170.*

PIIPPO, S. 1990. Annotated catalogue of Chinese Hepaticae and Anthocerotae. — *J. Hattori Bot. Lab*. **68**: *1-132.*

SCHUSTER, R. M. 1972. Phylogenetic and taxonomic studies on Jungermanniidae. — *J. Hattori Bot. Lab*. **36**: *321-405.*

SCHUSTER, R. M. 1995. Phylogenetic and taxonomic studies of Jungermanniidae, III. Calypogeiaceae. — *Frag. Fl. Geobot*. **40**(2): *825-888.*