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Hypogymnia magnifica (Parmeliaceae), a new lichen from southwest China

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ABSTRACT. Hypogymnia magnifica X.L.Wei & McCune is described as a new species of lichenized fungi from high elevations in Yunnan and Sichuan Provinces in southwestern China. Previously lumped under H. taiwanalpina, H. magnifica is readily distinguished from that species by its large size (commonly to 30 cm or more diam.), broad, rather appressed lobes that are contiguous to subcontiguous, sparse perforations in the upper and lateral surfaces, whitish color in the field (when dry), and lacking 3-hydroxyphysodic acid. Hypogymnia magnifica and H. taiwanalpina appear to be allopatric, with the former restricted to southwestern China and the latter restricted to far-east Asia (Taiwan and Japan).

KEYWORDS. Hengduan Mountains, Hypogymnia taiwanalpina, Lecanorales, lichenized ascomycetes, lichenized fungi, Sichuan Province, Yunnan Province.

Since the last checklist of lichens in China (Wei 1991), numerous species of Hypogymnia from southwestern China have been described or revised (Chen 1994, McCune et al. 2002, McCune & Obermayer 2001, Wei & Bi 1998, Wei & Wei 2005). Despite the studies in this area, one particularly notable species has gone undescribed. Long confused with H. taiwanalpina Lai (Lai 1980), we describe H. magnifica, a distinctive species in both the field and laboratory.

Hypogymnia magnifica X.L.Wei & McCune sp. nov. Figs. 1–5

Thallus corticola, laxe adnatus vel imbricatus; ad > 30 cm diametro, planiusculus; cortex superior albicans ad subviridi-griseus, sparse pertusus; lobi cavi, 1–4(5) mm lati; cavitas nigra; cortex inferior sparse pertusus, rugosus, niger; soredia vel isidia desunt; apothecia brunnea, ad 10 mm diametro; ascosporis 6.0–7.7 × 4.0–5.0 μm. Cortex K+ flavescent, KC−; medulla K−, C−, KC− vel KC+ aurantiaca vel rubra, P+ aurantiaca vel rubra. Thallus atranorin et acidum physodalicum continentia.


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Description. Thallus appressed to loosely adnate or somewhat imbricate, to 30 cm or more broad; texture papery; branching variable, budding present; upper surface white to pale greenish gray, epruinose, dark mottles none or rare, black border sometimes present; lobes contiguous to ± separate, smooth to weakly rugose in ± planar sprays or slightly curled back at the lobe tips; lobe profile even to ± nodulose; lobe width 1–4(5) mm; lobe width/height ratio 0.75–4.00; upper surface and lateral margins sparsely perforate with roundish to ellipsoid holes; lobe tips and axils often perforate, lower surface sparsely perforate,
the holes not rimmed; medulla hollow, ceiling and floor of cavity dark; soredia, isidia, and lobules lacking; apothecia common, stipitate, to 10 mm or more in diameter; receptacle urn or funnel shaped; disk brown; ascospores: 6.0–7.7 × 4–5 μm; pycnidia common, brown to black, plane to slightly raised; spermatia not seen in numerous pycnidia examined.

**Chemistry.** Spot tests: cortex K–, KC–, P+ pale yellow; medulla K–, C–, KC or KC+ orange-red, P+ orange-red. Lichen substances by TLC: atranorin and physodalic acid (major), protocetraric acid (minor), with accessory physodic acid. No attempt was made to distinguish atranorin from chloroatranorin.

**Ecology and substrate.** *Hypogymnia magnifica* occurs on bark and wood, usually of *Abies, Sabina,* and other conifers in high-elevation conifer forest in Yunnan and Sichuan (Fig. 6). Although subtropical in latitude, these high-elevation mountain habitats are cool and moist, supporting lichen-rich forests, woodlands, and subalpine areas. These forests are rich in *Hypogymnia* species, commonly with multiple species having rimmed holes (McCune et al. 2002); the usnic-acid containing species, *H. flavida* and *H. hypotrypa;* species in the *H. vittata* group, and others.

**Etymology.** The epithet “magnifica” refers to the magnificent field appearance of this species, which forms strikingly large, whitish rosettes on trunks of conifers.

**Selected specimens examined.** Collection numbers are those of L. S. Wang (KUN), unless otherwise noted. CHINA. SICHUAN PROVINCE, Mu Li Co., Ka La Village, 28.083°N 101.333°E, 3500 m, 83-1693, 83-1708; 3750 m, 83-1677, 3650 m, 83-1908; road from Yi Qu to Wo Ya, 27.833°N 101°E, 3800 m, 83-2375; *Xiaojin Co.,* Shuangqiaoogou, 30.24333°N 102.783°E, 3300 m, 96-16074; YANYUAN Co., Da-ling Village, 27.333°N 101.483°E, 3500 m, 7147; Bai-lin, 27.583°N 101.667°E, 3750 m, 7010a; *Kangding Co.,* Muquecuo, 02-21055; *Xiaojin Co.,* Rilong Village, Sigunianshan Mt., 31.033°N 102.867°E, 3420 m, 01-20615. YUNNAN PROVINCE, DEQIN Co., E slope of Bei Ma Xue Shan, 28.383°N 99°E, 3750 m, 217; Meilishi village, Suola Ya-Kou, 28.637°N 98.61333°E, 4000 m, 00-19767; Mei Li Xue Mt, Xio-Nang Village, 28.4°N 98.75°E, 3400 m, 94-15044, 94-15101b; *Fu Gong Co.,* Lu Ma Den Village, Qu Lu Di unit, 27.033°N 98.883°E, 3500 m, 82-434, 83-445; *Gong Shan Co.,* Qinatong, Songtaxue Mt., 28.188°N 98.532°E, 3300 m, 00-19610, 00-19620, 00-19621; JIANCHUAN Co., trailhead to Lao Juen Shan, 26.632°N 99.725°E, 3700 m, McCune 26714, 26718 (OSC); *Lijiang Co.,* Laojue Mt., Jiushijiu Long Lake, 26.632°N 99.728°E, 4100 m, 00-20247, 00-20251, 00-20254, 00-20287; Jiushijiu Longtiam Lake, Maan Mt., 26.652°N 99.775°E, 3500 m, 00-20103; Jiutue Village, Lao Juen Mt., 26.65°N 99.767°E, 4000 m, 99-18723, 99-18730; Li-di-ping, 26.85°N 100.267°E, 3200 m, Xi jian-xun 11512b; *Ning Lang Co.,* Wei Yi, 26.677°N 100.75°E, HAN YU FEN 81-1154; *WEI XI CO.,* Wei Den Village, outskirts of Lu Ma, 27.083°N 99.167°E, 3600 m, 82-420; Ye Zhi Village, Ba Di, 27.717°N 99.05°E, 3500 m, 82-72; *Zhongdian Co.,* Daxue Mt., 28.575°N 99.834°E, 4000 m, 00-19988, 00-20011; Wengshuei Village, Daxue Mt., 28.50167°N 99.818°E, 3800 m, 00-19851, 00-19810, 00-19841, 00-20014, 00-19846, 00-19791, 00-19823; Da Xue Shan, summit of pass, 99°49′ 25″N 28°34′45″E, 3350 m, M. F. Watson 14 (v); Xiozhongdian, Tiaochi, 27.833°N 99.717°E, 3750 m, 93-13684, 93-13679, 94-15527b; Zhongdian Forestry Dist., Hong Shan Sta, 27.833°N 99.717°E, 3600 m, HAN YU FEN 81-1527, HAN YU FEN 81-1551; Na Pa, Hai Hou Shan, 27.833°N 99.717°E, 3860 m, 93-13741; Tiaochi (alpine lake), 27.833°N 99.717°E, 3750 m, 94-14930, 94-14915, 94-14916b.

**Discussion**

*Hypogymnia magnifica* is the only *Hypogymnia* species that frequently develops holes in the upper
surface. These are not as regular and frequent as in many species of *Menegazzia*. Typically the holes are rather sparse, circular or elliptical, sometimes lateral, sometimes laminal. The large whitish thallus is distinctive in the field, contrasting with the mineral gray to pale greenish gray or brownish color of most *Hypogymnia* in southwest China and elsewhere in the world.

Previously lumped under *H. taiwanalpina*, *H. magnifica* is readily distinguished from that species by its large size (commonly to 30 cm or more in diameter), broad, rather appressed lobes that are contiguous to subcontiguous, sparse perforations in the upper and lateral surfaces, whitish color in the field (when dry), and lacking 3-hydroxyphysodic acid. In contrast, *H. taiwanalpina* is smaller (to 10 cm diam.), with appressed to suberect lobes that are mostly separate, with imperforate upper and lateral surfaces (but lobe tips and lower surface sparsely perforate), a more typical color of *Hypogymnia* in the field (mineral gray to pale greenish gray), and containing 3-hydroxyphysodic acid. *Hypogymnia magnifica* and *H. taiwanalpina* appear to be allopatric, with the former known only in southwestern China and the latter only in Taiwan and Japan.

The phylogenetic affinities of *H. magnifica* are obscure. The large appressed whitish thalli in mature to old conifer forests are reminiscent of *H. rugosa* (Merr.) Pike in western North America, but the similarity ends there, *H. rugosa* being imperforate and containing hypoprotocetraric acid. Two broad-lobed North American endemics, *H. apinnata* (P.–, atranorin only; Goward & McCune 1993) and *H. enteromorpha* (Ach.) Nyl. (P+, diffractaic, physodalic, and physodic acids), have perforate lobe tips and axils but lack laminal perforations, grow loosely appressed to trailing or pendulous, and frequently have intestiniform lobes. *Hypogymnia physodes* (L.) Nyl. is much smaller, sorediate, and contains 3-hydroxyphysodic acid in addition to physodalic and physodic acids. Although the perforations in the upper surface of *H. magnifica* might suggest an intriguing link to *Menegazzia*, the chemistry and small spores of *H. magnifica* are typical of *Hypogymnia*. Phylogenetic placement will require molecular methods.

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**Literature Cited**


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