

# *Gyalideopsis japonica* (Lichenized Ascomycota, Gomphillaceae), a New Gyalectoid Lichen from Japan

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**Abstract** *Gyalideopsis japonica* H. Harada et Vězda sp. nov. is described as new from Chiba-ken and Hiroshima-ken, Japan. It is characterized by having shield-form brown hyphophores, broadly adnate apothecia with brown to greyish discs and laterally spreading exciple, and 1-spored asci. It grows on bark of various trees in humid places in forests in the warm temperate zone.

**Key words:** lichens, lichenized Ascomycota, Gomphillaceae, *Gyalideopsis*, new species, description, taxonomy, Japan.

During field surveys for floristic works in Chiba-ken, central Japan, the first author collected an unfamiliar species of gyalectoid lichen in the genus *Gyalideopsis*. At present, more than 67 species of this genus are known mainly from the tropics (Kalb and Vězda, 1988; Vězda, 1979) but no species has been recorded in this country. Careful examination has revealed that this gyalectoid lichen is an undescribed species. It is described as new in this paper.

## Materials and Methods

Descriptions of external morphology are based on air-dried material observed under a dissecting stereoscope. Sections were made with a razor blade under a dissecting stereoscope, mounted in lactophenol cotton-blue (LPCB), and used for anatomical description except for the color description which was based on the GAW (glycerol: ethanol: water = 1:1:1) preparations. For observing ascus, spores, paraphyses, conidia, and conidiophores in more detail, sections of apothecia or pycnidia were mounted in 10% aqueous solution of KOH, squashed gently, and the mounting medium replaced by water, ethanol, and finally LPCB. These LPCB preparations were used for the line drawings. The K, I, KI tests were conducted on sections of

apothecia by using 10% aqueous solution of KOH and/or a diluted Lugol's solution. Specimens used in this study are deposited in the herbarium of Natural History Museum and Institute, Chiba (CBM), or in the private herbarium of A. Vězda.

## Taxonomy

### *Gyalideopsis japonica* H. Harada et Vězda sp. nov.

(Figs. 1–4)

*Thallus* crustaceus, epiphloeodicus, continuus, cinereoviridis. *Apothecia* gyalectoidea, 0.2–0.8 mm lata, late adnata, non constricta ad basim; discus fere planus, brunneus vel glaucescens; margo excipuli indistinctus, semi-pellucidus, effusus ad basim. *Sporae* 1 per ascis, muriformes, 35–50 × 10–22 μm. *Hyphophori* peltati, pallide brunnei, 0.35–0.65 mm lati; diahyphae fasciculos formantes, moniliformes, cellulis ± globosis.

*Typus.* JAPAN. Honshu. Chiba-ken, Kimitsu-shi, Seiwa-kenmin-no-mori, Atago-zawa, 120 m elev., on trunk of *Swida controversa* by stream in forest, 10 Nov. 1997, cum ap. et hyphoph., Harada 18543 (CBM-FL-10573, *holotypus*; herb. Vězda, *isotypus*); Seiwa-kenmin-no-mori, 300 m alt., on trunk of *Mallotus japonicus* in a laurel-leaved forest

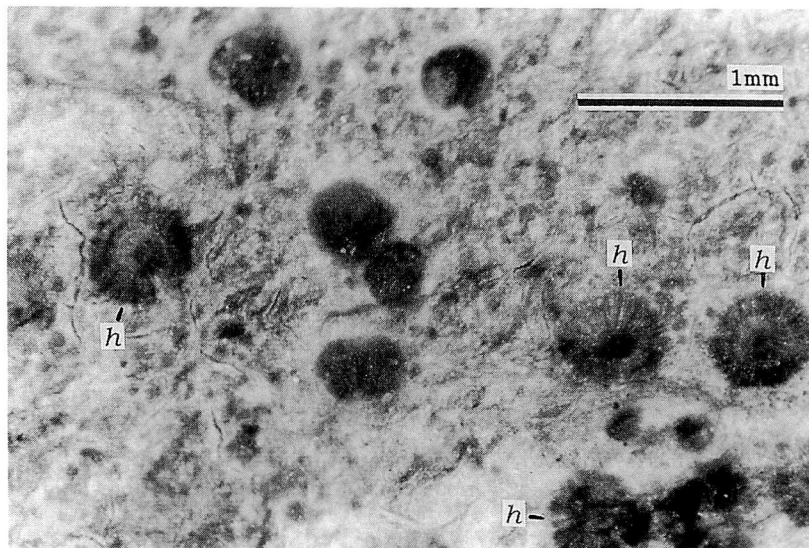


Fig. 1. Habit of *Gyalideopsis japonica* (holotype, air-dried material). *h* = hyphophores.

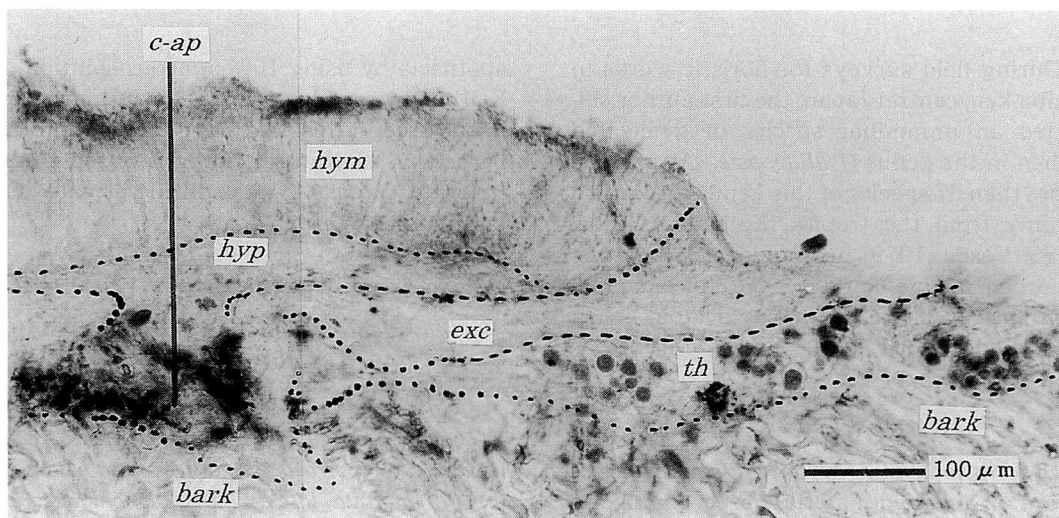


Fig. 2. Part of vertical section of apothecium in *Gyalideopsis japonica* (LPCB preparation from holotype). *bark* = substratal bark; *c-ap* = center of apothecium; *exc* = exciple; *hym* = hymenium; *hyp* = hypotheceum; *th* = thallus.

around a peak, 12 Aug. 1993, cum hyphoph., Harada 13601 (CBM-FL-4162, *paratypus*); Futtsu-shi, Utougi, 120 m elev., on trunk of *Pourthiaea villosa* var. *laevis*, 18 Oct. 1997, cum ap. et hyphoph., Harada 18430 & 18432 (CBM-FL-103248 & 103250, *paratypi*); Ichihara-shi, Daifuku-yama, 80 m alt., on trunk of deciduous hardwood, 15 July 1991, cum hyphoph., Harada 11897 (CBM-FL-3635, *paratypus*). Hiroshima-ken, Miyajima Isl., 50 m alt., 9 Sept. 1983, cum hyphoph., M. R. D.

Seaward s.n. (herb Vězda, *paratypus*).

*External Morphology.* Thallus pale greenish gray, smooth, usually glossy; margin filmy, whitish. Apothecia adnate, usually not constricted at base; disc 0.2–0.8 mm diam., almost plane, pale to somewhat dark gray to brown, epruinose; margin  $\pm$ semipellucid, almost colorless or whitish, usually up to 0.2 mm wide (seen above), distally becoming very thin and almost filmy, significantly swelling and semipellucid when wetted. Hyphophores

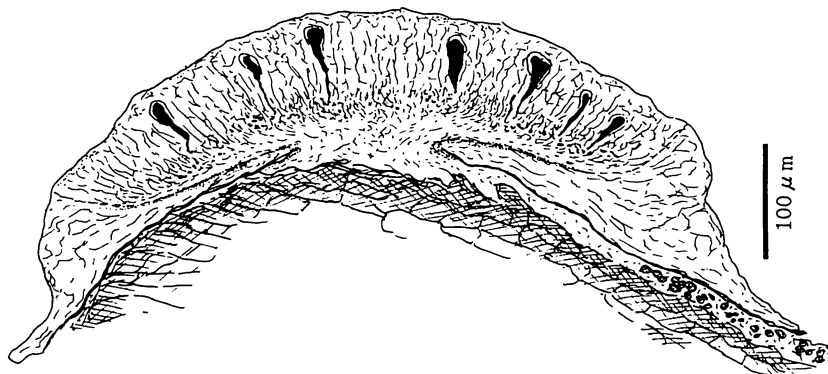


Fig. 3. Vertical section of apothecium in *Gyalideopsis japonica* (LPCB preparation from holotype).

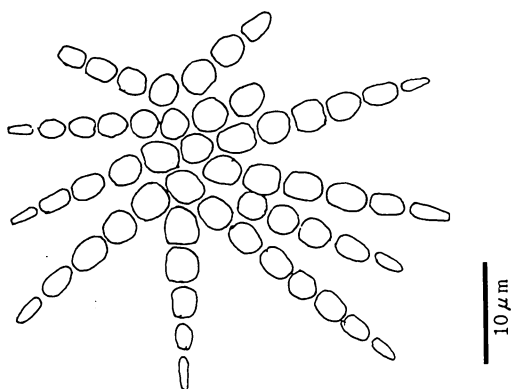


Fig. 4. One fascicle of diahyphae in *Gyalideopsis japonica* (LPCB preparation from holotype).

shield-form with very short stipe, usually almost adnate; the shield 0.3–0.7 mm diam.,  $\pm$ dark brown, with dark brown radii, with dissected margin.

**Anatomy.** Thallus lacking prominent cortex,  $\pm$ partly semiendophloeodal, with Treboxioid-phycobiont. Apothecia widely adnate on thallus. Exciple in basal parts  $\pm$ rather compact and similar to hypothecium, 5–25  $\mu$ m thick,  $\pm$ brownish in the distal parts, colorless in the remainder; exciple in lateral parts composed of branched and anastomosing hyphae ( $\pm$ similar to hymenium) near hymenium, but with the hyphae becoming sparse and even discrete distally, frequently with irregular outline due to collapse, usually spreading laterally on the thallus, colorless throughout. Hypothecium 15–40  $\mu$ m thick, mostly colorless, rather compact, with rather dense hyphae embedded in gelatinous matrix. Hymenium colorless, 55–125  $\mu$ m

thick, generally thicker towards the center. Paraphyses branched and anastomosing to form a network, even in thickness, 0.5–1  $\mu$ m diam. Asci 60–80  $\times$  15–25  $\mu$ m. Spores 1/ascus, 35–50  $\times$  10–22  $\mu$ m, strongly muriform, almost colorless. Diahyphae around the stipe of hyphophores forming many fascicles, 10–15  $\mu$ m long, thin towards the apices, with rounded, basally about 3–3.5  $\mu$ m thick cells.

**Distribution.** Known from Chiba-ken on the Pacific side of Honshu, and Miyajima Island in Seto Inland Sea, Japan.

**Habitat.** On bark of evergreen hardwoods, deciduous hardwoods, and conifers, usually at humid places along streams through forests in valleys or gorges in the warm temperate zone, also in forests near peaks; foliicolous lichens frequently occurring in the vicinity along the streams.

**Remarks.** *Gyalideopsis japonica* H. Harada et Vězda sp. nov. is characterized by having (1) broadly adnate apothecia (Fig. 1), (2) laterally spreading exciple (Figs. 2 & 3), (3) epruinose, pale to somewhat dark brown to greyish disc (Fig. 1), (4) strongly muriform ascospores (40–50  $\times$  10–22  $\mu$ m), and (5) peltate hyphophores (Fig. 1) with (6) diahyphae around the stipe forming many fascicles (Fig. 4), and by (7) corticolous habit.

It resembles *Gyalideopsis lambinonii* Vězda by having (1) shield-form hyphophores with (2) diahyphae around the stipe forming many fascicles, (3) broadly adnate apothecia and (4) 1-spored asci. However, *G. lambinonii* has black-brown to black discs,  $\pm$ compact (not spreading laterally) exciples and black (not brown) hyphophores (Vězda, 1979).

In *Gyalideopsis japonica*, the exciple is rather loose mycelium which is composed of sparse hyphae and is strongly swollen when wetted. It is laterally spreading to a large extent and becomes gradually thinner outwards (Figs. 2 & 3) so that one may erroneously take it for the thallus rather than the exciple, especially as to the lower and/or outer parts. It is very difficult to recognize the outline of the exciple in the surface view (Fig. 1). It is pale and very indistinct encircling the disc when dry. It becomes strongly swollen and almost translucent when wetted, but the outline is still unclear since the mycelium is gradually thinner towards the edge as seen in the sections (Figs. 2 & 3).

Additional specimen examined. *Gyalideopsis lambinonii* Vězda: Brasilien, Bahia, Serra das Mangabeiras, etwa 30 km nach Seabra, an sehr feuchten und zumeist schattigen Felsüberhängen in Cerrado, 1000 m, 17. 7. 1980, K. Kalb s.n. (herb. Vězda).

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aceae (Discolichenes). *Folia Geobot. Phytotax.* 14: 43-94.

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### 日本産地衣類の一新種 *Gyalideopsis japonica*

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*Gyalideopsis* は以下の特徴を示す: (1) 裸子器は gyalectoid で少なくとも初期には裸出し無柄, (2) 顕著な果殻は側部で無色ないし淡褐色で, 軟骨質の基質に埋もれた網状の菌糸から成り, (3) 子嚢層は I-, (4) 側糸は分枝・癒合し, (5) 子嚢は 2 重壁, (6) 子嚢胞子は平行多室ないし石垣状多室, (7) hyphophores を形成し, (8) 地衣体には棘状の構造 ("Lagerborsten") を欠く. 本属は世界で 67 種以上知られ, 日本からはこれまで報告がなかったが, 最近の千葉県内での地衣類相調査に伴い本属地衣類が発見された. 検討の結果新種と判明したので, 本報で *Gyalideopsis japonica* H. Harada et Vězda, sp. nov. として新種記載する. 本種は盾状の hyphophores を生じ, その柄の周りに多数の diahyphae の束を生じ, 広く圧着する裸子器と, 各子嚢中に 1 個の石垣状多室の子嚢胞子を生ずることから, 南米から記載された *G. lambinonii* Vězda によく似る. しかし本種は, 子器盤が褐色から灰褐色で, 果殻が基物上に顕著に広がり, hyphophores が褐色であることから, 子器盤が黒褐色~黒色で, 果殻がコンパクトで, hyphophores が黒色の *G. lambinonii* とは異なる. 本新種は千葉県南部において, 森林内の溪谷沿いを中心に湿潤な場所の様々な樹種の樹皮に着生していた. また, 広島県宮島からも無子器の標本が 1 点得られており, 国内の暖温帯に広く分布するものと思われる.