

SHORT COMMUNICATION

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***Septobasidium parviflorae* sp. nov. on *Pinus parviflora* from Japan**

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Abstract *Septobasidium parviflorae* sp. nov. on *Pinus parviflora* is described and illustrated. This species is characterized by its whitish-gray, gray to dark gray-colored fungus body with an indeterminate margin, hyphal strands, and cylindrical basidia with long sterigmata. This is the first report of *Septobasidium* occurring on a member of the genus *Pinus* in Japan.

Key words *Pinus parviflora* · Scale insect · *Septobasidium parviflorae*

The genus *Septobasidium* was established by Patouillard (1892), and more than 200 species of the genus have been described (Couch 1938; Henk 2005). *Septobasidium* species colonize on branches, twigs, trunks, or leaves, and they are definitely parasitic on scale insects (Couch 1938). They cause damage to the host trees, but such damage is not directly caused by the fungi, but rather is caused by the combination of the fungi and scale insects (Couch 1938).

In 2004, specimens of a species belonging to the genus were collected on leaning trees of *Pinus parviflora* Siebold et Zucc. in Minamiaizu-machi, Fukushima, northern Japan (Fig. 1). This fungus is characterized by its whitish-gray, gray to dark gray-colored body with an indeterminate margin, abundant fan-shaped mycelia (Figs. 3, 4), and cylindrical basidia. Morphological comparison of this fungus with other *Septobasidium* species showed that this species could be distinguished from the other species. Here, this new species is referred to as *Septobasidium parviflorae*.

***Septobasidium parviflorae* Masuya et T. Yamada, sp. nov.**
Figs. 2–12

Basidioma, resupinatum in ramis, pallidebrunneum vel atrobrunneum, 50–120 µm crassum, e strato unico compositum, cum margine irregulari, superficie aspera gossypina, cum rhizomorphibus conspicuis flabelliformibus usque 12 cm longis, et synnematis usque 5 mm longis. Probasidia hyalina, persistentia, clavata vel ovoidea, 25–43 × 8.5–12.5 µm. Basidia cylindrica, recta, 4-cellulata, hyalina, 60–100 × 7.5–11 µm. Sterigmata 14–24 µm longa. Basidiosporae hyalinae, oblongae vel cylindricae, 12–28 × 2.5–5.5 µm.

Holotypus: TFM (= FPH) 7927

Etymology: Derived from the epithet of its host, *parviflora*.

Basidiomata resupinate, patchy, grayish-white, grayish-brown to dark brown, 50–120 µm thick, up to 12 cm in diameter, composed of one layer, with an irregular margin, determinate with conspicuous rhizomorphs; surface irregular, retiform, with conspicuous fan-shaped rhizomorphs. Erect hyphae sometimes present in the center of basidiomata, fusing longitudinally to form dark brown hyphal strands up to 5 mm in length. Haustoria consisting of more or less regularly coiled hyphae. Probasidia developed on the surface of basidiomata and the basal part of synnemata, but less developed on the tip of a synnema, clavate to ovoid, sometimes detached from the hyphae, 25–43 × 8.5–12.5 (mean = 35.5 × 10.5) µm in size, and producing basidia by an apical prolongation. Basidia cylindrical to clavate, usually 1–3-septate (sometimes up to 8-septate), 60–100 × 7.5–11 (mean = 79.5 × 9) µm in size, with sterigmata of 14–24 µm in length, readily becoming detached in water, and appearing able to continuously produce budding spores. Basidiospores hyaline, smooth, allantoid, cylindrical to slightly curved, and 12–28 × 2.5–5.5 (mean = 18.5 × 4.5) µm in size.

Host: *Pinus parviflora* Siebold et Zucc.

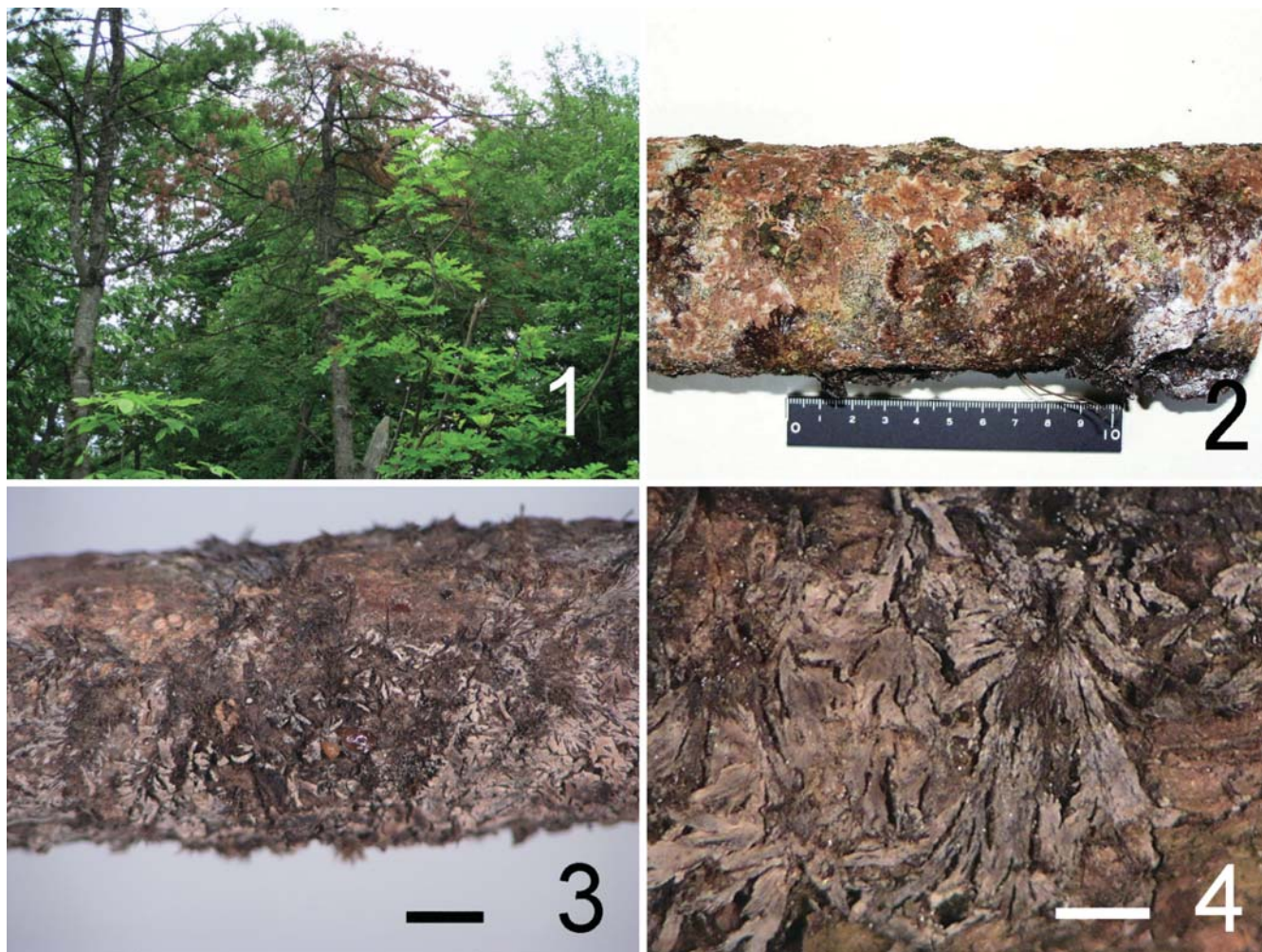
Distribution: Japan, Fukushima.

Scale insect associate: Present but not identified.

Specimens examined: On *Pinus parviflora*, Minamiaizu-machi, Minami-aizu-gun, Fukushima Prefecture, 16 June

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Figs. 1–4. Leaning pine tree infected by *Septobasidium parviflorae* and fruit bodies of *S. parviflorae*. **1** Leaning pine tree infected by *Septobasidium parviflorae*. **2** Immature fruit bodies of *S. parviflorae*. **3** Mature

fruit bodies of *S. parviflorae* on a branch. **4** Fruit body of *S. parviflorae*. Bars **3** 1 cm; **4** 0.5 cm

2005, H. Masuya TFM (= FPH) 7927 (holotype), 7928 (paratype), and 7929 (paratype).

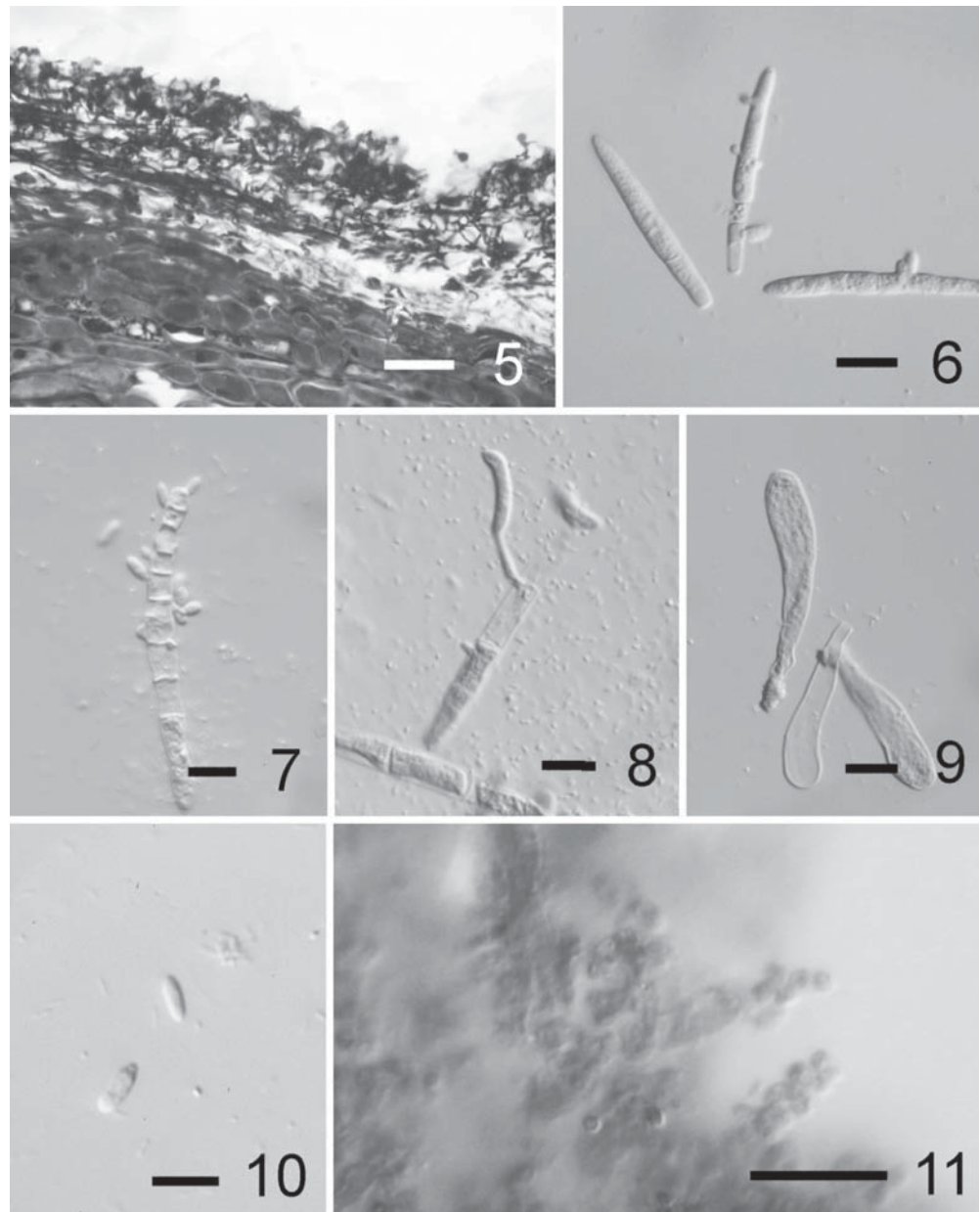
Seven species of *Septobasidium* have been reported to occur on conifers, and only two species, *S. linderi* Couch and *S. pinicola* Snell, are found on *Pinus* species (Couch 1938). The cylindrical basidia of *S. parviflorae* are similar to those of *S. linderi*. However, *S. parviflorae* has long sterigmata and clavate probasidia, and is distinguished from *S. linderi*, which has conical sterigmata and globose to pyriform probasidia. *Septobasidium pinicola* also bears cylindrical basidia and relatively long sterigmata. However, its fruit body with a distinct margin and globose to subglobose probasidia can be distinguished from those of *S. parviflorae* with an indeterminate margin and clavate probasidia. Some species of *Septobasidium* occurring on angiosperms also have cylindrical basidia, but they do not possess any characteristics of the fruit body that are similar to those of *S. parviflorae*. The foregoing distinctions were confirmed by referring to the original descriptions and herbarium speci-

mens including type specimens (*S. linderi*, BPI 268787, 296630; *S. pinicola*, BPI 268868, 268855–268860).

In Japan, 11 species of *Septobasidium* have been reported (Yamamoto 1956; Ito and Hayashi 1961). Among them, *S. kameii* Kaz. Ito has been reported as occurring on conifers (*Abies* and *Picea* spp.). However, this species has never been reported to occur on *Pinus* species. In addition, *S. kameii*, which has curved basidia, is easily distinguished from *S. parviflorae* by the shape of its basidia. Although *S. bogoriense* Pat. and *S. albidum* Pat., which have a wide host range, are also known to occur on conifers [*Juniperus rigida* Siebold et Zucc. and *Podocarpus macrophyllus* (Thunb. ex Murray) Sweet] in Japan (Phytopathology Society of Japan 2006). They are easily distinguished from *S. parviflorae* by the morphology of their basidia: *S. bogoriense* has curved basidia and *S. albidum* produces basidia without a probasidial stage (Couch 1938).

In this study, we observed the associated scale insect (Homoptera: Diaspididae), although we could not identify

Figs. 5–11. *Septobasidium parviflorae*. **5** Cross section of a part of *S. parviflorae*. **6, 7** Basidia with budding spores. **8** Basidiospore and basidia. **9** Probasidia. **10** Budding spores. **11** Irregularly coiled haustoria. Bars **5** 50µm; **6, 7, 8, 9, 10** 20µm; **11** 10µm



it. The taxonomy of scale insects is now confused, and their significance for the taxonomy of *Septobasidium* and the relationships between the insects and *Septobasidium* are not fully clarified. However, several types of haustoria are reported within the body of the insect and used to characterize the species of *Septobasidium*. The haustoria of *S. parviflorae* could be easily recognized within the insects (Figs. 11, 12D). The haustoria are more or less irregularly coiled hyphae; this is a characteristic of several species of *Septobasidium*.

Fungal flora of *Septobasidium* are not always fully clarified in Japan, and other undescribed species are expected

to be distributed in this area. Unfortunately, almost all the type specimens of *Septobasidium* described in Japan are now missing (Doi, personal communication), which is a problem while surveying the flora of *Septobasidium* in Japan. Neotypifications or a reappraisal of Japanese *Septobasidium* will be required.

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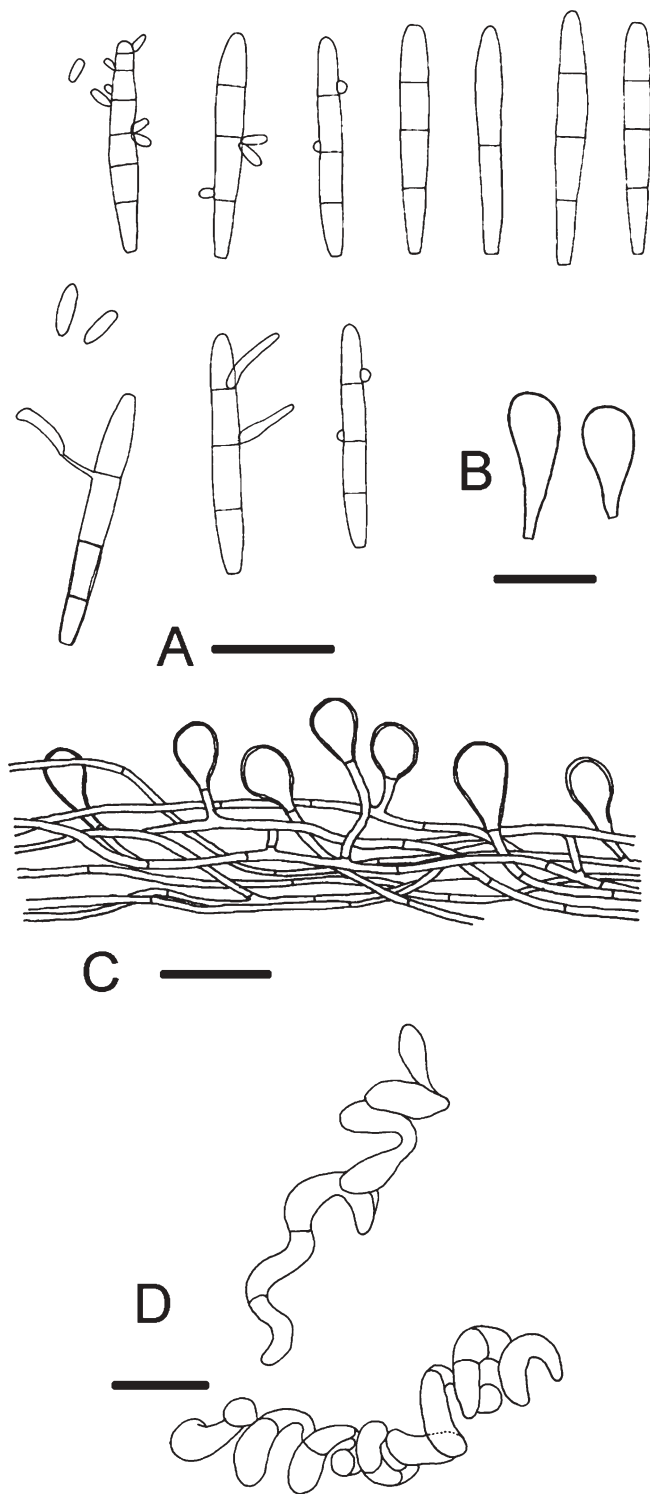


Fig. 12. Basidia, probasidia, basidiospores, and haustoria of *S. parviflorae*. **A** Basidia, basidiospores, and budding spores. **B** Probasidia. **C** Surface of fruit body. **D** Irregularly coiled hyphal haustoria. Bars **A** 25 μ m; **B** 20 μ m; **C** 30 μ m; **D** 5 μ m

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