Mycoscience (2003) 44:411–414
DOI 10.1007/s10267-003-0125-0

SHORT COMMUNICATION

Tsuneo Watanabe · Yasuhiro Kawano
Kazunori Nakamura

New records of *Ardhachandra*, *Dicyma*, and *Sibirina* species from basidiomata of Aphyllophorales (Basidiomycetes) in Japan

Received: January 27, 2003 / Accepted: May 25, 2003

Abstract Three mitosporic fungi, i.e., *Ardhachandra cristaspora, Dicyma pulvinata*, and *Sibirina gamsii* from basidiomata of Aphyllophorales (Basidiomycetes), are described and illustrated. These fungi have not been previously reported in Japan.

Key words Fruit bodies · Identification · Mitosporic fungi · Morphology · New records

During studies on fungal diversities in various substrates and habitats in Japan, fungi were collected from soil, fruit bodies of wood-inhabiting fungi including basidiomata, or rarely decayed wood in Ibaraki, Tochigi, Nagano, and Okinawa Prefectures and the Ogasawara (Bonin) Islands, Tokyo metropolis in Japan from 1998 to 2002. Some soil fungi were already reported elsewhere (Watanabe et al. 2001a–c).

Three mitosporic fungi, i.e., *Ardhachandra cristaspora* (Matsush.) Subram. & Sudha, *Dicyma pulvinata* (Berk. & Curt.) v. Arx, and *Sibirina gamsii* Gray & Morgan-Jones from fruit bodies of Aphyllophorales (Basidiomycetes) are described and illustrated in this report. These fungi have not been previously reported in Japan.

The isolates from the tissue of fruit bodies were obtained by single hyphal tippings elongated from the dissected tissues on 2% water agar (WA) after cleaning the tissue surface with 70% ethanol-soaked cotton. The isolates in this study are deposited at Institute of Biological Resources and Functions with TW number, National Institute of Advanced Industrial Science and Technology (AIST) at Tsukuba, Ibaraki, Japan, and reported as follows.

T. Watanabe (✉) · Y. Kawano · K. Nakamura
Research Institute of Biological Resources and Functions, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki 305-8566, Japan
Tel. +81-29-861-6812; Fax +81-29-861-6812
e-mail: tsuneo-watanabe@aist.go.jp

Ardhachandra cristaspora (Matsush.) Subram. & Sudha, Can. J. Bot. 56:731, 1978. Figs. 1–9

≡*Rhinocladiella cristospora* Matsush. Matsushima 1971. Microfungi of the Solomon islands and Papua-New Guinea. p. 49.

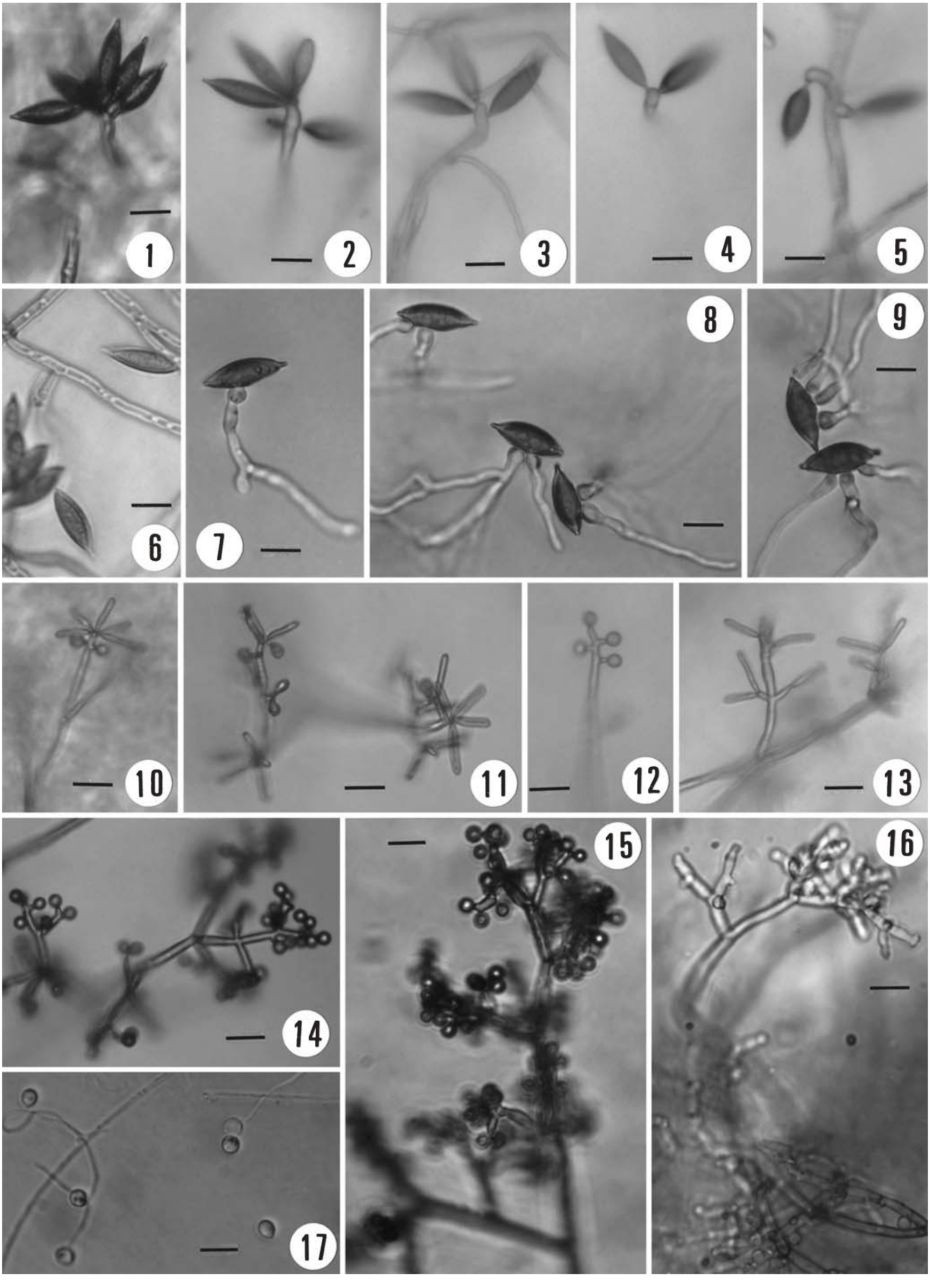
Colonies on potato dextrose agar (PDA) after incubation for 20 days at 25°C, 41–43 mm in diameter, dark greenish-gray, nonaerial, velvety with a slight zonation; reverse dark greenish-gray. Conidiophores erect, subhyaline to brown, simple, septate, bearing one to several conidia mostly in apical fertile denticulate portions successively, often more than 50 μm tall, 2–3 μm wide. Conidia brown, apiculate, spindle shaped, and "bivalved" lenticular with hyaline slit, often unequal sided (Fig. 6), often granulate, 19–30 × 5–8 μm; apex 2–3 μm long. One to four germ tubes (Figs. 7–9) were elongated from the germinated conidia on WA with two germ tubes being predominant (Fig. 8).

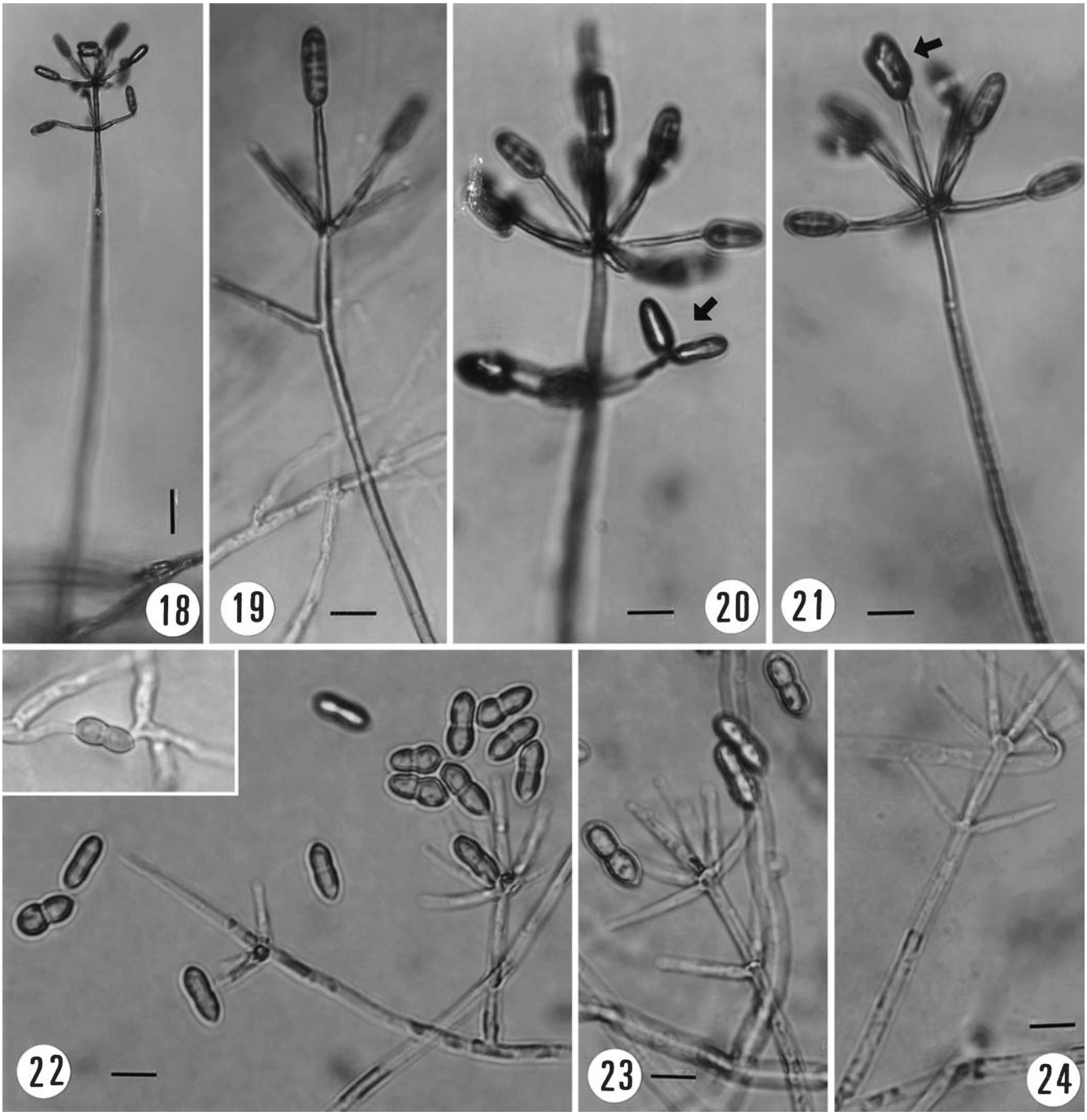
Materials examined: Japan, Okinawa Pref., Nagodake, culture from an unidentified polyporaceous fruit body (sample B287), Jan. 20, 2002, collected and isolated by T. Watanabe, TW 02-326.

The fungus was first isolated in Taiwan and named as *Rhinocladiella cristospora* Matsushima (1971), but later included in *Ardhachandra* as *A. cristaspora* (Matsush.) Subram. & Sudha (1978) (misspelled as *A. critaspora*), and the new name was adopted by Matsushima (1980). Although this fungus is known as one of the folicolous fungi, this isolate from a fruit body is interesting to note. It is also morphologically closely related with *A. prolatofusiformis* J.L. Chen and Tzean and two other *Ardhachandra* species (Chen and Tzean 1995), but it is readily separated from these fungi on the basis of small but conspicuous acuminate apices.

Dicyma pulvinata (Berk. & Curt.) v. Arx, Gen. Fungi, 3rd edn., p. 316, 1981, Fig. 83b Figs. 10–17

≡*Polyactis pulvinata* Berk. & Curt., Grevillea 3: 110, 1875. For other synonyms, see Deighton (1972).


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17



Figs. 18–24. *Sibirina gamsii*. **18** Habit showing conidiophore and apical fertile portions bearing single conidia at each apex. **19–21** Apical fertile portions bearing single conidia (**19**) and single and rarely two conidia (**20, 21**) (*arrow*) at each apex of verticillate phialides. **22, 23** Apical fertile portions of conidiophores composed of verticillate phialide and detached conidia. **22** *Inset:* germinated conidium. **24** Apical fertile portions of conidiophores with verticillate phialide after detachment of conidia. *Bars* **18** 20 μm; **19–24** 10 μm

Figs. 1–9. *Ardhachandra cristaspora*. **1–5** Habit showing conidiophores and apical fertile portions bearing two (**4, 5**), three (**3**), and several conidia (**1, 2**). **6** Detached conidia. Note unequal-sided conidia. **7–9** Germination of conidia with one (**7**), two (**8**), and three to four germ tubes (**9**). *Bars* 10 μm

Figs. 10–17. *Dicyma pulvinata*. **10–13** Apical fertile portions of immature branches bearing either globose conidia (**12**) or cylindrical conidium-like side branches (**13**), or both (**10, 11**). **14, 15** Apical fertile portions of mature conidiophores bearing conidia. **16** Conidiophores after detachment of conidia. **17** Germinated and nongerminated conidia. *Bars* 10 μm

Colonies on PDA after incubation for 30 days at 25°C, nearly 25 mm in diameter, whitish, whitish-gray to dirty gray with whitish tint, nonaerial, slightly raised, furrowed and zonated; reverse pale yellowish-brown. Conidiophores erect, hyaline, subhyaline to brown, septate, simple or branched, bearing conidia apically and laterally on apical fertile portions, often more than 200 μm tall, 1.2–3 μm wide, branches cylindrical, 6–30 × 1–2.4 μm; lateral branches often conidium-like, readily detached, cylindrical, aseptate, tapering at one end, 8–18 × 1.6–2 μm. Conidia subhyaline, globose, subglobose, or angular, apiculate at one end, 2.8–6 μm diameter.

Materials examined: Japan, Nagano Pref., Shiojiri, culture from an unidentified corticeaceous fruit body (sample B78), Oct. 20, 1999, collected and isolated by T. Watanabe, TW 99-204.

This fungus sporulated within 4 days after inoculation on WA. Some conidiophores bore only globose conidia, while others bore globose conidia with conidium-like lateral branches (Figs. 10, 11). With age, however, rather stout conidiophores were dominantly formed, bearing abundant globose conidia (Figs. 14, 15). After removal of conidia, branches with denticulate, raised sporogenous cells were conspicuous (Fig. 16).

Dicyma pulvinata is common especially in warm areas (Arx 1982; Deighton 1972), but its morphological characteristics are noteworthy particularly in the young stage, and are further studied here.

Our fungus resembles *Hansfordia grisella* described by Hughes (1951). Particularly, fig. 6 in Hughes (1951: p. 22), and the reproduced figures, fig. 9 in plate 1, of *Botrytis griseola* by Saccardo (1877), are comparable to Figs. 12, 14, and 15 in the present article.

Sibirina gamsii Gray & Morgan-Jones, Mycotaxon 10: 396, 1980. Figs. 18–24

PDA colonies aerial, yellowish-brown, homogeneous, more than 40 mm in diameter for 5 days at 25°C, slightly radiate, reverse yellowish-brown. Conidiophores erect, hyaline, straight, septate, mostly 15–450(–500) μm tall, 3–4 μm basally, simple or branched apically and subapically with 2–9 verticillate phialides, very rarely branched basally, bearing single or rarely 2 terminal conidia on each monophialide, phialides straight, gradually tapering toward tips, terminal ones 20–40 μm long, lateral ones 16–24(–26) μm long, 2–3.6 μm wide basally, collarette none or inconspicuous. Conidia hyaline, 1- or 2-celled, ellipsoidal, constricted at the septum, often upper cells inflated, apiculate at one end, (12–)14–21 × 4–7 μm. Catenulate globose chlamydospore-like structures 8–11 μm in diameter formed in old cultures.

Materials examined: Japan, Nagano Pref., Agematsu, culture from an unidentified exidiaceous fruit body (sample B121), Oct. 21, 1999, collected and isolated by T. Watanabe, TW 99-369.

This fungus is morphologically identical with the original description of *Sibirina gamsii* Gray & Morgan-Jones (1980) isolated from carpophores of *Polyporus* sp., except for often having more than 6 verticillate conidiogenous cells. The genus *Sibirina* Arnold is characterized by erect conidiophores with verticillate conidiogenous cells and monophialides bearing single 2-celled phialoconidia (Arnold 1970).

The phialides in the present isolate bear single conidia, but production of at least more than two conidia (Figs. 20, 21) was rarely observed, as suggested by Gray and Morgan-Jones (1980) for this fungus. Although *Sibirina* was synonymyzed to *Cladobotryum* Nees (Rogerson and Samuels 1993), the authors do not accept the generic concept of *Cladobotryum* because of the incomplete description, as pointed out by Hughes (1951). Thus, the original name *Sibirina gamsii* is adopted for the present isolate.

References

Arnold GRW (1970) Über *Sibirina* und *Sympodiophora* zwei neue Gattungen der Moniliales. Nova Hedwigia 19:299–304

Arx JAv (1982) The genus *Dicyma*, its synonyms and related fungi. Proc Kon Ned Akad Wet Amsterdam Ser C 85:21–28

Chen JL, Tzean SS (1995) A new species of *Ardhachandra* from Taiwan. Mycol Res 99:364–366

Deighton FC (1972) Synonymy of *Hansfordia pulvinata*. Trans Br Mycol Soc 59:531–536

Gray DJ, Morgan-Jones G (1980) Notes on hyphomycetes. XXXIV. Some mycoparasitic species. Mycotaxon 10:375–404

Hughes SJ (1951) Studies on microfungi. Mycol Pap 43:1–25

Matsushima T (1971) Microfungi of the Solomon islands and Papua-New Guinea. Self-published, Kobe (Japan), p 49

Matsushima T (1980) Saprophytic microfungi from Taiwan. Matsushima Mycol Mem. Self-published, Kobe (Japan) 1:6, 8

Rogerson CT, Samuels GJ (1993) Polyporicolous species of Hypomyces. Mycologia 85:231–272

Saccardo PA (1877) Fungi italici autographice delineati. Hyphomycetes 23, p 124

Subramanian CV, Sudha K (1978) *Ardhachandra*, a new genus of the Hyphomycetes. Can J Bot 56:729–731

Watanabe T, Watanabe Y, Fukatsu T (2001a) Soil fungal floras in the Bonin (Ogasawara) Islands, Japan. Mycoscience 42:499–502

Watanabe T, Watanabe Y, Fukatsu T (2001b) New species of *Acremonium, Cylindrocarpon* and *Verticillium* from soil in the Bonin (Ogasawara) Islands, Japan. Mycoscience 42:591–595

Watanabe T, Watanabe Y, Fukatsu T (2001c) *Dactylella chichisimensis*, sp. nov. in the Bonin (Ogasawara) Islands, Japan. Mycoscience 42:633–635