

South Florida microfungi: a new species of *Stanjehughesia* (hyphomycetes) from *Sabal* palm

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Abstract—*Stanjehughesia floridensis* anam. sp. nov. is described and illustrated from rachides and petioles of dead leaves of *Sabal* sp. in southeastern Florida, USA. The fungus is characterized by conidiophores reduced to monoblastic, brown, cylindrical, ampulliform or lageniform, solitary or clustered conidiogenous cells and obclavate to cylindric-obclavate, smooth, brown, 5–9 euseptate conidia with dark bands at the septa. It is compared with morphologically similar taxa, and a synoptical table of accepted species of *Stanjehughesia* is provided.

Key words—anamorphic fungi, palm fungi, *Sporidesmium*

Introduction

During a short-term survey of saprophytic microfungi occurring on plant debris from southeastern Florida, an interesting hyphomycetous anamorph was abundantly collected on *Sabal* palm dead leaves. The fungus possesses conidiogenesis and conidial features that clearly suggest a placement within the genus *Stanjehughesia* Subram. (Subramanian 1992, Wu & Zhuang 2005), but morphologically differs from all previously known species. Therefore it is described here as new. The type specimen and other specimen examined are deposited in the Herbarium of the U. S. National Fungus Collections (BPI).

Taxonomic description

Stanjehughesia floridensis G. Delgado, anam. sp. nov.

Figs. 1–6

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Ad fungus anamorphicus, hyphomycetes, pertinens. COLONIAE in substrato naturali effusae, nigrae. MYCELIUM superficiale, ex hyphis ramosis, septatis, pallide brunneae vel brunneae, 1.5–2 µm latis compositum. CONIDIOPHORA absentia. CELLULAE CONIDIOGENAE monoblasticae, determinatae, plerumque intercalares, cylindricae, ampulliformes vel lageniformes, erectae, rectae vel flexuosae, crassitunicatae, laevia, discretae vel gregares,

brunneae vel *atro-brunneae*, $5-9 \times 2-3.5 \mu\text{m}$, ad basim $5-6 \mu\text{m}$ crassa, at apicem $1.5-2 \mu\text{m}$ crassa et truncatae. CONIDIORUM SECESSIO schizolytica. CONIDIA holoblastica, solitaria, sicca, acrogena, recta vel leviter curvata, obclavata vel cylindrico-obclavata, brunneae, laevia, $5-9$ euseptata, leviter constricta ad septa, $32-48 \times 6-7 \mu\text{m}$, cellula apicalis rotundata vel leviter spatulata, pallide brunnea, cellula basalis obconica, saepe pallide brunneae, $5-7 \times 4-4.5 \mu\text{m}$, in hilum truncatum breviter attenuata. TELEOMORPHOSIS ignota.

HOLOTYPE — UNITED STATES. FLORIDA: Broward Co., POMPANO BEACH, on rachides and petioles of dead leaves of *Sabal* sp., V.27.2007, coll. G. Delgado (BPI 878270).

ETYMOLOGY — Latin, *floridensis*, referring to the state of Florida, where the fungus was collected.

Anamorphic fungi, hyphomycetes. COLONIES on natural substrate effuse, black. MYCELIUM superficial, composed of branched, septate, pale brown to brown hyphae, $1.5-2 \mu\text{m}$ wide. CONIDIOPHORES absent. CONIDIOGENOUS CELLS monoblastic, determinate, mostly intercalary, cylindrical, ampulliform or lageniform, erect, straight or flexuous, thick-walled, smooth, solitary or disposed in caespitose clusters to large extensive groups, brown to dark brown, $5-9 \times 2-3.5 \mu\text{m}$, $5-6 \mu\text{m}$ wide at the bulbous base, $1.5-2 \mu\text{m}$ wide at the truncate apex. CONIDIAL SECESSION schizolytic. CONIDIA holoblastic, solitary, dry, acrogenous, straight or slightly curved, obclavate to cylindric-obclavate, brown, smooth-walled, $5-9$ euseptate, with dark bands and slightly constricted at the septa, $32-48 \times 6-7 \mu\text{m}$; apical cell rounded or slightly spatulate, light brown; basal cell obconical, often paler, $5-7 \times 4-4.5 \mu\text{m}$, tapered to a narrow, truncate hilum. TELEOMORPH unknown.

OTHER SPECIMENS EXAMINED—UNITED STATES. FLORIDA: Broward Co., POMPANO BEACH, on rachides and petioles of dead leaves of *Sabal* sp., XI.2004, coll. G. Delgado (BPI 877806A).

Discussion

Subramanian (1992) reassessed the anamorphic genus *Sporidesmium* Link and introduced *Stanjehughesia* to accommodate a group of five species characterized by solitary, euseptate conidia and very reduced or absent conidiophores consisting of simple conidiogenous cells. Reblová (1999) did not accept Subramanian's arrangement, considering it to be schematic, diagnostically valuable but phylogenetically unacceptable. She preferred to retain the type species, *Stanjehughesia hormiscioides* (Corda) Subram. in *Sporidesmium*, as *Sp. hormiscioides* Corda. However, additional species have been described or transferred to *Stanjehughesia* following Subramanian's concept (McKenzie 1995, Mena et al. 2001, Wu & Zhuang 2005). Wu & Zhuang provided an account of the genus and described four species collected on bamboo culms and dead branches from China. They retained the specific name *St. vermiculata* (Cooke) Subram. (= *Sp. vermiculatum* (Cooke) M.B. Ellis) for a specimen collected on rotten wood and bark of *Fagus sylvatica* L. and *Quercus* sp. Hughes

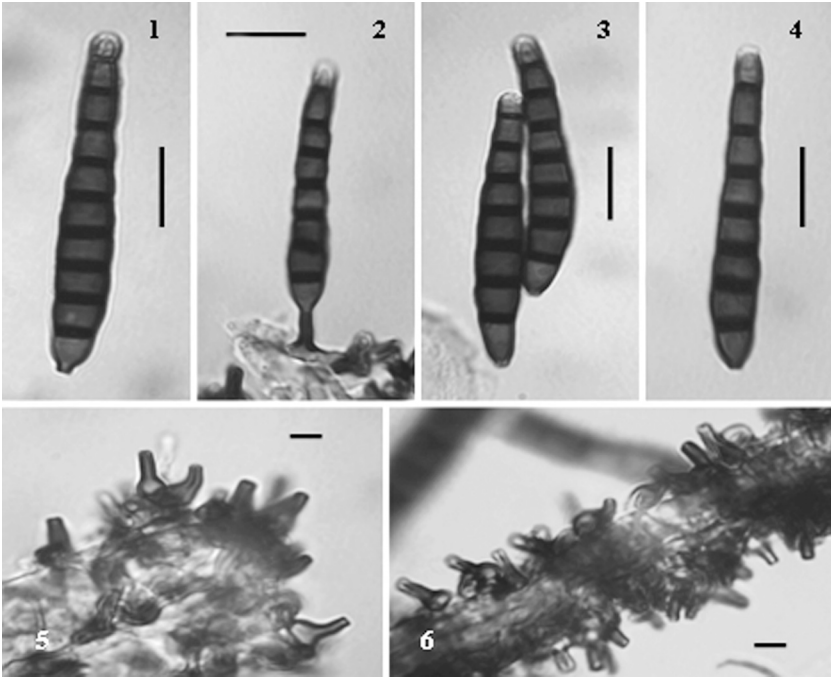


Fig. 1-6. *Stanjehughesia floridensis*, from holotype (BPI 878270). 1, 3-4. Conidia. 2. Conidium attached to a conidiogenous cell. 5-6. Conidiogenous cells on natural substrate.

Scale bars: 1-4 = 10 μ m; 5-6 = 5 μ m.

(1958) previously considered *Sp. vermiculatum* and *Sp. caespitosum* (Ellis & Everh.) M.B. Ellis (= *St. caespitosa* (Ellis & Everh.) Subram.) to be synonyms of *Sp. hormiscioides* (= *St. hormiscioides*). The descriptions and illustrations provided by Ellis (1958, 1976) show that *Sp. vermiculatum* and *Sp. hormiscioides* are remarkably similar and should be considered conspecific under their current placement in *Stanjehughesia*, whereas *St. caespitosa* differs enough to be retained as a separate species. Reblová (1999) also discussed the variations in conidiophore morphology of another species, *St. larvata* (Cooke & Ellis) Subram. (= *Sp. larvatum* Cooke & Ellis) under natural and culture conditions, retaining the latter name for the anamorph of *Miyoshiella larvata* Reblová. Several collections having distinct, macronematous, multicelled conidiophores and 0-1 proliferating conidiogenous cells support Reblová's opinion to maintain this anamorph in *Sporidesmium* (Hughes & Illman 1974, Matsushima 1975, Reblová 1999, Wu & Zhuang 2005).

Recent phylogenetic studies suggest that *Sporidesmium* and morphologically similar genera including *Stanjehughesia* are a polyphyletic, artificial assemblage

Table 1. Morphological features of accepted species of *Stanjehughesia*.

SPECIES	CONIDIOPHORES	CONIDIOGENOUS CELLS		CONIDIA			
		SHAPE	SIZE (MM)	SHAPE	SEPTATION	WALL TEXTURE	SIZE (MM)
<i>St. CAESPITULOSA</i>	Absent	Bulbous	12-15 × 8-11	Cylindrical to subfusiform	8-20 eusepta	Smooth	65-150 × 13-17
<i>St. DECOROSA</i>	Present, reduced	Cylindrical	20-30 × 10-15	Obclavate	10-14 euseptate	Verrucose, striated	170-200 × 12-17
<i>St. FASCICULATA</i>	Present, reduced	Obclavate-cylindrical to obclavate	Up to 30	Obclavate or fusiform	9-15 euseptate, 1-2 distoseptate at the apex	Verruculose	60-118 × 7-11
<i>St. FLORIDENSIS</i>	Absent	Cylindrical, ampulliform or lageniform	5-9 × 2-3.5	Obclavate to cylindrical-obclavate	5-9 euseptate	Smooth	32-48 × 6-7
<i>St. FUSIFORMIS</i>	Absent	Cylindrical to ampulliform	11-15 × 5-7	Fusiform, obclavate to obclavate-rostrate	6-8 euseptate	Smooth	65-85 × 7-8
<i>St. HAMATIELLA</i>	Absent	Cylindrical to ampulliform	7-14 × 5-7	Obclavate to obclavate-rostrate and hamate	11-14 euseptate, 6-9 distoseptate	Smooth	70-140 × 7-8.5
<i>St. HORMISCIODES</i>	Absent	Obclavate to flask shape	10-25 × 5-11	Subcylindrical to cylindrical-fusoid	12-26 euseptate	Smooth	65-270 × 10-17
<i>St. MINIMA</i>	Absent	Cylindrical to ampulliform	8-11 × 2-3.5	Fusiform or ellipsoidal	6-8 euseptate	Smooth	34-48 × 8.5-10
<i>St. NIGROACUS</i>	Absent	Lageniform to doliform	8-14 × 7-12	Acicular	23-36 euseptate	Smooth	130-214 × 10-12
<i>St. POLYPORA</i>	Absent	Cylindrical to ampulliform	13-18 × 3.5-5	Fusiform, obclavate to obclavate-rostrate	15-20 euseptate	Smooth	110-165 × 10-12

of unrelated anamorphs with affiliations to *Dothideomycetes* and *Sordariomycetes*, and the morphological characters currently used to delimit the genera are not phylogenetically significant (Shenoy et al. 2006). In the present case however, Subramanian's concept of *Stanjehughesia* is followed and considered valid for diagnostic purposes, until further investigations continue refining the taxonomic status and phylogenetic relationships among *Sporidesmium* and related anamorphs (Shenoy et al. 2007). Accordingly, *Stanjehughesia* would currently comprise ten species, whose morphological features are compared in Table 1.

Some *Stanjehughesia* species fit well with the generic concept of *Janetia* sensu Goh & Hyde (1996). These authors formally expanded the original concept of Ellis (1976), based on *Janetia euphorbiae* M.B. Ellis, to include species producing obclavate or cylindrical, euseptate or distoseptate conidia borne on monoblastic and/or polyblastic denticulate conidiogenous cells on usually integrated and single conidiophores, but also aggregated in synnematal conidiomata. Despite the morphological similarities, *Stanjehughesia* species can be separated from *Janetia* on the basis of their monoblastic, non-denticulate conidiogenous cells and lignicolous habitat (Mena et al. 2001, Wu & Zhuang 2005).

Stanjehughesia floridensis is morphologically close to *St. caespitulosa* and *St. hormiscioides* (Ellis 1958, 1976), which also have smooth-walled, brown conidia with dark bands associated with the septa. They also share similarly shaped conidiogenous cells that are solitary or disposed in caespitose clusters to large groups, terminally and laterally arranged on the hyphae. However, *St. caespitulosa* has cylindrical to subfusiform, 8-20 euseptate, larger conidia (65-150 × 13-17 µm) and larger conidiogenous cells (12-15 × 8-11 µm). *St. hormiscioides* is distinguished from the new species by its clavate when young, fusiform when mature, also larger conidia (65-270 × 10-17 µm), with 12-26 septa, and larger conidiogenous cells (10-25 × 5-11 µm). Another species, *St. minima* W.P. Wu (Wu & Zhuang 2005) resemble *St. floridensis* in conidial length, texture, color, number of septa and the morphology of conidiogenous cells, but differs in having fusiform or ellipsoidal, wider conidia (8.5-10 µm) without dark bands at the septa.

Among species of *Janetia* with similar conidial morphology, *J. euphorbiae* (Ellis 1976) could be compared with *St. floridensis*, but the presence of polyblastic conidiogenous cells usually bearing 2-4 thick denticles and 3-6 septate, shorter conidia (18-36 µm) clearly separate both taxa. *Janetia capnophila* S. Hughes (Hughes 1983) is also morphologically close to *St. floridensis* in having inflated, constantly monoblastic conidiogenous cells and narrowly obclavate conidia that are rounded at the apex and conico-truncate at the base. However, *J. capnophila* has (7-)9-13(-16) septate, larger conidia (80-125(-145) × 10.8-13.5(-16.2) µm), with conspicuously darker basal cells and up to 7 conidial cells that may

become conidiogenous. It also occurs intimately associated with sooty moulds, developing a thin, sparse, irregular network of hyphae on leaf surfaces.

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