

Collections of fungi from Christmas Island, Indian Ocean

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Abstract

Shivas, R.G. and Hilton, R.N. Collections of fungi from Christmas Island, Indian Ocean. *Kingia*: 1(3) 295-301 (1990). One hundred and twenty fungal taxa are listed for Christmas Island. Fifty-eight of these are new records for Christmas Island. Three plant pathogenic fungi, *Guignardia bidwellii*, *Puccinia claoxyli* and *Uredo musae*, have not been previously collected from Australian territory.

Introduction

The main collection discussed in this paper is that made by one of us (R.G.S.) on a one-week visit to Christmas Island during August, 1986. The weather had been dry prior to the visit so that it had favoured agarics as against polypores. New collections cannot be considered in isolation and reference is made to all known past collections. These fungal collections listed here as made by others are those of J.J. Lister in 1887 (Hemsley 1890, identifications by M.C. Cooke), C.W. Andrews in 1897-8 (Blackman 1900; Lister 1900), H.N. Ridley in 1904 (Ridley 1905, identifications by G. Masee), and D.A. Powell in 1968 (Reid 1969). There must also have been another collection, as yet undocumented, upon which the determinations of the fungi depicted in the April, 1984 issue of postage stamps from Christmas Island were based. As part of the area covered by *Flora Malesiana*, Christmas Island collectors are listed in Volume I of the *Flora* (Van Steenis-Kruseman 1950).

The systematic arrangement follows that of Ainsworth *et al.* (1973) and is not taken below ordinal level. The collection has been lodged at the Western Australian Herbarium (PERTH).

Fungi recorded from Christmas Island.

Division Myxomycota

Class Myxomycetes

Order Ceratiomyxales

Ceratiomyxa descendens Emoto, on wood (PERTH 731943), by H. Yorkston, det. Mitchell.

Ceratiomyxa sphaerosperma Boedijn, on bark (PERTH 731935), by H. Yorkston.

Order Physarales

Erionema aureum Penzig, on bark (PERTH 733407), by H. Yorkston, det. Mitchell.

Order Liceales

Lycogala epidendrum (L.) Fr., Aldrich Hill (PERTH 730297a), by H. Yorkston, det. Reid; no special locality, as *Lycogala minutum* Pers., by Andrews.

Order Trichiales

- Arcyria cinerea* (Bull.) Pers., on wood (PERTH 734047), by H. Yorkston.
Arcyria denudata (L.) Wetts., on bark (PERTH 798851), by H. Yorkston.
Arcyria flava Pers., no special locality, by Andrews. = *Arcyria nutans* (Bull.) Grev.
Arcyria obvelata (Oeder) Onsberg, on wood (PERTH 732451), by H. Yorkston.

Order Stemonitales

- Stemonitis axifera* (Bull.) Macbr., on bark (PERTH 732443), by H. Yorkston, det. Mitchell.
Stemonitis splendens Rost., on bark (PERTH 732907), by H. Yorkston; Flying Fish Cove and Phosphate Hill, as *S. splendens* var. *genuina*, by Andrews.

Division Eumycota

Sub-division Ascomycotina

Class Discomycetes

Order Helotiales

- Marssonina rosae* (Lib.) Died., leaf spot on *Rosa* hybrid, garden at Settlement (PERTH 835242).

Order Pezizales

- Phillipsia domingensis* Berk., featured on the 85c postage stamp.
Trichoscypha tricholoma Mont., no special locality, by Andrews. = *Cookeina tricholoma* (Mont.) O. Kuntze.

Class Loculoascomycetes

Order Dothideales

- Guignardia bidwellii* (Ellis) Viala & Ravaz, leaf spot on *Celastrus paniculatus* Willd., north-eastern coastal forest (IMI 310088, PERTH 736155). This collection is the first record from Australian territory of the pathogen that causes black rot of grapes. The record is curious as *G. bidwellii* is restricted to members of the Vitaceae (Sivanesan 1984) and *Celastrus* belongs to the Celastraceae.
Guignardia musae Racib., freckle disease on *Musa acuminata* Colla, north-eastern coast road (PERTH 834726).

Order Sphaeriales

- Daldinia concentrica* (Bolton) Ces. & de Not., National Park (PERTH 728683). Recorded by Ridley as common everywhere on dead wood, Phosphate Hill, Steep Point etc.
Daldinia eschscholtzia (Ehrenb.) Rehm, no special locality (D.A.P. 68), by Powell, det. Reid (1969).
Hypoxyylon sp., Aldrich Hill (PERTH 814091), by H. Yorkston, det. Reid.
Rhopalopsis heliscus Mont., on dead wood Irvine Hall, by Ridley. = *Kretzschmaria heliscus* (Mont.) Masee. See Dennis (1957 p. 314, fig. 10).
Xylaria digitata Fr., Flying Fish Cove, by Ridley.
Xylaria fistulosa Lev., Phosphate Hill, by Ridley.
Xylaria hypoxyylon Grev., Flying Fish Cove, Murray Hill Track, by Ridley.
Xylaria sp. 1, no special locality (PERTH 729280), by H. Yorkston.
Xylaria sp. 2, West White Beach, lower terrace forest (PERTH 728217).
Xylaria sp. 3, Aldrich Hill (PERTH 730289), by H. Yorkston.
Xylophaera papyrifera (Fr.) Dennis, no special locality (D.A.P. 67), by Powell, det. Reid (1969).

Sub-division Basidiomycotina

Class Teliomycetes

Order Uredinales

- Puccinia arachidis* Speg., leaf rust on *Arachis hypogaea* L., garden at Settlement (PERTH 835161).
Puccinia claoxyli Sydow & H. Sydow, leaf rust on *Claoxyylon indicum* (Reinw. ex Blume) Hassk., one km south of airport (PERTH 835285).
Puccinia cymbopogonis Masee, leaf rust on *Cymbopogon citratus* (DC.) Stapf., garden at Poon San (PERTH 834742).
Puccinia ruelliae Sydow & H. Sydow, leaf rust on *Ruellia prostrata* Poir., entrance to golf course (PERTH 834653).
Uredo musae Cummins, leaf rust on *Musa acuminata* Colla, Grants Well (PERTH 834750). This collection is the first from Australian territory (Shivas 1987).
Uredo spp., leaf rust on *Bothriochloa bladhii* (Retz.) S.T. Blake, Central Plateau (PERTH 750921); leaf rust on *Digitaria radicata* (Presl) Miq., edge of railway track (PERTH 750956); leaf rust on *Sporobolus fertilis* (Steudel) W. Clayton, 0.5 km north of airport (PERTH 834661).

Order Ustilaginales

Ustilago cynodontis (Pass.) P. Henn., smut on *Cynodon dactylon* (L.) Pers., entrance to golf course (PERTH 834688).

Class Hymenomycetes

Order Auriculariales

Auricularia mesenterica Pers., National Park (PERTH 728667); edge of railway track and adjacent rainforest (PERTH 727687); West White Beach, lower terrace forest (PERTH 726621); Plateau Forest (PERTH 728748); Aldrich Hill (PERTH 729736), by H. Yorkston.

Hirneola auriculae-judae Berk., no special locality, by Andrews. = *Auricularia auricula* (Hooker) Underwood. A northern temperate fungus likely to have been recorded in error.

Hirneola polytricha Mont., Flying Fish Cove, Plateau, recorded by Ridley (1905 p. 254) states "Common used as food by natives". = *Auricularia polytricha*, a well known edible abundant in New Zealand. There might be confusion with *Auricularia mesenterica* (above). As *Auricularia* cf. *polytricha* (Mont.) Sacc., no special locality (D.A.P. 70) by Powell, det. Reid (1969).

Order Agaricales

Chaetocalathus semisupinus (Berk. & Br.) Pegl., lower terrace forest at West White Beach (PERTH 728195), det. Reid.

Dictyopanus luminescens Corner, on buttress root beneath wild pomelo tree, Camp 4 (PERTH 728233). Luminous.

Favolaschia thwaitesii (Berk. & Br.) Sing., lower terrace forest at West White Beach (PERTH 728209), det. Reid.

Favolus albidus Masee, Plateau at Irvine Hall, by Ridley, who states that it is "A small white agaric luminous at night". Ridley's statement (Ridley, 1905, p.252) that it is endemic and a new species is inconsistent with it being described by Masee from Klong Son, Thailand (Rostrup and Masee, 1902). Nor is the polypore genus *Favolus* appropriate for an agaric.

Flammula sapinea Fr., no special locality, by Ridley. = *Gymnopilus sapineus* (Fr.) R. Maire, but it is *G. purpuratus* (Cooke & Masee) Singer that has the violet cap described.

Lentinus lecontei Fr., Murray Hill track, centre of Island, by Ridley as *L. lecontei*. Pegler (1983) equates *L. lecontei* with *L. strigosus* (Schwein.) Fr.

Lentinus fulvus Berk., no special locality, by Ridley. Pegler (1983) equates *L. fulvus* with *L. velutinus* Fr.

Lentinus velutinus Fr., no special locality, by Ridley.

Lentinus sp. 1, West White Beach, lower terrace forest (PERTH 726591).

Lentinus sp. 2, National Park (PERTH 728705).

Lentinus sp. 3, no special locality (PERTH 729809), by H. Yorkston.

Leucocoprinus fragilissimus (Berk. & Rav.) Pat., This species is featured on the 30c postage stamp.

Marasmius crinisequi Mueller ex Kalchbrenner, no special locality (PERTH 730300), by H. Yorkston.

Marasmius sp. 1, Aldrich Hill (PERTH 731307), by H. Yorkston.

Marasmius sp. 2, Aldrich Hill (PERTH 729817), by H. Yorkston.

Mycena sp. 1, edge of railway track and adjacent rain-forest (PERTH 728136).

Mycena sp. 2, no special location (PERTH 730858), by H. Yorkston.

Naucoria sp., edge of mine site, newly cleared tall rainforest (PERTH 727636)

Pleurotus promethius Berk. & Curt., common on the Plateau, by Ridley. Eaten by inhabitants, which suggests affinity with *P. sajor-caju* (Fr.) Singer, which would be familiar to them from Malaya.

Pleurotus sp. 1, no special location (PERTH 730823), by H. Yorkston.

Pleurotus sp. 2, National Park (PERTH 730785), by H. Yorkston.

Trogia anthidepas (Berk. & Br.) Corner. This species is featured on the 45c postage stamp.

Volvaria haplotricnia Berk. & Br., Flying Fish Cove, by Ridley.

Order Aphyllophorales

Corioloopsis sp., edge of railway track and adjacent rain forest (PERTH 727083).

Corioloopsis brunneo-leuca (Berk.) Ryvarden, lower terrace forest at West White Beach lower terrace (PERTH 726613); hill near waterfall (PERTH 728764); Aldrich Hill (PERTH 730254) by H. Yorkston.

Coriolus zonatus (Fr.) Quel., edge of mine site and adjacent rain forest (PERTH 727164), det. Reid.

Daedalea subcongener Berk., Flying Fish Cove by Ridley. = *Trametes occidentalis* (Klotzsch) Fr. according to Cunningham (1965 p. 174).

Daedalea pavonina Berk., Phosphate Hill by Ridley. = *Trametes muelleri* Berk., (K), see Cunningham (1965 p. 161).

- Favolus boucheanus* Klotzsch, no special locality, by Andrews. A *nomen dubium* according to Ryvar den and Johansen (1980).
- Favolus caperatus* Pat., no special locality (D.A.P. 133), by Powell, det. by Reid (1969) who comments "possibly a form of *F. brasiliensis* Fr." with tomentose surface at least near point of attachment.
- Favolus tessulatus* Berk. & Curt., Phosphate Hill, by Ridley.
- Fomes lucidus* Fr., Phosphate Hill, by Ridley. Also collected by Andrews. = *Ganoderma lucidum* (Fr.) Karst.
- Ganoderma* spp., Two species (D.A.P. 121) collected by Powell from no special locality were sent to Reid (1969) for specialist determination.
- Ganoderma applanatum* (Pers.) Pat., edge of mine site in newly cleared tall rain forest (PERTH 727180); National Park (PERTH 730327) young specimen by H. Yorkston; variety *brownii* was collected by both Andrews and Lister under the name *Fomes australis* Fr.
- Gloeoporus thelephoroides* (Hooker) G.H. Cunn., Waterfall - along track to main road (PERTH 726605); Dolly Beach (PERTH 727067); no special locality (PERTH 730831) by H. Yorkston.
- Haddowia longipes* (Lev.) Steyaert, no special locality, (D.A.P. 123) by Powell. Presumably the *Amauroderma* (*Polyporus*) *costatus* Lloyd said by Reid (1969) to be probably a new name for *Amauroderma longipes* (Mont.) Lloyd. This species is featured on the 55c stamp.
- Hexagonia tenuis* (Hooker) Fr., coastline at the Grotto (PERTH 726656); National Park (PERTH 730343), by H. Yorkston; Phosphate Hill, Murray Hill road, as *Hexagonia similis* Berk., by Blackman; no special locality, as *Hexagonia polygramma* Mont., by Andrews; no special locality (D.A.P. 132) det. as *Hexagonia thwaüesii* Berk. & Curtis by Reid (1969).
- Hydnum concrescens* Fr., edge of railway track and adjacent rain-forest (PERTH 727156); coastline at the Grotto (PERTH 727660); no special locality, by Ridley.
- Lachnocladium furcellatum* Sw., no special locality, by Ridley. Corner (1950, p. 425) gives the name *L. furcellatum* (Fr.) Lev. as of no certain application.
- Laschia caespitosa* Berk, no special locality, by Andrews. = *Favolus caespitosus* Berk. See Saccardo's *Sylloge Fungorum* 6507.
- Lenzites acuta* Berk., no special locality (PERTH 730793), by H. Yorkston; no special locality, as *Daedalea tenuis* Berk., by Andrews.
- Lenzites elegans* (Fr.) Pat., lower terrace forest at West White Beach, (PERTH 726648).
- Lenzites palisotii* Fr., no special locality (D.A.P. 71) by Powell det. Reid (1969).
- Lenzites platyphyllus* Cooke., Waterfall, Phosphate Hill, by Ridley.
- Microporus flabelliformis* (Klotzsch) O. Kuntze, edge of railway track and adjacent rain forest (PERTH 727117); Warton Hill (PERTH 729299) by H. Yorkston. Common everywhere, Phosphate Hill, as *Polystictus flabelliformis* (Klotzsch) Cooke, by Andrews and by Ridley.
- Microporus xanthopus* (Fr.) Kuntze, edge of mine site, newly cleared tall rain forest (PERTH 727148); Warton Hill (PERTH 730262) by H. Yorkston. Common Phosphate Hill, as *Polystictus xanthopus* Fr., by Andrews and by Ridley.
- Oxyporus cervino-gilvus* (Jungh.) Ryvar den, National Park (PERTH 727598); no special locality (PERTH 729272), by H. Yorkston.
- Pellinus conchatus* (Pers. ex Fr.) Quel., Waterfall (PERTH 726664); no special locality, as *Fomes conchatus* (Pers. : Fr.) Gill, (K) by Lister at time of Andrews' visit.
- Polyporus confluens* Fr., no special locality, by Andrews.
- Polyporus elegans* Fr., lower terrace forest at West White Beach (PERTH 727601); no special locality (PERTH 730246), by H. Yorkston.
- Polyporus subzonalis* Cooke, Grevillea 17. Phosphate Hill, Murray Hill track, Flying Fish Cove, by Ridley. = *Trametes muelleri* Berk., see Cunningham (1965 p. 161).
- Polyporus udus* Jungh., lower terrace forest at West White Beach (PERTH 726575).
- Polystictus brunneo-pictus* Berk., Flying Fish Cove, by Ridley.
- Polystictus luteo-olivaceus* Berk. & Br., no special locality, by Andrews.
- Polystictus occidentalis* Klotzsch, Phosphate Hill, by Ridley. = *Trametes occidentalis* (Klotzsch) Fr. = *Corioloopsis occidentalis* (Klotzsch) Murrill = *Corioloopsis polyzona* (Pers.) Ryvar den.
- Polystictus sanguineus* Fr., Common. Flying Fish Cove, by Ridley. Also collected by Andrews. = *Pycnoporus sanguineus* (Fr.) Murrill.
- Polystictus gaudichaudii* (Lev.) Cooke., no special locality (D.A.P. 72), by Powell det. Reid (1969).
- Poria chlorina* Masee, Kew Bull. 1906 p. 93. TYPE. Considered by Lowe (1963) as very similar to and possibly a

synonym of *Poria mellea* (Berk. & Br.) Cooke.

Rigidoporus lineatus (Pers.) Ryvarden, one km south of airport (PERTH 728772). This is the *Polyporus zonalis* Berk. important in plantation agriculture for its liability to be confused with the White Root Disease pathogen *Rigidoporus microporus* (Fr.) Van Overeem, the "*Fomes lignosus*" of Malayan rubber planters. Reid (1969) determined a specimen collected by Powell (D.A.P. 122) from no special locality as *Rigidoporus zonalis* (Berk.) Imazeki.

Schizophyllum commune Fr. ex Fr., East Coast (PERTH 728241); Phosphate Hill etc., by Ridley, also Andrews.
Scytinostroma (Stereum) duriusculum (Berk. & Br.) Donk, no special locality (D.A.P. 134), by Powell det. Reid (1969).
Stereum lobatum Fr., Grants Well (PERTH 728659); Phosphate Hill by Ridley, also collected by Lister; no special locality D.A.P. 73), by Powell det. Reid (1969) as *Stereum ostrea sensu lato* (= *S. lobatum* (Kunze ex Fr.)Fr.).
Stereum sp., West White Beach, lower terrace forest (PERTH 727628).

Order Dacrymycetales

Dacrymyces palmatus (Schw.) Lloyd, no special locality (PERTH 730769), by H. Yorkston, det. Reid; no special locality, as *Dacrymyces chrysospermus* Berk. & Curt. according to McNabb (1973 p. 495).

Guepinia sparassoides Kalchbrenner, no special locality, by Andrews.

Guepinia spatularia Fr., no special locality, by Ridley.

Class Gasteromycetes

Order Nidulariales

Cyathus montagnei Tulasne, National Park (PERTH 728675); no special locality, by Andrews.

Order Phallales

Phallus sp. 1, no special locality (PERTH 730874), by H. Yorkston.

Phallus sp. 2, National Park (PERTH 730351), by H. Yorkston.

Order Lycoperdales

Geastrum andrewsi Blackman. Blackman (1900) described and published this endemic, collected by Andrews.

Lycoperdon hiemale Bull., Smith Point, by Ridley.

Lycoperdon pyriforme L., Smith Point, by Ridley.

Radiigera asperata Reid, on rotten palm stump and remains of termite nest. Coll. D.A. Powell & H'ng Kim Chey. See Reid (1986 p. 437).

Radiigera terminaliicola Reid, on termite nest. Coll. D.A. Powell & H'ng Kim Chey. See Reid (1986 p. 435).

Form Class Hyphomycetes

Bipolaris maydis (Nisikado & Miyake) Shoem., leaf spot on *Saccharum officinarum* L., Central Plateau (PERTH 834238; IMI 310089).

Bipolaris sp., leaf spot on *Eleusine indica* (L.) Gaertner, along roadside at Settlement (IMI 310090, PERTH 729191).

Does not match with any specimens held at Herbarium IMI (Sivanesan, C.A.B. International Mycological Institute, pers. comm.).

Cercospora sp., leaf spot on *Tithonia diversifolia* (Hemsley) A. Gray. Central Area Work Quarry (PERTH 834246).

Cercosporidium personatum (Berk. & Curt.) Deighton, leaf spot on *Arachis hypogaea* L., garden at Settlement (PERTH 834769).

Oidium spp., powdery mildew on *Cucurbita maxima* Duch, Grants Well (PERTH 835293); powdery mildew on *Chrysanthemum* sp., garden at Settlement (PERTH 835234); powdery mildew on *Psophocarpus tetragonolobus* (L.) DC., garden at Settlement (PERTH 835218); powdery mildew on *Physalis minima* L., roadside at Waterfall (PERTH 834696) powdery mildew on *Capsicum annum* L., market garden near Hanitch Hill (PERTH 835277); powdery mildew on *Euphorbia heterophylla* L., alongside north-west coast road (PERTH 834637); powdery mildew on *Lycopersicon esculentum* Mill., garden at Settlement (PERTH 835196); powdery mildew on *Euphorbia cyathophora* Murray, 0.5 km north of airport (PERTH 750891).

Pyricularia grisea Sacc., leaf spot on unidentified grass, roadside at Waterfall (IMI 310087).

Stilbum javanicum Henn., no special locality, by Andrews.

Form Class Coelomycetes

Colletotrichum gloeosporioides (Penz.) Sacc., leaf spot on *Deeringia amaranthoides* (Lam.) Merr., Central Area Work Quarry (IMI 310086); leaf spot on *Cenchrus brownii* Roemer & Schultes, edge of road at golf course (IMI 310148).

Macrophomina phaseolina (Tassi) Goid., pod spot on *Lablab purpureus* (L.) Sweet, Waterfall (PERTH 728721).

Sphaerellopsis filum (Biv.-Bem. ex Fr.) Sutton, hyperparasitic on *Uredo* sp. on *Digitaria radicata* (Presl.) Miq., edge of railway track (PERTH 750948); hyperparasitic on *Uredo* sp. on *Bothriochloa bladhii* (Retz.) S.T. Blake, Central Plateau (PERTH 750913).

Discussion

Eighteen plant pathogenic fungi are listed. Three of these, *Guignardia bidwellii*, *Puccinia claoxyli* and *Uredo musae* have not been previously collected from Australian territory. *G. bidwellii* causes the serious disease black rot of grapevine and is of particular concern to the Australian plant quarantine service (Anon. 1982). It is not certain that the form of *G. bidwellii* recorded from Christmas Island has the ability to infect commercial grapevines (*Vitis* spp.) or other Vitaceae.

This paper presents the information available up to the end of 1986. More records should emerge from Kew Herbarium, and a recent valuable collection made by H. Yorkston has been lodged at the W.A. Herbarium and remains to be worked upon.

Evidence so far shows, as would be expected, that the mycoflora consists of Malesian as well as Australian components.

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