

New records of Lignicolous fungi from Ratanmahal Wildlife Sanctuary, Gujarat, India

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ABSTRACT

Thirty species of lignicolous fungi belonging to Ascomycetes and Basidiomycete are reported from the Ratanmahal Wildlife Sanctuary, Gujarat, India. The new species are *Coriolus versicolor*, *Coriopsis gallica*, *Daedalea quercina*, *F. resupinate*, *D. unicolor* var. *hydnoidea*, *Fomitopsis rosea*, *Hypodontia comptopsis* and *Lenzites betulina*. *F. variegatum* is reported for the first time from India. All the species are new to studied area.

Keywords: *Coriolus*; *Fomitopsis rosea*; India; Ratanmahal Wildlife Sanctuary; Wood deteriorating fungi

1. INTRODUCTION

Fungi are diverse group of heterotrophs, some of them cause diseases to plants, animals and human beings. They are responsible for decay of wood. These produce secondary metabolites that may be used for biotechnological purposes. Wood deteriorating fungi belonging to Aphyllophorales (Basidiomycetes) are economically important as many of them are pathogens of forest trees and cause serious damage. These wood-rotting fungi are also important in the forest ecosystem as active decomposers of organic matter (Natarajan and Kolandavelu 1998). Wood inhabiting Basidiomycetes can be a valuable resource for few pharmaceuticals, food production, and bioremediation of toxic chemical pills (Lamar *et al* 1994). Biopulping of paper and other industrial uses (Akhtar *et al* 1993). These fungi maintain the productivity and contribute to a clean environment. A sustainability of natural resource increased understanding of fungal diversity and natural history of fungi will contribute to the Knowledge of the local biota and will greatly strengthen initiatives to protect and use sustainably our natural resources (Rossman *et al* 1998).

According to available record, wood deteriorating fungi were first collected in Gujarat state in 1992 by S. D. Sabnis and later by Arya in 2004. Sabnis reported *Polyporus* sp. from Sardar Sarovar in Gujarat. and Arya reported 7 species of fungi from Schoolpaneshwar Wildlife Sanctuary, Gujarat.

2. MATERIALS AND METHODS

2. 1. Study area

Ratanmahal Wildlife Sanctuary is an area of 55.65 Sq. Km consisting of dry deciduous forest. The total existing sanctuary area lies between the river panama and orsang. It's location is Panchmahals district, Limkheda taluka. Ratanmahal is 45 km from Baria. It is situated between 74° 37' to 70° 11' East longitude and between 22° 32' to 22° 35' North latitude. The flora of Ratanmahal forest is 543 species of plants, out of which 119 species are trees, 40 species are shrubs, 238 species are herbs, 48 species are grasses, 87 species are climbers, 2 species are partial parasites and 9 species are orchids. Amongst all tree species, Teak was found to have the maximum density and comprised 19.6 % of the total trees cover composition. The next dominant species is the Badaro, constituting 15.7 % of the total composition.

The climate is subtropical arid, which turns to humid during the monsoon, i e during July to October. Gradually it becomes exceedingly dry and cold during November to February followed by a long hot summer the hottest month being May and June. Mean annual temperature of the sanctuary is 25.3 °C with a maximum of 44.9 °C and minimum of 6.1 °C. annual rain fall is about 980 mm and rain fall occurs between June and September.

2. 2. Identification

A survey was undertaken in RWS and various areas in Vadodara city during June 2006 to February 2010 to find out various wood deteriorating fungi. Basidiomes were studied using macroscopic (eg: size, colour, number of pores/mm, length of tubes) and microscopic (presence/absence of structures, dimensions, vegetative and reproductive characters (Ryvarden 1991, Singer 1975).

Measurements were made from slide preparations. Fungi were stained with 1 % aqueous Phloxine and 5 % KOH. Specimens were identified to species using specialized references and CBS Aphyllophorales database. Certain specimens were sent to The Royal Botanical Garden Kew U. K. for final confirmation. These fungi are kept in fungal collection of Botany Department of The Maharaja Sayajirao University of Baroda, Gujarat, India.

3. RESULTS AND DISCUSSION

A total of 30 species of wood deteriorating fungi belonging to Ascomycetes and Basidiomycetes fungi reported from RWS Gujarat, India. These wood deteriorating fungi were belonging to the families Xylariaceae, Auricularreae, Ganodermataceae, Shizophyllaceae, Stecherinaceae, Hymenochaetaceae, Lachnocladiaceae, Schizoporaceae, Fomitopsidaceae, Polyporaceae. Seven of the identified species are first time reported to India and all other are new to study area. The families with one species is Auriculariae, Schizophyllaceae, Schizoporaceae, Lachnocladiaceae and Steccherinaceae. The family with largest genera is Polyporaceae.

Arya (2004) reported the 7 species of wood deteriorating fungi are *Phallus impudicus* L., *Cyanthus striatus* (Schw.) de Toni, *Trametes cingulata* Fr., *Trametes varians* Van der Bijl, *Lenzites sterioides* (Fr.) Ryv., *Ganoderma lucidum* (Fr.) Karsten and *Phellinus nilgheriensis* (Mont.) Cunn. The *Trametes varians* and *Lenzites sterioides* are new reports to India.

Xylaria polymorpha commonly called Dead man's fingers which is actually a cluster of hard to separate species that are imperfectly documented. Tom Volk estimates there are five

to ten species involved (Kuo 2003). *Daldinia concentrica* is known as King Alfred's Cake, Cramp balls and Coal fungus. *D. concentrica* contains several unique compounds, including a metabolite called concentrinol which is oxidized squalene.

The fungus is a useful form of tinder for fire lighting (Singh jagjit 1994). *Fomitopsis pinicola* is one the most damaging decay fungi in old-growth forests. It is a less serious problem in second-growth stands but infected dead trees are subjected to wind throw and top breakage making them high-risk hazard trees (Etheridge 1973).

F. rosea causes brown top rot of conifers forming a tan to reddish-brown, soft cubical rot on both living and dead wood. Infection usually originates in the upper part of the stem or crown. (Pegler and Waterston 1968). *Hypoxylon rubiginosum* causes a traumatic disease in Hevea and also associated with the decay of hard wood timber. Cankers occur on *Catappa bignonioides* following injury. It is mild pathogen on most hosts (Hawksworth 1972).

3. 1. A checklist of the wood deteriorating fungi form RSW Gujarat, India

In the following list those species that are new records to the state are marked with an asterix (*). New records to India are indicated in bold type.

Ascomycetes:

Xylariaceae

**Daldinia concentrica* (Bolton) Cesati and de Notaris

**Hypoxylon rubiginosum*

**Xylaria polymorpha* (Dead Man's fingers)

Auriculariaceae

**Auricularia auricularia*

Ganodermataceae

**Ganoderma applanatum* (Pers. ex. Wallr.) Pat.

Ganoderma lucidum (Leyss.) Karst.

Agaricales

Schizophyllaceae

**Schizophyllum commune* Fr.

Hymenochaetales

Hymenochaetaceae

**Phellinus gillus* (Schw. Fr.) Pat.

Phellinus nilgheriensis (mont.) Cunn.

Phellinus sp

Schizoporaceae

**Hypodontia comtopsis* Burdsall and Nakasone

Lachnocladiaceae

**Vararia pallescens* (Schw.) Rogers and Jacks.

Polyporaceae

**Hexagonia apiaria* Pers.

**Hexagonia tenuis* hooker ex. Fries

**Coriolopsis gallica* (Fries) Ryv.

**Coriolopsis aspera* (Jungh.) Teng.

**Coriolus versicolor*

**Trametes gibbosa* (Pers.) Fr.

**Trametes lactinea*

**Daedalea unicolor* var. *hydnoidea* Hennings

- **Daedalea adamani*
- **Daedalea quericina* F. *resupinata*.
- **Lenzites betulina* F. *variegata* (Fries.) Donk.
- **Lenzites sterioides* (Fr.) Ryv.
- **Lenzites palisoti* Fr.
- **Navisporus floccosa* (Bres.) Ryv.
- **Polyporus xanthopus* Fr.
- **Polyporus violaceo-cinerescens* Petch
- Fomitopsisaceae
- **Fomitopsis pinicola* (Swartz) P. Karsten.
- **Fomitopsis rosea* (Albertini and Schweinitz) P. Karsten.
- Steccherinaceae
- Flavodon flavus* (Klotzsch) Ryv.





Figure 1. A) *Hypodontia comptopsis* B) Upper surface of *Fomitopsis rosea* C) Lower surface of *F. rosea* D) Upper surface of *Daedalea unicplor* Var. *hydnoidea* E) Lower surface of *Daedalea unicplor* Var. *hydnoidea*, F) Upper surface of *Daedalea adamani* G) Lower surface of *Daedalea adamani*.

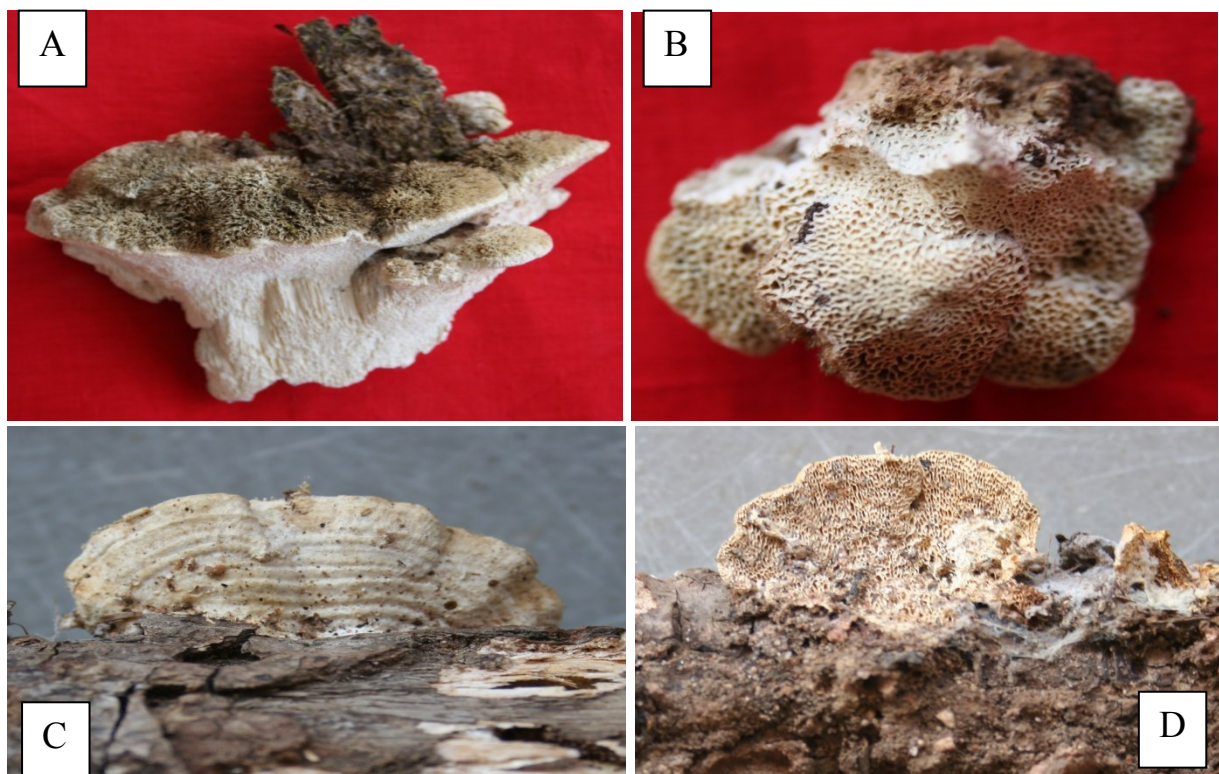




Figure 2 A) Upper surface of *Coriolopsis gallica* B) Lower surface of *Coriolopsis gallica* C) Upper surface of *Daedalea quercina*. *F. resupinate*, D) Lower surface of *Daedalea quercina*. *F. resupinate*, E) Upper surface of *Lenzites betulina*. *F. variegatum* and F) Lower surface of *Lenzites betulina*. *F. variegatum*.

4. CONCLUSIONS

Ratanmahal Wildlife Sanctuary has rich biodiversity in Gujarat. From this sanctuary so many fungal samples were collected and identified as new to that area for the first time. The lignicolous fungi like *Hypodontia comtopsis*, *Daedalea unicolor* var. *hydnoidea*, *Daedalea quercina* *F. resupinata*, *Lenzites betulina* *F. variegata*, and *Fomitopsis rosea* are new report to India. For the first time lignicolous Ascomycetes members were studied.

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