



Statistical analysis of foliicolous fungal biodiversity of Konkan region, Maharashtra, India: A novel approach

Dubey R and Pandey AD

Botanical Survey of India, Western Regional Centre, Pune, Maharashtra, India

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Abstract

Foliicolous micro-fungi are the microscopic fungi inhabiting leaf surface as asymptomatic mutualists, benign commensals or latent pathogens. Maharashtra being the largest state in terms of area in peninsular India shows wide variety of ecosystems. With a view of studying the foliicolous fungi in such a diverse array of habitats, a project entitled “Foliicolous fungi of Maharashtra” was undertaken and various areas were visited in different forest ecosystems of Maharashtra. The present paper deals with the analysis of foliicolous micro-fungal diversity of Konkan region of Maharashtra. A total 191 foliicolous micro-fungi were found. In order to analyse difference in biodiversity across the districts ordinary least squares (OLS) and count data regression models were developed with Species Count as a dependent variable. Both approaches yielded identical results in terms of overall significance of regression and statistical significance of estimated coefficients: there was highly statistically significant ($p < 0.01$) difference in mean Species Count across the districts. To analyse the similarity in species composition Jaccard similarity Index (JSI) was calculated. Maximum JSI was 7.927%, for Greater Thane and Sindhudurg districts. No species was common in all districts; only 4.396% species were common in maximum three districts (i.e. Greater Thane, Ratnagiri, Sindhudurg).

Key words – Foliicolous fungi – Jaccard similarity Index – Konkan – Mycobiota – Negative Binomial Regression Model (NBRM) – Ordinary Least Squares – Poisson Regression Model (PRM)

Introduction

Leaf surfaces continuously receive fungal spores deposited by wind impaction, sedimentation and rain wash. Though long considered as hostile environment for fungal growth, the leaf surface is a complex biological system, where interesting interactions occur between leaf and its intimately associated mycoflora (Andrews & Harris 2000). Kinkel (1997) reported that a thin nutrient film deposited from the atmosphere on the leaf surface further facilitates the microbial colonization as growing plants make new surfaces available for fungi. They may act as asymptomatic mutualists, benign commensals or latent pathogens, depending upon the physico-chemical environment of leaf, any imbalance in which can change the nature of host-fungi relationship. Such imbalance often leads to the pathogenic phase of fungi manifesting in different kinds of symptoms (Andrews & Hirano 1991). The potential of foliicolous fungi is not known much, from an application point of

view; however, they constitute a fairly big group of micro-fungi.

Maharashtra is one of the larger states in India, with the coastline on its western side measuring about 825 km (Karve 1968). Konkan is a coastal narrow strip of Maharashtra, which starts from Tapti basin in North to Goa in South and lies to the east of Arabian Sea and the west of Sahyadris. Area of Konkan is 30,746 km² and is 27 to 48 km broad (Singh & Karthikeyan 2000). It comprises of seven districts of Maharashtra viz. Mumbai, Mumbai (Sub-urban), Thane, Palghar, Raigad, Ratnagiri and Sindhudurg. For the purpose of study, Greater Thane district has been defined to include districts of Mumbai, Mumbai (Sub-urban), Thane and Palghar. The reason being, Sanjay Gandhi National Park which is spread over the Mumbai (Sub-urban) and Thane districts, also because forest areas of Thane and Palghar districts are contiguous with each other. As far as forest types are concerned, Montane subtropical evergreen forests are found in Thane and Raigad districts. Subtropical evergreen forests are encountered in Amboli ghat (Savantwadi) and surroundings. West coast semi-evergreen forests are found in some parts of Ratnagiri and Sawantwadi.

Review of pertinent literature reveals that foliicolous fungi have been fairly well documented from some parts of India (Sahni 1964, Kumar & Kamal 1979, Kamal & Singh 1980, Rai & Kamal 1982, Rajak & Pandey 1984, Kamal & Morgan-Jones 1985, Verma & Kamal 1987a, 1987b, 1991, Bhat & Kendrick 1993, Bhat & Raghukumar 2000, D'Souza 2002, Bhat 2010, Pratibha et al. 2010, Hosagoudar & Robin 2011, Mall et al. 2013, Thimmaiah et al. 2013). In Maharashtra, although serious efforts were not made to document the foliicolous fungi exclusively, but studies carried out earlier revealed the distinct presence of fungi on leaves (Parandekar 1964, Patwardhan 1969, Patil & Magdum 1979, Pande & Bansude 1980, Pande 1981, Patil & Pawar 1989, Sawant & Papdiwal 2007, Singh et al. 2011). Thus, it is evident from the above-cited literature that no systematic and serious studies of foliicolous fungi have been undertaken and only sporadic reports are available. To address these deficiencies, a project entitled "Foliicolous fungi of Maharashtra", was undertaken which involved a reconnaissance survey (2010–2015) in the natural stands and forest plantations throughout the Maharashtra State, encompassing different types of forest ecosystems. Enumeration of foliicolous fungi of Maharashtra along with associated symptoms has been recently been published by Dubey & Pandey (2018). Floristic works generally tend to be enumerative. Present paper, however, focusses on foliicolous fungi of Konkan region of Maharashtra along with statistical analysis of the biodiversity to gain deeper understanding of underlying patterns of biodiversity.

Methodology

Foliicolous samples were collected from 37 locations in four districts (Fig. 1) – Greater Thane (10), Raigad (7), Ratnagiri (13) and Sindhudurg (7). The identification and description of fungi were made with the help of various books, monographs and review published in standard journals and books. Ainsworth (1973), von Arx (1981) offer keys to most of the groups of fungi. Fungi forming spores in Pycnidia or Acervuli were identified from Nag Raj (1993), Sutton (1980), Subramanian (1971), Barnett & Hunter (1972), Ellis (1971, 1976), Ellis & Ellis (1985). Seifert (2011) was referred for the Hypomycetes. Ascomycetes were identified from Dennis (1978). Alexopolous & Mims (1979) was also consulted. A manual by Cummins & Hirsukta (1983) was referred for the identification of various rust and smut species. Bitunicate ascomycetes were studied with the help of Sivanesan (1983). Booth (1971), Smith & Onions (1994), Butler & Bisby (1931), Mundkar (1938) were very useful in identification of pathogenic groups. Hosagoudar (1996, 2008, 2012, 2013) were consulted for the identification of Black mildew fungi. Total number of fungi was 191, which have been enumerated in Table 1 along with associated host and location data. The district locations along with fungal species, observed are given in supplementary material.

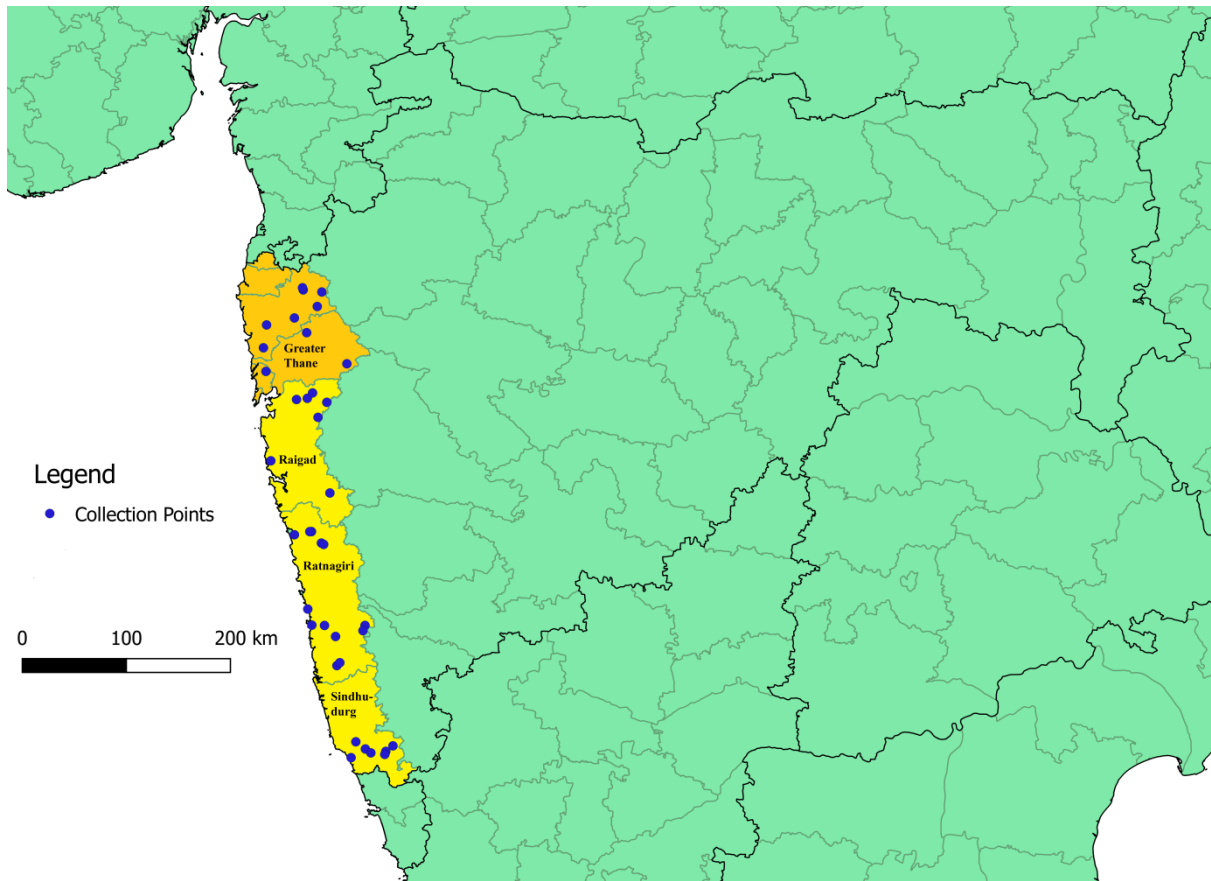


Fig. 1 – Collection locations in different districts of Konkan region (Greater Thane highlighted in orange; Raigad, Ratnagiri and Sindhudurg, in yellow) of Maharashtra, India

Statistical Methods

In order to study the difference in biodiversity across the four districts, additive dummy variable regression model of following functional form was developed:

$$\text{SpsCount} = \beta_0 + \sum_{j=1}^n \beta_j D_j + \epsilon$$

Where D_j is j^{th} district dummy, β_j is its estimated j^{th} coefficient and β_0 is intercept, representing benchmark category against which comparisons are made. β_j is the difference in mean SpsCount between j^{th} category and benchmark category. SpsCount is number of species at each location. It is to be noted that a species can be found at more than one location, however at any given location a species has been counted only once. The reason for choosing SpsCount as a dependent variable is that it is a simplest measure of biodiversity, determined by whole range of biotic and abiotic factors. For the purpose of study, following functional form was considered:

$$\widehat{\text{SpsCount}} = \beta_0 + \beta_1 \text{DS} + \beta_2 \text{DRd} + \beta_3 \text{DT}$$

Where DS is Sindhudurg district dummy, DRd is Raigad district dummy, DT is Greater Thane dummy. Intercept term β_0 represents mean SpsCount for Ratnagiri district, chosen as benchmark category due to its lowest mean SpsCount.

Two classes of models were developed and their comparative performance carried out. First being, Classical Normal Linear Regression Model (CNLRM) estimated by Ordinary Least Squares

(OLS). In order to develop CNLRM model, SpsCount is assumed to be continuous variable, which is rounded to nearest integer when interpreting regression output. Second being, count data models, estimated by Maximum Likelihood Estimation (MLE). Count data models have been developed as SpsCount is a count variable, taking only non-negative integer values. Count data models developed were Poisson Regression Model (PRM) and Negative Binomial Regression model (NBRM). For NBRM, Negbin2 form was chosen. This was developed to account for overdispersion, if present in PRM.

In OLS, F-test tests the null hypothesis that all the estimated slope coefficients are simultaneously equal to zero i.e. there is no difference in mean SpsCount across the districts. Thus, rejecting null hypothesis would mean that there is difference in mean SpsCount across the districts, implying difference in fungal biodiversity across the districts of Konkan. MLE equivalent of F-test (in OLS) is Likelihood Ratio Statistic (λ) which follows Chi-square distribution with (k-1) degrees of freedom, where k is number of regressors.

Regression diagnostics were carried out to ensure that the model assumptions are not violated so as to avoid drawing misleading conclusions. Details of models and associated regression diagnostics have been discussed in references (Greene 2011, Gujarati 2014). CNLRM model was tested for normality and homoskedasticity of residuals. Spatial autocorrelation was assumed away as model doesn't involve number of individuals clumping together. Breusch-Pagan test and White's test were used to test the null hypothesis of homoskedasticity of residuals of OLS models. Chi-square test was used to test the null hypothesis of normality of residuals of OLS as well as count data models. When residuals are not normally distributed, t-,z-,f- & Chi-square- tests become suspect as they all are based on normality assumption. Heteroskedasticity in CNLRM and overdispersion in PRM lead to overestimated statistical significance of estimated coefficients. Gretl (Cottrell & Lucchetti 2018) and Statsmodels (Seabold & Perktold 2010) module for Python were used for regression analysis.

To analyse similarity in species composition between any two districts (A & B), Jaccard Similarity Index (JSI) was used, given by:

$$JSI \text{ (between A \& B)} = \frac{n(A \cap B)}{n(A \cup B)} = \frac{n(A \cap B)}{n(A) + n(B) - n(A \cap B)}$$

Results

OLS models (Table 2) showed highly statistically significant ($F_{p\text{-value}} < 0.01$) difference in mean SpsCount across the districts, with highly significant coefficients (p-value < 0.01) for Sindhurg and Greater Thane dummies, implying highly statistically significant difference in biodiversity across the districts was. However, when regression diagnostics was carried out, in Model 1 heteroskedasticity was highly significant (p-value = 0.0001 for Breusch-Pagan Test, p-value = 0.0089 for White's Test) for both the tests. Also, in Model 1 residuals were not normally distributed (p-value = 0.023 for Chi-square test). To overcome these limitations, Model 2 was developed, with natural log of SpsCount as dependent variable. This yielded identical results, with normally distributed residuals (p-value = 0.3228) and no evidence of heteroskedasticity (p-value = 0.7360 for Breusch-Pagan Test, p-value = 0.6602 for White's Test). Similar results were obtained for count data models (Table 3). PRM model showed statistically significant over dispersion (p-value = 0.0223), making results suspect. Hence, NBRM model (Negbin2) was developed, which yielded identical results, with statistically significant (p-value = 0.0913) ϕ , which is over dispersion parameter of NBRM. LLR p-value for both models (3 & 4) was less than 1%, having highly significant coefficients (p-value < 0.01) for Sindhurg and Greater Thane dummies, with implications similar to F-test and t-test of OLS models. But, since error terms are not normally distributed for both count data models (p-value = 0.0229), as in case of OLS models, various tests of significance become suspect. However, by dropping observation for Kesari (SpsCount = 33), residuals had normal distribution (p-value = 0.4997 for modified Model 1, 3 and 4) with overall conclusion remaining the same at the same level of statistical significance ($\alpha = 0.01$), though

Model 1 still showed similar heteroskedasticity (p -value < 0.01 for both tests). Hence, the models with all the observations have been retained. All the four models show similar results at $\alpha = 0.01$. Of all the 4 models developed, Model 1 is simplest in terms of functional form and ease of interpretability. For these reasons, Model 1 was retained (though Model 2 has lowest AIC) and it was concluded that there is highly statistically significant ($F_{p\text{-value}} < 0.01$) difference in mean SpsCount – and thus biodiversity – across the districts of Konkan.

For studying similarity in species composition between any two districts, Jaccard Similarity Index (JSI) was calculated (Table 4). Maximum JSI was 7.927%, between Greater Thane and Sindhudurg districts. None of the species were common in all the districts. Only 4 species (4.396% of total) were common in maximum of 3 districts viz., Greater Thane, Ratnagiri, Sindhudurg. Thus, Konkan region shows highly rich biodiversity of foliicolous micro-fungi.

Table 1 Enumeration of fungal species along with associated host and location data.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
1	<i>Acarophialophora</i> sp.	<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
2	<i>Acremoniula sarcinellae</i> (Pat. & Har.) G. Arnaud ex Deighton	Apocynaceae sp. 1	201021	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
3	<i>Acroconidiellina arecae</i> (Berk. & Broome) M.B. Ellis	<i>Areca catechu</i> L.	200061	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
4	<i>Acrodictys balladynae</i> (Hansf.) M.B. Ellis	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	200993	24.01.2013	Kodawali-Rajapura, Ratnagiri	16.682105	73.544952	167
5	<i>Alternaria chlamydospora</i> Mouch.	<i>Ficus religiosa</i> L.	196370	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
6	<i>Amazonia elaeocarpi</i> Hosag., D.K. Agarwal, H. Biju & Archana	<i>Leea indica</i> (Burm. f.) Merr.	200117	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
7	<i>Amerosporium polynematoides</i> Speg.	<i>Eleusine coracana</i> (L.) Gaertn.	201123	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
8	<i>Ampelomyces quisqualis</i> Ces.	<i>Malachra capitata</i> L.	201052	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
		<i>Abelmoschus esculentus</i> (L.) Moench	201114	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Malachra capitata</i> L.	201161	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295
9	<i>Aphanofalx</i> sp.	<i>Bambusa bambos</i> (L.) Voss	200015	20.01.2012	Akeri, Sawantwadi Sindhudurg Dist.	15.937989	73.765437	66
10	<i>Ardhachandra cristaspora</i> (Matsush.) Subram. & Sudha	<i>Jasminum odoratum</i> Noronha	196359	24.09.2013	Karjat, Raigad Dist.	18.928594	73.432723	122
		<i>Flacourtia indica</i> (Burm.f.) Merr.	196354	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
11	<i>Aschersonia aleyrodalis</i> Webber	<i>Helicteres isora</i> L.	200206	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Grewia</i> sp.	200230	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ziziphus jujuba</i> Mill.	200139	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		Unidentified plant sp.1	200162	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
12	<i>Asperisporium pongamiae</i> (H.Syd.) Deighton	<i>Pongamia pinnata</i> (L.) Pierre	200033	16.10.2013	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Pongamia pinnata</i> (L.) Pierre	201047	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
13	<i>Asteridiella depokensis</i> (Hansf.) Hansf.	<i>Vitex negundo</i> L.	200081	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
14	<i>Asterina capparidis</i> Syd., P. Syd. & E.J. Butler	<i>Capparis</i> sp.	200224	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
15	<i>Asterina delicatula</i> Syd., P. Syd. & Bal	<i>Jasminum</i> sp.	200075	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
16	<i>Asterina jambolanae</i> A.K. Kar & Maity	<i>Eugenia</i> sp.	200100	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
17	<i>Asterina jasminicola</i> W. Yamam	<i>Jasminum</i> sp.	200005	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Jasminum multiflorum</i> (Burm. f.) Andrews	200080	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
18	<i>Asterina woodfordiae</i> V.P. Sahni	<i>Woodfordia fruticosa</i> (L.) Kurz.	201106	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
19	<i>Asterina wrightii</i> Berk. & M.A. Curtis	<i>Paramignya monophylla</i> W ight	194051	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
20	<i>Bahusandhika indica</i> Subram.	<i>Cocos nucifera</i> L.	194261	26.01.2013	Dapoli, Ratnagiri Dist.	17.813476	73.300173	135

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
21	<i>Balladyna pavattae</i> Boedijin	<i>Synedrella nodiflora</i> (L.) Gaertn.	200026	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
22	<i>Balladyna vanderystii</i> (Hansf.) Arx	<i>Catunaregum spinosa</i> (Thunb.) Tirveng.	200993	29.09.2011	Kodawali-Rajapura, Ratnagiri	16.682105	73.544952	167
23	<i>Beltrania querna</i> Harkn.	<i>Eucalyptus</i> sp.	194127	16.10.2012	Wada, Greater Thane	19.656455	73.152646	51
24	<i>Capnodium</i> sp.1	<i>Ficus racemosa</i> L.	201010	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
		<i>Psidium guajava</i> L.	196490	28.09.2013	Phansad WLS, Raigad Dist.	18.424063	72.949255	239
25	<i>Cercospora apii</i> Fresen	<i>Colocasia esculenta</i> (L.) Schott	201089	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
		Poaceae species 1	196371	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
		Fern	196374	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
		<i>Alternanthera</i> sp.	201130	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Arisaema</i> sp.	201030	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
		<i>Blumea</i> sp.	201040	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Amorphophallus</i> sp.	201170	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295
26	<i>Cercospora blumeicola</i> S. Das	<i>Blumea</i> sp.	201040	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
27	<i>Cercospora careyae</i> Ramakrishnan	<i>Careya arborea</i> Roxb.	200062	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
28	<i>Cercospora ricinella</i> Sacc. & Berl.	<i>Euphorbia neriifolia</i> L.	201074	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
29	<i>Cercospora thunbergiae</i> Hansf	<i>Thunbergia</i> sp.	200002	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
30	<i>Chalara siamense</i> Pinnoi	<i>Pongamia pinnata</i> (L.) Pierre	196396	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
31	<i>Chloridium indicum</i> Subram.	<i>Mangifera indica</i> L.	200220	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Mangifera indica</i> L.	201056	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
32	<i>Circinotrichum olivaceum</i> (Speg.) Piroz	<i>Mangifera indica</i> L.	201029	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
33	<i>Cirsosia vateriae</i> Hosagoudar	Unidentified plant species 4	199600	27.09.2011	Matheran, Raigad Dist.	18.963105	73.264070	742
34	<i>Cladosporium cladosporioides</i> (Fresen.) G.A. de Vries	<i>Hibiscus esculentus</i> L.	200228	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Coix lacryma-jobi</i> L.	201005	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
35	<i>Cladosporium colocasiae</i> Sawada	<i>Eupatorium</i> sp.	200204	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Clerodendrum grandiflorum</i> (Hook.) Schauer	200214	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Lygodium</i> sp.	200216	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Blumea</i> sp.	200223	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	200156	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Hibiscus rosa-sinensis</i> L.	200907	22.01.2013	Near Amba Ghat, Ratnagiri	17.003574	73.762144	352
36	<i>Cladosporium gallicola</i> B. Sutton	<i>Cordia</i> sp.	201083	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
37	<i>Cladosporium oxysporum</i> Berk. & Curt.	<i>Cassia</i> sp.	200233	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Hibiscus trionum</i> L.	200050	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
38	<i>Cladosporium spongiosum</i> Berk. & M.A. Curtis	<i>Cladosporium spongiosum</i>	200241	22.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
39	<i>Colletotrichum dematium</i> (Pers.) Grove	Euphorbiaceae	196358	24.09.2013	Karjat, Raigad Dist.	18.928594	73.432723	122
		Unidentified Poaceae species 2	199580	27.09.2011	Karjat, Raigad Dist.	18.928594	73.432723	122
		Unidentified Poaceae species1	196371	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
		<i>Eleusine coracana</i> (L.) Gaertn.	201123	18.10.2012	Pulachiwadi , Greater Thane	19.880359	73.389547	395
40	<i>Colletotrichum gleosporioides</i> (Penz.) Penz. and Sacc	<i>Careya arborea</i> Roxb.	200009	20.01.2012	Akeri, Sawantwadi (Sindhudurg)	15.937989	73.765437	66
		<i>Gnetum ula</i> Brongn.	200174	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Persea</i> sp.	200190	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ficus benghalensis</i> L.	194035	25.01.2013	On the way to Khed, Ratnagiri Dist.	17.702558	73.405491	125
		<i>Meyna laxiflora</i> Robyns	201018	18.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
		<i>Erythrina</i> sp.	201136	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
41	<i>Colletotrichum lindemuthianum</i> (Sacc. & Magnus) Briosi & Cavara	<i>Dalbergia latifolia</i> Roxb.	200998	24.01.2013	Kodawali-Rajapura, Ratnagiri	16.682105	73.544952	167

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Carissa spinarum</i> L.	201020	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
		<i>Meyna laxiflora</i> Robyns	201120	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
42	<i>Coniothyrium palmarum</i> Corda	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
43	<i>Corynespora cassicola</i> (Berk & Curt.) Wei	<i>Hygrophila auriculata</i> (Schumach.) Heine	200016	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Clerodendrum grandiflorum</i> (Hook.) Schauer	200029	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Sida cordifolia</i> L.	200034	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Clerodendrum grandiflorum</i> (Hook.) Schauer	200214	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		<i>Laportea</i> sp.	199582	27.09.2011	Karjat, Raigad Dist.	18.928594	73.432723	122
		<i>Eupatorium</i> sp.	199589	27.09.2011	Karjat, Raigad Dist.	18.928594	73.432723	122
		<i>Pogostomon</i> sp.	200110	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Dregea volubilis</i> (L.f.) Benth. ex Hook.f.	200115	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	200149	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Cassia</i> sp.	199590	27.09.2011	Khopoli, Raigad Dist.	18.798914	73.356470	115
		<i>Diospyros</i> sp.	199575	27.09.2011	On the way to Matheran, Raigad Dist.	19.009706	73.309401	134
44	<i>Corynespora torulosa</i> (Syd. & P. Syd.) Crous	<i>Ensete superbum</i> Cheesm.	194227	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
45	<i>Custingophora olivacea</i> Stolk, Hennebert & Klopotek	<i>Clerodendrum grandiflorum</i> (Hook.) Schauer	200214	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
46	<i>Custingophora ratnagiriensis</i> Dubey & Moonambeth	<i>Ziziphus oenopolia</i> (L.) Mill.	200927	23.01.2013	Panval, Ratnagiri Dist.	17.003259	73.412566	112
47	<i>Deightoniella jabalpurensis</i> G.P. Agarwal & Hasija	<i>Apluda</i> sp.	201122	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
48	<i>Dendryphiella vinosa</i> (Berk. & M.A. Curtis) Reisinger	<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
49	<i>Dendryphion</i> state of <i>Pleospora papaveracea</i> (De Not.) Sacc	<i>Dillenia pentagyna</i> Roxb.	200145	22.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
50	<i>Dictyosporium subramanianii</i> B. Sutton	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
51	<i>Didymella fabae</i> Jellis & Punith.	<i>Tectona grandis</i> L.	200037	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Ficus</i> sp.	200098	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
52	<i>Diplodia</i> sp.	<i>Agave americana</i> L.	200243	22.1.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
53	<i>Domigoella asternarum</i> Petr. & Shiff	<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		<i>Cocos nucifera</i> L.	194061	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
		<i>Justicia adhatoda</i> L.	200078	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Jasminum multiflorum</i> (Burm. f.) Andrews	200080	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Woodfordia fruticosa</i> Kurz.	200973	24.01.2013	Kurne-Lanja Tal RF, Ratnagiri	16.908281	73.508016	167
		<i>Malachra capitata</i> L.	201161	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295
54	<i>Drechslera papendorfii</i> (Aa) M.B. Ellis	Poaceae species 4	196363	24.09.2013	On the way to Panvel, Raigad Dist.	18.953163	73.170934	34
		<i>Eleusine coracana</i> (L.) Gaertn.	201123	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Ischaemum</i> sp.	201124	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
55	<i>Echidnodella polyalthiae</i> Hosag.	<i>Ixora</i> sp.	199601	27.09.2011	On the way to Matheran, Raigad Dist.	19.009706	73.309401	134

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
56	<i>Epicoccum nigrum</i> Link	<i>Tectona grandis</i> L.f.	201009	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
57	<i>Excipulariopsis narsapurensis</i> Subram.	<i>Cocos nucifera</i> L.	194261	26.01.2013	Dapoli, Ratnagiri Dist.	17.813476	73.300173	135
58	<i>Fusarium oxysporum</i> E.F. Sm. & Swingle	<i>Cocos nucifera</i> L.	194061	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
59	<i>Fusarium solani</i> (Mart.) Sacc	<i>Desmodium</i> sp.	199602	27.09.2011	Matheran, Raigad Dist.	18.963105	73.264070	742
60	<i>Fusicoccum</i> sp.	<i>Calliandra haematocephala</i> Hassk.	196373	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
61	<i>Gibberella baccata</i> (Wallr.) Sacc.	<i>Thunbergia</i> sp.	200002	20.01.2012	Akeri, Sawantwadi (Sindhudurg)	15.937989	73.765437	66
62	<i>Gleocladium penicilloides</i> Corda.	<i>Cocos nucifera</i> L.	200161	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
63	<i>Glomerella cingulata</i> (Stoneman) Spauld. & H. Schrenk	<i>Tylophora indica</i> (Burm.f.) Merr.	200150	22.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
64	<i>Gonatophragmium mayteni</i> S.K. Singh, L.S. Yadav & P.N. Singh	Unidentified Leguminosae sp. 2	201028	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
65	<i>Goosiomyces bambusicola</i> Dubey & Moonambeth	<i>Bambusa bambos</i> (L.) Voss	200989	24.01.2013	Kurne-Lanje Tal Reserved Forest, Ratnagiri	16.908281	73.508016	167

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
66	<i>Graphium</i> sp.	<i>Macaranga peltata</i> (Roxb.) Muell – Arg.	201095	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
67	<i>Hansfordiellopsis lichenicola</i> (Bat. & H. Maia) Deighton	<i>Macaranga peltata</i> (Roxb.) Müll.Arg.	200021	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
68	<i>Harpographium</i> sp.	<i>Dracena fragrans</i> (L.) Ker Gawl.	194044	26.01.2013	Khed, Ratnagiri Dist.	17.714175	73.385699	33
69	<i>Helicoceras celtidis</i> (Biv.) Linder	Unidentified Leguminosae sp. 4	200209	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
70	<i>Helicomina costi</i> M.A. Salam & P.N. Rao	<i>Costus speciosus</i> Konig	196398	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
71	<i>Helicosporium lumbricoides</i> Sacc.	<i>Cocos nucifera</i> L.	200099	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
72	<i>Isthmospora spinosa</i> F. Stevens	<i>Holarrhena pubescens</i> (Buch. – Ham.) Wall. ex DC.	194054	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
		Apocynaceae sp. 2	200148	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Tylophora indica</i> (Burm.f.) Merr.	200150	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Strychnos nux-vomica</i> L.	200083	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Volkameria inermis</i> L.	200085	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Jasminum malabaricum</i> Wight.	194067	26.01.2013	Pachavali, Dapoli, Ratnagiri Dist.	17.812811	73.285301	131
73	<i>Isthmospora</i> state of <i>Trichothyrium asterophorum</i> (Berk. & Broome) Höhn.	<i>Mangifera indica</i> L.	200141	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
74	<i>Khuskia oryzae</i> H.J. Huds.	<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	200156	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Colocasia esculenta</i> (L.) Schott	201089	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
		Unidentified Poaceae species 5	194274	24.01.2013	Ratnagiri	17.006400	73.303397	54
75	<i>Kirschsteiniothelia atra</i> (Corda) D. Hawksw	Apocynaceae sp. 2	200148	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Jasminum multiflorum</i> (Burm. f.) Andrews	200080	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
76	<i>Leptoxyphium glochidion</i> H. Yang & K.D. Hyde	<i>Terminalia elliptica</i> Willd.	201031	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
77	<i>Melanocarpus</i> sp.	<i>Pandanus tectorius</i> Parkinson ex Du Roi	200244		Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
78	<i>Meliola allophyli-serrulati</i> Hosag. & T.K. Abraham	<i>Allophylus</i> sp.	200143	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
79	<i>Meliola alstoniae</i> Koord	Unidentified plant sp. 8	200157	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
80	<i>Meliola bauhiniicola</i> Yamam.	<i>Bauhinia</i> sp.	200988	24.01.2013	Kurne-Lanje Tal RF, Ratnagiri	16.908281	73.508016	167
81	<i>Meliola buteae</i> Hafiz Khan, Azmatullah & Kafi	<i>Butea monosperma</i> (Lam.) Taub.	196384	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
82	<i>Meliola careyae</i> (F. Stevens) Hosag.	<i>Careya arborea</i> Roxb.	200022	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
83	<i>Meliola carissae</i> var. <i>spinari</i> Hosag.	<i>Carissa spinarum</i> L.	201027	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
84	<i>Meliola desmodii-triquetri</i> Hosag. & Manojk	<i>Desmodium triflorum</i> (L.) DC	200010	20.01.2012	Akeri, Sawantwadi (Sindhudurg)	15.937989	73.765437	66
85	<i>Meliola eugeniae-jamboloidis</i> var. <i>amphigena</i> , A.K. Kar & Maity	<i>Carissa spinarum</i> L.	200084	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
86	<i>Meliola eugeniae-stocksii</i> Hosag.	<i>Ixora brachiata</i> Roxb.	200178	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ixora brachiata</i> Roxb.	200130	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
87	<i>Meliola hemidesmicola</i> Hosag.	Apocynaceae sp. 2	200148	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
88	<i>Meliola holarhenae</i> Hansf. & Thirum.	<i>Holarrhena pubescens</i> (Buch. – Ham) Wall. ex G. Don	196402	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
89	<i>Meliola hyptidis</i> Syd. & P. Syd.	<i>Volkameria inermis</i> L.	200085	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Plectranthus</i> sp.	196393	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
90	<i>Meliola ixorae</i> Yates var. <i>macrospora</i>	<i>Ixora brachiata</i> Roxb.	200180	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ixora brachiata</i> Roxb.	200215	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ixora coccinea</i> L.	200077	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
91	<i>Meliola ixorae-coccineae</i> Hosag. & C.M. Pillai	<i>Ixora brachiata</i> Roxb.	200180	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
92	<i>Meliola jasminicola</i> Henn.	<i>Jasminum multiflorum</i> (Burm. f.) Andrews	200080	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Strychnos nux-vomica</i> L.	200083	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
93	<i>Meliola mangiferae</i> Earle	<i>Mangifera indica</i> L.	200219	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
94	<i>Meliola melanoxylois</i> Hosag. & C.M. Pillai	<i>Acacia auriculiformis</i> A.Cunn.ex Benth.	200146	21.01.2012	Kesari, Sindhudurg	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
					Dist.			
		<i>Carissa spinarum</i> L.	200935	23.01.2013	Kirbet, Ratnagiri	16.958657	73.744567	277
95	<i>Meliola mitragynae</i> Syd. & P. Syd.	<i>Mitragyna parviflora</i> (Roxb.) Korth	196410	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
96	<i>Meliola pandanacearum</i> Hosag. & T.K. Abraham	<i>Pandanus tectorius</i> Parkinson ex Du Roi	200140	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
97	<i>Meliola pongamiae</i> Hosag. & T.K. Abraham	<i>Pongamia pinnata</i> (L.) Pierre	200163	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
98	<i>Meliola semecarpi-anacardii</i> Hosag., Kaver., Raghu & Goos	<i>Semecarpus anacardium</i> L.f.	200158	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
99	<i>Meliola tylophorae</i> Hosag.	<i>Tylophora</i> sp.	200038	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
100	<i>Meliola tylophorae-indicae</i> Hosag. & Manojk.	<i>Tylophora indica</i> (Burm.f.) Merr.	200150	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
101	<i>Meliola unoncola</i> Hosag. & T.K. Abraham	<i>Diospyros</i> sp.	196477	28.09.2013	Phansad WLS, Raigad Dist.	18.424063	72.949255	239
102	<i>Meliola ziziphi</i> Hansf. & Thirum.	<i>Ziziphus jujuba</i> Mill.	200139	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
103	<i>Meliolina mollis</i> (Berk. & Broome) Höhn	<i>Leea indica</i> (Burm. f.) Merr.	200117	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Memecylon umbellatum</i> Burm f.	200089	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
104	<i>Metulocladosporiella musae</i> (E.W. Mason) Crous, Schroers, J.Z. Groenew., U. Braun & K. Schub.	<i>Cocos nucifera</i> L.	200161	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
105	<i>Microsphaeropsis sarcinellae</i> (V.P. Sahni) Morgan-Jones,	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad	18.963105	73.264070	742
106	<i>Mitteriella zizyphina</i> Syd.	<i>Ziziphus jujuba</i> Mill.	201036	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
107	<i>Moorella speciose</i> P.Rag. Rao & D. Rao	<i>Eugenia</i> sp.	194125	16.10.2012	Wada, Greater Thane	19.656455	73.152646	51
108	<i>Mycovellosiella solani-torvi</i> (Gonz. Frag. & Cif.) Deighton	<i>Grewia</i> sp.	200074	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
		<i>Vitex trifolia</i> L.	200239	22.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
109	<i>Myrothecium roridum</i> Tode	<i>Casearia</i> sp.	201033	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
		<i>Bombax ceiba</i> L.	201037	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
110	<i>Neopestalotiopsis asiatica</i> (Maharachch. & K.D. Hyde) Maharachch., K.D. Hyde & Crous	<i>Cocos nucifera</i> L.	200045	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Bombax ceiba</i> L.	201037	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
		<i>Carissa spinarum</i> L.	201039	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
111	<i>Nigrospora sphaerica</i> (Sacc.) E.W. Mason	<i>Euphorbia neriifolia</i> L.	201074	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
		<i>Eleusine coracana</i> (L.) Gaertn.	201123	18.10.2012	Pulachiwadi , Greater Thane	19.880359	73.389547	395
112	<i>Passalora desmanthi</i> (Ellis & Kellerm.) U. Braun	<i>Tinospora cordifolia</i> (Thunb.) Miers	201082	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
113	<i>Penicillium notatum</i> Westling	<i>Careya arborea</i> Roxb.	194002	24.01.2013	Rajapura, Ratnagiri Dist.	16.656979	73.519422	89
114	<i>Periconia byssoides</i> Pers.	<i>Thunbergia</i> sp.	200002	20.01.2012	Akeri, Sawantwadi Tal., Sindhudurg Dist.	15.937989	73.765437	66
		<i>Eupatorium</i> sp.	200004	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		Unidentified plant sp.9	200007	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
115	<i>Periconia cambrensis</i> E.W. Mason & M.B. Ellis	<i>Bambusa bambos</i> (L.) Voss	196168		Raigad Forest	18.146382	73.459228	277
116	<i>Periconia cookei</i> E.W. Mason & M.B. Ellis	<i>Ipomoea pes-caprae</i> (L.) R.Br.	194026	25.01.2013	Ganpatipule, Ratnagiri Dist.	17.144616	73.268033	60
117	<i>Periconia lateralis</i> Ellis & Everh,	<i>Pogostomon</i> sp.	200110	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Pongamia pinnata</i> (L.) Pierre	196396	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
118	<i>Periconia minutissima</i> Corda	<i>Eleusine coracana</i> (L.) Gaertn.	201123	18.10.2012	Pulachiwadi , Greater Thane	19.880359	73.389547	395
119	<i>Periconiella telopeae</i> (Hansf.) M.B. Ellis	Unidentified plant sp.8	200157	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
120	<i>Pestalotiopsis anacardii</i> Kamil et al	<i>Mangifera indica</i> L.	200138	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
121	<i>Pestalotiopsis funerea</i> (Desmazieres) Steyaert	<i>Leea indica</i> (Burm. f.) Merr	200046	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
122	<i>Pestalotiopsis linearis</i> Maharachch. & K.D. Hyde	<i>Mangifera indica</i> L.	200219	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Glochidion velutinum</i> Wight	200144	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		<i>Acacia</i> sp.	200108	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
123	<i>Phaeoisaria clematidis</i> (Fuckel) S. Hughes	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
124	<i>Phialophora cyclaminis</i> J.F.H. Beyma	<i>Chrysalidocarpus lutescens</i> Wendl.	201046	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
125	<i>Philonectria</i> sp.	<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
126	<i>Phoma multirostrata</i> Doretosch & Boerema	<i>Calliandra haematocephala</i> Hassk.	196373	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
127	<i>Phoma tropica</i> Schneider & Boerema	<i>Ficus</i> sp.	200159	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
128	<i>Phoma nebulosa</i> (Pers.) Mont.	<i>Ipomea</i> sp.	200053	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
129	<i>Phyllachora</i> sp.	<i>Ixora brachiata</i> Roxb. ex DC	200996	24.01.2013	Kodawali-Rajapura, Ratnagiri	16.682105	73.544952	167
130	<i>Pirozynskiella solanina</i> (Sacc. & P. Syd.) Hughes	<i>Jasminum multiflorum</i> (Burm. f.) Andrews	200080	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
131	<i>Pithomyces ellisii</i> V.G. Rao & Chary	<i>Memecylon umbellatum</i> Burm. f.	201013	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
132	<i>Pithomyces pavgii</i> (V.R. Nath) M.E. Palm, E.L. Stewart & Rossman	<i>Bambusa bambos</i> (L.) Voss	196329	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
133	<i>Pleurocytospora vestita</i> Petr.	<i>Madhuca longifolia</i> var. <i>latifolia</i> (Roxb.) Chev	201091	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
134	<i>Polytretophora calcarata</i> Mercado	<i>Dendrocalamus</i> sp.	200133	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
135	<i>Porrectotheca</i> sp.	<i>Bambusa bambos</i> (L.) Voss	200015	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
136	<i>Prathigada</i> sp.	<i>Pandanus tectorius</i> Parkinson ex Du Roi	200244	21.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
137	<i>Prathigada terminaliae</i> (Syd.) B. Sutton	<i>Terminalia</i> sp.	200999	24.01.2013	Kodawali- Rajapura, Ratnagiri	16.682105	73.544952	167
138	<i>Prillieuxina polyalthiae</i> Hosag. & T.K. Abraham	<i>Desmodium</i> sp.	200041	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
139	<i>Pseudocercospora conyzae</i> Sawada ex Goh & W.H. Hsieh	<i>Eupatorium</i> sp.	200004	20.01.2012	Akeri, Sawantwadi, Sindhudurg	15.937989	73.765437	66
140	<i>Pseudocercospora eupatorii- formosanae</i> U. Braun & Bagyan.	<i>Eupatorium</i> sp.	201045	16.10.2012	Shirpur, Greater Thane	19.261153	73.605987	148
141	<i>Pseudocercospora</i> sp. 1	<i>Pseudocercospora</i> sp. 1	200020	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
142	<i>Puccinia kraussiana</i> Cooke	<i>Smilax</i> sp.	194033	25.01.2013	On the way to Khed, Ratnagiri Dist.	17.702558	73.405491	125
143	<i>Puccinia phragmitis</i> (Schumach.) Körn.	<i>Smilax</i> sp.	200056	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
		<i>Smilax</i> sp.	200259	23.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
144	<i>Pyriculariopsis</i> sp.	<i>Commelina benghalensis</i> L.	201164	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
145	<i>Questeriella strychni</i> Hosag.	<i>Pongamia pinnata</i> (L.) Pierre	200163	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
146	<i>Repetophragma ellisii</i> (Piroz.) R.F. Castañeda, McKenzie & K.D. Hyde	<i>Bambusa bambos</i> (L.) Voss	200948	23.01.2013	Kirbet, Ratnagiri	16.958657	73.744567	277
147	<i>Rhinocladium</i> sp.	<i>Persicaria auriculata</i> (Makino) Masam.	200167	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Macaranga peltata</i> (Roxb.) Muell – Arg.	194032	25.01.2013	On the way to Khed, Ratnagiri Dist.	17.702558	73.405491	125
148	<i>Sarcinella cassiae-fistulae</i> Hosag. & Shajivaz	<i>Cassia fistula</i> L.	201065	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
149	<i>Sarcinella gmelinae</i> Hosag., Archana, Harish, Riju & D.K. Agarwal	<i>Tectona grandis</i> L.f.	201119	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
150	<i>Sarcinella gymnosporiae</i> Subhedar & Rao ex Hosag.	Unidentified Plant sp.10	201099	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
151	<i>Sarcinella loranthacearum</i> Hosag., Jac. Thomas & D.K. Agarwal	<i>Firmiana colorata</i> (Roxb.) R.Br.	201149	16.10.2012	Suryamal, Greater Thane	19.755400	73.350091	477
152	<i>Sarocladium strictum</i> (W. Gams) Summerb.	<i>Ludwigia</i> sp.	196383	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
153	<i>Septoria</i> sp.	<i>Septoria</i> sp.	200159	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
154	<i>Sheathnema indicum</i> Dubey & Moonambeth	<i>Pandanus tectorius</i> Parkinson ex Du Roi	200140	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
155	<i>Solicorynespora matherensis</i> Dubey & Moonambeth	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
156	<i>Sordaria fimicola</i> (Rob.) Ces. & de Not	<i>Pandanus tectorius</i> Sol. Ex Park.	201169	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295
157	<i>Sphacelia</i> sp.	<i>Diploclisia</i> sp.	200200	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Grewia</i> sp.	200230	23.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ziziphus jujuba</i> Mill	200139	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		Unidentified plant sp. 11	200092	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
158	<i>Spiropes capensis</i> (Thüm.) M.B. Ellis	<i>Vitex negundo</i> L.	200081	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
159	<i>Spiropes effusus</i> (Pat.) M.B. Ellis	<i>Ixora brachiata</i> Roxb.	200178	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
160	<i>Spiropes guareicola</i> (F. Stevens) Cif.	<i>Citrus medica</i> L.	200208	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ixora brachiata</i> Roxb.	194058	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
		<i>Careya arborea</i> Roxb.	194063	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
161	<i>Spiropes japonicus</i> (Henn.) M.B. Ellis	<i>Vites negundo</i> L.	200081	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
162	<i>Spiropes melanoplaca</i> (Berk. & M.A. Curtis) M.B. Ellis	<i>Mangifera indica</i> L.	200141	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
		<i>Volkameria inermis</i> L.	200085	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
163	<i>Spiropes nothofagi</i> M.B. Ellis	<i>Entada rheedii</i> Spreng.	200171	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
164	<i>Stachybotrys echinata</i> (Rivolta) G. Sm. Syn.	<i>Roystonea regia</i> (Kunth) O.F.Cook	196344	23.09.2013	Matheran, Raigad Dist.	18.963105	73.264070	742
165	<i>Stachybotrys levispora</i> (Subram.) Yong Wang bis, K.D. Hyde, McKenzie, Y.L. Jiang & D.W. Li syn.	<i>Ixora coccinea</i> L.	200103	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Agave americana</i> L.	201112	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
166	<i>Stauronema sacchari</i> Syd., P. Syd. & E.J. Butler	<i>Coix lacryma-jobi</i> L.	201005	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
167	<i>Stauronema spinificis</i> Subhedar & V.G. Rao	<i>Spinifex littoreus</i> (Burm.f.) Merr.	200238	22.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
168	<i>Stenella araguata</i> Syd.	<i>Mesua ferrea</i> L.	200120	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
169	<i>Stenella plectroniae</i> Ponnappa	<i>Carissa congesta</i> Wight	200011	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
170	<i>Temerariomyces indicum</i> Dubey	<i>Nymphae rubra</i> Roxb. ex Andrews	196372	24.09.2013	On the way to Sanjay Gandhi National Park, Greater Thane	19.398960	72.885344	71
171	<i>Tetraploa ellisii</i> Cooke	<i>Ixora coccinea</i> L.	200103	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
172	<i>Thirumalacharia thanensis</i> Dubey	<i>Coix lacryma-jobi</i> L.	201125	18.10.2012,	Pulachiwadi , Greater Thane	19.880359	73.389547	395
173	<i>Torula herbarum</i> (Pers.) Link	<i>Dracaena</i> sp.	201048	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
		<i>Croton</i> sp.	201057	16.10.2012	Jawhar, Greater Thane	19.917037	73.222610	433
		<i>Agave americana</i> L.	201112	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
174	<i>Trichoconiella padwickii</i> (Ganguly) B.L. Jain	<i>Achyranthes aspera</i> L.	201143	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
175	<i>Tripospermum acrobaticum</i> F.B. Rocha & R.W. Barreto	<i>Thespesia lampas</i> (Cav.) Dalzell	201127	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Leea indica</i> (Burm. f.) Merr.	201152	18.10.2012	Suryamal, Greater Thane	19.755400	73.350091	477

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
176	<i>Tripospermum myrti</i> (Lind) S. Hughes	<i>Mussaenda</i> sp.	200044	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Triumfetta rhomboidea</i> Jacq.	201139	18.10.2012	Pulachiwadi , Greater Thane	19.880359	73.389547	395
		Combretaceae sp. 1	201117	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Dalbergia</i> sp.	200267	23.01.2012	Vengurla, Sindhudurg Dist.	15.863050	73.642144	11
177	<i>Vamsapriya indica</i> Gawas & Bhat	Unidentified Leguminosae sp. 1	200119	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
178	<i>Veronaeopsis simplex</i> (Papendorf) Arzanlou & Crous	<i>Piper nigrum</i> L.	200065	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
179	<i>Verticillium lecanii</i>	<i>Verticillium lecanii</i>	200191	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
180	<i>Virgariella globigera</i> (Sacc. & Ellis) S. Hughes	<i>Memecylon umbellatum</i> Burm. f.	201013	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
		<i>Helictores isora</i> L.	196409	25.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86
181	<i>Vizella oleariae</i> Swart.	<i>Ixora coccinea</i> L.	200103	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
182	<i>Volutella</i> sp.	<i>Gnetum ula</i> Brongn.	200174	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
183	<i>Volutina concentrica</i> Penz. & Sacc.	<i>Coix lacryma-jobi</i> L.	201125	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
		<i>Areca catechu</i> L.	200061	20.01.2012	Sawantwadi, Sindhudurg Dist.	15.904231	73.812647	184
184	<i>Wiesneriomyces laurinus</i> (Tassi) P.M. Kirk	<i>Pandanus tectorious</i> Sol. Ex Park.	201169	19.10.2012	Tansa WLS, Greater Thane	19.529328	73.258630	295
185	<i>Xepiculopsis graminea</i> (Lib.) Nag Raj	<i>Coix lacryma-jobi</i> L.	201125	18.10.2012	Pulachiwadi, Greater Thane	19.880359	73.389547	395
186	<i>Zasmidium rubiacearum</i> (S. Chaudhary, N. Sharma & Kamal)	<i>Meyna laxiflora</i> Robyns.	201018	16.10.2012	On the way to Zap, Greater Thane	19.898442	73.228724	375
187	<i>Zygosporium dilleni</i> Dubey	<i>Dillenia pentagyna</i> Roxb.	200145	21.01.2012	Fanaswadi, Sindhudurg Dist.	15.890990	73.933043	151
188	<i>Zygosporium gibbum</i> (Sacc., M. Rousseau & E. Bommer) S. Hughes	<i>Mangifera indica</i> L.	200219	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Cocos nucifera</i> L.	194061	26.01.2013	Dapoli Forest Range, Ratnagiri Dist.	17.786041	73.152662	60
		<i>Pogostemon</i> sp.	200110	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Leea indica</i> (Burm. f.) Merr.	200111	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Dalbergia latifolia</i> Roxb.	200998	24.01.2013	Kodawali-Rajapura, Ratnagiri	16.682105	73.544952	167
		<i>Ixora coccinea</i> L.	200077	21.01.2012	Kudal, Sindhudurg	15.999956	73.683052	35

Table 1 Continued.

Sr. No.	Fungi	Host plants	Collection No. BSI (WC)	Date of collection	Sampling sites	Latitude (N)	Longitude (E)	Altitude (m)
					Dist.			
		<i>Leea indica</i> (Burm. f.) Merr.	200095	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
		<i>Madhuca longifolia</i> var. <i>latifolia</i> (Roxb.) Chev	201091	17.10.2012	On the way to Dahanu, Greater Thane	19.596222	72.912617	92
189	<i>Zygosporium masonii</i> S. Hughes	<i>Artocarpus heterophyllus</i> Lam.	200024	20.01.2012	Akeri, Sawantwadi, Sindhudurg Dist.	15.937989	73.765437	66
		<i>Clerodendrum grandiflorum</i> (Hook.) Schauer	200214	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Mangifera indica</i> L.	200219	22.01.2012	Amboli Ghat, Sindhudurg Dist.	15.964716	74.003571	700
		<i>Ficus benghalensis</i> L.	196361	24.09.2013	Karjat, Raigad Dist.	18.928594	73.432723	122
		<i>Ficus religiosa</i> L.	200118	21.01.2012	Kesari, Sindhudurg Dist.	15.917294	73.941860	165
		<i>Leea indica</i> (Burm. f.) Merr.	200095	21.01.2012	Kudal, Sindhudurg Dist.	15.999956	73.683052	35
190	<i>Zygosporium minus</i> S. Hughes	<i>Strobilanthes callosa</i> Nees	201145	18.10.2012	Suryamal, Greater Thane	19.755400	73.350091	477
191	<i>Zygosporium oscheoides</i> Mont.	<i>Bambusa vulgaris</i> Schrad. ex J.C.Wendl	196378	24.09.2013	Sanjay Gandhi National Park, Greater Thane	19.195361	72.906868	86

Table 2 OLS regressions

Dependent Variable	Model 1	Model 2
	SpsCount	ln_SpsCount
Const	2.2307 (1.373)	0.5513*** (0.195)
DS	16.7692*** (2.3208)	2.2865*** (0.3296)
DRd	0.7692 (2.3208)	0.1737 (0.3296)
DT	6.1692*** (2.0822)	1.3815*** (0.2957)
No. observations	37	37
R-squared	0.6393	0.6467
Adjusted R-squared	0.6065	0.6146
F(3, 33)	19.4992	20.1324
P-value(F)	1.87E-07	1.34E-07
Sum squared resid	808.7077	16.3137
S.E. of regression	4.9504	0.7031
Log-likelihood	-109.5643	-37.3508
Akaike criterion	227.1287	82.7017

Standard errors in parentheses.
*p<0.1, ** p<0.05, ***p<0.01

Table 3 Count Data Models.

Dependent Variable	SpsCount	
Method of Estimation	MLE	
No. Observations	37	
Model	PRM	NBRM (Negbin 2)
Const	0.8023*** (0.1857)	0.8023*** (0.225)
DS	2.1421*** (0.2049)	2.1421*** (0.297)
DRd	0.2963 (0.2865)	0.2963 (0.3582)
DT	1.3259*** (0.2154)	1.3259*** (0.2891)
ϕ	-	0.2101** (0.0913)
LLR p-value	2.290E-38	2.089E-08
AIC	215.322	196.3352
Chi-square test for Overdispersion	0.0223**	-

Standard errors in parentheses.
* p<0.1, ** p<0.05, ***p<0.01

Table 4 Jaccard Similarity Index (JSI)

	Greater Thane	Raigad	Ratnagiri	Sindhudurg
Greater Thane	1			
Raigad	0.03409	1		
Ratnagiri	0.05319	0	1	
Sindhudurg	0.07927	0.01667	0.07438	1

Species common in all the districts = 0

Percentage of species common in maximum number of districts (i.e. Greater Thane, Ratnagiri, Sindhudurg) = 4.396%

Discussion

In present study, a total of 191 foliicolous micro-fungi were found from Konkan region. There was highly statistically significant difference in mean species count, thereby biodiversity, across the districts ($F_{p\text{-value}} < 0.01$). OLS (Model 1) and Count Data models initially showed residuals not having normal distribution, however by dropping the largest observation (SpsCount = 33 for Kesari), modified models showed normally distributed residuals with similar results at same level of statistical significance ($\alpha = 0.01$), hence original models were retained. Model 1, both original and modified (by dropping Kesari observation), showed highly significant ($p\text{-value} < 0.01$) heteroskedasticity for both the tests. Hence Model 1 was modified by log transformation of the dependent variable (Model 2). Model 2 showed results similar to Model 1, with no heteroskedasticity and normally distributed residuals, proving in this case that non-normal and heteroskedastic residuals did not affect overall significance of regression and significance of estimated coefficients of Model 1. Also, despite significant overdispersion ($p\text{-value} < 0.05$), PRM yielded results similar to NBRM at same level of statistical significance ($\alpha = 0.01$). Count data models are generally recommended for large samples. However, in present study, in terms of overall significance of regression and significance of estimated individual coefficients, they show results similar to OLS models. Konkan also showed very high dissimilarity in species composition across the districts, with highest JSI being 7.927%, none of the species being common to all district and only 4 species (4.396% of total) being common in maximum 3 districts. In future, the same framework can be adopted in other similar studies. The statistical analysis carried out is based on the data obtained from the study. However, it should be noted that the statistical results can't be generalized as diverse ecological features and sheer number of fungi (many yet to be discovered) can yield different results.

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Supplementary material

Collection locations with species	
Greater Thane	
On the way to Zap (13)	<i>Acremoniula sarcinellae</i> , <i>Capnodium</i> sp.1, <i>Circinotrichum olivaceum</i> , <i>Cladosporium cladosporioides</i> , <i>Colletotrichum gleosporioides</i> , <i>Colletotrichum</i>

	<i>lindemuthianum, Epicoccum nigrum, Gonatophragmium mayteni, Meliola carissae, Pithomyces ellisii, Staurostoma sacchari, Virgariella globigera, Zasmidium rubiacearum</i>
Shirpur(7)	<i>Cercospora apii, Cercospora blumeicola, Leptoxyphium glochidion, Mitteriella ziziphina, Myrothecium roridum, Neopestalotiopsis asiatica, Pseudocercospora eupatorii-formosanae</i>
Jawhar(5)	<i>Ampelomyces quisqualis, Asperisporium pongamiae, Chloridium indicum, Phialophora cyclaminis, Torula herbarum</i>
On the way to Dahanu(14)	<i>Asterina woodfordiae, Cercospora apii, Cercospora ricinella, Cladosporium gallicola, Graphium sp., Khuskia oryzae, Nigrospora sphaerica, Passalora desmanthi, Pleurocytospora vestita, Sarcinella cassiae-fistulae, Sarcinella gymnosporiae, Stachybotrys levispora, Torula herbarum, Zygosporium gibbum</i>
Pulachiwadi (18)	<i>Amerosporium polynematoides, Ampelomyces quisqualis, Cercospora apii, Colletotrichum dematium, Colletotrichum gleosporioides, Colletotrichum lindemuthianum, Corynespora torulosa, Deightoniella jabalpurensis, Drechslera papendorfii, Nigrospora sphaerica, Periconia minutissima, Sarcinella gmelinae, Thirumalacharia thanensis, Trichoconiella padwickii, Tripospermum acrobaticum, Tripospermum myrti, Volutina concentrica, Xepiculopsis graminea</i>
Suryamal (3)	<i>Sarcinella loranthacearum, Tripospermum acrobaticum, Zygosporium minus</i>
Tansa WLS (6)	<i>Ampelomyces quisqualis, Cercospora apii, Domingoella asternarum, Pyriculariopsis sp., Sordaria fimicola, Wiesneriomyces laurinus</i>
On the way to Sanjay Gandhi National Park (6)	<i>Alternaria chlamydospora, Cercospora apii, Colletotrichum dematium, Fusicoccum sp., Phoma multirostrata, Temerariomyces indicum</i>
Sanjay Gandhi National Park (10)	<i>Chalara siamense, Helicospira costii, Meliola buteae, Meliola holarrhenae, Meliola hyptidis, Meliola mitragynae, Periconia lateralis, Sarocladium strictum, Virgariella globigera, Zygosporium oscheoides</i>
Wada (2)	<i>Beltrania querna, Moorella speciosa</i>
Raigad District	
Matheran (10)	<i>Ardhachandra cristaspora, Cirrosia vateriae, Coniothyrium palmarum, Dictyosporium subramanianii, Fusarium solani, Microsphaeropsis sarcinellae, Phaeoisaria clematidis, Pithomyces pavgii, Solicorynespora matheransii, Stachybotrys echinata</i>
Karjat (4)	<i>Ardhachandra cristaspora, Colletotrichum dematium, Corynespora cassicola, Zygosporium masonii</i>
On the way to Panvel (1)	<i>Drechslera papendorfii</i>
Phansad WLS (2)	<i>Capnodium sp.1, Meliola uniconicola</i>
On the way to Matheran (2)	<i>Corynespora cassicola, Echidnodella polyalthiae</i>
Khopoli (1)	<i>Corynespora cassicola</i>
Raigad Forest (1)	<i>Periconia cambrensis</i>
Ratnagiri District	
Dapoli (2)	<i>Bahusandhika indica, Excipulariopsis narsapurensis</i>
Dapoli Forest	<i>Asterina wrightii, Domingoella asternarum, Fusarium oxysporum, Isthmospora</i>

Range (6)	<i>spinosa</i> , <i>Spiropes guareicola</i> , <i>Zygosporium gibbum</i>
Ganpatipule (1)	<i>Periconia cookei</i>
Khed (1)	<i>Harpographium</i> sp.
Kirbet (2)	<i>Meliola melanoxylonis</i> , <i>Repetophragma ellisii</i>
Kodawali-Rajapura (6)	<i>Acrodictys balladynae</i> , <i>Balladyna vanderystii</i> , <i>Colletotrichum lindemuthianum</i> , <i>Phyllachora</i> sp., <i>Prathigada terminaliae</i> , <i>Zygosporium gibbum</i>
Kurne-Lanja Taluka Reserved Forest (3)	<i>Domingoella asternarum</i> , <i>Goosiomycetes bambusicola</i> , <i>Meliola bauhiniicola</i>
Near AmbaGhat(1)	<i>Cladosporium colocasiae</i>
On the way to Khed (3)	<i>Colletotrichum gleosporioides</i> , <i>Puccinia kraussiana</i> , <i>Rhinoctadium</i> sp.
Pachavali (1)	<i>Isthmospora spinosa</i>
Panval(1)	<i>Custingophora ratnagiriensis</i>
Rajapura (1)	<i>Penicillium notatum</i>
Ratnagiri (1)	<i>Khuskia oryzae</i>
Sindhudurg District	
Akeri (23)	<i>Aphanofalx</i> sp., <i>Asperisporium pongamiae</i> , <i>Asterina jasminicola</i> , <i>Balladyna pavatae</i> , <i>Cercospora thunbergiae</i> , <i>Colletotrichum gleosporioides</i> , <i>Corynespora cassicola</i> , <i>Didymella fabae</i> , <i>Gibberella baccata</i> , <i>Hansfordiellopsis lichenicola</i> , <i>Meliola careyae</i> , <i>Meliola desmodii-triquetri</i> , <i>Meliola tylophorae</i> , <i>Neopestalotiopsis asiatica</i> , <i>Periconia byssoides</i> , <i>Pestalotiopsis funerea</i> , <i>Porrectotheca</i> sp., <i>Prillieuxina polyalthiae</i> , <i>Pseudocercospora conyzae</i> , <i>Pseudocercospora</i> sp. 1, <i>Stenella plectroniae</i> , <i>Tripospermum myrti</i> , <i>Zygosporium masonii</i>
AmboliGhat (24)	<i>Aschersonia aleyrodis</i> , <i>Asterina capparis</i> , <i>Chloridium indicum</i> , <i>Cladosporium cladosporioides</i> , <i>Cladosporium colocasiae</i> , <i>Cladosporium oxysporum</i> , <i>Colletotrichum gleosporioides</i> , <i>Corynespora cassicola</i> , <i>Custingophora olivacea</i> , <i>Helicoceras celtidis</i> , <i>Meliola eugeniae-stocksii</i> , <i>Meliola ixorae</i> Yates var. <i>macrospora</i> , <i>Meliola ixorae-coccinea</i> , <i>Meliola mangiferae</i> , <i>Pestalotiopsis linearis</i> , <i>Rhinoctadium</i> sp., <i>Sphacelia</i> sp., <i>Spiropes effusus</i> , <i>Spiropes guareicola</i> , <i>Spiropes nothofagi</i> , <i>Verticillium lecanii</i> , <i>Volutella</i> sp., <i>Zygosporium gibbum</i> , <i>Zygosporium masonii</i>
Fanaswadi (19)	<i>Acarophialophora</i> sp., <i>Aschersonia aleyrodis</i> , <i>Corynespora cassicola</i> , <i>Dendryphiella vinosa</i> , <i>Dendryphion</i> state of <i>Pleospora papaveracea</i> , <i>Domingoella asternarum</i> , <i>Isthmospora</i> state of <i>Trichothyrium asterophorum</i> , <i>Meliola allophyli-serrulati</i> , <i>Meliola eugeniae-stocksii</i> , <i>Meliola pandanacearum</i> , <i>Meliola ziziphi</i> , <i>Pestalotiopsis anacardii</i> , <i>Pestalotiopsis linearis</i> , <i>Philonectria</i> sp., <i>Polytretophora calcarata</i> , <i>Sheathnema indicum</i> , <i>Sphacelia</i> sp., <i>Spiropes melanoplaca</i> , <i>Zygosporium dilleni</i>
Kesari (33)	<i>Amazonia elaeocarpi</i> , <i>Aschersonia aleyrodis</i> , <i>Asterina jambolanae</i> , <i>Cladosporium colocasiae</i> , <i>Corynespora cassicola</i> , <i>Didymella fabae</i> , <i>Gliocladium penicilloides</i> , <i>Glomerella cingulata</i> , <i>Helicospirium lumbricoides</i> , <i>Isthmospora spinosa</i> , <i>Khuskia oryzae</i> , <i>Kirschsteiniotelia atra</i> , <i>Meliola alstoniae</i> , <i>Meliola hemidesmicola</i> , <i>Meliola melanoxylonis</i> , <i>Meliola pongamiae</i> , <i>Meliola semecarpi-anacardii</i> , <i>Meliola tylophorae-indicae</i> , <i>Meliolina mollis</i> , <i>Metulocladosporiella</i>

	<i>musae, Periconia lateralis, Periconiella telopeae, Pestalotiopsis linearis, Phoma tropica, Questeriella strychni, Septoria sp., Stachybotrys levispora, Stenella araguata, Tetraploa ellisii, Vamsapriya indica, Vizella oleariae, Zygosporium gibbum, Zygosporium masonii</i>
Kudal(17)	<i>Asteridiella depokensis, Asterina jasminicola, Domingoella asternarum, Isthmospora spinosa, Kirschsteiniethelia atra, Meliola eugeniae-jamboloidis, Meliola hyptidis, Meliola ixorae Yates var. macrospora, Meliola jasminicola, Meliolina mollis, Pirozynskiella solaninum, Sphacelia sp., Spiropes capensis, Spiropes japonicus, Spiropes melanoplaca, Zygosporium gibbum, Zygosporium masonii</i>
Sawantwadi (9)	<i>Acroconidiellina arecae, Asterina delicatula, Cercospora careyae, Cladosporium oxysporum, Mycovellopsiella solani-torvi, Phoma nebulosa, Puccinia phragmitis, Veronaeopsis simple, Volutina concentrica</i>
Vengurla(8)	<i>Cladosporium spongiosum, Diplodia sp., Melanocarpus sp., Mycovellopsiella solani-torvi, Prathigada sp., Puccinia phragmitis, Stauronema spinificis, Tripospermum myrti</i>