



Diversity of macrofungi in Siddapura taluk of Uttara Kannada district of Karnataka

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Abstract

Macrofungi constitutes a large subgroup of kingdom fungi including thousands of species next to insects. They grow luxuriantly in many parts of the biosphere. They intermingle and participate or compete with other micro-organisms behaviour and predators. They form large fruiting bodies, visible without the aid of a microscope. The study was conducted in five sampling plots of Siddapura taluk, each measuring 50 × 20 m transect during January 2019 to December 2020. The collected macrofungi belongs to 37 species, 25 genera, 19 families, two classes and seven morpho-groups. The highest species were found in Agaricaceae (6 species) and Tricholomataceae (5 species). More number of species belonged to fleshy gilled fungi as the same species may need less rain or moisture content for its development and they found in all the substratum.

Keywords: macrofungi, fruitingbodies, gilled fungi, agaricaceae

Introduction

The exact number of fungi recorded is a point of discussion among mycologists and research is only focused on the cataloguing the fungal diversity on earth (Sheikh *et al.*, 2014)^[9]. Fungi are highly diverse with the species presence consisting of an appreciable number of forms that can be observed directly and many others remain undetected due to their rarity and the typically aggregated distribution of fungal species (Zhang *et al.*, 2010)^[11]. Macrofungi constitutes a large subgroup of kingdom fungi including thousands of species next to insects. They are characterized by large fruit-bodies and visible to naked eye (Al-Thani, 2010)^[1] including, gilled fungi, cup fungi, flask fungi, tongue fungi, bracket fungi, puffballs, etc. (Bates, 2006)^[2]. Macrofungi consist of many accountable species and which are unique and beautiful. They are characterized by their unusual sudden appearance in different shapes, various habitats and grow luxuriantly in many parts of the biosphere. They intermingle and participate or compete with other micro-organisms and predators (Razaq *et al.*, 2014)^[8]. Resolving the effect of variations in climate on distribution and fruiting of fungi is a major challenge (Boddy *et al.*, 2014). Macrofungi have been studied since age of civilization among different groups of fungi and though they are studied much in many parts of the world (Mueller *et al.*, 2007)^[5]. Many macrofungi are listed under the threat of extinction due to destruction in habitats and global climate change. The degradation of habitats is disadvantageous to the macrofungi and decrease the numbers in fungal community. Research has also shown, the macrofungal diversity and its species composition is affected by clear-cutting of old-growth forests (Osono and Trofymow, 2012)^[6].

Materials and Methods

Study Area

The study was supervised in Siddapura taluk (Fig. 01) located in Uttara Kannada district of Karnataka during January 2019 to December 2020, situated between 14.34° North latitude, 74.89° East longitude. The average annual rainfall and mean air temperature in Siddapura taluk was 1800mm and 16°C to 38°C.

Survey and Sampling

The encountered macrofungi were collected, which were limited to epigeous macromycetes and identified by the presence-absence of fruiting bodies. The study sites were plotted in 5 sampling plots of Siddapura taluk. A 50 × 20 m transect was measured out in each of the sampling plot. The sampling was done in random sampling sites and fruiting bodies were collected in transects.

Collection and Characterization

Fresh and dried specimens were collected without any damage to the macrofungi and Wood inhabiting macrofungi was removed along with some part of the substratum (Stojchev *et al.*, 1998)^[10]. The details of habitat and field characteristics of macrofungi were documented (Pekşen and Karaca, 2003)^[7] and photographs were also taken for further analysis (Fadime and Mustafa, 2002)^[4]. Macrofungi were assessed for morphological

and microscopical characters. They were identified with appropriate monographs and for nomenclature, website of mycobank (<http://www.mycobank.org>) was considered.

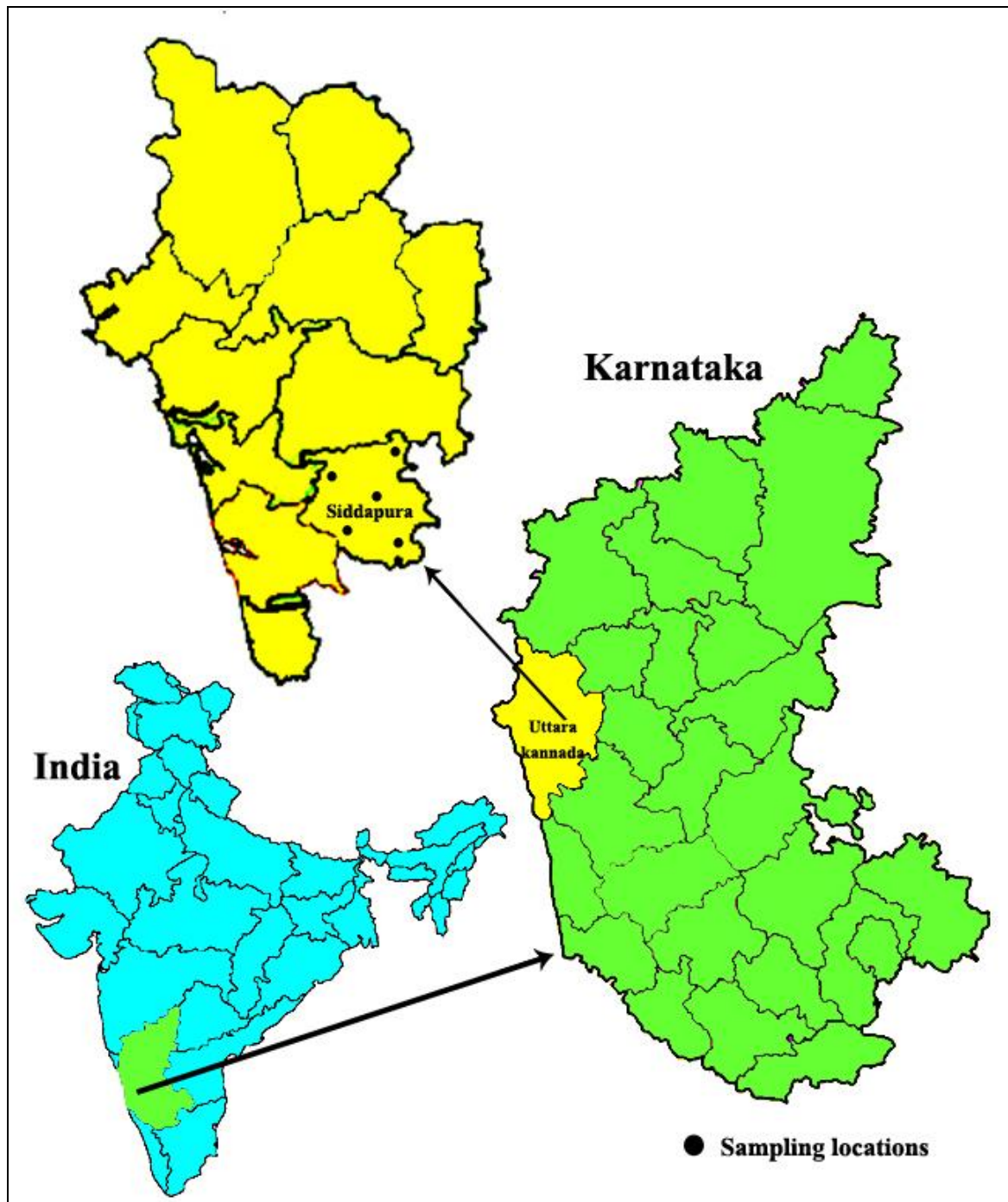


Fig 1: Sampling locations of Siddapura taluk in Uttara Kannada district, Karnataka

Results and Discussion

The survey was undertaken in five transects for documentation of macrofungi occurring in Siddapura taluk during January 2019 to December 2020. The collected macrofungi belongs to 37 species, 25 genera, 19 families, two classes and seven morpho-groups. The collected species showed highest rate in basidiomycota with 34 species followed by three species in Ascomycota (Fig. 02).

Macrofungal studies were carried out in Siddapura taluk according to their respective morphology and encountered a total of seven different types of morpho-groups. The survey recorded 21 species in fleshy gilled fungi accounting for maximum species encountered during August 2019 and second highest in Bracket fungi with six species followed by five species (coral fungi), two species (jelly fungi) and one each in cup fungi, birdnest fungi, and flask fungi (Fig. 03).

Families encountered in Siddapura taluk during 2019 were enumerated. A total of 19 families were encountered. The highest species were found in Agaricaceae and Tricholomataceae with six and five species respectively. Families with three species were found in Clavariaceae, Marasmiaceae and Polyporaceae and Coprinaceae,

Ganodermataceae, Gomphaceae were associated with two species and the families with one species were Auriculariaceae, Bolbitaceae, Cantharallaceae, Gloeophyllaceae, Inocybaceae, Lyophyllaceae, Pleurotaceae, Psathyrellaceae, Sarcoscyphaceae, Tremellaceae and Xylariaceae (Fig. 04).

During two years study, species were recorded highest in *Agaricus*, *Hygrocybe*, *Marasmius* with three species followed by *Clavulinopsis*, *Coprinus*, *Ganoderma*, *Lepiota*, *Ramaria*, *Tricholoma* (2 species) and *Auricularia*, *Cantharellus*, *Clavaria*, *Conocybe*, *Cookiena*, *Crepidotus*, *Cyathus*, *Gloeophyllum*, *Micropus*, *Parasola*, *Pleurotus*, *Polyporus*, *Pycnoporus*, *Termitomyces*, *Tremella* and *Xylaria* possess only one species (Fig. 05).

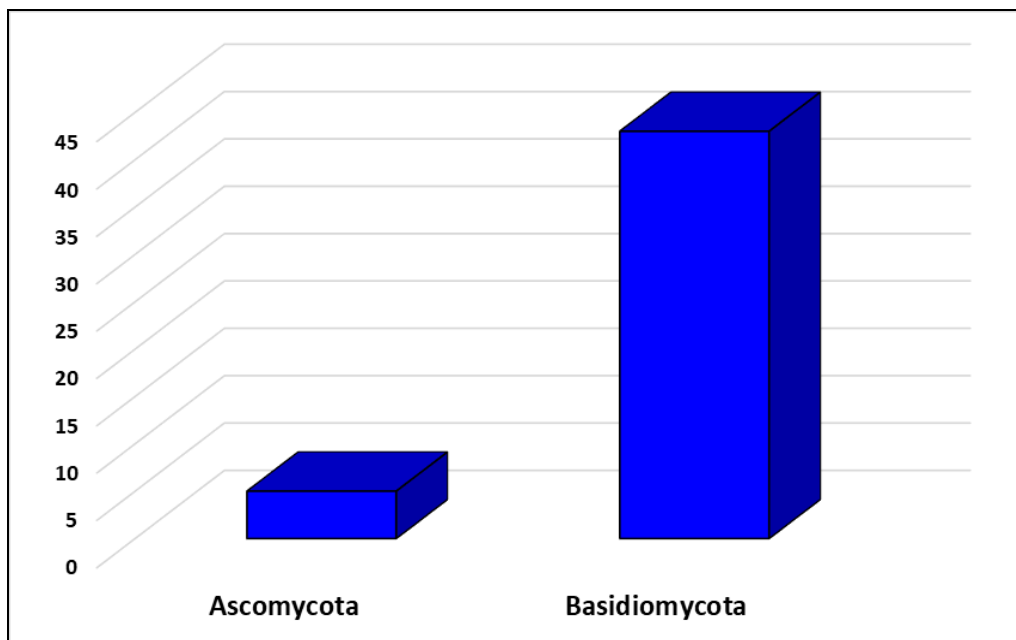


Fig 2: Macrofungal species occurred in Ascomycota and Basidiomycota

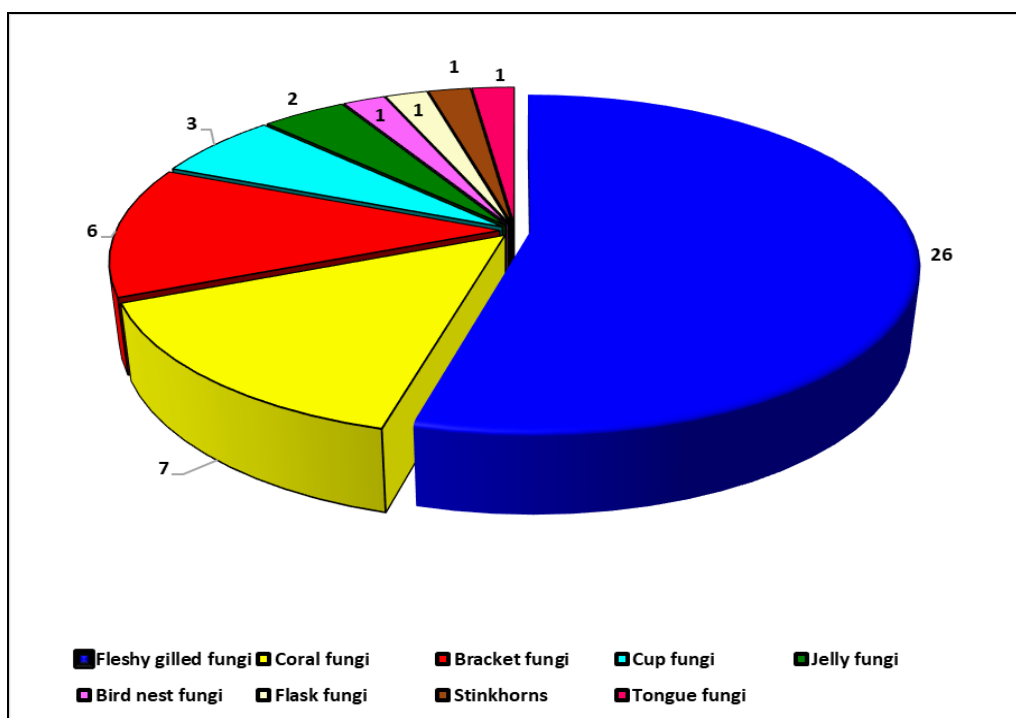


Fig 3: Macrofungal species occurred in different morpho-groups

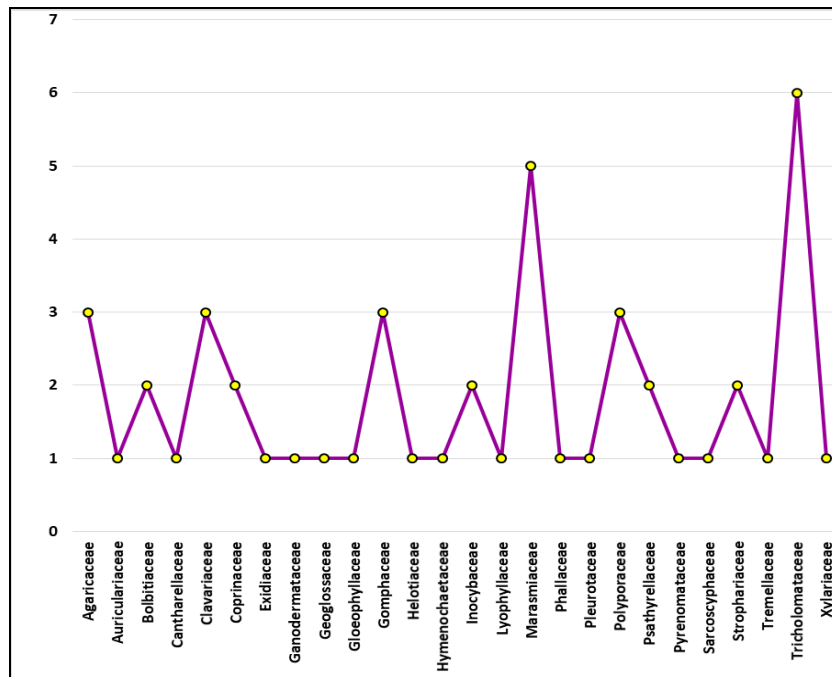


Fig 4: Macrofungal species occurred in different families

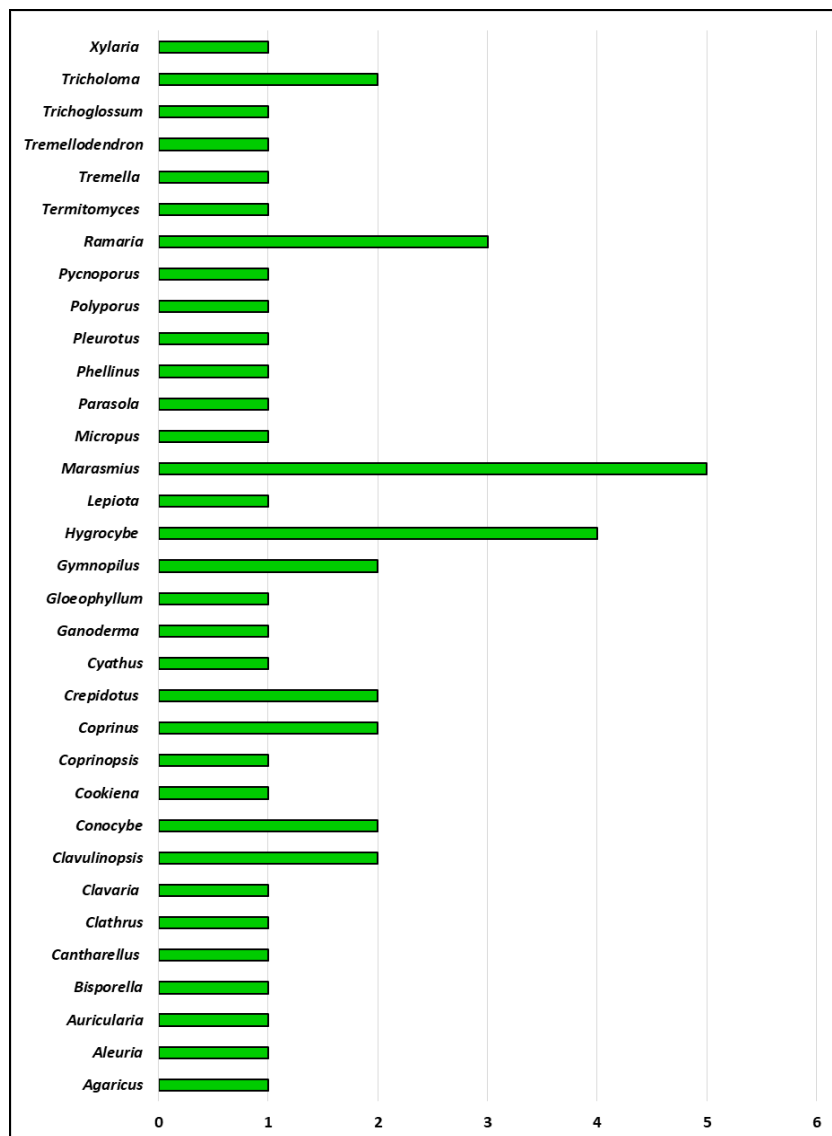


Fig 5: Macrofungal species occurred in different genera

Conclusion

Macrofungal diversity in Siddapura taluk of Uttara Kannada district, Karnataka is conducted during the period of two years from January 2019 to December 2020 to identify and document the species which are present in the mentioned place. Abundance and diversity is more in rainy season than winter and summer. Mulching and moisture content of substratum play very important role in the growth of macrofungi. Heavy rain affects the growth and development of macrofungal fruiting bodies. More number of sporocarps and species were found in the month of August 2019, probably for the highest rainfall and percolation, which produced more number of fruiting bodies. In our study more number of species belong to fleshy gilled fungi. The species collected were more in the short span of time. The research on macrofungi should be more in the future days and more encouragement and preference should be given to the diversity of macrofungi in different locations of Karnataka.

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