

A Preliminary Study on the Mycodiversity of Maipokhari, East Nepal

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Abstract This is a preliminary report on mycological investigation at Maipokhari area. Nine genera of Ascomycotina and twenty-eight genera of Basidiomycotina were found from this area. Among the collected taxa many of the species listed in this paper are new to the area. References on the fungi of Maipokhari area and Nepalese Himalayan belts are listed.

Key words : East Nepal, Maipokhari, mycodiversity

Introduction

Maipokhari lies in the North Eastern corner between 26°30'–27°28'N latitude and 87°35'–88°20'E longitude of the Nepalese Kingdom in the Ilam district of Mechi zone. It is a natural lake with interesting geosettings situated at a height of 2100 m surround by small hillocks around it. It embraces an interesting mythological legend related to goddess Durga.

Phytogeography of the area The area possesses cool temperate climate with heavy amount of rain with typical assemblage of interesting biodiversity. The area embraces typical temperate mixed flora. The phytodiversity is composed of *Cryptomeria japonica* (introduced from Japan and naturalized), *Castanopsis indica*, *C. hystrix*, *Schima wallichii*, *Rhododendron arboreum*, *Alnus nepalensis*, *Symplocos sumuntia*, *Berberis aristata*, *Dendrocalamus* sp., *Ilex* sp., and *Lyonia ovalifolia*. Many orchid species belonging to *Dendrobium*, *Cymbidium*, *Coelogyny* and pteridophyte like *Polystichum*, *Dryopteris*, *Glychenia* and *Selaginella* are found. These complex phytogeographical conditions generally provide a good homeland for growth of tremendous amount of parasitic, saprophytic and mycorrhizal fungi in the region. Darjeeling of India, the area from where numerous species of fungi had been reported mainly by Berkeley, is near from Ilam district, situated out of the east side of the International Boundary.

The first historical event of collection of natural plant diversities from Ilam district started from J. D. Hooker's period. Since then several botanical investigations

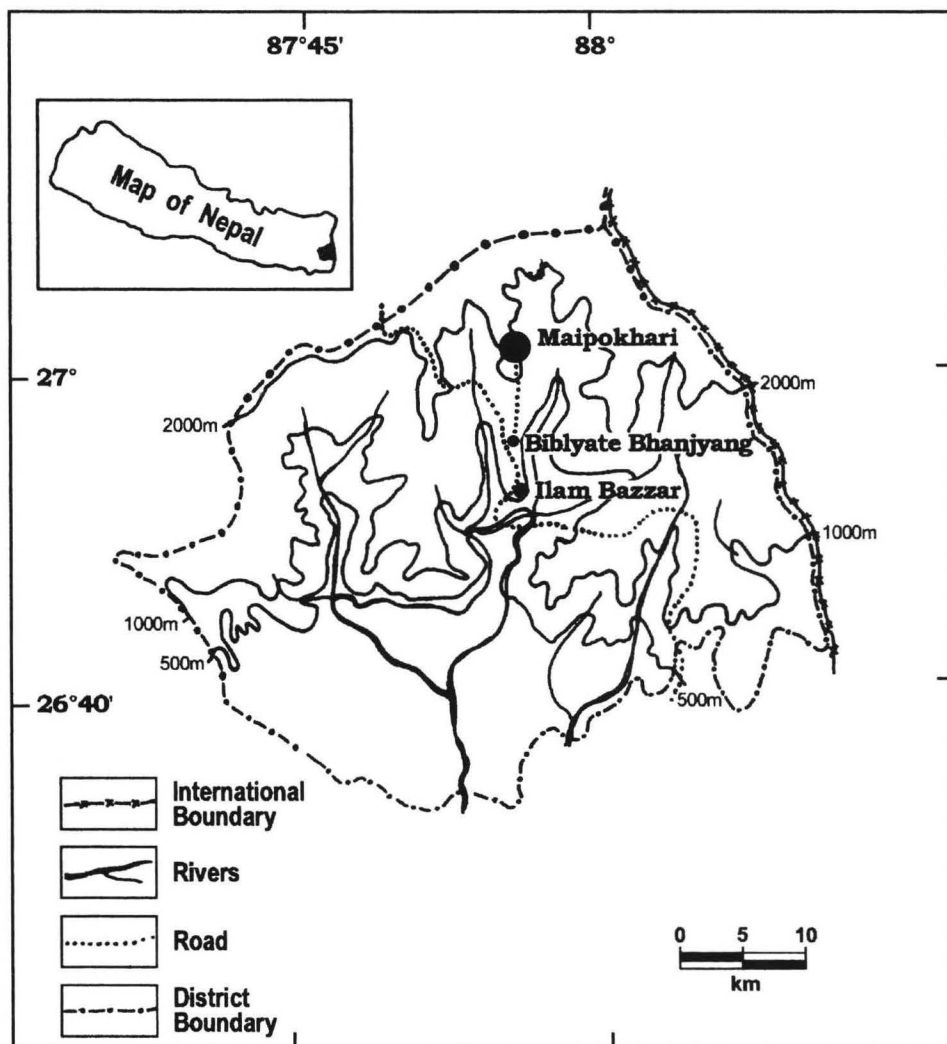


Fig. 1. Map of Maipokhari area in Ilam district, East Nepal.

have been going on. The recent investigation on mycological diversities of this area has created an enthusiasm towards its intensive exploration.

Itinerary of collection The fungal collection during this period (July 15–25, 1998) encompasses the areas shown in the map provided here (Fig. 1). The recent investigation was done in joint expedition with National Science Museum, Tokyo, Japan and Nepal Flora Implementation Project, DPR, Kathmandu, Nepal. The route traverse from Ilam to Maipokhari through Biblyate on foot.

Mycodiversity in the area

A. Bibliographic review

The glimpse on the historical accounts and studies on mycoflora made in Nepalese Himalayan belts can be seen in Adhikari (1990a, 1991a, 1996a) and Adhikari & Manandhar (1996, 1997). The bibliographical review provide vivid records of collections and reports made on investigation of fungi in Nepal but these revealed very few studies and investigation of fungi from Eastern Nepal (Adhikari, 1976; 1981–82; 1984; 1987; 1988 a; 1988 b; 1988 c; 1988 d; 1990 a; 1990 b; 1991 a; 1991 b; 1991 c; 1991 d; 1992 a; 1994; 1994–95; 1995 a; 1995 b; 1996 a; 1996 b; 1996 c; Adhikari & Adhikari, 1996–1997; Adhikari, Adhikari, Joshi, Bhandary, Gyawali & Pradhan, 1996; Adhikari & Durrieu, 1996; Adhikari & Manandhar, 1996 a; 1996 b; 1997; Adhikari & Parajuli, 1993; 1994; Adhikari, Parajuli & Durrieu, 1994; Balfour-Browne, 1955; 1968; Berkeley, 1854 a; 1854 b; 1854 c; 1854 d; Bhandary, 1980; 1984; Bills & Cotter, 1989; Cotter & Miller, 1987; Cotter, 1987; Hjortstam, 1983; Hjortstam & Ryvarden, 1984; Imazeki, Kobayashi & Aoshima, 1966; Kobayasi, 1965; Kreisel, 1967; 1969; 1976; Manandhar & Adhikari, 1988; 1994; 1995; Maas, 1992; Miller. & Cotter, 1988; Otani, 1982; Pandey, 1976; Ranjitkar & Bhatt, 1976; Ryvarden, 1977; Sacherer, 1979; Sharma, 1983 a; 1983b; Sharma & Sharma, 1983; Singh, 1966; 1968; Singh & Adhikari, 1977; Singh & Nisha, 1974; 1976 a; 1976 b; 1976 c; Singh & Upadhyaya, 1978; Thind & Sharma, 1983; Tullons & Bhandary, 1992; Tullons, Hongo & Bhandary, 1992; Waraitch & Thind, 1977 a; 1977 b; 1977 c). Maipokhari has not been previously explored and investigated for its fungal diversity, although some botanists collected a few species of fungi through their botanical exploration.

By the present investigation on fungi from Eastern Nepal, it has been observed that the pure stand of *Cryptomeria japonica* does not favour the growth and dominance of fungi. These may be due to growth of tremendous amount of mycophagus bacteria and or other microbes in the soil and roots of plants which inhibit them. The litter debris of *Cryptomeria japonica* do not favour the regulation of temperature in the soil or it is the resinous substance which do not allow the growth of fungi such as saprophytic and mycorrhizal elements. It is the other species of forest which favour the growth of fungi.

B. Prevalent fungal taxa

Some of the major genera found in this area are *Aleuria*, *Amanita*, *Boletus*, *Clavaria*, *Coprinus*, *Coriolus*, *Cortinari*, *Dacrymyces*, *Daldinia*, *Epichloe*, *Exobasidium*, *Fistulina*, *Ganoderma*, *Geoglossum*, *Gomphus*, *Hygrocybe*, *Hyndnum*, *Hypocrea*, *Hypomyces*, *Lactarius*, *Leotia*, *Lycoperdon*, *Marasmius*, *Nectria*, *Naematoloma*, *Oudemansiella*, *Peziza*, *Phylloporus*, *Pleurotus*, *Polyporus*, *Rhodophyllus*, *Russula*, *Scleroderma*, *Stereum*, *Strobilomyces*, *Thelephora*, *Tremella* and *Xylaria*.

Frequency of fungal taxa A notable frequency of species have been found in

Table 1. Frequency of some of the groups of Ascomycotina (57 spp.). Tns=Total number of species; SF=Species frequency.

Taxa	Clavicipitales	Helotiales	Pezizales	Sphaeriales	Hypocreales	Others
Tns	3	20	6	5	16	7
SF	5.3	35.0	10.5	8.8	28.0	12.3

Tabel 2. Frequency of some of the groups of Basidiomycotina (80 spp.). Tns=Total number of species; SF=Species frequency; Aur=Auriculariales, Dacr=Dacrymycetales, Tre=Tremel-lales, Gan=Ganodermatales. Poly=Polyporales, Clav=Clavariales, Tric=Tricholomatales, Agar=Agaricales, Russ=Russulales, Cast=Gastromycetes, Others=the other Orders.

Taxa	Auri	Dacr	Trem	Gan	Poly	Clav	Tric	Agar	Russ	Gast	Others
Tns	2	2	2	2	14	2	18	11	16	5	6
SF	2.5	2.5	2.5	2.5	17.5	2.5	22.5	13.7	20.0	6.3	7.5

this area. The Ascomycotina is also relatively found in high frequency. The tables 1 and 2 show a pattern of diversity, frequency and dominance.

C. Enumeration of the species

Some of the species collected in this area in 1998 are already identified and enu-merated below. All specimens are deposited in the National Herbarium of Nepal (KATH). Added numbers at the end of each species show the specimen numbers of KATH. Separated specimens of Doi’s collection are deposited also in TNS.

- Aleuria aurantia* (Pers.: Fr.) Fuckl., On soil, no. 980064.
Amanita rubrovolvata Imai, On soil, no. 980059b.
Auricularia mesenterica (Dicks.: Fr.) Pers., On dead wood, no. 980033.
Clavulinopsis fusiformis (Sow.: Fr.) Corner, On soil, no. 980065.
Clavaria vermicularis Swartz.: Fr., On soil, no. 980057.
Coltricia cinnamomea (Jacq.: Fr.) Murr., On soil, no. 980044.
Coprinus comatus (Mull.: Fr.) Pers., On soil, no. 980086.
Daldinia concentrica (Bull.: Fr.) Ces. & de Not., On dead wood, no. 980099.
Exobasidium butleri P. & H. Sydow, On soil, no. 980050.
Fistulina hepatica (Schaeff.) Fr., On soil, no. 680036, Nepalese name: Bhalu chyau
Gomphos floccopus (Schw.) Singer, On soil, no. 980054.
Hygrocybe pseudoconica Lange [= *H. nigrescens* (Quel.) Kuhn.], On soil, no. 980084.
Hypocrea muroiana Hino & Katsumoto, On dead trunk of broad-leaved tree, no. 980096 (duplicate specimen D. 9696 in TNS).
Hypocrea nigricans (Imai) Doi, On dead trunk of broad-leaved tree, no. 980097 (du-

- plicate specimen D. 9678 in TNS).
- Hypocrea pachybasoides* Doi, On branchlet of broad-leaved tree, no. 980098 (duplicate specimen D. 9695 in TNS).
- Hypomyces rosellus* (Alb. & Schw.: Fr.) Tul., Among mosses on the ground, no. 980099 (duplicate specimen D. 9675 in TNS).
- Lactarius volemus* (Fr.: Fr.) Fr., On soil, no. 980039.
- Nematoloma fasciculare* (Huds.: Fr.) Kummer, On soil, no. 980051.
- Oudemansiella radicata* (Rehl.: Fr.) Singer, On soil, no. 980060.
- Russula alboareolata* Hongo, On soil, no. 980049.
- Russula cyanoxantha* (Schw.) Fr., On soil, no. 980083.
- Russula kathmanduensis* Adhikari, On soil, no. 980042.
- Russula pectinatoides* Peck, On soil, no. 980041.
- Russula senesis* Imai, On soil, no. 980061.
- Russula sororia* (Fr.) Romell, On soil, no. 980040.
- Scleroderma verrucosum* (Bull.) Pers., On soil, no. 980058.
- Strobiliomyces strobilaceus* (Scop.: Fr.) Berk. [= *S. floccopus* (Vehl.: Fr.) Karst.], On soil, no. 980079.
- Tylopilus nigerrimus* (Heim.) Hongo & Endo, On soil, no. 980087.

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