

ABSTRACT

In this investigation, a total 60 specimens have been collected from different localities of Oila Didar Singh town and its adjacent villages. Specimens were described on the basis of morphological and molecular methods. The collected specimens comprised 40 different species belonging to 24 genera, 16 families and 6 orders. Agaricales in this investigation are represented by 30 different species which fall in 10 families i.e., Agaricaceae, Amanitaceae, Bolbitiaceae, Marasmiaceae, Mycenaceae, Pluteaceae, Psathyrellaceae, Schizophyllaceae, Strophariaceae and Tricholomataceae. Agaricaceae includes 6 species of *Agaricus* (*A. bisporus*, *A. brunneofibrillosus*, *A. campestris*, *A. dulcidulus*, *A. glabriusculus* and *A. trisulphuratus*), 1 species of *Chlorophyllum* (*C. molybdites*) and *Macrolepiota* (*M. procera*), 2 species of *Leucocoprinus* (*L. birnbaumii*, *L. cretaceus*) and *Podaxis* (*P. beringamensis*, *P. pistillaris*). Amanitaceae includes 2 species of *Amanita* (*A. nana*, *A. thiersii*). Bolbitiaceae includes 2 genera each of *Conocybe* (*C. apala*, *C. tenera*) and *Panaeolus* (*P. papilionaceus*, *P. sphinctrinus*). Marasmiaceae includes the only species *Marasmius brunneoaurantiacus*. Mycenaceae family also includes single species with genus *Mycena* i.e., *Mycena speirea*. Pluteaceae includes 2 species, 1 of each of genera *Pluteus* (*P. leoninus*) and *Volvopluteus* (*V. earlei*). Psathyrellaceae includes 2 species of *Coprinopsis* (*C. lagopus*, *C. picacea*), and 2 of *Psathyrella* (*P. almenensis*, *P. candolleana*), 1 species of *Parasola* (*P. schroeteri*). Schizophyllaceae includes 1 species of *Schizophyllum* (*S. commune*). Strophariaceae includes 1 species of *Agrocybe* (*A. pediades*) and Tricholomataceae includes 1 species of *Clitocybe* (*C. phyllophila*). Order Hymenochaetales is represented by family Hymenochaetaceae in this investigation, which possess the genus *Inonotus* having 1 species (*I. rickii*). Phallaceae of order Phallales has a single species of *Lysurus* (*L. periphragmoides*). Polyporales order includes two families, Ganodermataceae and Polyporaceae; Ganodermataceae with genus *Ganoderma* having 5 species (*G. applanatum*, *G. colossus*, *G. curtisii*, *G. lucidum* and *G. stipitatum*) and Polyporaceae with genus *Trametes* represent only 1 species (*Trametes gibbosa*) in this investigation. Pucciniaceae of Pucciniales and Ustilaginaceae of Ustilaginales are represented by *Puccinia purpurea* and *Ustilago cynodontis*, respectively. All of these collected specimens have been named, illustrated, and thoroughly described. Detailed morphological description of collected Basidiomycetes species have been given. Light micrographs of microscopic features of all the fungal taxa have been provided. The molecular phylogenetic analysis was based on ITS-nrDNA. Phylograms have been created for certain taxa that were successfully sequenced in this research work. In this investigation, there are 15 new records to the Fungi of Pakistan. These are *Agaricus brunneofibrillosus*, *Agaricus dulcidulus*, *Leucocoprinus cretaceus*, *Podaxis beringamensis*, *Amanita thiersii*, *Conocybe apala*, *Marasmius brunneoaurantiacus*, *Mycena speirea*, *Coprinopsis picacea*, *Parasola schroeteri*, *Psathyrella almenensis*, *Clitocybe phyllophila*, *Inonotus rickii*, *Lysurus periphragmoides* and *Ganoderma stipitatum*.