# MUSHROOMS OF GRAND TETON NATIONAL PARK

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## Objectives

This study attempts to inventory the mushrooms and related fungi of the Park and to assemble correlative data useful in park resource management and utilization. It is directed toward (1) determining what species of higher fungi grow in and around Grand Teton National Park; (2) appraising their role in the ecosystem; and (3) preparing descriptions, illustrations, and where possible, keys for the common species. Fungi included are mostly Ascomycetes and Basidiomycetes with large or otherwise conspicuous fruiting bodies. Collecting is not confined to Grand Teton National Park but includes sites with similar ecology in the areas surrounding the Park.

Ecological analysis of the mushroom flora is projected to permit characterization of the higer fungi associated with each of the major forest community types. This information will help resource personnel associated with this area to recognize the mushroom species present, assist visitors with questions about edible and poisonous species, identify potential mycorrhizal companions for better management of host trees, and better assess the role of fungi in nutrient recycling of each of these forested areas.

Previous collections of mushrooms in the Park were directed almost entirely toward compiling a list of species known to occur there. Although this objective was continued during the relatively brief field studies in 1980, special attention was directed this summer to obtaining stand characterization data for studies of the ecology of selected sites. Three ecological hypotheses under consideration are: (a) Predictably moist habitats support a characteristically



Published by Wyoming Scholars Repository, 1980

different mushroom flora than sites unpredictable with regard to moisture; (b) Communities with dense overstory support a different mushroom flora than communities with open canopy; (c) Morphological differences exist in the mushroom flora along a phenological gradient.

## Methods

Collections of fungus specimens and annotation data and specimen processing were conducted as outlined in the 1979 report. When quantities permit, replicate specimens will be deposited in the Rocky Mountain Herbarium of the University of Wyoming, the New York Botanical Gardens, and the Yellowstone National Park Herbarium. Collection data including species phenology and habitat data from the 1980 and previous collections from this area are being entered in a newly initiated, 24-field file with a high speed Information Processor. Much of the field work during 1980 was directed at recording data on community composition and structure and environmental data in the stands selected for intensive study. Some statistical analyses of these data have begun, but with this, as with compilation of the species list, the final analysis must await additional input from future field observations.

## Results

During the year to date 1480 records of collection data have been entered in the files of the Information Processor from collections made during 1964 and 1965 in Yellowstone and Grand Teton Parks and environs. During the short field season of 1980, 148 collections were made. Of those identified to date, the following 39 species (in 20 families) not previously reported from Grand Teton National Park were added to the composite species list which now totals 205 species:

Amanita pantherina v. pantherinoides (Murr.) Jenk.
Clitocybe epichysium (Pers. ex Fr.) Bigel.
Clitocybe praemagna (Murr.) Bigel. & A. H. Smith
Clitocybe pseudomarginella Bigel. (ined.)
Cortinarius ahsii McKn.
Cortinarius arquatus Fr.
Cortinarius clandestinus Kauffm.
Cortinarius infractus Fr.
Cortinarius malicorius Fr.
Cystoderma granulosum (Batsch ex Fr.) Fayod
Dasyscyphus virgineus (Fr.) Fuckel
Discina apiculatula McKn.
Gautieria graveolens Vitt.
Gomphidius subroseus Kauffm.
Gymnopilus terrestris Hesl.
Gyromitra infula (Schaeff. ex Fr.) Quel.
Helvella leucomelaena (Pers.) Nannf.
Hygrophorus chrysodon (Fr.) Fr.
Hygrophorus pudorinus (Fr.) Fr.
Hymenogaster subochraceous A. H. Smith

Inocybe geophylla (Sow. ex Fr.) Kumm.
Lactarius deliciosus v. areolatus A. H. Smith
Lasiobolus equinus (Mull.) Karst.
Lepiota clypeolaria (Bull. ex Fr.) Kumm.
Morchella angusticeps Pk.
Naematoloma fasciculare (Fr.) Karst.
Nannfeldtiella aggregata Eckbl.
Byssonectria aggregata (Rogers. & Korf) in Korf
Peziza sylvestris (Fr.) Karst.
Pluteus nanus (Pers. ex Fr.) Kumm.
Polyporus griseus Pk.
Polyporus tomentosus Fr.
Psathyrella solheimii McKn. & A. H. Smith
Psathyrella ulignicola A. H. Smith & McKn.
Saccobolus glaber (Pers.) Lamb.
Sporormia pascua Niessl.
Stropharia semiglobata (Batsch ex Fr.) Quel.
Suillus lakei (Murr.) A. H. Smith & Thiers
Truncocolumella citrina Zeller

The two Psathyrella species, P. solheimii and P. ulignicola, are of special interest as the type collections were made on Pole Mountain, near Laramie, Wyoming. As reported earlier, the type locality of Cortinarius ahsii is in Grand Teton National Park.

Previous collections of mushrooms in the study area were made at 125 sites throughout the region. Half of these were selected in 1980 for further collecting. Thirty six of these stands were characterized with respect to elevation, forest type (dominant trees present), predictability of available moisture, and extent of canopy cover. Stands at 4 sites (Nez Perce Creek, Teton Pass, Turpin Meadows, Cattle Bridge) were further characterized with respect to the following: slope; exposure; topographic aspect; percent frequency, basal area, and number of trees per hectare for dominant tree species present; average canopy cover; soil depth; understory vegetation height; average percent cover of rock, soil, litter and living tissue; average percent composition of living cover (trees, shrubs, forbes, grasses and cryptogams). A composite soil sample was also taken. Soil moisture blocks and soil temperature probes were installed in 2 of the study stands for further use in ecological analysis.

Through the courtesy of Dr. K. L. Diem detailed maps were obtained for characterization of stand vegetation type, underlying geologic strata, mean annual precipitation, and mean annual snowpack. Also located were site characterizations of soil types, variability in precipitation and mean annual temperature.

Work continues on development of the species files, identification of unknown species from previous collections, and analysis of ecological data, including the following which were initiated in 1980: (1) regression analysis of pileus diameter on fresh weight and dry weight of Leccinum aurantiacum, a common, edible, mycorrhizal mushroom found mostly in lodgepole pine forests; (2) analysis of mean

percent dry weight of some fungi found typically in predictably wet and predictably dry habitats; (3) a survey of 15 beetles found inside mushroom specimens to estimate the quantity of fungal spores that could be dispersed by these beetles.

## Acknowledgments

The excellent facilities of the UW-NPS Research Center at Colter Bay were essential in pursuit of these studies. Their use in the project is hereby gratefully acknowledged, with special thanks given to the Director, Dr. K. L. Diem. For their cooperation, assistance and valuable advice we also thank Dr. Mark Hamilton and Dr. Don Despain, NPS-Yellowstone National Park; Mr. Robert Wood and Dr. Richard Shaw, NPS-Grand Teton National Park; and Mr. M. Murdock, USFS-Buffalo District, Teton National Forest.