

Fleshy Fungi of Yellowstone and Teton National Parks
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Objectives

1. A survey of the higher macrofungi (mushrooms) of Yellowstone and Grand Teton National Parks to determine what species are present.
2. To collect ecological information on these fungi such as:
 - (a) time of fruting
 - (b) association with vascular plants and their possible role in biotic succession
 - (c) geographic distribution of species
3. Collection of fresh material of Discina and Neogyromitra for cytological, anatomical, and more accurate gross morphological study.

Results

A favorably wet season in June and early July contributed to exceptionally good fruitings of the early season species. Five hundred sixty-seven collections of fungi were made. Detailed descriptive notes and photographs were made for those not previously annotated or photographed. Collecting was stopped in late August to allow attendance at the A.I.B.S. meetings on the return trip to Beltsville. The results will be incorporated in several research publications.

Discussion

This was a continuation of studies begun in the Yellowstone-Jackson Hole area during the summers of 1964 and 1965. Yellowstone National Park occupies an area of approximately 3,500 square miles mostly in the northwest corner of Wyoming, but overlapping into Montana on the north and Idaho on the west. Grand Teton National Park occupies approximately 485 square miles just south of Yellowstone Park. Large areas of National Forest land adjoin the parks on all sides including the Teton wilderness area of approximately 900 square miles. These park and forest areas consist of wild lands most of which is inaccessible by automobile. Because of the necessity to get mushrooms quickly to the laboratory for study, collecting was restricted to areas away from the principal tourist attractions and main highways which could be reached by automobile. In previous summers, collecting was concentrated in Yellowstone Park while this summer most collections were made in the Teton Range and Jackson Hole where better aspen and spruce-cottonwood forests are available. Twenty collecting stations in and around Grand Teton Park and 8 in Yellowstone and adjacent areas were visited during the summer in an effort to sample communities differing in ecology.

Many species were found which had not been seen previously. This is probably due to a combination of factors: (1) the different habitats studied, (2) the very favorable weather, (3) the well-known fact that all species do not fruit every year, (4) previous summers' work in some of the same and other similar areas permitted the investigator to gain a ready familiarity with some species and allowed concentration this season on others previously passed over or inadequately studied, (5) exceptionally good fruitings were found this summer for some species previously seen only from comparatively poor material. This last point is very important in taxonomy of gill fungi since accurate identification is based on observation of a combination of characters which cannot be recognized unless fresh specimens in good condition are seen (often live specimens of different ages or states of maturity are needed). This is not possible for every species each year. For example, although I have collected macrofungi in the Rocky Mountains for many years this is the first season that I have found an abundance of Hygrophorus marzuolus Fr., consisting of all stages of development in good condition. This is an European species not well understood in this country.

It is expected that some of these collections will be new species and for several previously described species this summer's collections will make it possible to write better descriptions. Final identification of the collections will be made at Beltsville, where access may be had to library and reference herbarium facilities not available at the field station.

This was an exceptionally good season for fruiting of Discina and Neogyromitra currently being monographed for North America. Collections were preserved for cytological study and chromatographic analysis of hymenium pigments. Discina olympiana known previously only from the type locality in the Olympic Peninsula, was found in Wyoming, as well as a pallid form which may be Discina pallida, known only from Czechoslovakia. Additional information was obtained which helps to differentiate D. olympiana and D. brevapicula, a new species previously collected from the Rocky Mountains, but not yet published. Accurate color photographs and written field notes on color with reference to the Munsell and National Bureau of Standards color standards will help to resolve the much debated issue of color variation within and between species of these genera, particularly with reference to Neogyromitra gigas and Discina perlata.

Many of the species collected all in two large genera, Cortinarius and Russula for which there are no satisfactory monographs. Because of this, and because past experience reveals a relatively high percentage of undescribed species in the western american mushroom flora final identification of some of these collections can not be accomplished immediately. These facts together with the irregularity of fungus fruiting and the need for additional detailed field observations mentioned above indicate that several seasons collecting in the future will be needed to get a reasonably complete picture of the mushroom flora of this region although an interim report of some value on the basis of collections which can be identified from the three seasons work can be compiled.

Assisted by Mrs. McKnight who prepared water color illustrations of the fungi.
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