

Fleshy Fungi of Yellowstone and Teton National Parks

Kent H. McKnight
Crops Research Division
U.S. Dept. of Agriculture
Beltsville, Maryland
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Unusually dry weather prevailed throughout the Central Rocky Mountains during spring and early summer resulting in generally very poor fruiting of mushrooms during this time. This was reversed in late summer. Commencing in early August there were almost daily rains and by August 20, collecting was exceptionally good. Three hundred eighty-five collections were made and detailed annotations were made for over 200 of them. Many were photographed either in the field or in the laboratory.

The exceptionally dry spring and early summer and unusually high precipitation in late summer and fall is just the reverse of the weather pattern encountered in the same general area during the summer of 1967. In 1967, spring and early summer were unusually wet while late summer was dry. When final identifications are completed for all of the collections made during these 2 seasons, some conclusions on fruiting habits may be reached. While long-term studies are needed to get detailed data, it was obvious, for instance, that species characteristic of the Lodgepole Pine forest were very abundant during the 1967 season and almost completely lacking in 1968. On the other hand, the Spruce-Fir forests which were unproductive in 1967 provided excellent collecting in 1968.

Final identification could not be made in the field for many of the collections, but of those identified to date many species are new to our herbarium or are poorly represented in our previous collections. A few examples are Cortinarius clandestinus, C. laniger, C. gentilis, C. glaucopus, C. semisanguineus, C. rufoolivaceus, Russula adusta, and Lactarius semi-sanguifluus. Some of these are among the most common species found in our western mountains year after year, yet little information about them is available to ecologists, foresters, conservationists, naturalists, and mycophiles.

Recent monographs and technical papers reporting research utilizing new methods and materials have shown that many species have been misunderstood and often incorrectly identified by American mycologists. A good example is Russula brevipes Pk., a common species from coast to coast in the northern states. We have only one collection of this, correctly identified, in the herbarium. Yet we have many American collections in the herbarium identified as R. delica Fr., a closely related species which does not occur in the United States. R. brevipes fruited very abundantly in Wyoming this summer making it possible to obtain a number of collections with the necessary notations on ecology and anatomy, gross morphology, and chemical reactions of the fresh fruiting bodies to distinguish accurately between R. brevipes, R. delica, and other closely related species as they are treated in Shaffer's recent monograph. A number of other cases of this type could be cited. From

a pragmatic point of view these are particularly important where the confusion involves closely related poisonous and edible species. Information was obtained this summer which may enable me to make an original contribution toward accurate distinction of species in difficult groups such as the Lactarius deliciosus-L. semisanguifluus complex and the Cortinarius phoenecius-C. semisanguineus complex.

Some collections made during the summer are important as new species or new distribution records having geographical or ecological significance. For example, two species are tentatively placed in Leotia of the Geoglossaceae. I know of no published records of any members of this family from the Rocky Mountains, although they are common on the West Coast and elsewhere in the United States from the Great Plains eastward. One of these two species had been collected several times in previous years, but never before with mature spores. Quite a number of species were collected and annotated this year which I had never been able to study before in detail, either because of their irregular fruiting habits or the great quantity of material which had to be studied at the time they were collected. Some of these are very common and some, although studied earlier, were found this year in better condition. A few examples are Hygrophorus ponderatus, Tricholoma imbricatum, Hygrophorus erubescens, Hygrophorus pudorinus v. fragrans f. pallidus, and Amanita porphyrea. Some new connections with host phanerogams were recorded, such as Psathyrella uliginicola and cottonwood.

Although a check-list is being prepared for the fungi collected in the Teton-Yellowstone area, it is estimated that not more than 25 to 30 percent of the higher fungi which actually occur there have been collected and annotated. Several large genera have hardly been collected at all: For example, Mycena and Galerina were usually passed up in the field. Since they are small and usually inconspicuous and since there were always more of the larger plants than one could study in the time available, it was considered advisable to pass these up for the time being. They are very important in the ecology of the area, however, and should be included in any floristic survey which is published. Some genera such as Psathyrella, Marasmius, and Inocybe were avoided since there were no keys available for them. A North American monograph of Psathyrella will be available soon and the keys by Stuntz are now accessible for Inocybe which is a very large genus in this area. Future collecting will be directed toward two objectives: (1) A special effort will be made to get species from genera previously ignored; (2) definite plots will be established to study the effects of fire, timber harvesting and possibly grazing on succession, distribution, and fruiting of the fungi. The plots will have to be studied over a long period of time, although not necessarily every season. Comparison of the flora of this study area with that at Priest River, Idaho, as originally proposed, was not attempted this summer.

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