

**DATA TO THE AUTUMN MUSHROOM FLORA IN THE
INUNDATION AREA OF THE TISZA IN THE NEIGHBOURHOOD
OF SZEGED**

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Introduction

The mushroom flora of this country from the Southern part of the Plain is known very imperfectly, particularly as to the hatted mushrooms. This region, however, according to my observations, has plenty of habitats growing a varied mushroom flora. My investigations have so far been carried out in the environs of Szatymaz, Sándorfalva, Kiskundorozsma, Tápé, Deszk and Szőreg. At present I am discussing the autumn vegetation of the large mushrooms in the inundation area of the Tisza in the neighbourhood of Szeged.

For the botanists investigating mushrooms the characteristic habitat of the inundation areas affords good opportunities. It is a field hardly investigated from this point of view that promises much to be discovered. Anyway, I have doubtlessly found mushrooms in a much higher number of species and specimens in other areas of the region covered with woods. The cause of that is first of all that the inundation areas lie under water generally for a longer time in every year that hinders in a high degree the mycelia spreading and the growing bodies in their development. Water is preserved by the fixed argillaceous soil for a long time, a ventilation is therefore not secured properly. The same soil becomes stone-hard in aridity, shrinking strongly, that is similarly unfavourable for the development of mycelia and growing bodies. I shall deal with this question separately after discussing the occurrence of the single mushrooms.

We cannot have a perfect knowledge of the vegetation in the inundation areas of the Tisza without knowing the mushrooms growing there. For taking the large mushrooms of the inundation areas into consideration, I have performed several collections, with regard to the circumstances of mushroom life under both rainy and arid weather conditions. My several collections, however, have more and more confirmed the conviction in me that the inundation areas, although they

are of woody, moist soil in their overwhelming majority, i.e., good habitats for growing mushrooms, may yet be considered as areas relatively poor in mushrooms.

Description of the autumn mushroom flora in the inundation area of the Tisza in the environs of Szeged

1. *Coprinus atramentarius* Fr. (Wrinkled ink-mushroom).

I have found them in a large group at the foot of a willow. In the group there were 27 well-developed specimens. The willow may formerly have been damaged, it let out sap from beneath its rind.

2. *Coprinus comatus* Fr. (Downy ink-mushroom).

It is one of the most frequent mushrooms of the inundation area. It appears already on the next day after rain. It can be observed scattered, in groups of 2—3—5, almost everywhere. South of Szeged, in a sector of 300 m, I found 18 groups at a collection of October 15, 1968. Its habitat is highly varied, being found at the grassy fringes of woods, among the dense, bushy underwood, and even in a soil without any vegetation, as well. They could be collected in comparatively arid days, too, till the autumn frosts came.

3. *Coprinus micaceus* Fr. (Garden ink-mushroom).

Its habitat is, by and large, similar to that of *Coprinus comatus*. After rains it appears in large numbers and in crowds. Its groups with much higher specimen numbers prefer the grassy areas along the fringes of woods. The sizes of those grown in the inundation area are, according to my observations, much smaller than of those grown in other woods and first of all round the houses.

4. *Psathyrella disseminata* Fr. (Disseminated crumbly mushroom).

This mushroom of small size was found on moulding willow and polar stumps, on crumbling branch pieces in very large groups. Its occurrence depends not vary much on the precipitation. It seems so that the moisture necessary for its development can be ensured by the water supply of the moulding stumps, the morning dew and the higher vapour content of air. It perishes very soon; sometimes I found it in the early morning hours, and at noon I could find only a very few remains of it.

5. *Collibia dryophila* Fr. (Mushroom of rusty stem).

It is frequent but found only on willow and poplar stumps, on their dead chumps. It penetrates deep with its rottlike formation into the moulding wood material, occurring the most frequently at the fringes of woods, as a rule on the shaded side. It always grows in groups. On two occasions, I collected them on the cut, decaying stump of *Amorpha fruticosa*, in a comparatively dry weather. As in case of the former species, I attribute its occurrence in an arid weather similarly to the moisture accumulated in the mouldering wood-stump.

6. *Lentinus tigrinus* Fr. (Poplar mushroom).

It may be observed, as a rule, also on dead branch pieces, poplar and willow stumps, and even in the mouldering material of soil. I have often noticed that on the soil I could always find it but alone, in 1—2

specimens. On wet stumps, it has generally occurred in smaller groups, on willows always more often than on poplars. Stometimes I have collected them on stems of living willows, in that case, anyhow, always one by one.

7. *Trametes versicolor* I. (Butterfly-amadou).

This is the most common tinder fungus, occurring almost everywhere. I have observed it also here in the inundation area but only on a few occasions. On old willow and poplar stumps, I have collected them only in two cases.

8. *Trametes suaveolens* (L.) Fr. (Anise tinder).

According to my observations, it is the most frequent tinder fungus of the inundation area. Its distribution here is probably promoted by the easily mouldering sapwood of the willows. It is wellknown as a tree-damaging mushroom and can easily be recognized by its characteristic anise scent. They can be found in any part of the inundation area, both older and aounger specimens, but always only on villows. The growing body develops on the stem, generally in a height of 1,50—2,50 m, as a rule, immediately below the foliage. The willow plantations of the inundation area are everywhere highly infected. There are places where they can be found on 40 percent of the tree substance. On three occasions, I have found their deformed, scattered specimens on willow stumps cut quite low (5—10 cm), on their horizontal surfaces.

9. *Fomes igniarius* (L.) Gill. (Glowing tinder).

This tinder species, living on willows, is not at all so frequent in our country as it is mentioned in the determining book, Large mushrooms of Hungary, by Bánhegyi — Bohus — Kalmár. A much more frequent species is, at least in the inundation areas, *Trametes suaveolens*. This species occurs, in every case, only on quite old willows, on their mouldering stems. It does not reach, however, the numerical quantity of the former species in old willow-plantations, either.

10. *Schizophyllum commune* Fr. (Mushroom of split lamellae).

I often found this very characteristic species of small size in the inundation area, mainly on the branches of *Amorpha fruticosa*, on willows, and on the thicker stems of *Gleditsia triacanthos*, as well. It takes generally place on trees but I have noticed that it occurs in groups and in greater quantities where the underwood was before burnt and consequently, also the rind of trees, shrubs has burned, bursted. In places like these, its appearance in large numbers may be taken for certain.

11. *Hebeloma sacchariolens* Quél. (Fallow mushroom of swet scent).

It occurred scarcely in the inundation areas in the environment of Szeged. I found them in the early autumn, before the night frosts came, in moist places covered with undergrowth densely, collected bit by bit, never in larger groups. They appeared rarely, ony in a quite humid soil, in shaded places, one day or two after raining.

12. *Boletus scaber* Fr. (Flap mushroom with sweet stem).

It is the most frequent mushroom of the poplars in the inundation area, being edible, too. It occurs generally, first of all in older poplar woods and even in poplar alleys. The appearance of the growing body is a close effect of the quantity of precipitation. It appears 2—3 days

after rainy days. Then I found them one by one but in a larger amount, on every occasion. It prefers the brushwoods covered with undergrowth, the regions of dwarf acacia, bushes, and it is frequent in the lighter clearings, as well. Also 8—12 days after greater rains, I collected a larger amount of them, younger specimens, too. It is probably a root-connected mushroom of poplars. That is supported by finding them always in poplar woods, poplar groves.

13. *Boletus chrysenteron* Fr. (Golden flap mushroom).

It is a chanterelle of small size that occurs only scarcely, rarely in the inundation areas, first of all after a major, lasting rain, in ashen groves beside poplar woods, in the early autumn. I found it then sporadically.

I notice that the discussion of the species enumerated is not full. For describing the entire mushroom flora of the inundation areas I shall need the collective activity of several years; it is one of my aims in the future. This article is intended to be an introduction in the hope that I am contributing with it to the Hungarian Tisza research, as intensive and as wide-ranging as it is possible.

Summary

At last, taking into consideration the conditions that have an influence on the distribution of mushrooms, I have paid due attention to the following, at their appearance in the inundation area:

1. The inundation areas are exposed to a systematically repeated inundation, sometimes more times a year, often for long periods. That makes impossible from the very first the mycelia develop; resp. the mycelia already developed soon perish because of their being closed from oxygen. This also gives a reason why the mushrooms of small size, that have a shorter growing time, can be found in an overwhelming quantity in our inundation areas.

2. The distribution of mushrooms is not promoted by the soil structure, either. The soil of inundation areas is fixed, clayey, of a dense structure, having an influence both on the formation of growing bodies and of mycelia. In the compact soil that is strongly cleft in an arid weather, in the rainless periods the mycelia soon tear, perish. That is getting on particularly in the neighbourhood of Szeged where the number of sunny hours is wellknown high and, at the same time, the precipitation is little.

3. At last, the formation of a rich mushroom flora is not promoted by the undergrowth of the inundation areas, either. For developing the most frequent mycorrhiza connections, there are missing from the deciduous trees the oak, beech, ash-trees, acacia, fir-trees and the lawn grass species. In the inundation areas, there can count from this point of view only the willow and poplar woods.

In addition to all these, in the year of the investigation (1968) the precipitation was smaller than the average, the consequence of which is the local and periodical occurrence of mushrooms.

On the basis of the data mentioned above, I would like to sum up,

according to my general observations, the distribution of mushrooms in the inundation areas, as follows.:

In the inundation areas, the majority is formed by species that were of a short growing time, of small size, and perishing early.

The majority of mushrooms found here is formed by species growing on trees (xylophagous ones). There are dominant, among them, too, the species living in mouldering material, dead logs, pieces of branches.

The least favourable for the development of mushrooms is an area covered with a dense undergrowth. I have found the regions covered densely with *Rubus caesius*, *Ajuga reptans*, *Lysimachia nummularia* to be the poorest one.

Willow and poplar, like two dominant wood types, are showing in the inundation areas, from the point of view of the mushroom flora, an essential difference. The poplars grow mushrooms in a much more varied, quantity, richer in number of species and size. The willow woods are much poorer.

I have found the most variegated and largest species number along the dams of the inundation areas and at the fringes of wooded areas. At these fringes of woods, first of all on the logs, decaying branch pieces, and even in the soil, lying in the shade of the bordering trees, the number of species and specimens was much higher than in the thicket of the woods in the inundation areas. According to the points of the compass, the most varied picture has been shown by the western, north-western sides. These places were much moister, and that alone is explaining why I have found there the majority of the species listed.

References

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