# Indiana Fungi—VI.

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The first paper of this series on the subject of Indiana Fungi,* which was undertaken in 1910, was a mere list of those fungi which appeared to be, for the most part, new to our State. In the five papers previously published, we have recorded 724 species. In the later papers we have gradually added more data concerning each species, in many cases now entirely rewriting descriptions. Where only fragments of descriptions are given, it is to be understood that such fragments are additions to, or differences from, the original.

Investigators, particularly in the field of the so-called Imperfect group, are amazed at the many meager descriptions by which one is expected to identify his specimen. If the host were unknown, it might easily be placed under any one of a dozen species. *Spots* are often described as "epiphyllous" or "hypophyllous" when it is very evident that the writer had in mind "pycnidia," "acervuli" or "conidiophores." It is very evident that spots on living leaves are practically always *amphigenous*, but differing sometimes only in color. The characteristics of spots both on the upper and lower sides of leaves should be described.

Much new, rare or extraordinary interesting material has been made available by Mr. H. M. Hudelson, who is collecting particularly the fleshy and woody forms.

Where the name of the collector is omitted, it is understood to be that of the writer; when the locality of its occurrence is not given, it is to be presumed that it was collected in Monroe County.

## Ascomycetes.

*Hysteriographium gloniopsis* (Ger.) E. & E.

On decorticated *Ulmus americana*, Monroe County, 1907. Indiana University number 3809. The spores of this fungus remain hyaline for a long time.

*Podosphaera biuncinata* Cke. & Pk.

On leaves of *Hamamelis Virginiana*, Stephens Creek, October 17, 1920. 3846.

## Basidiomycetes.

### Ustilaginales.

*Entyloma compositarum* Farl.

On living leaves of *Ambrosia trifida*, Stone Springs, June 30, 1920. 3830.

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* Indiana Fungi-I, 1910, 459 species.
Indiana Fungi-II, 1911, 71 species.
Indiana Fungi-III, 1912, 27 species.
Indiana Fungi-IV, 1915, 99 species.
Indiana Fungi-V, 1920, 68 species.

*Entyloma serotinum* Schroet.

On living leaves of *Mertensia Virginica*, Harrodsburg, May 7, 1921. 3865. At this early date, this fungus had already killed the lower leaves of its host. The similarity of leaf spotting by certain species of Entyloma to those caused by Imperfect Fungi is strikingly noticeable here.

UREDINALES.

*Gymnosporangium germinale* (Schw.) Kern.

On branches of *Juniperus Virginiana*, Weimar Lake, April 24, 1921. 3863. Collected also at Harrodsburg. Found on twigs and branches of all sizes up to an inch or more. Our specimens agree well with the description given by Arthur except that spores are usually constricted and many much longer than given. The average length is fully the extreme recorded by him. We find spores more than 80 microns long.

HYMENOMYCETALES.

*Clavariaceae.*

*Clavaria inequalis* Fr.

In large palm pot, greenhouse, May 17, 1921. Also in September. Plants white, upper half somewhat yellow. Some enlarged slightly on top; others rounded.

HYDNACEAE.

*Hydnum caput-ursi* Fr.

On decayed log (*Nyssa sylvatica*), Bean Blossom Valley, November 12, 1921. Hudelson. 3909.

POLYPORACEAE.

*Boletus chrysenteron* Fr.

Ground, open woods, July 6, 1921. 3877.

*Polyporus fragrans* Pk.

On bark of log (*Ulmus americana*), Bean Blossom, November 12, 1921. Hudelson. Has odor of sweet anise and licorice. 3908.

*Poria undata* (Pers.) Bres.

City Water Works, October 27, 1908. 2192. (See Mycologia, *12*, 89, 1921.)

*Trametes sepium* Berk.

On stake of deciduous wood, Campus of I. U., October 14, 1921. 3384. Common on structural timber.

AGARICACEAE.

*Clitopilus prunulus* Fr.

On ground, Griffey Creek, June 23, 1921. Hudelson. 3873.

*Cortinarius distans* Pk.

On ground, Bean Blossom, June 27, 1921. Hudelson. 3874.

*Lepiota cristata* Fr.

Ground, I. U. Campus, July 6, 1921. Paul E. Harris. 3876.

*Pleurotus spathulatus* (Fr.) Pk.

On ground, Bean Blossom, September 27, 1921. Hudelson. 3882. This species is very similar to P. petaloides but has spores 7½ by 4 to 5 microns, whereas the latter has globose spores, 3 to 4 microns.

*Russula foetentula* Pk.

Griffey Creek, June 20, 1921. Hudelson. 3782. Distinguished by the cinnabar red color at the base of stem.

PHALLINALES.

*Mutinus elegans* (Mont.) E. Fisher.

On ground in woods, Monroe County, June 10, 1921. 3885.

LYCOPERDINALES.

*Bovistella Ohiensis* Ell. & Morg.

On ground, Bean Blossom, June 15, 1921. Hudelson. 3870.

PLECTOBASIDINALES.

*Scleroderma Geaster* Fr.

On a clay bank, Bean Blossom Valley, September 27, 1921. Hudelson. This is an interesting fungus, seeming to prefer a rather raw clay situation. They are easily overlooked, as only the top is visible, this being split sometimes into star-like segments but often in a very irregular manner. They ordinarily split one-fourth to one-third of the distance from the top. They are from two to four inches in diameter. 3596 and 2883. (Bovistella Ohiensis Morg. number 3596 in Indiana Fungi IV, for 1915, should be referred here.)

FUNGI IMPERFECTI.

SPHAEROPSIDALES.

*Phyllosticta circumvallata* Wint.

On somewhat languishing leaves of *Liriodendron tulipifera*. Also on circular spots due to the common catalpa midge. July 22, 1921. 3879. Harris.

*Phyllosticta Podophylli* Wint.

On living leaves of *Podophyllum peltatum*, Cedar Cliff, May 6, 1921. 3867. Huckleberry ravine, May 24, 1921. Anderson. 3868. This fungus is common in Monroe County and varies from the description as follows: Pycnidia, almost wholly epiphyllous, 100 to 150 microns in diameter with a definite pore about 20 microns in diameter. Spores irregularly globose or ovoid, granular, 9 to 12½ by 7 to 10 microns. The arrangement of the pycnidia along the veins is very noticeable.

*Septoria verbascicola* B. & C.

Common in Monroe County, on *Verbascum blattaria*. I. U. Campus, August 7, 1908. 2386.

Spots, 1 to 6 mm. in diameter, white center with broad purplish border, circular, amphigenous; pycnidia mostly epiphyllous, prominent, rupturing the epidermis, dark, pore small, wall thin and easily rupturing about the pore; spores hyaline, long bacilla-like, curved, flexuous or straight, as much as 50 microns long and .5 to 1 micron thick. (The ease with which the pycnidia rupture above may cause it to be placed under the Melanconiales in hasty study.) Since no description of this plant is given in Saccardo,

it is herein described as shown in our local fungi. Professor C. H. Kauffman, of the University of Michigan, has kindly compared specimen number 749 of the exsicatti of Ellis' N. A. F. with the above description and says that it agrees well with it.

MELANCONIALES.

*Cylindrosporium Capsellae* E. & E.

On living leaves of *Lepidium Virginicum*, six miles west of Bloomington, July 25, 1920. 3861.

The measurements of the spores on this new host agree well with those in the description, except that they are only 12 to 30 by 2 to 2½ microns, while in Ellis and Everhart's original description they are given as 35 to 45 by 3. We have two specimens collected on Capsella Bursa-pastoris. The spores in these are slightly longer, measuring 15 to 37 by 2 to 2½. They are variously curved and are 1 or 3-septate, not uniform in thickness and occasionally pointed at one end. Though differing somewhat from the original description, it seems proper to refer this specimen to C. Capsellae E. & E. In addition to the spore difference noted above, the acervuli are hypophyllous as well as epiphyllous.

*Marsonia Thomasiana* Sacc.

On living leaves of *Evonymus atropurpureus*, Showers' Farm, August 26, 1920. 3811.

Spots 1 to 6 mm. broad, usually 1 to 3 mm., amphigenous, subcircular or angular, with reddish margin; acervuli amphigenous, erumpent through the cuticle, 25 to 50 microns and later often extending so as to cover most of the spot and leaving a white, flaky appearance due to the adbundance of spores drying in masses; spores 17 to 30 by 8 to 12 microns, mostly about 20 to 25 by 10, pyriform, usually constricted at the septum; the upper cell twice the width of the lower one, subspherical and occasionally not exactly above it but tilted slightly to one side by the lower cell being bent; conidiophore very short cylindric, about 4 to 7 by 4 to 5 microns.

HYPHOMYCETES.

*Cercospora avicularis* Wint.

Common on living leaves of *Polygonum* species throughout Monroe County. 2805. Collected on the Showers' Farm, August 20, 1920. Spots scattered, amphigenous, 1 to 6 mm., brown in dried specimens, bounded by a narrow elevated reddish-brown line, yellowish outside this line; tufts of conidiophores chiefly epiphyllous; conidiophores short, about 25 by 4 microns, colored at the base; conidia pale yellow (almost hyaline), 3 to 7-septate, curved or straight, 40 to 90 by 3 to 4 microns. Distinguished from C. polygonacea E. & E. by its short conidiophores.

*Cercospora depazeoides* (Desm.) Sacc.

On living leaves of *Sambucus Canadensis*, Showers' Farm, August, 1920. 3810. Our specimen agrees with the European type rather than with C. sambucina E. & K. collected in New York and Kansas. The spots agree with those described for C. depazeoides except

that they are 2 to 6 mm. This covers both the sizes described for C. depazeoides and for C. sambucina (4 to 6 and 2 to 4 respectively). The conidiophores agree also with the European form except that we have a minimum length of 50 microns. While the spores are for the most part 75 by 5 microns, they range from 50 to 115 by 5 to 5½. It seems rather remarkable that our Indiana specimens should agree so well with the European form as compared with those from New York and Kansas situated as we are between the two States. In our judgment C. sambucina E. & K. is not sufficiently different from C. depazeoides to constitute a separate species. The "shot hole" effect of the fungus upon the leaves is very noticeable in our specimens.

*Cercospora granuliformis* Ell. & Mart.

On *Viola cucullata* (V. sororia), Kerr Creek, June 22, 1920. 3821. Varies from the description as follows: conidiophores 3 to 4 microns in thickness; conidia 20 to 62 long, straight or sometimes bent, cylindrical or enlarged near the base, 1 to 5-septate (mostly about 3), hyaline and not brown. Our specimens have many things in common with C. Violae Sacc., C. murina Ell. & Kell. and C. granuliformis Ell. & Holw. These common characters suggest a too close relationship of these species.

*Cercospora Nasturtii* Pass.

On leaves of *Radicula Nasturtium-aquaticum* at a spring one mile southeast of Bloomington, July 24, 1921. 3880. Large areas of this cress were killed by this fungus at this date. It appeared as follows: spots circular, 1 to 10 mm. (eventually spreading over and killing the entire leaf), pallid, with ochraceous border; conidiophores amphigenous, fuscous, light colored at the tips; conidia 40 to 112 by 4 to 6 microns, 3 to 7-septate (many are 4-septate), cylindrical to long tapering, some cells thicker than others, hyaline. Our specimens bear great resemblance to several species and varieties of Cercospora described on various Cruciferae, some of which seem too closely related.

*Cercospora murina* Ell. & Kell.

On *Viola cucullata*, I. U. Campus, July 13, 1916. 3700.

*Cercospora Rubi* Sacc.

On leaves of blackberry, Weimar Lake, October 21, 1920. 3851. Further study of specimen number 3655 reported in 1915 (Indiana Fungi IV) as C. septorioides E. & E. seems to assign it here. As stated there, C Rubi Sacc., C. rubicola Thuem. and C. septorioides E. & E. have many common characteristics, while our specimens differ somewhat from all of them as follows: spots amphigenous, one-third to one cm., orbicular, at times somewhat limited by veins, wood-brown to avellaneous, becoming paler with age, bounded by a purplish-fuscous border; conidiophores densely aggregated, short, 15 to 30 by 3 to 4 microns, wavy above; spores 30 to 100 by 2 to 4 microns, continuous to 7-septate, most of the larger ones slightly curved and 5 or 6-septate.

*Isariopsis laxa* (Ell.) Sacc.

On leaves and pods of beans (*Phaseolus vulgaris*), Clark County, Indiana, August, 1920. 3816.

So far as the writer is able to learn, this is the first time this fungus has been recorded as injuring or growing upon bean bods. During the month of August, 1920, and to some extent during the same month of 1921, a number of gardens were completely ruined by this disease. It appeared first upon the leaves, then attacking the pods, spotting and rotting them. The appearance of the spots upon the pods is entirely unlike that caused by anthracnose. They are usually larger, more superficial at the beginning, and present a blotched appearance around the edge. Further work is being done to determine more definitely the exact nature of and the conditions necessary to cause bean pods to be severely injured by this fungus. This fungus was first noted in America by Ellis under the name of *Graphium laxum Ell.* Bull. Torr. Club, 1881, p. 65.

*Ramularia Plantaginis* Pk.

On living leaves of *Plantago Rugelii*, six miles west of Bloomington, July 25, 1920. 3833 and 3858.

Our specimens have spots 1 mm. to 2 cm. in diameter, brown, with small light colored center. Specimen number 3633 has much smaller spots than 3858. Conidiophores amphigenous, and especially abundant near the outer edges of the spots, wavy in outline, and bearing spores laterally as well as terminally, about 25 microns long. Spores cylindrical, rounded at the upper end, somewhat truncate below, 12 to 45 by 4 to 5 microns, continuous, becoming 1 or even 2 or 3-septate. This fungus corresponds well with the too brief description by Peck in Report 32, 1879. Ramularia Plantaginis Ell. & Mart. is said to have minute spots. The descriptions of these two species, however, seem, in the light of our material, to be near if not identical. From the fact that conidiophores are found in the outer brown part of the spots, it seems better to describe spots as brown with pale center rather than, spots small, pale with broad border. Since Peck's description antedates that of Ell. & Mart., it seems preferable to refer our specimens to R. Plantaginis Pk.

*Sterigmatocystis nigra* V. Tiegh.

On bread, July 14, 1921. 3878.

MYXOMYCETES.

*Tubifera ferruginosa* (Batsch.) Gmelin.

On pieces of rotten wood, I. U. Campus, June 26, 1921. O'Neal. 3875. Tops of sporangia even more pointed than figured by MacBride, and the figure shows them more pointed than warranted by the descriptions.

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