

**SYNOPSIS OF THE
GENUS FOMES,
PP. 210-286**

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C. G. LLOYD

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SYNOPSIS

OF THE

GENUS FOMES

By
C. G. LLOYD.

CINCINNATI, OHIO, . JANUARY, 1915.



REV. H. BOURDOT

who is in Europe to-day the leading authority on resupinate fungi, and has written the best and only exhaustive systematic account of those occurring in France. I am indebted to him for the determination of my Swedish resupinate specimens, and I beg to dedicate this pamphlet in appreciation of the many kindnesses received from him.—C. G. L.

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THE GENUS FOMES.

As defined in Saccardo, the genus *Fomes* embraces the pileate species with pores, which are perennial, forming successive strata of pores each year. In this sense it is a very easily-recognized and natural collection of plants. We would restrict it to this definition. *Fomes* are easily known, being mostly hard, woody species that persist for years on trunks of trees. A few of the perennial, hard species (*Trametes pini* and *Trametes odorata* as usually known) were not included in *Fomes* because the pores were not supposed to be in strata. This is a mistake for the pores are in as distinct strata as any species of *Fomes*. We have included them as *Fomes* species in the addendum.

There is another section of polyporoids that might be sought in *Fomes*, but which is not included. These are the perennial, resupinate species with strata of pores. As these also would be included in *Poria*, taking the simplest definition of this genus, viz., "resupinate *Polyporus*," we think it better to so classify them. A plant that is usually a *Poria* will rarely form a pileus. We know two such in Sweden, but we include them in *Poria*, as we feel that species should be classified according to their usual form.

In temperate regions there is usually no trouble whatever in distinguishing a *Fomes* from a *Polyporus*, the *Fomes* being the hard, subwoody, perennial species, the *Polyporus* the soft, fleshy, annual species, but in the tropics some species of *Polyporus*, as *Polyporus gilvus*, sometimes take perennial forms. Also there are species of *Polyporus* in the temperate regions, as *Polyporus dryadeus*, which when old become hardened and indurated, but that does not make them *Fomes*.

Although *Fomes* is usually such a simple and easily-recognized genus, there are in our "literature" perhaps more species that are wrongly classed as *Fomes* than of any other genus. This is due to careless work on the part of those who first arranged the species, and largely to Cooke, who made the first general compilation, which was followed by Saccardo. I doubt if a single one of the first sixty-one species found in Saccardo belongs in the genus according to the definition that Saccardo gives, but this was fully considered in our pamphlet on the *Stipitate* species.

Fomes are mostly sessile plants, for naturally plants that persist for several years must have a firm attachment to the host. Some species, such as *Fomes applanatus*, normally sessile, may develop stipe-like bases growing under unusual conditions. A few species (cfr. Section 75) in the tropics have a natural tendency to form a stipe. The tissue or context, as it is called, of most *Fomes* is hard and subwoody, a few species, such as *Fomes Laricis*, *Fomes perlevis*, *Fomes floccosus* have soft, friable or spongy tissue. Where measurements are given in this pamphlet as the size of a species, it is of course our intention to convey only a general idea.

In shape, *Fomes* are divided into those with unguulate or hoof shapes, and applanate or relatively thin shapes. The general shape is usually characteristic of the species. Thus, *Fomes applanatus*, as its name implies, is generally flat and relatively thin, but sometimes unguulate specimens occur. I think the position of growth in relation to the host has something to do with it. Thus in France, where I noted *Fomes fomentarius* growing abundantly on the standing beech trees, the shape was unguulate, but when it developed on a fallen trunk I found it more thin and applanate. As a usual thing, *Fomes* grow on standing trees, and hence are usually unguulate.

The general color of the context is the most constant feature of the species of *Fomes*, and has been used as a basis for grouping the species in most works. The color may vary a few shades in the same species, but usually the context color is the best single character that a species has. In designating the color, we have

matched it in Ridgway's Standard and used his terms. Wherever a definite color term is used in this work, as "Sudan Brown," the term is taken from Ridgway. Due allowance, however, must be made for slight difference in color of specimens, which may vary through two or three shades of Ridgway, and particularly for my personal error, for I am not expert at matching colors. The use of definite color terms will be nearer the truth, even if not strictly accurate, than the prevailing custom of employing such terms as "brown," "ferruginous," etc. The larger part of the species of *Fomes* have context color of some shade of brown. For convenience, we have endeavored to arrange them into light brown and dark brown subsections, but too much dependence must not be placed on it, for I doubt if the line of division is definite enough to be practical.

The use of the microscope in the determinations of species and relations of species to each other is a recent introduction. The older mycologists judged species only on their general resemblance, and they were often badly mistaken. The microscope shows some marked and constant characters, as the color and shape of the spores, the presence or absence of setae on the hymenium, and in a few instances special structural characters, as the large, colored, bristle-like hyphae imbedded in the tissue of *Fomes pachyphloeus* (see page 261, figure 600).

The spores are mostly hyaline, but many species, usually with brown tissue, have colored spores, and those of the section *Ganodermus* have the peculiar, truncate spores of this section. Species with colored spores nearly always retain their spores in abundance in the dried specimen. It is often difficult to find spores in dried specimens of species with hyaline spores, and errors are liable to be made in examining them. The spore records of this pamphlet are as I have found them, excepting in a few instances. The size of the spores as recorded is not intended as absolute, for spores vary in size on the same slide. I usually pick out a spore that I think is perfect and of the largest size and measure it.

This pamphlet was written at Kew, and when I was unable to find spores, Miss Wakefield, who is more expert with the microscope than I, kindly hunted for them and sometimes found them, and such are recorded on her observations and marked (W.). In a few cases, marked (B.), the measurements are taken from Bresadola's record.

The presence or absence of colored setae on the hymenium is a strong, though I think not invariable, character of species, but, like all classes of fungi, it is restricted to those with brown context. As a usual thing setae are easily found in those species that have setae, but cases have been observed that throw doubt on its being an invariable character. There are a few species, such as *Fomes connatus*, that have large hyaline "cystidia" on the hymenium.

Basidia are rarely if ever found in the dried specimen, but some species have a sub-hymenial layer that persists and may be mistaken for spores. This latter is shown in figure 600, page 261. In many species, however, no indication of this structure can be found. The spores as found in *Fomes* specimens are supposed to be basidial spores, and in most cases no doubt are. Conidial spores, or spores borne direct on the hyphae, are known in some species, and I suspect occur more frequently than supposed, for it is difficult for me to believe that the masses of spores found lining the tubes of some colored spore species are of basidial origin.

The *Fomes* of Europe and the United States are well known, and probably all species have been named. Also I feel sure, from the elaborate collections in the New York Botanical Gardens from tropical America, very few additional will ever be found from this region. The remainder of the world, particularly Australia, Africa, Japan is but scantily represented in the museums, and many will yet be added from these little-worked regions. Still I think all the common species of the world are named.

In preparing this pamphlet I have worked over the specimens in the principal museums of Europe and this country, including the fine collection in the New York Botanical Gardens, where is preserved the best collection of tropical American material in existence. In our own museum we have as many specimens in numbers, if not in variety, as are found in the other museums we have visited. Where specimens are cited, we refer to those in our museum. We extend our thanks to those who have aided us with specimens, and for the courtesies we have received in the various museums. This pamphlet was written at Kew, where the most of the historical specimens are preserved.

To Rev. Bresadola I am indebted for his determinations and opinions of a number of doubtful specimens, and to Miss E. M. Wakefield, at Kew, for the sketches that are used, as well as for various other helps in this work.

DIVISIONS OF THE GENUS FOMES.

We have divided the species into seven general divisions and sections as follows:

- 1st General Division, Pallidus. Context and pores pale, white, isabelline or pale yellowish, pale rose or cinnamon. Spores hyaline.
- | | | |
|-------------|---|---------|
| Section 55. | Large. Context white, soft, friable..... | p. 213. |
| " 56. | Large. Context white, hard..... | p. 214. |
| " 57. | Small. Context white or isabelline..... | p. 218. |
| " 58. | Context pale yellow..... | p. 219. |
| " 59. | Context color isabelline. Context hard..... | p. 220. |
| " 60. | Context isabelline. Soft, punky..... | p. 220. |
| " 61. | Context pinkish cinnamon..... | p. 220. |
| " 62. | Context cinnamon..... | p. 223. |
| " 63. | Context pink or rose color..... | p. 223. |
- 2d General Division, Depallens. (As this section.)
- | | | |
|-------------|---|---------|
| Section 64. | Pores darker than the context, usually fading out in old specimens..... | p. 228. |
|-------------|---|---------|
- 3d General Division, Aurantiacus. Context orange rufous.
- | | | |
|-------------|--|---------|
| Section 65. | Spores hyaline (or very pale colored)..... | p. 231. |
| " 66. | Spores colored..... | p. 232. |
- 4th General Division, Bicoloris. (As this section.)
- | | | |
|-------------|--|---------|
| Section 67. | Section with bicolored tissue, the pores a dark brown, the flesh a light buff..... | p. 232. |
|-------------|--|---------|
- 5th General Division, Funalis. (As this section.)
- | | | |
|-------------|---|---------|
| Section 68. | Pileus with a thick pad of dense, brown hairs, analogous to section Funalis in Polystictus..... | p. 233. |
|-------------|---|---------|
- 6th General Division, Fuscus. Context some shade of brown. Spores not truncate.
- | | | |
|-------------|-----------------------------------|---------|
| Section 69. | Setæ, none. Spores hyaline..... | p. 234. |
| " 70. | Setæ present. Spores hyaline..... | p. 241. |
| " 71. | Setæ, none. Spores colored..... | p. 248. |
| " 72. | Setæ present. Spores colored..... | p. 257. |
- 7th General Division, Ganodermus. Context brown. Spores truncate.
- | | | |
|-------------|--|---------|
| Section 73. | Fomes-Ganodermus. Pores with thin walls..... | p. 263. |
| " 74. | Ponderosus-Fomes-Ganodermus. Pores with thick walls..... | p. 269. |
| " 75. | Stipitate Fomes of the Section Ganodermus..... | p. 270. |

FIRST GENERAL DIVISION—PALLIDUS.

Context and pores pale, white, isabelline or pale yellowish, pale rose or cinnamon. Spores hyaline.

SECTION 55. LARGE. CONTEXT WHITE, SOFT, FRIABLE.

FOMES LARICIS.—Pileus unguulate, when young with a thin, smooth crust, which soon becomes broken up into a rough surface. Flesh white, soft, friable, bitter to the taste. Pores minute, white with yellowish mouths. Spores (W.) $2\frac{1}{2} \times 4$, elliptical, hyaline, apiculate, guttulate.

PALLIDUS. CONTEXT PALE.

This differs from all other European species of *Fomes* in its soft flesh, hence is still found in Saccardo as a *Polyporus*. Notwithstanding its soft context, it is a typical *Fomes*, permanent, of slow growth, and with many annual pore layers, which, however, become indistinct. The plant occurs in Europe only on the Larch and only known from the Alpine regions. For years it has been employed in medicine as a laxative, and the crude drug is mostly exported from Trieste. In the United States it occurs on other acerose trees, and is rather rare. It is only reported from the North and Northwest, but I have a collection from the Northeast.

ILLUSTRATIONS.—Bulliard, 296, good; Jacquin, Vol. 1 t. 21, crude; other figures are largely in medical works.

SPECIMENS.—P. Hariot, from the Alps; Paul Dumée, Switzerland; L. W. Riddle, Massachusetts; C. V. Piper, Washington; Jas. L. Weir, Idaho.

Compare *albogriseus*, *Aegerita officinalis*, *purgans*.



Fig. 570.

Fomes hornodermus

SECTION 56. LARGE. CONTEXT WHITE, HARD.

FOMES HORNODERMUS (Fig. 570).—Pileus mostly appanate, $1\frac{1}{2} \times 2$ inches thick, rarely unguulate, with a very hard, black, smooth, usually sulcate crust. Context and pore tissue white when freshly cut, but on exposure to air turn fuliginous in spots, very hard, ligneous. Pores minute, hard, in layers.

CONTEXT WHITE.

This species is hard and heavy and the tissue is very finely grained. It is tropical, frequent in West Indies and other American tropics. Also occurs in Africa, Java, and the Philippines, though the eastern form differs slightly from the American form. The eastern form has more minute pores and harder context. Also, it takes unguulate forms. I have a specimen from New Zealand over a foot in diameter, and with more than 25 annual layers. At Kew is a large, unguulate specimen from Madagascar, with about fifty annual pore layers. I have a Madagascar collection with paler crust than usual.

SPECIMENS.—New Zealand, W. A. Scarfe (very large), R. S. Robinson (?); Mauritius, C. A. O'Connor; Madagascar, Henri Perrier de la Bathie; Brazil, Rev. Rick.
Compare *hippopus*, *ligneus*, *sulcatus*.

FOMES MARTIUS.—Pileus applanate, thin, 1-1½ cm. thick, with a hard, smooth, reddish brown or black crust. Context white, slightly punky, often tinged with orange shade directly under the crust. Pores very minute, hard, slightly isabelline.

This species is similar to *Fomes hornodermus*, but thinner, and context not so hard. The crust also varies from shades of reddish brown to black, and is often zonate. It was originally from Brazil, but there are a number of collections at New York (called *Fomes subferreus* in part) from Central America and West Indies. I have a collection from Australia.

SPECIMENS.—W. W. Froggatt, Australia.

FOMES OBESUS.—Pileus globose-ungulate, with mat surface, and thin, indistinct crust. Context and pores white, soft, ligneous, with many narrow pore layers 2 mm. wide.

This is based on a single specimen from Pacific Islands (Apataki) on a cocconut tree. Type at Paris. I do not know if the narrow zones represent pore layers or zones of the context.

FOMES ROSEIPORUS.—Pileus applanate, with a thin, smooth, brown crust. Context white, with a faint pinkish tint. Pores minute, pale rose.

This was named from Java. The type is not at Paris museum. The above description is from a specimen at Kew recently collected in Java by v. Hoehnel.

FOMES SUBRESINOSUS (Fig. 571).—Pileus applanate, with a black, smooth, shiny crust. Context white, contrasting strongly with the black crust. Pores minute, slightly darker than the context. Spores globose, 4 mic. hyaline.

This is a frequent species in the East, Africa, Ceylon, India, Philippines, etc., and has been known for years. I found it named *Fomes nigro-laccatus* in the museums at Berlin and Paris, which was an error said to be based on determinations of Cooke. The records of *nigro-laccatus*, Patouillard p. 103, and Bresadola, *Kamerunenses*, p.