Polyporaceae of Eastern Africa: II. The genus Amauroderma Murrill

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With plates VII—X.

Introduction:

This is the third paper to report results of work which has been carried out in the Department of Botany, University College Nairobi, on Polyporaceae of Eastern Africa. The first paper (Otieno: 1966) was concerned with the genus *Favolus* Fr., while the second paper (In Press) has produced a check-list of Polyporaceae which have been collected from our area. The genus *Amauroderma* appears to be fairly widespread in Eastern Africa as the present paper shows. It is interesting, however, to note that, of the eleven species herein described, seven are from Uganda, three from Kenya and one from Rhodesia. The twelfth species from Zambia has not been seen by the writer and it is only mentioned in passing. Recently, one species has been collected by the writer from Tanzania near Dar-es-Salaam, another from the coast of Kenya near Mombasa. These will be reported separately in a subsequent paper.

It is evident, therefore, that the discontinuity in the distribution of *Amauroderma* in eastern Africa could be attributed to scanty collecting that has been done; and it is our hope that this preliminary paper will stimulate further work on *Amauroderma* so that our knowledge of the genus becomes more thorough than it is at present.

Amauroderma Murill. Bulletin Torrey Botanical Club *32:* 366, 1905.

Sporophore annual, solitary, usually terrestrial; some species epixylous, and attached to the substratum by a smooth or rough central stipe. Pileus orbicular, sometimes convex due to presence of an *umbo* on the abhymenial surface, and dull coloured. Hymenial pores cylindrical but may be compressed or pseudolamellate. Hyphal system dimitic. Basidia bearing 4 spores on short sterigmata. Spores globose to ovoid, ganodermous (sensu Cunningham: 1965), smooth, or faintly echinulate, and coloured.

Type species: *Fomes regulicolor* (Berk.) Cke.

Key to our species of *Amauroderma*

1. Spores ovoid . . . . . 2.
   2. Spores verrucose . . . . . 3.
      3. Spores with larger echinulations, 6.0 μ—10.0 μ . . . *A. rugosum*
      3. Spores minutely echinulate . . . . . 4.
         4. Spores 8.0 μ × 14.0 μ . . . . . *A. rubeolum*
         4. Spores 15—18 μ × 12—13 μ . . . . . *A. salebrosum*
         4. Spores 11—12.5 μ × 10—11 μ . . . *A. infundibuliforme*
   2. Spores smooth . . . . . 5.
      5. Spores 8.5 μ × 14.8 μ . . . . . *A. fuscatum*
      5. Spores 11—12 μ × 7—7.2 . . . . . *A. conjunctum*
1. Spores globose . . . . . 6.
   6. Spores smooth, 8.0—9.0 μ . . . . . *A. rude*
   6. Spores verrucose . . . . . 7.
      7. Spores 8.0—9.5 μ . . . . . *A. expallens*
      7. Spores 7.0—9.0 μ . . . . . *A. schomburgkii*
      7. Spores with larger echinulations, 5.0—6.0 μ . . *A. sericatus*

1. *Amauroderma rude* (Berk.) Torrend in Broteria, Ser. Bot. XVIII, p. 127 (1920). Pl. 3. Fig. 3. & 4, Pl. 4. Fig. 1.

Sporophore laterally stipitate or mesopodal; with a thick stipe 90 mm. long and 10—12 mm wide at the base, but tapering slightly towards the pileus. Pileus zonate, moderately thin, encrusted at the *umbo;* sepia coloured. The hymenial surface creamy white with very minute pores and short tubes. Spores globose, smooth, hyaline, 8.0 μ — 10 μ in diameter.

Distribution: Karura forest, Nairobi, Kenya.

Several specimens of *A. rude* were collected by the writer from one locality — i. e., Karura forest, — where they were found growing scattered near a river bank. We suspect that it is more widely distributed than our present records show. Further collections might reveal its occurrence, not only in Kenya, but also in other countries of Eastern Africa.

2. *Amauroderma conjunctum* (Lloyd) Torrend l. c. p. 133. Pl. 4. Fig. 2.

Sporophore laterally stipitate. The stipe woody, smooth, cylindrical, 50—65 mm. long and 8—10 mm. in diameter. Pileus concentrically zoned above, smooth, but cracking in the dried herbarium specimens; warm buff on the abhymenial surface and sepia coloured in the hymenium. Spores ovoid, smooth, 11—12 μ × 7—7.2 μ.

Distribution: Sesse Islands on Lake Victoria, Uganda. Lake area, Kenya.

Material examined: Specimen No. 506 at Kew collected by T. D. Maitland in 1920.

From its present distribution, it appears as if *A. conjunctum* is restricted to warmer, fairly lowlying areas around Lake Victoria. Similar

ecological conditions prevail on the coastal areas of Eastern Africa where this species might probably be found if intensive collecting were to be carried out.

3. *Amauroderma expallens* (Bres.) Furtado in litt. Pl. 4. Fig. 3.

Syn.: *Ganoderma expallens* Bres. in Mycologia XVII. p. 72 (1925).

Sporophore centrally stipitate, with a rough, cylindric, woody stipe having a bulbous base. The stipe, longitudinally ridged, and forking as it joins the pileus, 30—70 mm. long and 4—6 mm. in diameter. Pileus 25—60 mm. in diameter, zonate on the abhymenial surface, smooth, pale brown. The hymenium with minute, irregularly shaped spores. Spores very minutely echinulate, mostly globose 8.0—9.5 μ.

Distribution: 1. Uganda. Sesse Islands on Lake Victoria.
2. Kampala.
3. Kenya from an unknown locality.

The writer examined two collections by T. D. Maitland and W. Small which are deposited at Kew. It is probable that this species occurs around Lake Victoria where conditions are similar.

4. **Amauroderma fuscatum** (Lloyd) Otieno comb. nov. Pl. 3. Fig. 1 & 2. Pl. 4. Fig. 4 & 6.

Syn.: *Polyporus fuscatus* Lloyd. Mycol. Writ. VI. p. 942 (1920) non Fr.

Sporophore centrally stipitate, with a woody, cylindrical, rough stipe 40—50 mm. long and 6—9 mm. in diameter. The stipe expands into a funelliform, hard and leathery pileus 60—70 mm. in diameter. Abhymenial surface dresden brown, with a smooth, fragile crust. Hymenial surface warm sepia, with large pores which appear pseudo-lamellate in places when specimens are old.

Spores smooth, hyaline, ovoid, 8.5 μ × 14.8 μ.

Distribution: 1. Umtali, Rhodesia.
2. Uganda from an unspecified locality.
3. Kenya on Chylu Hills where specimens were collected by N. C. Otieno.

Besides the speyimens collected from Uganda by T. D. Maitland in 1919 and deposited in Kew, the writer has examined his own collections from Chyulu Hills in Kenya. *A. fuscatum* has also been collected from Rhodesia indicating that the species should be widespread in East and Central Africa. Present discontinuity in its range is probably due to insufficient collecting in east and Central Africa.

5. *Amauroderma infundibuliforme* Wakefield Kew Bull. 1917. p. 309. Pl. 2. Fig. 1 & 2. Pl. 4. Fig. 5.

Sporophore centrally stipitate, with a robust, hard, woody, smooth the infundibuliform pileus. Pileus large, thick, woody, infundibuliform,

strongly wrinkled from the deep centre towards the edges; mummy brown on the abhymenial surface and cinnamon brown in the hymenium. Hymenial pores very minute. Spores globose, minutely echinulate, 11—12.5 μ × 10—11 μ.

Distribution: Bupenge Forest, Uganda.

The writer was able to examine the collection of T. D. Maitland deposited at Kew. As with other species, we suspect that this species should be found in other areas of Eastern Africa whose ecology is similar to that of Bupenge forest.

6. *Amauroderma schomburgkii* (Mont. et Berk.) Torrend in Broteria. Ser. Bot. XVIII. p. 127 (1920). Pl. 1. Fig. 1 & 2. Pl. 4. Fig. 10.

Sporophore mesopodal or pleuropodal, with a dull slender stipe 30 mm. long and 2—9 mm. in diameter. Pileus 35—40 mm. in diameter, thin, with zonate, smooth abhymenial surface. Hymenial pores minute, rough, cylindrical and concolorous.

Spores globose, hyaline, 7.0—9.0 μ in diameter.

Distribution: Mpanga Forest, Uganda, where it was collected by Mrs. H. E. Brown.

The many forests in Uganda should yield more specimes of this species than have hitherto been found. Our specimen closely resembles the ones described by Lloyd (1912) in structure of the sporophore and in morphological features.

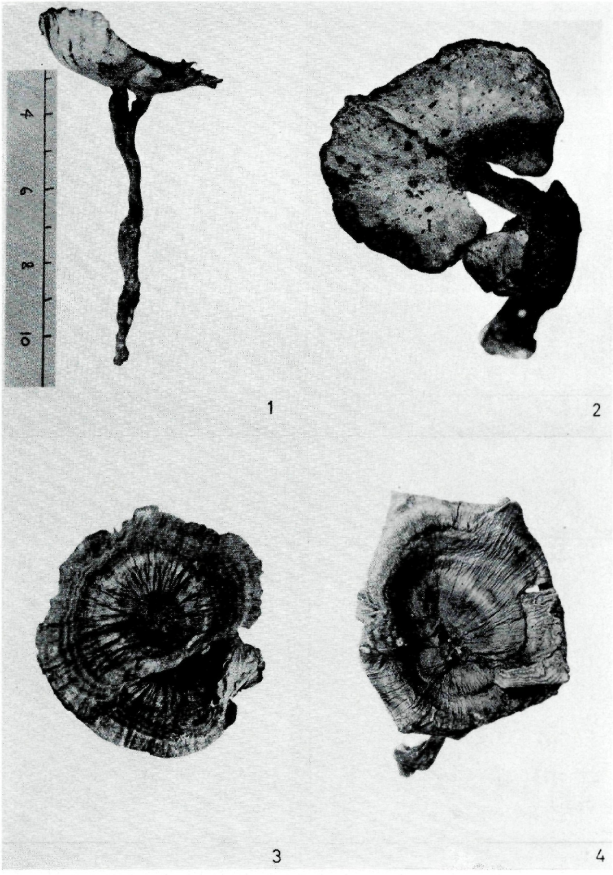
7. **Amauroderma sericatum** (Lloyd) Otieno comb. nov. Pl. 4. Fig. 11. Syn.: *Polyporus sericatus* Lloyd Mycol. Writ. III. p. 120 (1912).

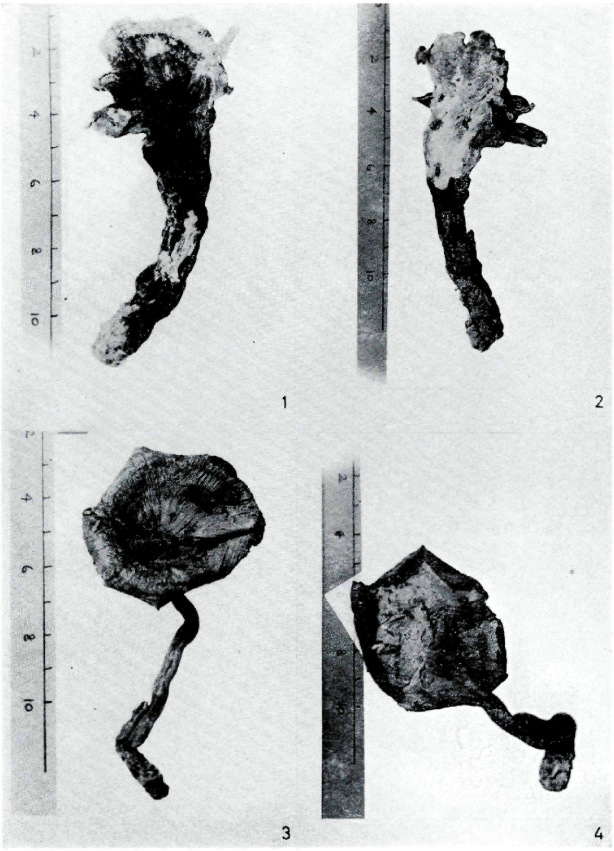
Sporophore centrally stipitate or mesopodal, with a bifurcate stipe 15—20 mm. long and 3—5 mm. in diameter, and having a dull, velvety surface. The stipe either branching or joined in parts before combining to form an "imbricate" pileus i. e., two or more overlapping pilei. Pileus moderately thin, woody, coriaceous, fragile and having shiny, shallow funelliform, snuff brown, abhymenial surface which is concentrically zoned and wrinkled towards the edges. Hymenial pores minute, deep, warm sepia in colour. Spores globose, minutely echinulate, 5.0—6.0 μ in diameter.

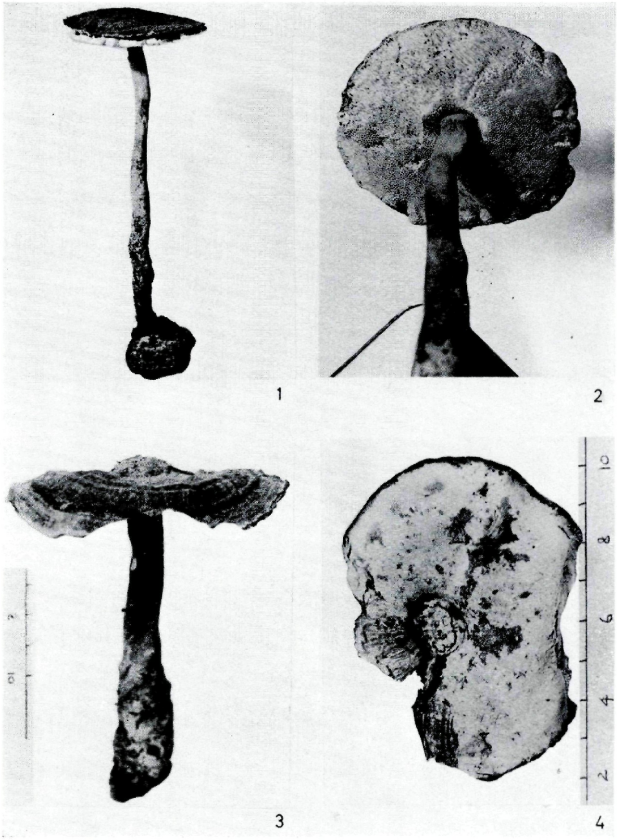
Distribution: Kyagwe forest, Uganda Botanic Gardens, Entebbe Uganda.

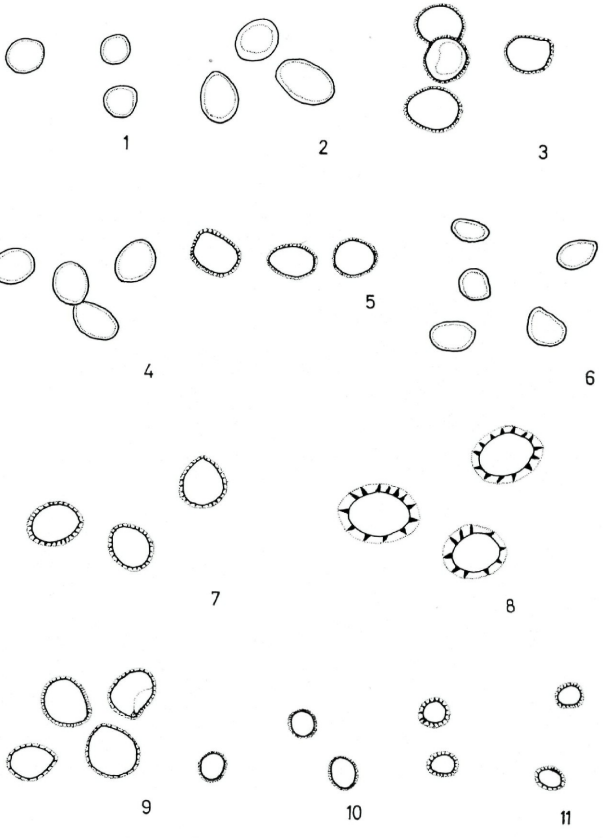
8. *Amauroderma rugosum* (Blume et Nees) Torrend l. c. p. 140. Pl. 4. Fig. 8.

Sporophore centrally stipitate, with a smooth, woody, cylindrical stipe 110—120 mm. long and 6—10 mm. in diameter. Pileus wrinkled towards the edge, concentrically zoned, and with a dull abhymenial sur-









face. Hymenium sepia coloured, with minute, thin-walled pores. Spores globose, echinulate, 6—10 μ in diameter.

Distribution: Umtali, Rhodesia — collected by J. C. Hopkins. Congo (Kinshasa and Brazzaville).

9. **Amauroderma salebrosum** (Lloyd) Otieno comb. nov. Pl. 1. Fig. 3 & 4. Pl. 2. Fig. 3 & 4.

Syn.: *Polyporus salebrosus* Lloyd. Mycol. Writ. IV. p. 2 (1912).

Sporophore centrally stipitate, with a hard, woody, smooth, cylindrical stipe 150—170 mm. long and 6—10 mm. in diameter. Pileus concentrically zoned, radially rugulose and antique brown on the abhymenial surface, buth with dresden brown hymenium. Spores ovoid, minutely echinulate, 15—18 μ × 12—13 μ.

Distribution: Sesse Islands on Lake Victoria — Uganda Kampala — Uganda.

The two specimens were collected from Uganda by T. D. Maitland and W. Small, respectively and are deposited in the Kew Herbarium. It appears as if the Sesse Islands deserve more exploration for additional species of *Amauroderma* from what present records show.

10. **Amauroderma rubeolum** (Bres.) Otieno comb. nov. Pl. 4. Fig. 7.

Syn.: *Ganoderma rubeolum* Bres. in Mycologia XVII. p. 73 (1925).

Sporophore centrally stipitate, with a cylindrical, smooth stipe, flattened in places, showing incipient branching, 130—140 mm. long and 5—8 mm. in diameter. Pileus large, thick, woody, concentrically zoned, umbonate, antique brown abhymenial surface and buckthorn brown hymenium. Hymenial pores minute. Spores smooth, ovoid, 8.0 μ —14.0 μ.

Distribution: Uganda from unspecified locality.

Discussion

Cunnigham (1965) states that the genus *Amauroderma* is comprised of about 18 species distributed in tropical and subtropical regions. He reported two species from New Zealand — *A. rude* and *A. rugosum* — both of which have been found in our region. *A. rude* is herein reported from Kenya and *A. rugosum* is reported from Rhodesia. Lloyd (1912) also reported *A. rugosum* from Ceylon, *A. schomburgkii* from British Guiana and Brazil, and *A. sericatum* from Old Calabar-Africa.

Ten out of the eighteen possible species are described in this paper as occurring in East and Central Africa. One further species, viz. *A. argenteofulvum*, which the writer has not seen, has been reported from Zambia. This pantropical genus thus appears to be widely distributed

within its range so that further collecting should reveal more species as well as the ecological zones where the species might be found.

Lloyd (1912) used spore characters to separate his species. Our key has also separated east African species according to whether the spores are smooth or rough, or whether they are globose or ovoid. These microscopic structures should, however, be combined with the macroscopic structures if species are to be separated successfully. We consider the occurrence of an umbo on the pileus, the funnelliform nature of some pilei, the concentric zonation of the abhymenial surface and the possession of a bulbous base on the stipe as important diagnostic characters for species which must be taken into account by any student of the genus.

Summary

Ten species of *Amauroderma* are reported from East and Central Africa in this paper viz. *A. rude, A. conjunctum, A. expallens, A. sericatus, A. schomburgkii, A. salebrosum, A. fuscatum, A. infundibuliforme, A. rubeolum* and *A. rugosum.*

Note

In the list of illustrations, several specimens described from Kew collections do not appear in the photographs since there was no time for photography to be done. Spores of all specimens, however, were drawn using camera lucida and are illustrated in Plate 4.

Literature cited.

1. Cunningham, G. H. 1965. Polyporaceae of New Zealand. N. Z. Dep. sci. Industr. Res. Bull. 164.
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Plate VII: Photographs of *Amauroderma* showing. Fig. 1 & 2: *A. schomburgkii*, Fig. 3 & 4: *A. salebrosum.*

Plate VIII: Photographs of *Amauroderma* showing, Fig. 1 & 2: *A. infundibuliforme*, Fig. 3 & 4: *A. salebrosum.*

Plate IX: Photographs of *Amauroderma* showing. Fig. 1 & 2: *A. fuscatum*, Fig. 3 & 4: *A. rude.*

Plate X: Drawings of spores of species of *Amauroderma:* Figs. 1: *A. rude.* — 2: *A. conjunctum.* — 3: *A. expallens.* — 4 & 6: *A. fuscatum.* — 5: *A. infundibuliforme.* — 7: *A. rubeolum.* — 8: *A. rugosum.* — 9: *A. salebrosum.* — 10: *A. schomburgkii.* — 11: *A. sericatus.*