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**Autor:** Guzmán, Gastón / Torres, Miguel F. / Logemann, Heidi  
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# MYCOLOGIA HELVETICA

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## FUNGI FROM GUATEMALA, I. A NEW SPECIES OF MORCHELLA

Gastón Guzmán \*)

INIREB

Apartado Postal 63

Xalapa, Veracruz 91000

MEXICO

Miguel F. Torres, Heidi Logemann,

Jorge Argueta and Ivonne Sommerkamp

Facultad de CC. QQ y Farmacia

Universidad de San Carlos de Guatemala

Edificio F, Ciudad Universitaria, Zona 12;

Guatemala, GUATEMALA

\*) Supported by CONACyT, Dirección Adjunta de Desarrollo Científico at Mexico City.

**SUMMARY.** Morchella guatemalensis Guzmán, Torres & Logemann is described as a new species and edible fungus from a forest of Quercus and Cupressus, in the Department of Chimaltenango, in Guatemala. It is differentiated by its orangish colour in the hymenophore and the white colour of the stipe, as well as rubescent colour which is most conspicuous in the stipe or in old specimens.

**RESUMEN.** Se describe una nueva especie de hongo comestible de Guatemala, Morchella guatemalensis Guzmán, Torres & Logemann. Fue colectada en un bosque de Quercus y Cupressus en el Departamento de Chimaltenango. Se diferencia esta especie por su color anaranjado pálido en el himenóforo y blanquecino en el estípite, así como por mancharse de color café vináceo en todas las partes, principalmente en el estípite o en los especímenes viejos.

## INTRODUCTION

Despite the high popularity enjoyed by edible mushrooms among the people, especially the Indians, the fungi of Guatemala are not well known. It is very interesting to see in the Highland towns of Guatemala many different species of mushrooms, e.g. Amanita caesarea (Scop. ex Fr.) Grev., Lactarius indigo Schw. ex Fr., and Cantharellus cibarius Fr., for sale in the markets, as reported Argueta (1983).

Sharp (1948) was probably among the first to study the fungi from Guatemala. He was surprised to find in the Highlands of Guatemala and Mexico several species of fungi which also occur in the Eastern United States. However, he did not report any Morchella.

Morchella does not appear to be common in Guatemala, or in Central and South America. It is surprising to see that Dennis (1970), who paid special attention to the Ascomycetes of Venezuela and adjacent countries, did not report any species of Morchella. Gamundi (1975) reported only one species from Tierra de Fuego, Argentina. Nevertheless Guzmán (1980) has reported 6 species of Morchella from Mexico, where they are more or less common in the Quercus forests and very appreciated by farmers and Indians.

In the present paper a new species of Morchella is described, based on several specimens collected at two different times from the same locality near Guatemala City in December 1983, but observed some time ago in that locality by Torres. This is the first species of Morchella known from Guatemala. Argueta (1983) and Sommerkamp (1984) did not report any. Guzmán reviewed all the available literature on Morchella and did not find any species with the features of the Guatemalan specimens described below.

This is the first contribution from the authors on their continuing study of the mycoflora of Guatemala.

## DESCRIPTION OF THE SPECIES

**Morchella guatemalensis** Guzmán, Torres et Logemann, sp. nov. Figures 1-3 and 4-5.

Apothecium 55-90 mm altum. Hymenophorum subcylindraceum vel subcylindraceo-conicum, luteum vel mellinum juventute, vinaceum vel rufo-brunneum vetutate vel laeso, alveolis marginis irregularibus praecipue verticalis. Stipes 20-40 x 10-12 mm, cylindraceus excavatus, basi leviter dilatatus, levigatus vel sulculis, albus deinde rufo-brunneus. Caro suaveolenti et sapido. Asci 280-420 x 18-23  $\mu\text{m}$ , inamyloidei, sporis (17-) 18-22 x 11-13  $\mu\text{m}$ , hyalinis, inamyloideis, late ellipsoideis. Paraphyses simplices, septatae, cylindraceae, 6-12  $\mu\text{m}$  diam., necque crassatae necque tortae. Gregarius solitariusve ad terram in silvis Quercorum Cupessorumque, Guatemala prope Chimaltenango, El Tejar. Leg. Guzmán G-41-a (Holotypus herbarium Universidad de San Carlos de Guatemala, Isotypus XAL).

Ascocarp 55-90 mm high. Hymenophore subcylindric or subcylindric-conic, 15-35 mm in diameter, yellowish orange or honey-colour to reddish vinaceous or dark vinaceous brown when damaged or throughout when old, mainly in the ribs. The surface is formed of large, irregular alveoli extended mainly vertically by vertical and transversal ribs; the vertical ones more conspicuous. Stipe 20-40 x 10-12 mm, cylindric but wider at the base or subbulbous, smooth, but villose under the lens, with some furrows or subvenations, mainly at the base, hollow, whitish to yellowish, stained reddish viaceous in irregular large spots or becoming completely reddish brown or purplish brown in old specimens. Odour weak, flavour pleasant. Spore print pale orange.

Spores (17-) 18-22 x 11-13  $\mu\text{m}$ , broadly ellipsoidal or subglobose, hyaline in KOH, brownish iodine in Melzer's solution, thin walled, smooth. Asci 280-420 x 18-23  $\mu\text{m}$ , with 8 spores, hyaline in KOH, brownish iodine in Melzer's solution with a regular or irregular arrangement of the spores, more frequently spores in a ball at the ascus apex. Paraphyses cylindrical to slightly enlarged upwards, hyaline in KOH, multiseptate, not branched, 6-12  $\mu\text{m}$  broad; the basal cells are 15-35  $\mu\text{m}$  long; the apex cells are 50-70 (-120)  $\mu\text{m}$  long.

Habitat: Solitary or gregarious on soil, among weeds and grasses in an open disturbed forest of Quercus and Cupressus which are incrustated with epiphytes such as Tillandsia usneoides.

Material studied: Guatemala, Department of Chimaltenango, El Tejar, December 11, 1983, leg. G. Guzmán G-41-A (Type: Herb. Univ. San Carlos, Guatemala; Isotype: XAL, Mexico); October 19, 1984, leg. M. Torres (Herb. Univ. San Carlos, Guatemala, and XAL).

## DISCUSSION

Morchella guatemalensis is similar to M. costata Vent. because of the longitudinal ribs, according to Marchand (1971), Boudier (1905 - 1910) and Guzmán (1980), but the colour of the fruit body in the fertile part, and the lack of the rubescent feature differentiates it from that species. The spores of M. costata are 20-22 x 12-13  $\mu\text{m}$  or 21-25 x 12.5-15  $\mu\text{m}$ , and the asci 350-400 x 20-25  $\mu\text{m}$ , according to Marchand and Boudier. The species here described is also similar to M. esculenta var. rotunda Pers., following the concept of Breitenbach and Kränzlin (1981), in the honey colour of the hymenophore, but differs in its longitudinal ribs; this species is not rubescent. The spores and asci are very similar in both species, but the paraphyses of M. esculenta var. rotunda are more branched and have some globose cells.

M. guatemalensis is also close to M. elata (Bull. ex Fr.) Quélet but in that species the lateral ribs are not as high as the longitudinal ribs; the microscopic features are very similar, except the size of the spores in M. elata: (19.2-) 21.1-26.4 (-30.2) x 13-17.8  $\mu\text{m}$  (according to Gamundi, 1975), 21-15 x 12.5-15 (according to Marchand, 1971) or 25-27 x 16-18  $\mu\text{m}$  (according to Boudier, 1905-1910). The species described here is also close to M. elata var. purpurascens Krombh., according to Boudier (1905-1910), but in that species the entire fruitbody is vinaceous from the young stages, the spores are 23-26 x 14-16  $\mu\text{m}$ , and the asci are 300-350 x 20-25  $\mu\text{m}$ . Marchand (1973) reported that variety to have a vinaceous or rose colour in the upper part, a white stipe, spores 18.7-22.5 x 10-11.2  $\mu\text{m}$ , and asci 250 x 17.5-22.5  $\mu\text{m}$ .

M. esculenta Pers. ex St. Amans var. esculenta as interpreted by Guzmán (1980), following Marchand's (1971) description, has the upper part of the fruit body grayish to yellowish brown, never yellowish orange or honey colour, and never has irregular ribs arranged longitudinally. The stipe is white to cream but does not stain reddish. The microscopic features, following Boudier (1905-1910), Dennis (1968) and Rifai (1968), are similar to the Guatemalan material, but according to Seaver (1928) the spores of M. esculenta are 20-24 x 12-14  $\mu\text{m}$  and the asci 200-250 x 18-20  $\mu\text{m}$ . Le Gal (1953) described the spores as 21-26.5 x 12-13  $\mu\text{m}$  and asci as 300-360 x 20.5-25  $\mu\text{m}$ .

We do not have any information on the edibility of *M. guatemalensis* from the Indians or farmers, and we did not see it in the markets. But one of the authors (Torres), together with his wife, has eaten this fungus and found it to have a delicious flavour. Logemann has information from the coast of Guatemala about the use of some species of *Morchella* where the people regard them edible; they call them "colmena" (beehive, as they call in Mexico).

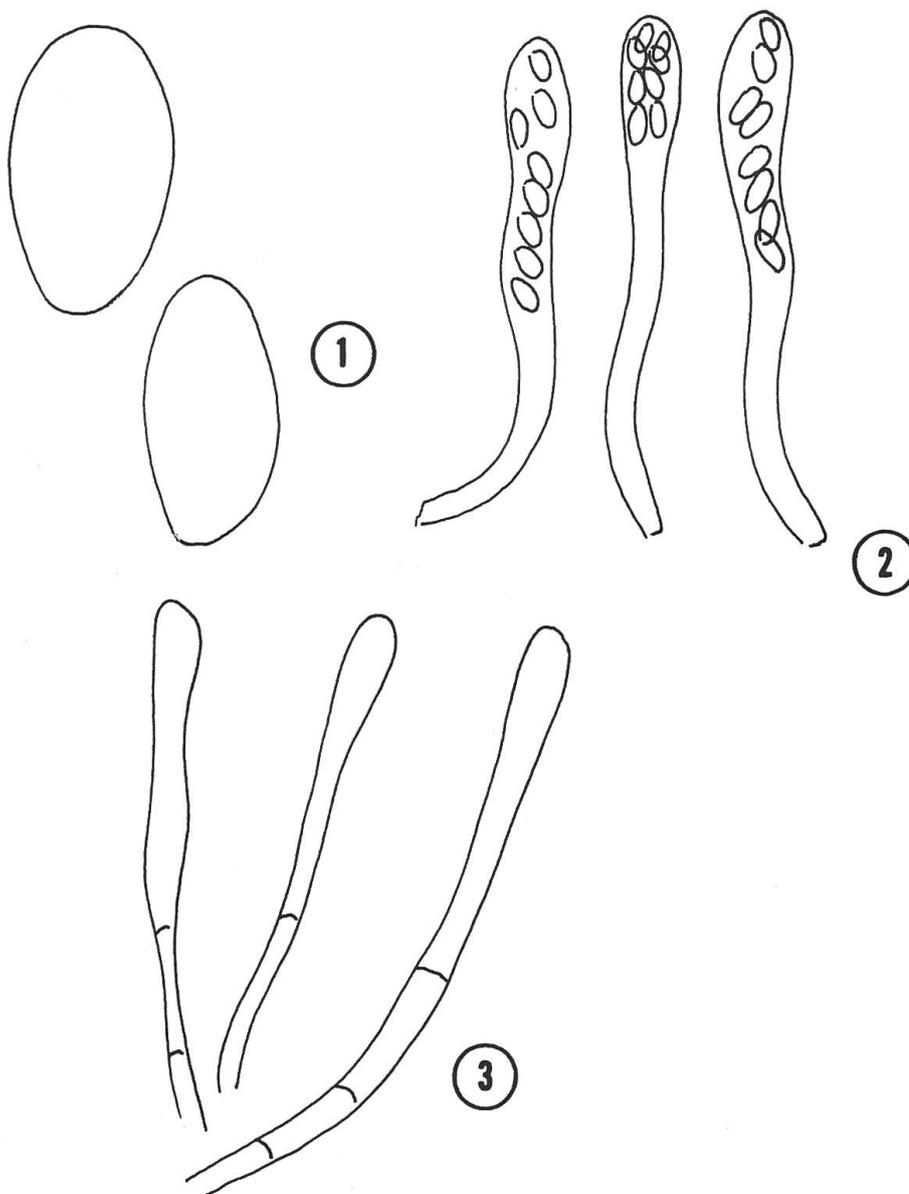
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Figures 1-3. Microscopic features of *Morchella guatemalensis* Guzmán, Torres & Logemann. 1: Ascospores (x 1500) 2: Asci with 8 spores (x 300 app.) 3: Paraphyses (x 600).

## Coloured Plate No 12

Figure 4 (below). Ascocarps of Morchella guatemalensis in the habitat.

Figure 5 (above). Young fruit body of Morchella guatemalensis.

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