

Introduction

The eastern slopes of the Andes have been considered one of the world's 25 biodiversity hotspots, defined by Myers et al. (2000) as an area “featuring exceptional concentrations of endemic species and experiencing exceptional loss of habitat.” The tropical Andes are home to an estimated 20,000 endemic species of plants (6.7% of the total number of global species of plants) and over 1500 endemic vertebrates (5.7% of the total number of global species of vertebrates). The Yungas, Aymaran for “warm land,” is a large swath that stretches along this hotspot from southern Peru to central Bolivia. The snow capped Andes Mountains, at over 6000 meters above sea level, rise from the dense forests of the Amazon basin, at 200 meters above sea level in a short 75 horizontal kilometers. This juxtaposition of Amazon Basin with Andes Mountains results in the convergence of a wide range of diverse ecosystems with high biodiversity, including some of the wettest forests within the Bolivian borders, receiving upwards of 5 meters of rain annually (Gerold et al., 2008). Development of the area has remained partially constrained due to the sheer steepness of the slopes, however this area is quickly growing in population and the fertile lands of the region are prime real estate for the production of cocoa, coffee, fruits, and the relatively lucrative coca. Bolivia’s growing population is a primary driving force behind increased clear-cutting to make way for agriculture. Bolivia’s annual deforestation rate was 0.94% from 1990–1995, correlating to a predicted

extinction rate of 34 plant species and 3 vertebrate species per year (Brooks et al, 2001). The Bolivian government has worked to protect some areas as parks; however enforcement of these protective measures is neither easily enforced nor monitored (Fjeldsa et al., 2005). This combination of high diversity, high moisture, and growing human encroachment give reason to the necessity to catalogue and understand the biodiversity of the area. From a biodiversity standpoint, Bolivia has been considered the most poorly understood of South American countries; however over the past twenty years research in this area has greatly increased (Ibisch, 2005). Fungi represent one of the largest, most diverse kingdoms that has remained overlooked in the Yungas region. Aside from the occasional recreational collector, only a handful of mycologists have collected on Bolivian soil.

Of the 14,000 estimated macro-fungi that may be present in South America, only half have been accounted for taxonomically. Of the species that have been catalogued, 70% are unique names for the South American region (Mueller et al., 2009). Very little has been studied in regards to human benefits of these mushrooms. *Marasmius* mushrooms, while primarily saprotrophic have proven to have many other human benefits, including uses in bioremediation (Cerniglia, 1997), medicine (Zhang et al, 2009; Wasser, 2002; Badalyan, 2002), and as consumable foods (Antonin, 1998, Arora, 1986).

Marasmius is a genus of white-spored basidiomycetes found throughout the tropic and temperate zones of the world. Global species richness estimates range from

500–1000 species with the highest concentration of species in tropical forests (Kirk et al., 2001; Wilson & Desjardin, 2005). *Marasmius* species are noted for their marcescent nature, the ability to wither during dry conditions and to rehydrate with very little humidity and continue sexual production of spores (Fries, 1838). However the distinction of marcescent vs. putrescent is currently more a loose guide rather than a distinguishing characteristic. The genus is primarily saprotrophic, usually growing on decaying leaf and wood litter. Microscopically the genus is easily differentiated from its close relatives by forming a hymeniform pileipellis of erect cells. These cells may or may not have apical setulae or finger-like projections (Wilson & Desjardin, 2005; Kuo, 2006). For a comprehensive history of the nomenclature and taxonomy of *Marasmius* refer to Antonin & Noordeloos (2010).

Rolf Singer was the first to document *Marasmius* species from Bolivia (Singer 1965, 1976). He collected extensively throughout neotropical South America in the 1960s and made numerous collections from Bolivia, some of which represented new species. Repeated attempts to borrow the specimens from where he deposited them in Fundación Miguel Lillo (LIL; Tucuman, Argentina) went unanswered. As a result, the species concepts of a number of *Marasmius* species described from Bolivia remain unclear. The results of this monograph are based on studies from the author's collections made in the Nor Yungas region in 2010–2011, as well as specimens collected by Dr. Roy Halling (New York Botanical Garden) in 1990 from the lower Amazonas areas near

Rurrenabaque (approximately 120 miles northeast of study sites used in the current investigation).

Eleven different study sites were visited during the beginning of the rainy seasons, in January of 2010 and 2011, as follows:

1. Death Road: High altitude tropical scrub. Dense vegetation, steep canyon walls.

16°17'40.97"S 67°53'32.32"W; 3713 m elev.

2. Chairó: Tiny town north of Coroico deep in the canyons along the Rio Huarinilla.

Extremely humid, and hot with dense foliage. Mixed tropical forest. 16°12'08.96"S

67°50'10.92"W; 1303 m elev.

3. Charobamba Bridge: Riparian flats along the Rio Huarinilla. Mixed tropical forest.

16°11'46.71"S 67°45'33.61"W; 1134 m elev.

4. Yolosita: Riparian corridor along the Rio Coroico just below Coroico. Disturbed mixed

tropical forest. 16°11'44.87"S 67°44'37.70"W; 1277 m elev.

5. Hotel Verde: Animal refuge along the Rio Coroico. Mixed, dense tropical forest along

riparian corridor. 16°13'29.19"S 67°44'37.87"W; 1207 m elev.

6. Hotel Esmeralda: An old, unkempt banana and coffee plantation just west of the hotel.

16° 11.612'S 67°43.660'W; 1818 m elev.

7. Hotel Sol Y Luna: Manicured gardens surrounding the hotel. Mixed native tropical

plants. 16°11'52.25"S 67°43'27.28"W; 1827 m elev.

8. Uchumachi: Virgin forest accessible only via hiking trail above the town of Coroico.

16°13'35.45"S 67°42'26.96"W; 2504 m elev.

9. Coroico Waterfall: The trail to the waterfall crosses several riparian corridors where collecting proved bountiful under mixed tropical forests.

16°12'51.45"S 67°42'14.28"W; 2030 m elev.

10. Santa Barbara: Small town North of Coroico situated at the confluences of the Rio

Coroico and the Rio Santa Barbara. Mixed tropical forest on steep hillsides. 16°

10'8.67"S 67°43'59.66"W; 1062 m elev.

11. Choro: Town Northeast of Coroico. Steep walled riparian corridor along the Rio

Coroico with mixed tropical forest. 16°01'56.83"S 67°37'50.99"W; 800 m elev.

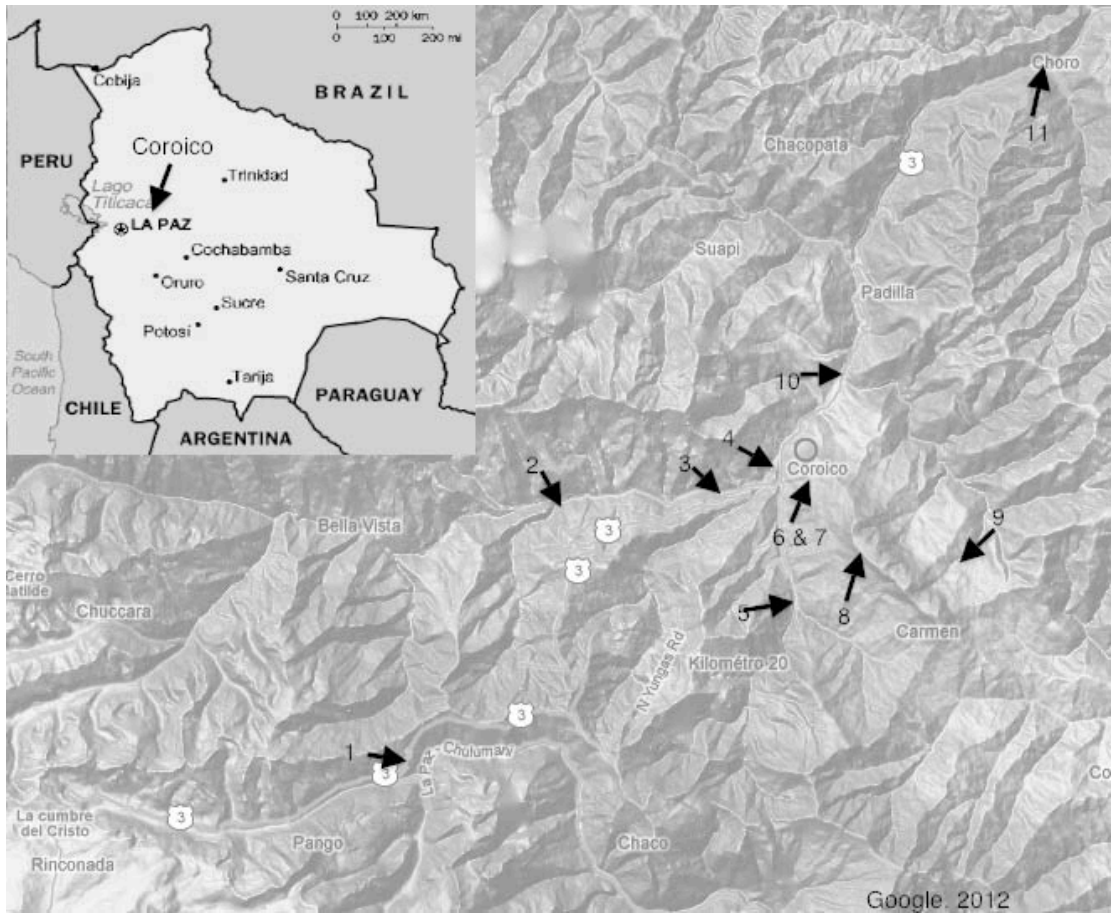


Fig. 1. Collection sites. Numbers correspond to sites described above.

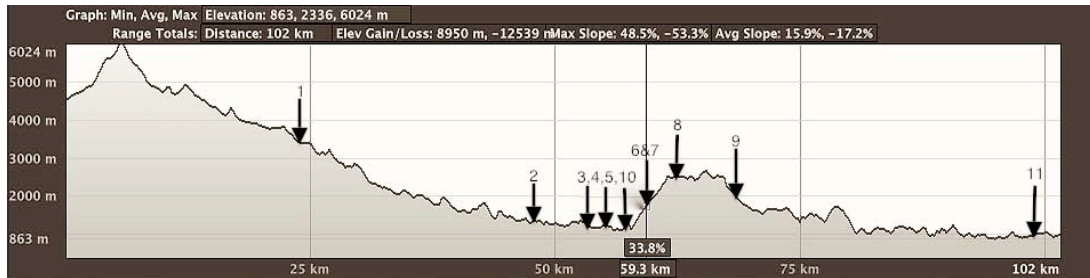


Fig. 2. Elevation profile of the Eastern Andes. Numbers correspond to collection sites (Google, 2012).

Collections made by Roy Halling were near the junction of Rio Beni and Rio Tuichi near Rurrenabaque. Approximately $14^{\circ}32'11.20''S$ $67^{\circ}28'25.81''W$; 200 m (686 ft) elev.

Of the 240 specimens were examined for this study, 212 specimens represented material collected by Wenck, and the remaining 28 are specimens collected by Halling. Of these, 143 specimens were determined to belong to the genus *Marasmius* s.s., representing 45 distinct species. Comprehensive description of these 45 species are presented in this monograph, of which 6 are new species and additionally, 1 is a new variety.

Materials and Methods

Macromorphological characters were observed in the field at the time of collection from fresh samples. Samples were collected into fishing tackle boxes with one well filled with moss to retain high humidity in the collection box. Specimens were then described, photographed using a Panasonic G1 camera and then dried on a Nesco Garden Master food drier set to the lowest setting. Specimens were then transferred to Petri dishes to protect the 3D structure, wrapped in paper to absorb any moisture and then sealed into Ziplock plastic bags for transport. Terms used to describe the features are those of Largent (1986). Color terms are those of Kornerup and Wanscher (1978).

Micromorphological characters were observed at the SFSU Herbarium lab from dried specimens reconstituted in ETOH, and followed by 5% KOH or Melzer's reagent. An Olympus CH 30 light microscope was used and all microscopic photos were taken with a Panasonic DMC-FP3 held up to the microscope eyepiece. Spore statistics include: X_m , the arithmetic mean of spore length by spore width (\pm standard deviation) for n spores measured in a single specimen; X_{mr} , the range of spore means, and X_{mm} , the mean of spore means (\pm SD) when more than one specimen is available; Q the quotient of spore length by spore width of any one spore, or as a range of variation for n spores measured; Q_m the means of Q -values in a single specimen; Q_{mr} , the range of Q_m values

and Q_{mm} the mean of Q_m values when more than one specimen is available; n , the number of spores measured per specimen; s , the number of specimens available.

Specimens collected as part of this study are deposited in Herbario Nacional de Bolivia (LPB; La Paz, Bolivia) and in the H.D. Thiers Herbarium (SFSU; San Francisco State University, San Francisco, CA). Other specimens studied were borrowed from the New York Botanical Garden (NY; New York, NY) and the Field Museum of Natural History (F; Chicago, IL).

Macromorphologically informative characters:

Pileus: *Marasmius* can vary quite a bit in pileus characteristics. The shape typically ranges from convex to plano-convex or semihemispherical, occasionally conical; often without papilla, however, sometimes umbonate or papillate, and sometimes depressed or umbilicate. Colors range from white to yellow, orange, red, purple or brown, or occasionally with an olive hue. The surface is often velutinous, or sometimes glabrous or granulose. The margin of the cap ranges from smooth to striate, sulcate or plicate. Size of mature pilei ranges from just a few millimeters to 67 mm broad.

Pileus flesh is often highly reduced, seemingly absent, if obviously present, typically very thin, white to cream, mild in taste, and rarely with an odor.

Lamellae: The lamellae range from free to adnexed, adnate or slightly decurrent, and in some species the lamellae are adnate to a collarium. The spacing of through-lamellae ranges from remote to distant, close or crowded. Lamellulae typically occur in 1–3 series, although they are absent in some species. White to cream is the most common color, however very often the lamellae will be concolorous with the pileus, thus orange, pink, red, or brown lamellae were all observed. If the lamellae had a discoloured margin, it was either white to cream or concolorous with the pileus. Intervenose lamellae were not frequently observed, but do sometimes occur.

Stipe: Length and width are sometimes informative. Very often the stipe is wiry or horse hair-like, tough and cartilaginous, however, thicker, up to 3 mm thick, fleshier stipes were frequently observed. The stipe is typically central, however there are some species that are eccentric to lateral. There are even fewer species that are astipitate. Stipe color is most often cream to pale yellow at the apex, and dark brown to black towards the base, although other colors, such as orange, yellow, red or white are observed. Stipe ornamentation is glabrous to velutinous or pruinose. Attachment to substrate is either

insititious or with a tuft of mycelium at the base (non-insititious). Color of the mycelium is white to cream, light brown, brown or rust.

Micromorphologically informative characters:

Spores: Spores in all species are inamyloid, smooth, ellipsoid to fusoid or oblong, inamyloid, acyanophilic, and thin-walled. Spore size is critical in determining species.

Hymenium: Basidia are rarely observed because they collapse soon after spore discharge. Where observed, they are 4-sterigmate. Basidioles are fusoid to clavate, and uninformative for species identification. Cheilocystidia are almost always present in the form of either *Siccus*-type broom cells, *Rotalis*-type broom cells or *Globulares*-type broom cells - corresponding to the same type of cells forming the pileipellis. Rarely cheilocystidia are absent. Size and shape of the cells and their setulae morphology are all informative at the species level. The presence or absence of pleurocystidia is highly informative. Occasionally thick-walled, sharply acute cystidia termed setae occur in the hymenium as well as on the gill edge and are taxonomically informative.

Pileipellis: The anatomy of the pileipellis is crucial for identification. It is always a hymeniform layer of either smooth *Globulares*-type cells, warty *Rotalis*-type cells or setulose (with finger-like projections) *Siccus*-type broom cells.

Stipitipellis: The stipe surface is often glabrous, however the presence of cystidia, such as *Siccus*-type broom cells, setae or cylindrical cystidioid cells, is informative at the series level.

Chemical reactions: all specimen in this study have dextrinoid tissues found somewhere within the basidiocarp, if not throughout the trama of the mushroom.

Ecological characters: many species are substrate-specific, growing on decomposing leaves, wood or both.

At the time of collection, the elevation was noted to increase our knowledge of ecological characteristics. No *Marasmius* specimens were found above 2100 meters elevation.

Artificial Key to Bolivian *Marasmius*

1 Collarium present; stipe insititious [sect <i>Marasmius</i>]	2
1' Collarium absent; stipe non-insititious.....	9
2 Pileipellis composed of Siccus-type broom cells [subsect. <i>Sicciformis</i>].....	3
2' Pileipellis composed of Rotalis-type cells [subsect. <i>Marasmius</i>]	7
3 Spores 6.4–8.8 μm long.....	4
3' Spores 10.0–18.4 μm long	6
4 Pileus 1–2 mm broad, reddish brown; lamellae paler than pileus, white to orangish white	1. <i>M. aripoensis</i>
4' Pileus 4–8 mm broad, orange, grayish orange or clay colored; lamellae concolor with pileus	5
5 Pileus orange; lamellae subdistant (12).....	2. <i>M. wilapi</i> sp. nov.
5' Pileus clay to grayish orange; lamellae distant (7–9).....
.....	3. <i>M. aciculaeformis</i> var. <i>albus</i>
6 Pileus orange to orangish yellow.....	4. <i>M. guyanensis</i>
6' Pileus reddish brown to dark brown.....	5. <i>M. rubromarginatus</i>
7 Lamellae close (17–25)	6. <i>M. vigintifolius</i>
7' Lamellae distant to subdistant (10–14)	8

8 Pileus reddish brown; stipe 37–100 mm long	
..... 7. <i>M. variabiliceps</i> var. <i>variabiliceps</i>	
8' Pileus yellowish brown to grayish yellow; stipe 4–23 mm long	
..... 8. <i>M. variabiliceps</i> var. <i>separatus</i>	
9 Pileipellis composed of <i>Globulares</i> –type cells (clavate, lacking apical setulae)	
[sect. <i>Globulares</i>]	10
9' Pileipellis composed of <i>Siccus</i> –type broom cells [sect. <i>Sicci</i>]	12
10 Basidiomes growing in dense clusters; spore mean 9.2 x 3.2 μm	
..... 9. <i>M. arborescens</i>	
10' Basidiomes growing solitary or scattered; spore mean 5.3–6.1 x 3.4–3.5 μm	11
11 Pileus yellowish white to cream	10. <i>M. cohortalis</i> var. <i>cohortalis</i>
11' Pileus yellowish grey to grayish brown	11. <i>M. cohortalis</i> var. <i>arenicolor</i>
12 Setae present on pileus &/or stipe [ser. <i>Spinulosi</i>]	13
12' Setae absent on pileus and stipe (apical obtuse caulocystidia may be present)	16
13 Setae present on lamellae (often few and scattered)	14
13' Setae absent on lamellae	15
14 Spores 15.2–17.6 μm long	12. <i>M. spiculosus</i>
14' Spores 8–10 μm long	13. <i>M. venezuelanus</i>
15 Spores 9–11.2 μm long	14. <i>M. aff. echinatulus</i>

- 15' Spores 7.2–8.8 μm long 15. *M. aff. variabilis*
- 16 Simple cylindrical caulocystidia present; Siccus-type broom cells absent on
stipe surface [ser. *Atrorubentes*] 17
- 16' Caulocystidia absent, Siccus-type broom cells present or absent on stipe
surface 19
- 17 Caulocystidia short (up to 25 μm long), thin-walled, scattered
..... 16. *M. askhapukukuna* sp. nov.
- 17' Caulocystidia long (up to 130 μm long), thin- and thick-walled, numerous .. 18
- 18 Pileus golden yellow; spores mean 11.6–12.6 x 3.3–3.7 μm
..... 17. *M. chrysolepharis*
- 18' Pileus caramel to brownish orange or ferruginous; spore mean 9.3 x 3.1 μm
..... 18. *M. actinopus*
- 19 Pleurocystidia present [ser. *Haematocephali*] 20
- 19' Pleurocystidia absent [ser. *Leonini*] 28
- 20 Cheilocystidia nearly absent, lamellae edge of smooth, clavate or irregular cells
..... 19. *M. aff. spgazzinii*
- 20' Cheilocystidia abundant, of Siccus-type broom cells 21
- 21 Pileus large, 20–43 mm broad 20. *M. hatun* sp. nov.
- 21' Pileus smaller 1–20 (–23) broad 22

22 Pileus grayish orange, golden yellow, cream or pale orange	
.....	21. <i>M. qellu</i> sp. nov.
22' Pileus some shade of red, brown or brownish orange.....	23
23 Pleurocystidia all Siccus-type broom cells	22. <i>M. setulosifolius</i>
23' Pleurocystidia cylindrical to clavate or fusoid, refractive, without setulae	24
24 Pleurocystidia with oily-globular or golden to golden brown contents	25
24' Pleurocystidia lacking oily contents; hyaline.....	26
25 Pleurocystidia with golden to golden brown contents; stipe typically copper colored	23. <i>M. oleiger</i>
25' Pleurocystidia with oily to globular, hyaline contents; stipe dark brown	
.....	24. <i>M. allocystis</i>
26 Pileus some shade of red, pink, rose or burgundy	
.....	25. <i>M. haematocephalus</i> var. <i>haematocephalus</i>
26' Pileus some shade of brown or brownish orange	27
27 Pileus brown; stipe 16–30 mm long; spore mean 14.3–16.7 μ m long	
.....	26. <i>M. haematocephalus</i> var. <i>leucophyllus</i> ;
27' Pileus mostly brown to brownish orange; stipe 34–74 mm spore mean 16.9– 20.8 μ m long.....	27. <i>M. ferrugineus</i>
28 Pileus with olive-green tones.....	29

28' Pileus lacking olive-green tones.....	30
29 Spores 6.4–8.0 μm ; lamellae close (22)	28. <i>M. digiloi</i>
29' Spores 9.6–12 μm ; lamellae distant (11–13)	29. <i>M. trinitatus</i>
30 Pileus 1–3 mm broad	30. <i>M. huchuy</i> sp. nov.
30' Pileus > 6 mm broad	31
31 Spores 16–21 μm long.....	32
31' Spores < 16 μm long	33
32 Pileus orange to carrot red	31. <i>M. rhabarberinus</i>
32' Pileus brown to brownish orange	32. <i>M. aff. rubicosus</i>
33 Lamellae close (20–26, not including lamellulae)	34
33' Lamellae distant (9–12) or subdistant (14–20)	36
34 Spores 11–14 μm long.....	33. <i>M. matrisdei</i>
34' Spores 7.2–11.2 μm long	35
35 Spores 7.2–8.8 μm long; pileipellis homogeneous, of Siccus-type broom cells with setulae up to 8.8 μm long; stipe typically < 40 mm long	34. <i>M. beniensis</i>
35' Spores 9.6–11.2 μm long; pileipellis heterogeneous, of Siccus-type cells plus setoid cells with few, thick-walled setulae up to 28 μm long; stipe typically > 40 mm long.....	35. <i>M. corrugatus</i> var. <i>aurantiacus</i>
36 Lamellae distant (9–12, not including lamellulae)	37

36' Lamellae subdistant (14–20)	41
37 Pileus 6–23 mm broad	38
37' Pileus 25–67 mm broad.....	39
38 Pileus disc golden yellow to grayish orange, margin pale orange; stipe glabrous, lacking broom cells	36. <i>M. durasnu</i> sp. nov.
38' Pileus disc brownish red; margin pale orange; stipe pruinose, with <i>Siccus</i> -type broom cells	37. <i>M. aff. ruber</i>
39 Pileus disc dark brown to reddish brown, margin light brown to orange or tomato red; spore mean of means 13.2 μm long	38. <i>M. berteroi</i> var. <i>major</i>
39' Pileus grayish orange to pale orange.....	40
40 Stipe glabrous or with a few scattered <i>Siccus</i> -type broom cells; spore mean of means 11.7 μm long	39. <i>M. bellus</i>
40' Stipe pruinose, covered with <i>Siccus</i> -type broom cells; spore mean of means 12.33 μm long.....	40. <i>M. bellus</i> var. <i>pruinostipes</i> var. <i>nov</i>
41 Stipe pruinose, w numerous <i>Siccus</i> -type broom cells; spores 4–5.6 μm broad with mean 4.6 μm	41. <i>M. napoensis</i>
41' Stipe glabrous, lacking <i>Siccus</i> -type broom cells; spores 2.4–4.0 (–4.8) μm broad with mean 3.1–3.8 μm	42
42 Pileus 20–40 mm broad	42. <i>M. leoninus</i>

42' Pileus 5–20 mm broad.....	43
43 Pileus with orange tones, bright orange, orangish brown, pale orange	
.....	43. <i>M. floriceps</i>
43' Pileus yellowish brown to reddish brown	44
44 Cap 5–20 mm, pileus yellowish brown; pileipellis broom cells 7.2–11.2 μm long; cheilocystidia scattered with setulae up to 3.2 μm long.....	
.....	44. <i>M. aff. bezerrae</i>
44' Cap 7–20 mm, pileus brownish orange to reddish brown; pileipellis broom cells 20–28.8 μm long; cheilocystidia abundant with setulae up to 8 μm long	
.....	45. <i>M. bezerrae</i>

Table 1. Summary of findings from Bolivia. Yellow highlighted are new species. Blue highlighted are new to Bolivia

Section <i>Marasmius</i>		
Subsection <i>Sicciformis</i>	1	<i>M. aripoensis</i>
	2	<i>M. wilapi sp. nov.</i>
	3	<i>M. aciculaeformis var. albus</i>
	4	<i>M. guyanensis</i>
	5	<i>M. rubromarginatus</i>
Subsection <i>Marasmius</i>	6	<i>M. vigintifolius</i>
	7	<i>M. variabiliceps var. variabiliceps</i>
	8	<i>M. variabiliceps var. separatus</i>
Section <i>Globulares</i>	9	<i>M. arborescens</i>
	10	<i>M. cohortalis var. cohortatlis</i>
	11	<i>M. cohortalis var. arenicolor</i>
Section <i>Sicci</i>		
Series <i>Spinulosi</i>	12	<i>M. spiculosus</i>
	13	<i>M. venezuelanus</i>
	14	<i>M. aff. echinatulus</i>
	15	<i>M. aff. variabilis</i>
Series <i>Atrorubentes</i>	16	<i>M. askhapukukuna sp. nov.</i>
	17	<i>M. chrysoblepharis</i>
	18	<i>M. actinopus</i>
Series <i>Haematocephali</i>	19	<i>M. aff. spgazzinii</i>
	20	<i>M. hatun sp. nov.</i>
	21	<i>M. qellu sp. nov.</i>
	22	<i>M. setulosifolius</i>
	23	<i>M. oleiger</i>
	24	<i>M. allocystis</i>
	25	<i>M. haematocephalus var. haematocephalus</i>
	26	<i>M. haematocephalus var. leucophyllus</i>
	27	<i>M. ferrugineus</i>

Table 1. Continued

Section <i>Sicci</i>		
Series <i>Leonini</i>	28	<i>M. digilioi</i>
	29	<i>M. trinitatus</i>
	30	<i>M. huchuy sp.nov.</i>
	31	<i>M. rhabarberinus</i>
	32	<i>M. aff. rubicosus</i>
	33	<i>M. matrisdei</i>
	34	<i>M. beniensis</i>
	35	<i>M. corrugatus var. aurantiacus</i>
	36	<i>M. durasnu sp. nov.</i>
	37	<i>M. aff. ruber</i>
	38	<i>M. berteroi var. major</i>
	39	<i>M. bellus</i>
	40	<i>M. bellus var pruinosipes var. nov</i>
	41	<i>M. napoensis</i>
	42	<i>M. leoninus</i>
	43	<i>M. . floriceps</i>
	44	<i>M. aff. bezerrae</i>
45	<i>M. bezerrae</i>	

Taxonomy

1. *Marasmius aripoensis* (Dennis) Singer, Sydowia 18: 188. 1965

Type specimen: Dennis 231, from Trinidad.

Pileus 1–2 mm broad, hemispherical to convex, striate, velutinous, papilla present, reddish brown (9E7); context white, < 1mm thick; odor and taste mild. Lamellae adnate to a collarium, distant (6–7) with no lamellulae, < 1 mm broad, pale orange (5A3) to yellowish white (4A2), non-marginate. Stipe 19–20 x <1 mm, horse hair-like, insititious, glabrous, smooth, yellowish brown (5E7).

Basidiospores (5.6–) 6.4–8.8 (–10.4) x 3.2–4.0 (–4.8) μm [$x = 7.74 \pm 1.17$ x 3.94 ± 0.56 μm , $Q = 1.5\text{--}3.25$, $Q_m = 2.08 \pm 0.70$, $n = 25$], ellipsoid, smooth, hyaline. Basidia not observed. Basidioles 10.4–31.2 x 3.2–7.2 μm , oblong to narrowly clavate, hyaline.

Cheilocystidia numerous, composed of *Siccus*-type broom cells; main body 11.2–17.6 x 2.4–12 μm , mostly clavate, sometimes globose to cylindrical, rarely lobed, hyaline, inamyloid; apical setulae 0.8–5.6 μm long, cylindrical to conical, inamyloid, thin walled. Pleurocystidia absent. Pileipellis not mottled, composed of a hymeniform layer of *Siccus*-type cells; main body 9.6–25.6 x 2.4–11.2 μm , turbinate to clavate or subcylindrical, often lobed, hyaline, inamyloid, thin- to thick-walled; apical setulae 2.4–8.8 μm long,

cylindrical to clavate, sometimes forked, brown to amber red, inamyloid, thin walled.

Pileus trama of inamyloid to weakly dextrinoid, cylindrical hyphae. Stipe of dextrinoid, cylindrical hyphae. Caulocystidia absent. Clamp connections present.

Habit, habitat and known distribution: Solitary to scattered on dicot leaves. Trinidad, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairó, N of Coroico along the Rio Huarinilla, 1303 m elev., 13 Jan. 2010, Wenck 047 (SFSU, LPB); same location and date, Wenck 058 (LPB).

2. *Marasmius wilapi* sp. nov.

Etymology: wilapi (wee-lah-pee), Quechua, adjective, orange in color. Refers to every part of the mushroom being orange in color.

Pileus 4 mm broad, convex, umbilicate, deeply striated, pale orange (6A4), velutinous, even; odor and taste mild; context < 1 mm thick, orange (6A8). Lamellae adnexed to a collarium, concolorous with context of pileus, distant (13) with no lamellulae, non

marginate. Stipe $13 \times < 0.5$ mm, horse hair-like, insititious, cylindrical, dry, glabrous, orange (6A8) at the apex, brown (6F5) at the base.

Basidiospores (6.4–) $7.2\text{--}8.0 \times 3.2\text{--}4.0 \mu\text{m}$ [$X = 7.36 \pm 0.69 \times 3.57 \pm 0.41$, $Q = 1.8\text{--}2.5$, $Q_m = 2.06 \pm 0.26$, $n = 14$], ellipsoid to lacrymoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles $24\text{--}29.6 \times 4\text{--}7.2 \mu\text{m}$, cylindrical to clavate. Cheilocystidia consist of *Siccus*-type broom cells; main body $11.2\text{--}17.6 \times 6.4\text{--}16 \mu\text{m}$, globose to clavate, thin walled, hyaline to yellow, inamyloid; setulae up to $8 \mu\text{m}$ long, cylindrical to conical, golden yellow in KOH, thin walled, inamyloid. Pleurocystidia absent. Lamellae and pileus tramas weakly dextrinoid. Pileipellis not mottled, composed of a hymeniform layer of *Siccus*-type broom cells; main body $18.4\text{--}24.8 \times 6.4\text{--}10.4 \mu\text{m}$, subglobose to clavate, sometimes pedicellate, thin-walled, hyaline, inamyloid; setulae up to $9.6 \mu\text{m}$ long, golden orange in KOH, cylindrical, hyaline, inamyloid. Stipe hyphae smooth, dextrinoid; caulocystidia absent. Clamp connections present.

Habit, habitat, known distribution: Solitary on leaf debris. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, N of Yolosita, junction of Rio Coroico and Rio Huarinilla, 1277 m elev., 8 Jan 2010, Wenck 020 (LPB).

Notes: *Marasmius wilapi* is phenetically similar to *M. stramineiceps* Wannathes, Desjardin & Lumyong, however *M. stramineiceps* differs in having a pale yellowish white pileus, fewer (9–10), cream colored lamellae, and larger basidiospores with a mean of 8.9 x 4.8 μm .

3. *Marasmius aciculaeformis* var. *albus* Dennis, Kew Bull. 15: 98. 1961.

Type specimen: Dennis 1023, from Caracas, Venezuela.

Pileus 5–8 mm broad, applanate to convex, striate, velutinous, golden brown (5D7) dot in center, grayish orange (5B6) everywhere else, umbilicate; context grayish orange (5B6), < 1 mm thick; odor and taste mild. Lamellae distant (7–8) with no lamellulae, adnate to a collarium, 1–3 mm broad, non-marginate. Stipe 13–19 x < 1 mm, horse hair-like, insititious, smooth, glabrous, black. Basal mycelium not present.

Basidiospores 6.4–8.8 x 3.2–4.8 μm [$X = 7.62 \pm .09$ x 4.19 ± 0.37 μm , $Q = 1.33$ – 2.2 , $Q_m = 1.93 \pm 0.21$, $n = 25$], ellipsoid to oblong, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 24.8–32 x 4.8–7.2 μm , cylindrical to fusoid or clavate, hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 10.4–12 x 4–6.4 μm cylindrical to clavate, hyaline, inamyloid; setulae up to 8 μm long, cylindrical to

clavate, hyaline to golden in KOH. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, composed of a hymeniform layer of *Siccus*-type broom cells; main body 9.6–20 x 4–8.8 μm , fusoid to clavate, some subglobose, sometimes with tiny nodules, hyaline, inamyloid; setulae up to 12 μm long, orange to brown in KOH. Pileus trama dextrinoid. Stipe trama of weakly dextrinoid, parallel hyphae. Stipe devoid of broom cells and/or setae. Clamp connections present.

Habit, habitat and known distribution: Gregarious on wood. Venezuela, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairo, N of Coroico along the Rio Huarinilla. 1303 m elev., 13 Jan 2010, Wenck 044 (LPB, SFSU).

Notes: The Bolivian material is pale clay colored when fresh, not white as in *M. aciculaeformis* var. *albus*, or fulvous as in *M. aciculaeformis* var. *aciculaeformis*, but all micro-morphological and ecological features match otherwise. *Marasmius pallipes* differs in having more lamellae (9–13), a pale stramenious stipe, and larger spores (8–14 x 4.5–6.2 μm).

4. *Marasmius guyanensis* Mont., Ann. Sci. Nat. Bot. IV. 1:114. 1854.

Type specimen: Leprier, from French Guyana.

Pileus 3–4 mm broad, parabolic to obtusely convex, umbilicate, sulcate to plicate, dry, velutinous, orange (5A7–5A6–5A5) with paler sulcae, umbilicus dark brown to black. Lamellae adnate to a collarium, distant to remote, 6–8 reach the collar with no lamellulae, white, even, non-marginate. Stipe up to 20 mm x < 1 mm, horse hair-like, subinsititious, glabrous, dark brown to black with paler apex (concolorous with lamellae). Odor and taste mild. Mycelium present at basal attachment to substrate.

Basidiospores 10.0–14.4 (15.2) x 3.2–4.4 μm [Xmr = 11.6–14.1 x 3.7–4.0 μm , Xmm = 12.84 \pm 1.77 x 3.86 \pm 0.19 μm , Q = 2.5–4.2, Qmr = 2.96–3.74, Qmm = 3.35 \pm 0.55, n = 15, s = 2], clavate or phaseoliform to fusoid, smooth, thin walled, hyaline, inamyloid.

Basidia not observed. Basidioles 15.2–22.4 x 5.6–8 μm , fusoid, hyaline, inamyloid.

Cheilocystidia composed of *Siccus*-type broom cells; main body 12–15.2 x 6.4–8.8 μm , obovoid or irregular, hyaline, inamyloid; setulae up to 3.2 μm long, golden yellow in KOH, cylindrical, inamyloid, thin-walled. Pleurocystidia absent. Pileipellis weakly mottled, composed of *Siccus*-type broom cells; main body 11.2–23.6 x 4.8–15.2 μm , broadly clavate to clavate, lower portion hyaline, upper portion golden yellow in KOH on some; setulae up to 4 μm long, cylindrical, golden yellow to deep orange in KOH. Pileus trama slightly dextrinoid. Stipe hyphae parallel, inamyloid. Clamp connections present.

Habit, habitat, and known distribution: solitary to clustered on leaves. Trinidad, French Guyana, Brazil, Venezuela, Bolivia.

Material studied: BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, Rurrenabaque, 200 m elev., 28 Mar 1990, Halling 6363 (LPB, NY); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 4 April 1990, Halling 6402 (LPB, NY).

5. *Marasmius rubromarginatus* Dennis, Trans. Brit. Myco. Soc. 34: 415. 1951.

Type specimen: Dennis 339, from Venezuela.

Pileus 2–6 mm broad, plano convex to truncately conical, centrally depressed, striate, crenate at margin, velutinous, reddish brown (8F8) to dark brown (7F8); context < 1mm thick; odor and taste mild. Lamellae adnate to a collarium, distant (11–14) with no lamellulae, up to 3 mm broad, orange white (5A2), edges brown (8F8). Stipe 17–26 x < 1 mm, wiry, horse hair-like, insititious, glabrous, apex light brown (6D6), dark brown (8F8).

Basidiospores (9.6–) 11.2–18.4 (–19.2) x 2.4–4.0 μm [$X_{\text{mr}} = 13.4\text{--}16.6$ x 3.2–3.3 μm , $X_{\text{mm}} = 15.03 \pm 3.23$ x 2.25 \pm 0.04, $Q = 3.0\text{--}5.8$, $Q_{\text{mr}} = 4.17\text{--}5.18$, $Q_{\text{mm}} = 4.68 \pm 0.72$, $n = 15$, $s = 2$], fusiform to clavate, thin walled, smooth. Basidia not observed. Basidioles 16.8–30.4 x 4.8–11.2 μm , clavate to obtusely clavate, hyaline, inamyloid. Cheilocystidia numerous, composed of *Siccus*-type broom cells; main body 12.8–20.8 x 2.4–10.4 μm , clavate, sometimes branched, thin walled, hyaline, inamyloid; setulae up to 4.8 μm long, cylindrical, brownish orange in KOH. Lamellae trama slightly dextrinoid. Pileipellis mottled, composed of a hymeniform layer of two types of broom cells; 1) *Siccus*-type broom cells; main body 12–18.4 x 2.4–18.4 μm , cylindrical to clavate, thick-walled, sometimes branched, dextrinoid; setulae up to 3.2 μm long, cylindrical, golden to brownish orange in KOH; 2) thick-walled broom cells, clavate, smooth, lacking setulae, brownish orange in KOH. Pileus hyphae 4–8 μm diameter, weakly dextrinoid. Stipe hyphae parallel, strongly dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to scattered on leaves or wood.

Venezuela, Ecuador, Brazil, Bolivia.

Material studied: BOLIVIA. Dept La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls. 2030 m elev., 3 Jan 2011, Wenck 121, 149 (LPB, SFSU); BOLIVIA. Dept. La

Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 16 Jan 2011, Wenck 212 (LPB, SFSU).

6. *Marasmius vigintifolius* Singer, Sydowia 18: 345. 1965.

Type specimen: Singer B 871, from Bolivia.

Pileus 2–10 mm broad, truncately conical to applanate, deeply umbilicate, velutinous, striate to pleated, brown (7E7); umbilicus cream (4A3) to honey yellow (5D6) with dark brown center (7F6); context cream (4A3); odor and taste mild. Lamellae adnate to a collarium, close to subdistant (17–25), no lamellulae, up to 3 mm broad, cream (4A3), non-marginate. Stipe 7–36 x < 1 mm, insititious, cylindrical, dry, glabrous, fistulose, dark brown (7F6).

Basidiospores (6.4–) 7.2–9.6 (–10.4) x 3.2–4.8 μm [$X_{\text{mr}} = 8.4\text{--}8.6 \times 3.9\text{--}4.3 \mu\text{m}$, $X_{\text{mm}} = 8.50 \pm 0.11 \times 4.10 \pm 0.23 \mu\text{m}$, $Q = 1.5\text{--}2.5$, $Q_{\text{mr}} = 2.04\text{--}2.19$, $Q_{\text{mm}} = 2.11 \pm 0.1$, $n = 25$, $s = 2$], ellipsoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 16.8–32 x 3.2–10.4 μm , fusoid to clavate, sometimes cylindrical, smooth, hyaline, inamyloid. Cheilocystidia consist of *Rotalis*-type broom cells; main body 24–40 x 12.8–32 μm , sphaeropedunculate to broadly ellipsoid, thick-walled, hyaline, inamyloid; rod-like

setulae, up to 2.4 μm long, golden brown in KOH. Pleurocystidia absent. Pileipellis composed of a hymeniform layer of *Rotalis*-type cells; main body 15.2–37.6 x 12–24 μm , sphaeropedunculate to broadly ellipsoid, thick-walled, hyaline, inamyloid; rod-like setulae up to 2.4 μm long, tan to brown in KOH. Caulocystidia and broom cells absent on stipe. Clamp connections present.

Habit, habitat, known distribution: solitary to scattered on wood and leaves in montane forest. Bolivia, Brazil.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, old banana plantation at Hotel Esmeralda, 1818 m elev., 6 Jan 2010, Wenck 003 (LPB, SFSU);

BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 16 Jan 2011, Wenck 211 (LPB, SFSU).

7. *Marasmius variabiliceps* var. *variabiliceps* Singer, Sydowia 18: 344. 1965.

Type specimen: Singer B 1531, from Bolivia

Pileus 3–6 mm broad, broadly truncate-conical, umbilicate, striate, velutinous, crenate margin, reddish brown (7E8), umbilicus grayish yellow (4B5); odor and taste mild.

Lamellae adnate to a collarium, close (17–20), no lamellulae, 3 mm broad, grayish yellow (4B5), margin concolorous to pileus. Stipe 37–100 x < 1 mm, horse hair-like, insititious, glabrous, dark brown (7F3).

Basidiospores (7.2–) 8.0–9.6 x 4.0–4.8 μm [$X = 8.55 \pm 0.84$ x 4.42 ± 0.41 μm , $Q = 1.5$ – 2.2 , $Q_m = 1.79 \pm 0.14$, $n = 20$], ellipsoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 20.8–29.6 x 5.6–7.2 μm , fusoid to slightly clavate, smooth, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 13.6–27.2 x 11.2–18.4 μm , inamyloid, thin-walled; setulae up to 3.2 μm , with majority being shorter, brown in KOH. Pleurocystidia absent. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 22.4–32 x 15.2–23.2 μm , broadly clavate to globose, sometimes pedicellate, inamyloid; setulae up to 3.2 μm , obtuse, brown in KOH. Pileus trama inamyloid. Stipe hyphae dextrinoid, parallel. Clamp connections present.

Habit, habitat, and known distribution: Solitary to scattered on dicot leaf veins. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls. 2030 m elev., 3 Jan 2011, Wenck 114 (LPB, SFSU).

8. *Marasmius variabiliceps* var. *separatus* Singer, Sydowia 18: 344. 1965.

Type specimen: Singer B1547, from Bolivia

Pileus 1–5 mm broad, truncately conical, umbilicate, striate to sulcate, velutinous, yellowish brown (5D5) to grayish yellow (4B4); umbilicus white; context pale orange (5A3), <1 mm thick; odor and taste mild. Lamellae adnate to a collarium, distant (9–14), no lamellulae, 1.5 mm broad, pale orange (5A5) to pale yellow (4A2), non-marginate. Stipe 4–26 x < 1 mm, horse hair-like, insititious, smooth, glabrous, apex yellowish brown (5D5) to pale yellow (4A2), base black.

Basidiospores 5.6–8.0 x 2.4–4.0 μm [$X_{\text{mr}} = 6.8\text{--}6.9 \times 3.2\text{--}3.4 \mu\text{m}$, $X_{\text{mm}} = 6.87 \pm 0.09 \times 3.30 \pm 0.14 \mu\text{m}$, $Q = 1.8\text{--}3.0$, $Q_{\text{mr}} = 2.06\text{--}2.26$, $Q_{\text{mm}} = 2.16$, $n = 25$, $s = 2$], ellipsoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 17.2–28.8 x 3.2–7.2 μm , fusoid to clavate, smooth, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells with short setulae; main body 10.4–24 x 6.4–16 μm , inamyloid, thin-walled; setulae up to 2.4 μm , majority shorter, brown in KOH. Pleurocystidia absent. Pileipellis not mottled, composed of a hymeniform layer of *Siccus*-type broom cells; main body 12–28.8 x 8–17.6 μm , broadly clavate to globose, sometimes pedicellate, inamyloid; setulae up to 2.4 μm , with most being shorter, obtuse, brown in KOH. Pileus trama inamyloid. Stipe composed of parallel hyphae, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: Solitary to scattered on dicot leaves. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 19 Jan 2010, Wenck 079 (LPB, SFSU); BOLIVIA. Dept La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna. 1827 m elev., 6 Jan 2011. Wenck 139 (LPB, SFSU).

9. *Marasmius arborescens* (Henn.) Beeli, Bull. Soc. Roy. Bot. Belg. 60: 156. 1928.

Type specimen: Bipinde, BR 11380–31, from Cameroon, 1898.

Pileus 20–23 mm broad, obtusely conical, striate, yellowish orange (4B7); context < 1 mm thick; odor of pine nuts, taste mild. Lamellae free, close (20+), 3 series of lamellulae, < 1 mm broad, yellowish orange (4B7), non-marginate. Stipe 5–90 x 2 mm, fistulose, glabrous in upper portion, slightly tomentose towards base, reddish brown (8E7). Mycelium tuft present at base.

Basidiospores 8–10.4 x 2.4–3.2 μm [$X = 9.18 \pm 0.64 \times 3.17 \pm 0.21 \mu\text{m}$, $Q = 2.5\text{--}3.33$, $Q_m = 2.85 \pm 0.22$, $n = 25$], ellipsoid to oblong, smooth, hyaline, inamyloid. Basidia 20 x

6.4 μm , 4-spored, narrowly clavate. Basidioles 15.2–17.6 x 6.4–7.2 μm clavate, smooth, hyaline, inamyloid, thin-walled. Cheilocystidia clavate, hard to distinguish from basidioles. Pleurocystidia absent. Lamellae trama hyphae up to 11.2 μm diam., cylindrical, dextrinoid. Pileipellis consists of a hymeniform layer of *Globulares*-type cells; main body 12.8–16.8 x 6.4–8.8 μm , clavate to fusoid, smooth, hyaline, inamyloid. Pileus hyphae up to 6.4 μm diam., cylindrical, dextrinoid. Stipe trama parallel, slightly dextrinoid. Caulocystidia absent. Clamp connections present.

Habit, habitat, known distribution; Growing in clusters on decaying wood and leaf debris. African type found widely distributed throughout tropical Africa, (Angola, Burundi, Cameroon, Democratic Republic of Congo, Ghana, Kenya, Malawi, Nigeria, Tanzania, Uganda). This is the first recorded sample from South America.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls. 2030 m elev., 3 Jan 2011, Wenck 112 (LPB, SFSU).

Notes: The Bolivian material has a tomentose stipe base, which differs from African material which has a glabrous stipe.

10. *Marasmius cohortalis* var. *cohortalis* Berk., Videnskaps Mededelingen
Naturhistoriska Vereniging, Kjobenhaven, p34. 1879.

Type specimen: Glaziou 9171, from Brazil.

Pileus 15–52 mm broad, plano–convex to convex, subumbilicate, velutinous, striate,
hygrophanous, translucent, yellowish white (4A2) to cream, disc slightly darker.

Lamellae adnate, distant (16–17), 2–3 series of lamellulae, up to 5 mm broad,
intervenose, yellowish white (4A2), non-marginate. Stipe 15–83 x 2–6 mm, glabrous,
fistulose, at apex yellowish white (4A2) to raw sienna (6D7), at base rusty brown (6E8).
Cream colored mycelium present at base.

Basidiospores 4.8–7.2 (–8.8) x 3.2–4 μm [$X = 6.07 \pm 0.72 \times 3.36 \pm 0.32 \mu\text{m}$, $Q = 1.14$ –
2.75, $Q_m = 1.78 \pm 0.41$, $n = 25$], oblong-ellipsoid, smooth, hyaline, inamyloid. Basidia
not observed. Basidioles 11.2–33.6 x 2.4–5.6 μm cylindrical to slightly clavate,
inamyloid. Pleurocystidia absent. Cheilocystidia largely undifferentiated,
basidiomorphous, lamellae edge sterile. Pleurocystidia absent. Lamellae trama slightly
dextrinoid. Pileipellis consists of a hymeniform layer of *Globulares*–type cells, 11.2–26.6
x 8–27.2 μm , globose to broadly clavate, hyaline, inamyloid. Tramal hyphae 4–12 μm
diameter, slightly dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat and known distribution: Solitary to scattered on humus and leaf duff.

Bolivia, Brazil, Argentina.

Material Studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 8 Jan 2011, Wenck 158 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 11 Jan 2011. Wenck 172 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 10 April 1990. Halling 6374, 6387, 6428, 6428, 6430 (LPB, NY).

11. *Marasmius cohortalis* var. *arenicolor* Singer, Sydowia 12: 92. 1958.

Type specimen: Singer T 1445, from Argentina.

Pileus 20–40 mm broad, plano–convex to conical, subumbilicate, striate, slightly velutinous, yellowish grey (4B2) to pale grey brown; context < 1mm thick; odor and taste mild. Lamellae adnate, sometimes with decurrent tooth, distant (14–16), 2 series of lamellulae, up to 3 mm broad, intervenose, yellowish grey (4B2) to white, non-marginate. Stipe 25–77 x 1–4 mm, narrowed towards base, glabrous, fistulose, apex dull yellowish

grey (4B2) fading to cognac (6E7) or reddish brown at base. Mycelium present at attachment to substrate.

Basidiospores (4.0–) 4.8–6.4 x (2.4–) 3.2–4.0 μm [$X = 5.28 \pm 0.66 \times 3.52 \pm 0.51 \mu\text{m}$, $Q = 1.2\text{--}2.3$, $Q_m = 1.44 \pm 0.05$, $n = 15$], ellipsoid, hyaline, smooth, inamyloid, thin-walled.

Basidia not observed. Basidioles 16–28.8 x 2.4–7.2 μm , cylindrical to narrowly clavate, inamyloid. Cheilocystidia not differentiated, basidiomorphous, lamellae edge sterile.

Pleurocystidia absent. Lamellae trama strongly dextrinoid. Pileipellis consists of a hymeniform layer of *Globulares*-type cells, 13.6–21.6 x 8–16.8 μm , clavate to vesiculose or subglobose, smooth or very rarely and rather indistinctly nodulose, hyaline, inamyloid, thin-walled. Pileus trama strongly dextrinoid. Stipe hyphae parallel, typically smooth or with random globose projections 18.4–20.8 x 10.4–13.6 μm ; strongly dextrinoid.

Caulocystidia absent. Clamp connections present.

Habit, habitat and known distribution: Solitary to scattered on grass and other plant debris. Bolivia to Argentina.

Material examined: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 8 Jan 2011, Wenck 151 (LPB, SFSU); BOLIVIA.

Dept. Beni. Prov. Iturralde, N of Rurrenabaque, along Rio Beni at Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6422 (LPB, NY).

12. *Marasmius spiculosus* Singer, Sydowia 18: 343. 1965.

Type specimen: Singer B 1206, from Bolivia.

Pileus 10–30 mm broad, dry, subvelutinous, subsulcate to disc, subrugulose there, brown (6E8) fading to (6D7), margin even (not striate); context < 1mm thick; odor and taste mild. Lamellae adnexed, subdistant to close with no lamellulae, sometimes forked and anastomosed, pale yellow (4A3) with even, non-marginate edges. Stipe 20–50 x 1–2.5 mm, equal, concolorous with lamellae above, progressively red brown below, scantily subpruinose (lens), base with a tuft of dark cream to white colored hairs.

Basidiospores 13.6–18.4 x 3.2–4.8 μm [$X_{\text{mr}} = 16\text{--}16.4$ x 3.7–4.2 μm , $X_{\text{mm}} = 16.19 \pm 0.23$ x 3.92 ± 0.34 μm , $Q = 3.6\text{--}4.8$ (–6.7), $Q_{\text{mr}} = 4.12\text{--}4.55$, $Q_{\text{mm}} = 4.34 \pm 0.3$, $n = 20$, $s = 2$], narrowly fusoid, smooth, hyaline, inamyloid, thin-walled. Basidia not observed.

Basidioles 22.4–30.4 x 6.4–8 μm fusoid to subclavate or cylindrical, obtuse.

Cheilocystidia few, scattered, consist of *Siccus*-type broom cells; main body 7.2–20 x 4.8–8.8 μm , clavate, hyaline, inamyloid, thin-walled basally, thickening apically; setulae

few (2–several), up to 16.8 μm long but most are shorter (6.4 μm), sometimes branching, sometimes setoid, acute, golden brown in KOH, inamyloid, thick-walled. Cheilosetae present, rare to abundant, 27.2 x 4.8 μm , acute, bulbous at base (nettle hair-shaped), hyaline, inamyloid, thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis mottled, consisting of setae and *Siccus*-type broom cells; broom cells with main body 6.4–17.6 x 3.2–10.4 μm , clavate to cylindrical, sometimes nodulose, brown towards apex in KOH, inamyloid, thin- to thick-walled; setulae up to 8.8 μm long, acute, golden brown in KOH, sometimes nodulose to branched, inamyloid. Pileosetae up to 60 μm x up to 12 μm wide, nettle hair-shaped, sometimes nodulose to forked, acute, hyaline, inamyloid, thick-walled. Pileus trama dextrinoid. Caulocystidia consist of both *Siccus*-type broom cells like those found on pileipellis, and setae; 37.6–58.6 x 8–14.4, nettle hair-shaped with a large bulb at the base, acute, usually one setulae, rarely two, up to 56 μm long, hyaline, inamyloid, thick-walled. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: On well-rotted wood along riparian corridor.

Brazil, Bolivia.

Material studied: BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 12 April 1990, Halling 6431 (LPB, NY); BOLIVIA.

Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni near mouth of Rio Tuichi (Laguna del Tigre), 200 m elev., 3 April 1990, Halling 6390 (LPB, NY).

13. *Marasmius venezuelanus* Dennis, Kew Bull. 15: 97. 1961.

Type specimen: Dennis 1052, from Venezuela.

Pileus 10–25 mm broad, convex to plano–convex, dry to moist and somewhat hygrophanous, rarely subsulcate, usually subrugulose, disc grayish orange (5B5–5B4), fading to orange white (4A2) on margin; context < 1mm thick; odor and taste mild.

Lamellae adnexed, crowded, no lamellulae, grayish orange (6B4) to orange white (5A3–5A2), edges even, margin pale brownish. Stipe 20–70 x 1–3 mm, equal, minutely pruinose-scabrous, apex concolorous with lamellae, darkening to red brown at base.

Arising from an orange white (4A2) strigose tuft of hairs.

Basidiospores 8.8–10 x 4–4.5 μm , only 2 spores found, lacrymoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 16–22.4 x 3.2–4.8 μm , cylindrical to fusoid. Cheilocystidia consist of *Siccus*-type broom cells; main body 13.6–20 x 3.2–9.6 μm , cylindrical to clavate, hyaline, inamyloid, mostly thin-walled, some thick-walled at apex; setulae up to 10.4 μm long, cylindrical to conical, slightly yellow in KOH, hyaline,

inamyloid, thick-walled. Pleurosetae abundant, 52–79.2 x 8–13.6 μm , most often fusoid, some forked, brown in KOH, thick-walled (2.4 μm). Pleurocystidia absent. Lamellae trama strongly dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 12–16.8 x 7.2–9.6 μm , fusoid to clavate, hyaline to brown in KOH, thin-walled basally and apically thick-walled; setulae up to 8.8 μm long, cylindrical to conical, brown in KOH, thick-walled. Pileosetae abundant, 45–73 x 4–8.8 μm , often forked, brown in KOH, thick-walled. Pileus trama strongly dextrinoid. Caulosetae present, simple, 75.2–114.8 x 5.6–7.2 μm , brown in KOH, thick-walled. Stipe trama strongly dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to scattered on well rotting wood.

Venezuela, Colombia, Bolivia.

Material studied: BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 7 April 1990. Halling 6420 (LPB, NY).

14. *Marasmius* aff. *echinatulus* Singer, Sydowia 12: 98. 1958.

Type specimen: Rick, from Brazil.

Pileus 7–17 mm broad, subconical to convex, subvelutinous, dry, disc brownish orange (6C8) fading to grayish orange (6B6) at even (non-striate) margin; context < 1mm thick; odor and taste mild. Lamellae adnexed, crowded, no lamellulae, narrow, white, not marginate. Stipe 20–60 x 1–2 mm, equal, glabrous, concolorous with lamellae at apex and when young, red brown toward base and with age. Tuft of white basal mycelium present.

Basidiospores 9–11.2 x 4–4.8 μm [$X = 10.23 \pm 0.9$ x 4.48 ± 0.26 μm , $Q = 2.1\text{--}2.5$, $Q_m = 2.29 \pm 0.14$, $n = 6$], oblong to lacrymoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 16–22 x 2.4–5.6 μm , cylindrical to subfusoid or subclavate. Cheilocystidia consist of *Siccus*-type broom cells; main body 9.6–18.4 x 1.6–8 μm , cylindrical to clavate, hyaline, inamyloid, thin-walled to apically thickened walls; setulae up to 18.4 μm , cylindrical, subconical, pale yellow in KOH, inamyloid, thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consists of a hymeniform layer of *Siccus*-type broom cells; main body 7.2–9.6 x 2.4–9.6 μm , subglobose to clavate, hyaline, inamyloid, thin-walled at base to apically thick-walled; setulae up to 9.6 μm , cylindrical, yellow to golden in KOH, rarely forked, thick-walled. Pileosetae abundant, 28–60 x 4.8–12.8 μm , hyaline to yellow in KOH, sometimes forked or branched, inamyloid, thick-walled. Pileus trama dextrinoid. Caulosetae abundant, 28–110 μm , often

forked, hyaline to pale yellow in KOH, thick-walled. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, known distribution: solitary to clustered on wood and leaves. Colombia, Brazil, Bolivia, Argentina.

Material studied: BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 7 April 1990, Halling 6418 (LPB, NY).

Notes: The Bolivian material differs from *M. echinatulus* in having only one type of cheilocystidia (only *Siccus*-type with long setulae) and longer spores. The protologue for *M. echinatulus* indicates cheilocystidia of 2 types, and spores only 6.5–9.7 μm long.

15. *Marasmius* aff. *variabilis* Desjardin & Ovrebo, Fung. Div. 21. 36. 2006.

Type specimen: Ovrebo 3588, from Panama.

Pileus 15–30 mm broad, convex to plane, striate to subsulcate half way to disc, moist, hygrophanous, finely translucent, disc light brown (6D6) fading slightly to near pale yellow (4A3), toward margin pale yellow (4A3); context < 1 mm thick; odor and taste

mild. Lamellae adnexed, crowded to close, no lamellulae, pale orange (5A3–4A2), even edged, not marginate. Stipe 35–80 x 1–3 mm, glabrous, dull, concolorous with lamellae above, progressively red brown below, eventually dark red brown overall. Cream colored tuft of strigose hairs at base.

Basidiospores (6.4–) 7.2–8.8 x (3.0–) 3.2–4.0 μm [$X_{\text{mr}} = 7.4\text{--}8.2 \times 3.2\text{--}3.4 \mu\text{m}$, $X_{\text{mm}} = 7.76 \pm 0.57 \times 3.29 \pm 0.19 \mu\text{m}$, $Q = 2.0\text{--}2.8$, $Q_{\text{mr}} = 2.19\text{--}2.58$, $Q_{\text{mm}} = 2.39 \pm 0.28$, $n = 20$, $s = 2$], narrowly elliptical, often with a suprahilar depression, smooth, thin-walled, hyaline, inamyloid. Basidia not observed. Basidioles 17.6–31.2 x 3.2–5.6 μm , cylindrical to subclavate, thin-walled. Cheilocystidia scattered, consist of *Siccus*-type broom cells; main body 8–17.6 x 7.2–10.4 μm , clavate, often nodular, hyaline, inamyloid, thin-walled; setulae up to 8.8 μm long, acute, golden orange in KOH, inamyloid. Pleurocystidia 30.4–42.4 x 4.8–10.4 μm , fusoid, hyaline, inamyloid, thin-walled. Lamellae trama strongly dextrinoid. Pileipellis consists of three types of cells: 1) *Siccus*-type broom cells; main body 6.4–23.2 x 4–17.6 μm , clavate, usually nodulose, golden brown in KOH at apex, inamyloid, thin-walled; setulae up to 9.6 μm long, sometimes branched, golden brown in KOH, inamyloid; 2) scattered setae 24–52 μm long, acute, hyaline, inamyloid, thick-walled; 3) cells transitional between the *Siccus*-type broom cells and acute setae. Pileus trama strongly dextrinoid. Caulocystidia and broom cells absent on stipe surface. Stipe trama strongly dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: On well rotted wood and leaf litter in low elevation riparian forest. Panama, Bolivia.

Material studied: BOLIVIA. Dept. Beni, Prov. Iturrealde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6425 (LPB, NY); BOLIVIA. Dept. Beni, Prov. Iturrealde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 14 April 1990, Halling 6438 (LPB, NY).

Notes: The Bolivian material differs from the protologue in having close to crowded gills instead of subdistant gills, and in having more pileosetae.

16. *Marasmius askhapukukuna* sp. nov.

Etymology: askha p'uku-kuna (ahs-k-hah p'oo-koo-koo-nah), Quechua, askha= many, p'uku-kuna= plates. Refers to the many gills that are present on the basidiocarp.

Pileus 5–15 mm broad, convex to hemispherical, non-striate, velutinous, orange (6B7) fading to orangish white (6A2). Lamellae adnate to subdecurrent, close (20+), 3–4 series

of lamellulae, up to 1 mm broad, white, marginate. Stipe 35–48 x 1–3 mm, fistulose, glabrous, white to pale yellow (4A2) fading to brown (7F7) at base. Basal mycelium light yellow.

Basidiospores (7.2–) 8.0–8.8 x 3.2–4.0 μm [$X = 8.28 \pm 0.49$ x 3.6 ± 0.41 μm , $Q = 1.8$ – 2.8 , $Q_m = 2.14 \pm 0.22$, $n = 20$], ellipsoid to clavate, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 12–22.4 x 3.2–8 μm , cylindrical to clavate or fusoid.

Cheilocystidia consist of *Siccus*-type broom cells; main body 8–21.6 x 3.2–8.8 μm , clavate, occasionally nodulose, hyaline to slightly yellow in KOH, inamyloid, thin- to apically thick-walled; setulae up to 11.2 μm , cylindrical, often branched, hyaline, inamyloid. Lamellae edge with amorphous crystalline deposits. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis composed of a hymeniform layer of *Siccus*-type broom cells; main body 9.6–40 x 3.2–11.2 μm , cylindrical to clavate, hyaline, inamyloid, thin- to thick-walled; setulae up to 14.4 (16) μm long, cylindrical to conical, yellow to golden in KOH, sometimes branched or nodulose, hyaline, inamyloid, thick-walled. Pileus trama dextrinoid. Caulocystidia simple, up to 25 μm long, scattered, cylindrical, obtuse, hyaline, thin-walled. No *Siccus*-type broom cells found on stipe. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, known distribution: Solitary to clustered on wood. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, old banana plantation at Hotel Esmeralda, 1818 m elev., 6 Jan 2010, Wenck 007 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba. near Rio Huarinilla crossing. 1134 m elev., 8 Jan 2011, Wenck 146 (LPB, SFSU).

Notes: The new species differs from *M. ochroleucus* Desjardin & E. Horak, from New Caledonia and Thailand, which has a light yellow to cream colored pileus, slightly larger spores ($X = 9.7 \times 3.9 \mu\text{m}$) and more densely pruinose stipe. It differs from *M. rubroflavus* (Theissen) Singer, from Brazil and Mexico, which has a sulcate pileus, subdistant lamellae, slightly smaller spores ($7.5\text{--}8.5 \times 3\text{--}3.3 \mu\text{m}$), and longer caulocystidia up to 150 μm .

17. *Marasmius chrysolepharis* Singer, Flora Neotropica 17: 237. 1976.

Type specimen: Singer M8201, from Mexico.

Pileus 3–18 mm broad, plano convex to applanate, subumbonate, wrinkled disc, velutinous, striate, light brown at disc, (6D8) to golden yellow (5B7) towards margin; context white, < 1mm thick; odor and taste mild. Lamellae adnate to free, close (18–19),

lamellulae in 3 series, up to 2 mm broad, light yellow (3A2), non-marginate. Stipe 16–31 x < 1 mm, cylindrical, velutinous to fibrillose, light yellow (4A4) at apex fading to grayish orange (5B4–5E4) at base. Basal mycelium present.

Basidiospores 10.4–14.4 x 3.2–4.0 μm [$X_{\text{mr}} = 11.6\text{--}12.6$ x 3.3–3.7 μm , $X_{\text{mm}} = 12.1 \pm 0.66$ x 3.47 ± 0.29 μm , $Q = 2.8\text{--}4.0$, $Q_{\text{mr}} = 3.47\text{--}3.52$, $Q_{\text{mm}} = 3.5 \pm 0.03$, $n = 25$, $s = 2$], fusoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 17.6–24 x 7.2–8.0 μm , fusoid to clavate. Cheilocystidia sparse, consist of *Siccus*-type broom cells; main body 9.6–18.4 x 4–8 μm , cylindrical to fusoid or clavate, hyaline, inamyloid, thin-walled; setulae up to 10.4 μm , golden, cylindrical, inamyloid, thin-walled. Pleurocystidia absent, but numerous fusoid, cystidoid basidioles present. Lamellae trama slightly dextrinoid. Pileipellis mottled, consisting of *Siccus*-type broom cells; main body 9.6–24.8 x 2.4–8.8 μm , cylindrical to clavate or rarely globose, hyaline, inamyloid, thin- to thick-walled; apical setulae up to 12 μm , cylindrical to fusoid, golden in KOH, hyaline, inamyloid, thin- to thick-walled. Pileus hyphae up to 8.8 μm diameter, slightly dextrinoid. Caulocystidia numerous to dense, simple, 10.4–130 μm long, cylindrical, mostly acute or mucronate, hyaline, thin- to thick-walled. Stipe trama slightly dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: Solitary to scattered on decaying leaves and wood in submontane region. Mexico, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico. Hotel Sol y Luna. 1827 m elev., 2 Jan 2011, Wenck 092 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 196 (LPB, SFSU).

18. *Marasmius actinopus* Mont., Ann. Sci. Nat. IV. 1:112. 1854.

Type specimen: Leprier, from French Guyana.

Pileus 14 mm broad, plano-convex, striate, velutinous, caramel to brownish orange or ferruginous (6C6). Lamellae adnate, close (20+), lamellulae in 2 series, up to 2 mm broad, light yellow (4A4), margin light brown. Stipe 52 x < 1 mm, cylindrical, fibrillose, stuffed, light yellow (4A4) apex, darkening to reddish blonde (5C4) at base. Basal mycelium present.

Basidiospores (7.2–) 8.0–11.2 x 2.4–4.0 μm [$X = 9.25 \pm 1.4$ x 3.07 ± 0.41 μm , $Q = 2.25$ – 4.00 , $Q_m = 3.12 \pm 0.66$, $n = 25$], clavate to subfusoid, hyaline, inamyloid. Basidia not

observed. Basidioles 16.8–20 x 4.8–7.2 μm , cylindrical to clavate, hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 8.8–17.6 x 4–8 μm , cylindrical to clavate, hyaline, inamyloid, thin-walled basally, thickening apically; setulae up to 5.6 μm long, acute, golden in KOH, inamyloid, thick-walled. Pleurocystidia absent. Lamellae hyphae 3.2–5.6 μm diam., dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 4.8–19.2 x 5.6–8.8 μm , subglobose to clavate, rarely with appendages, hyaline, inamyloid, thin- to thick-walled. Pileus hyphae 3.2–10.4 μm diameter, dextrinoid. Caulosetae abundant, 24–96 x 2.4–13.6 μm , simple to sometimes branched, hyaline, thick-walled. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to scattered in subalpine mountains.

French Guyana, Venezuela, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 11 Jan 2011, Wenck 178 (LPB).

19. *Marasmius* aff. *spgazzinii* Saccardo & Sydow, Sylloge Fungorum 14: 117. 1899.

Type specimen: Balansa 4284, from Paraguay.

Pileus 6–30 mm broad, convex to plane, dry, subvelutinous, brown (6E5–7 with an olive hue), dries bright orangish brown, margin even when young, subpubescent in age, subrugulose on disc; context < 1mm thick; odor and taste mild. Lamellae adnexed, subdistant (12–16), lamellulae 3 in series, pale yellow (4A2), not marginate. Stipe 30–80 x 1–3 mm, glabrous, equal, concolorous with lamellae at apex, progressively darker towards base to red brown, with basal tuft of strigose, pale yellow (4A2) hairs.

Basidiospores 6.4–8.8 x 2.4–4.0 μm [$X = 7.77 \pm 0.73$ x 2.87 ± 0.51 μm , $Q = 2.0$ – 3.67 , $Q_m = 2.92 \pm 0.39$, $n = 25$], fusoid to cylindrical, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 23.2–30.4 x 4–6.4 μm , fusoid to subclavate, thin-walled.

Cheilocystidia extremely rare, consisting of poorly developed *Siccus*-type broom cells, with 1–4 setulae per cell, golden brown in KOH, thin-walled. Lamellae edge sterile.

Pleurocystidia not projecting much above basidia, not refractive, clavate, 31.2–37.6 x 7.2–9.6 (–11.2) μm , hyaline, inamyloid, thin-walled. Lamellae trama dextrinoid.

Pileipellis slightly mottled, consisting of *Siccus*-type broom cells; main body 12–25.6 x 6.4–8 μm , clavate, nodulose, rarely branched or forked, sometimes pedicellate, hyaline, inamyloid; setulae up to 12.4 μm long, sometimes nodulose to branched, brown in KOH, acute, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, known distribution: growing on well rotten wood in low elevation riparian corridors. U.S.A., Costa Rica, Peru, Bolivia, Paraguay, Argentina.

Material studied: BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 7 April 1990. Halling 6419 (LPB, NY).

20. *Marasmius hatun* sp. nov.

Etymology: hatun (ha-toon), Quechua, large, or big. The species forms large basidiomes for a species in series Haematocephali.

Pileus 20–43 mm broad, plano-convex, velutinous, light yellow (4A4), white at disc; context white, <1 mm thick; odor and taste mild. Lamellae free, close (20+), lamellulae in 3–4 series, up to 2 mm broad, light yellow (4A4), non-marginate. Stipe 30–85 x 1–3 mm, glabrous, light yellow (4A4) apex fading to white in center, then to dark brown (7F3) at base. Basal mycelium present.

Basidiospores 5.6–8.8 (–9.6) x 2.4–4.0 μm [$X = 7.58 \pm 0.79$ x 2.94 ± 0.51 μm , $Q = 1.6$ – 4.0 , $Q_m = 2.68 \pm 0.47$, $n = 25$], ellipsoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 16.8–24.8 x 3.2–5.6 μm cylindrical to subclavate, rarely nodulose, obtuse. Cheilocystidia consist of *Siccus*-type broom cells often with few setulae, clavate, hyaline, inamyloid; setulae up to 16 μm long, hyaline, inamyloid. Pleurocystidia 32–56 x 5.6–6.4 μm , subfusoid to cylindrical, hyaline, inamyloid. Lamellae trama dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 9.6–21.6 x 4–9.6 μm , clavate, nodulose, hyaline, inamyloid, thin-walled; setulae long, up to 11.2 μm , acute, hyaline, inamyloid. Few, long, simple setae present on pileus, up to 72 μm long, acute, often forked at base, golden in KOH, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat and known distribution: clustered in submontane tropics on buried wood.
Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 3 Jan 2011, Wenck 118 (LPB, SFSU).

Notes: *Marasmius hatun* is similar to *M. confertus* Berk. & Broome, but the latter differs in ochraceous orange to bright ferruginous, sulcate pileus, larger spores (10.5–13.5 x 3–

4 μm), and absence of setae or setoid-broom cells on pileus. It is also similar to *M. cremeopileatus* Antonin & C. Sharp, but it differs in having distant and broad lamellae, larger spores (9–11.5 x 3.5–4.2 μm), and lacks setae or setoid-broom cells on pileus, and grows on leaf litter, not wood.

21. *Marasmius qellu* sp. nov.

Etymology: qellu (k'e-yoo), Quechua, pallid, referring to the pale pigmented pileus.

Pileus 1–24 mm broad, convex to conical or hemispherical, slightly depressed in center at maturity, striate to pleated, velutinous, with a small papilla, golden yellow (5B7) to grayish orange (5B6) disc, margin fading to orange white (5A2) to yellowish white (4A2); context yellowish white (4A2), < 1 mm thick; odor and taste mild. Lamellae free to adnexed or adnate, subdistant (11–15), no lamellulae, sometimes slightly intervenose, up to 3 mm broad, white orange (5A2) to yellowish white (4A2), non-marginate. Stipe 11–59 x < 1 mm, horse hair-like, glabrous, smooth, yellowish white (4A2) at apex, darkening to brown in center (6E7) and brownish orange (5C4) to grayish brown (5D3) at base. Basal mycelium grayish white.

Basidiospores (8.8–) 11.2–17.6 (–18.4) x 2.4–4.0 μm [$X_{\text{mr}} = 12.2\text{--}15.8$ x 3.1–4.1 μm , $X_{\text{mm}} = 14.91 \pm 0.7$ x 3.36 ± 0.3 μm , $Q = 3.2\text{--}6.3$, $Q_{\text{mr}} = 4.1\text{--}4.7$, $Q_{\text{mm}} = 4.48 \pm 0.2$, $n = 25$, $s = 8$], fusoid to clavate, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 9.6–24.8 x 3.2–6.4 μm , fusoid to cylindrical, obtuse. Cheilocystidia consist of *Siccus*-type broom cells; main body 8.8–23.2 x 3.2–12 μm clavate to subglobose, hyaline, inamyloid; setulae up to 7.2 μm long, acute, orange in KOH, inamyloid, thin-walled. Pleurocystidia rare to abundant, 24–60 x 6.4–13.6 μm , fusoid to lageniform, refractive, hyaline, inamyloid. Lamellae trama dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 4–20.8 x 4–10.4 μm , clavate to subglobose, sometimes nodulose, hyaline, inamyloid, thin-walled at base, thickening towards apex; setulae up to 5.6 μm long, acute, golden yellow in KOH, hyaline, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: Solitary to gregarious on leaves and wood.

Bolivia.

Material Studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairó, N of Coroico along the Rio Huarinilla, 1134 m elev., 13 Jan 2010, Wenck 050 (LPB, SFSU);

BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Hotel Verde, half way between Yolosa and

Yolosita. 1207 m elev., 14 Jan 2010, Wenck 057 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Santa Barbara, east of Coroico along the Rio Coroico, 1062 m elev., 20 Jan 2010, Wenck 083 (LPB), same location and same date, Wenck 085, 088 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 159 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 167 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro. 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 189, 195 (LPB, SFSU).

Notes: *Marasmius qellu* is similar to *M. variabilis* Desjardin & Overbo in size, pileus features & coloration, stipe features & substrate, but this species differs in having variable cheilocystidia (*Siccus*-type broom cells plus non-setuloid cystidia) and smaller spores (8–9 x 2.5–3 μm); also it has more lamellae. *Marasmius qellu* is also similar to *M. anomalus* Lasch sensu Antonin & Noordeloos but it has a more deeply pigmented pileus (yellowish to ochraceous), broad lamellae and longer spores (16–22 x 4–5 μm).

22. *Marasmius setulosifolius* Singer, Sydowia 18: 343. 1965.

Type specimen: Singer B 1649, from Bolivia.

Pileus 9–45 mm broad, convex to plano–convex, depressed to even on disc, striate to sulcate, slightly velutinous, brown (6E8–6D8) fading to brownish orange (6C8–6C6) to orange (5A6); context < 1 mm thick; taste mild, odor mild to slightly sweet. Lamellae adnate to adnexed, remote to distant (10–12), lamellulae in 1–2 series, up to 3 mm broad, orange white (4–5A2), margin slightly brownish orange (6C8). Stipe 40–110 x < 1–3 mm, glabrous, orange white apex (5A2) to brownish orange (6D8) at base. Orange, tan or white basal mycelium present.

Basidiospores 9.6–11.2 (–12.0) x 3.2–4.0 μm [$X = 11.01 \pm 0.73$ x 3.42 ± 0.37 μm , $Q = 2.4–3.75$, $Q_m = 3.46 \pm 0.39$, $n = 25$], ellipsoid to ellipsoid–oblong, smooth, hyaline, inamyloid, thin-walled. Basidia not observed. Basidioles 16.8–28 x 3.2–7.2 μm , fusoid to clavate, but mostly cylindrical. Cheilocystidia consist of *Siccus*-type broom cells; main body 7.2–24.8 x 3.2–9.6 μm , cylindrical to clavate, hyaline, inamyloid, thin-walled; setulae up to 16 μm long, cylindrical to conical, brownish orange in KOH. Pleurocystidia of *Siccus*-type broom cells, scattered, like the cheilocystidia. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body 8–15.2 x 4.8–9.6 μm , cylindrical to clavate, hyaline, inamyloid, thin-walled to apically thick-walled; setulae up to 8.8 μm long, cylindrical to conical, brownish orange

in KOH, thick-walled. Pileus trama dextrinoid. Caulocystidia of *Siccus*-type broom cells, similar to pileus broom cells. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to scattered on leaves and well rotted wood. Panama, Colombia, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 11 Jan 2011, Wenck 165 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque, along Rio Beni at Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6421 (LPB, NY); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 10 April 1990. Halling 6426 (LPB, NY).

23. *Marasmius oleiger* Singer, Sydowia 18: 339. 1965.

Type specimen: Singer B 776, from Bolivia.

Pileus 2–14 mm broad, hemispherical to convex, sometimes applanate, papilla present, velutinous, margin striate and undulate with age, yellowish brown (5E6), henna (7E7) or dark brown (6E8–6E6); context white, < 1 mm thick; odor and taste mild. Lamellae free,

close (19) 24–26, no lamellulae, up to 2 mm broad, grey-orange (5B2), margin concolorous with pileus. Stipe 20–50 x < 1 mm, smooth, glabrous, yellow–white (4A2) at apex darkening to golden brown (5D7) or cognac (6E7) at base. Basal mycelium present.

Basidiospores (11.2–) 13.6–16.0 (–18.4) x 3.2–4.0 μm [$X_{\text{mr}} = 14.6\text{--}16.7 \times 3.4 \mu\text{m}$, $X_{\text{mm}} = 15.65 \pm 1.54 \times 3.38 \pm 0.02 \mu\text{m}$, $Q = 3.5\text{--}5.8$, $Q_{\text{mr}} = 4.31\text{--}5.0$, $Q_{\text{mm}} = 4.66 \pm 0.49$, $n = 25$, $s = 5$], fusoid, smooth, hyaline, inamyloid. Basidia 33.6 x 9.6 μm , clavate, 4–spored hyaline, inamyloid. Basidioles 12.8–34.4 x 2.4–10.4 μm fusoid to clavate. Cheilocystidia crowded, consist of *Siccus*-type broom cells; main body 12–24.8 x 3.2–9.6 μm , clavate to cylindrical, rarely nodulose, hyaline, inamyloid, thin-walled; setulae up to 8 μm long, golden brown in KOH, acute, inamyloid, thick-walled. Pleurocystidia abundant, 18–37.6 x 4.8–10.4 μm , fusoid to clavate or cylindrical, golden brown in KOH, obtuse, inamyloid. Lamellae trama dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 9.6–24.8 x 2.4–12.8 μm , clavate to rarely subglobose, brown pigments in upper portions of cells, inamyloid, thin- to thick-walled; setulae up to 11.2 μm long, acute, golden brown in KOH, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe devoid of broom cells and caulocystidia. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, known distribution; Commonly found on leaf debris, solitary to gregarious. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, N of Yolosita, junction of Rio Coroico and Rio Huarinilla, 1277 m elev., 8 Jan 2010, Wenck 022 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairo, N of Coroico along the Rio Huarinilla, 1303 m elev., 13 Jan 2010, Wenck 049 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011. Wenck 153, 155 (LPB, SFSU). BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 171 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 185 (LPB, SFSU).

Notes: The Bolivian material differs from the protologue by having golden brown pleurocystidia with homogeneous, not coarsely or oily contents. The cystidia turn blue in crystal–blue mounts as in the type, and all other features match perfectly.

24. *Marasmius allocystis* Singer, *Flora Neotropica* 17: 206. 1976.

Type specimen: Singer B1875, from Bolivia.

Pileus 6–7 mm broad, broadly conical, striate to pleated, velutinous, dark brown (6F8); odor and taste mild. Lamellae adnexed, distant (17–19), no lamellulae, white, with dark brown (6F8) edges. Stipe 43–62 x < 1 mm, glabrous, dark brown (6F8). Basal mycelium present.

Basidiospores 14.4–17.6 x 2.4–4.0 μm [$X = 15.92 \pm 1.01$ x 3.24 ± 0.51 μm , $Q = 3.8–7.0$, $Q_m = 5.52 \pm 1.09$, $n = 20$], fusoid, smooth, hyaline, inamyloid. Basidia not observed.

Basidioles 18.4–27.2 x 4.8–6.4 μm , fusoid to subclavate. Cheilocystidia few, consist of *Siccus*-type broom cells; main body 12–21.6 x 2.4–5.6 μm , clavate, rarely nodulose, hyaline, inamyloid, thin-walled; setulae up to 10.4 μm long, acute, dark golden to brown in KOH, thin-walled. Pleurocystidia 32.8–60 x 6.4–11.2 μm , fusoid to lageniform, golden, oily contents in many filling up to %50 of cell, hyaline, inamyloid, thin-walled.

Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 7.2–11.2 x 2.4–8.0 μm , clavate to subcylindrical, hyaline, inamyloid, thin-walled to sometimes thick-walled at apex; setulae up to 7.2 μm , acute, brown to dark brown in KOH, thick-walled. Stipe smooth, slightly dextrinoid. Clamp connections present.

Habit, habitat and known distribution: solitary to scattered on leaves in low elevation forests. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 154 (LPB, SFSU).

25. *Marasmius haematocephalus* var. *haematocephalus* (Mont.) Fr., *Epicrisis Systematis Mycologici*, p 382. 1838.

Pileus 1–18 mm broad, conical to hemispherical or plano-convex, slightly depressed in center, velutinous, striate, color is highly variable in the red hues; ranging from violet-brown (10D7) to brownish red (8C6), brownish orange (7C7), dull red (9C3), reddish brown (8E4), grayish red (8B6), grayish red (11C5), maroon (11F8), port wine (12F7), garnet red (11E8) or rosewood (9C5); context white, < 1 mm thick; odor and taste mild. Lamellae adnexed to free, distant (8–14), lamellulae in 0–1 series, up to 3 mm broad, white to pale red (8A3) to port wine (12F7), non-marginate. Stipe 7–48 x < 1 mm, horse hair-like, cylindrical, glabrous, concolorous with lamellae at apex, darkening to brown (5E7, 6E7, 7F7) at base. Basal mycelium present.

Basidiospores (11.2–) 12.8–20.8 (–23.2) x (2.4–) 3.2–4.0 (–4.8) μm [Xmr = 14.2–19.7 x 3.2–3.8 μm , Xmm = 17.14 \pm 2.06 x 3.42 \pm 0.22 μm , Q = 3.0–8.0, Qmr = 4.4–6.2, Qmm =

5.13 ± 0.68, n = 24, s = 8], clavate–acicular to fusoid, smooth, hyaline, inamyloid.

Basidia not observed. Basidioles 16.8–37.6 x 3.2–7.2 μm, subfusoid to cylindrical or subclavate. Cheilocystidia consist of *Siccus*-type broom cells; main body 7.2–20.8 x 5.6–13.6 μm, clavate to cylindrical, sometimes pedicellate, sometimes nodulose, hyaline, inamyloid, thin-walled; setulae up to 5.6 μm long, acute, golden to light red in KOH, hyaline, inamyloid. Pleurocystidia 29.6–59.2 x 7.2–13.6 μm, fusoid to cylindrical or broadly lageniform, obtuse, hyaline, inamyloid. Lamellae trama dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 8–27.6 x 3.2–13.6 μm, clavate, sometimes pedicellate, hyaline, inamyloid, thin-walled at base to apically thick-walled; setulae up to 5.6 μm long, acute, golden to red in KOH, sometimes nodulose, hyaline, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to gregarious on leaves in low elevations.

Brazil, Argentina, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, N of Yolosita, junction of Rio Coroico and Rio Huarinilla, 1277 m elev., 8 Jan 2010, Wenck 019 (LPB, SFSU);

BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairo, N of Coroico along the Rio

Huarinilla, 1134 m elev., 13 Jan 2010, Wenck 043, 046 (LPB, SFSU); BOLIVIA. Dept.

La Paz, Prov. Nor Yungas, Hotel Verde, half way between Yolosa and Yolosita. 1207 m elev., 14 Jan 2010, Wenck 053, 062, 063 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Santa Barbara, east of Coroico along the Rio Coroico, 1062 m elev., 20 Jan 2010, Wenck 082 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 156 (LPB only), 157, 160, 161(LPB, SFSU); BOLIVIA Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 166, 173, 174, 177, 182 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 186, 188, 190, (LPB, SFSU) 191, 199 (LPB); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni near mouth of Rio Tuichi (Laguna del Tigre), 200 m elev., 3 April 1990. Halling 6386 (LPB, NY).

Notes: This species has a tremendous amount of color variation and is ubiquitous throughout the lowland tropics of Bolivia. This tremendous diversity in color lead me to believe that there may in fact be multiple species, however, this is not the case. Refer to Wannathes et al. (2009) for molecular data on the species.

26. *Marasmius haematocephalus* var. *leucophyllus* Singer, Flora Neotropica 17: 214. 1976.

Type specimen: Singer B 738, from Bolivia.

Pileus 1–8 mm broad, convex, slightly depressed, striate, velutinous, with a tiny papilla, brown (7E4–6); context < 1mm thick; odor and taste mild. Lamellae adnexed to free, distant (12–14), no lamellulae, 0.5–3 mm broad, light brown (6D4) to brownish grey (7E3) or pale orange (5A3), non-marginate. Stipe 16–41 x < 1 mm, horse hair-like, cylindrical, glabrous, concolorous with lamellae at apex, darkening to brown (5–6E7, 7F8) at base. Basal mycelium present but not obvious.

Basidiospores (12.8–) 13.6–17.6 (–18.4) x 3.2–4.0 μm [$X_{\text{mr}} = 14.3\text{--}16.7 \times 3.4\text{--}3.6 \mu\text{m}$, $X_{\text{mm}} = 15.49 \pm 1.2 \times 3.47 \pm 0.1 \mu\text{m}$, $Q = 3.2\text{--}5.8$, $Q_{\text{mr}} = 4.31\text{--}4.98$, $Q_{\text{mm}} = 4.52 \pm 0.4$, $n = 25$, $s = 3$], fusoid to clavate, hyaline, smooth, inamyloid. Basidia not observed.

Basidioles 9.6–38.4 x 3.2–7.2 μm , cylindrical to fusoid or clavate. Cheilocystidia composed of *Siccus*-type broom cells; main body 3.2–18.4 x 3.2–12 μm , clavate to subglobose, sometimes nodulose or branched, hyaline, inamyloid, thin-walled; setulae up to 7.2 μm long, conical to cylindrical, orange in KOH, inamyloid, thin-walled.

Pleurocystidia 31.2–48 x 5.6–17.6 μm , fusoid to cylindrical or lageniform, sometimes nodulose, hyaline, inamyloid. Lamellae trama dextrinoid. Pileipellis composed of a

mottled, hymeniform layer of *Siccus*-type broom cells; main body 4.8–16.8 x 4.8–9.6 μm , clavate, sometimes pedicellate, nodulose, hyaline, inamyloid, thin- to thick-walled; setulae up to 6.4 μm long, narrowly conical to cylindrical, sometimes forked, orange to orange-brown in KOH, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat and known distribution: solitary to gregarious on decaying leaves and wood. USA, Cuba, Mexico, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, N of Yolosita, junction of Rio Coroico and Rio Huarinilla, 1277 m elev., 8 Jan 2010, Wenck 023 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Hotel Verde, half way between Yolosa and Yolosita. 1207 m elev., 17 Jan 2010, Wenck 060 (LPB); BOLIVIA. Dept, La Paz, Prov. Nor Yungas, Santa Barbara, east of Coroico along the Rio Coroico, 1062 m elev., 20 Jan 2010, Wenck 089 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 162 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 183 (LPB, SFSU).

27. *Marasmius ferrugineus* (Berk.) Berk. & M.A. Curtis. Jour. Linn. Soc. Bot. 10: 297. 1868.

Type specimen: Gardner, from Brazil.

Pileus 4–13 mm broad, conical, pleated, velutinous, rusty brown (6E8); odor and taste mild. Lamellae free to adnexed, distant (10–14), no lamellulae, up to 3 mm broad, white with slightly rusty brown (6E8) edges. Stipe 32–74 x < 1 mm, horse hair-like, glabrous, white apex darkening to rusty brown (6E8) at base. Basal mycelium present.

Basidiospores (15.2–) 16.8–21.6 (–25.6) x 3.2–4.8 μm [Xmr = 16.9–20.8 x 3.2–3.7 μm , Xmm = 18.86 \pm 2.8 x 3.46 \pm 0.37 μm , Q = 4.2–8.0, Qmr = 4.54–6.55, Qmm = 5.55 \pm 1.42, n = 22, s = 2], fusoid to clavate, smooth, hyaline, inamyloid. Basidia not observed.

Basidioles 15.2–37.6 x 4–8 μm , fusoid to clavate. Cheilocystidia consist of *Siccus*-type cells; main body 8–20.8 x 4–8.8 μm , clavate to cylindrical, sometimes branched, hyaline, inamyloid, thin-walled; setulae up to 5.6 μm long, conical to cylindrical, orange to golden brown in KOH, inamyloid. Pleurocystidia 24–48 x 4–9.6 μm , fusoid to broadly lageniform, very common, also on lamellae edge, inamyloid. Lamellae trama dextrinoid.

Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type cells; main body 5.6–16 x 1.6–8 μm , clavate to pedicellate, often nodulose, hyaline, inamyloid, thin- to thick-walled; setulae up to 8 μm long, sometimes forked, orange to brown in KOH, conical to

cylindrical, hyaline, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution; solitary to gregarious on leaves in riparian corridor. Brazil, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 150 (LPB, SFSU); Bolivia. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 181 (LPB, SFSU).

28. *Marasmius digilioi* Singer in Singer & Digilio, Lilloa 25: 201. 1952.

Type specimen: Digilio & Singer T488, from Argentina.

Pileus 12 mm broad, plano-convex, slightly fibrillose, striate at margin, slightly crenate, green-grey (4D4); context < 1mm thick, cream (3A2); odor and taste mild. Lamellae adnexed, close (22), lamellulae in 2 series, white with brown margin (7E6). Stipe 35 x < 1mm, dry, tough, cylindrical, glabrous, white at apex, darkening to brown (7F6) at base. Basal mycelium present.

Basidiospores $6.4\text{--}8.0 \times 3.2\text{--}4.0 \mu\text{m}$ [$X = 7.65 \pm 0.59 \times 3.36 \pm 0.33 \mu\text{m}$, $Q = 1.8\text{--}2.5$, $Q_m = 2.30 \pm 0.27$, $n = 25$], ellipsoid with suprahilar depression, smooth, hyaline, inamyloid.

Basidia not observed. Basidioles $20\text{--}26.4 \times 4\text{--}7.2 \mu\text{m}$, fusoid to obtusely clavate.

Cheilocystidia composed of *Siccus*-type broom cells; main body $8\text{--}18.4 \times 5.6\text{--}8.8 \mu\text{m}$, clavate, rarely nodulose, hyaline, inamyloid, thin-walled; setulae up to $6.4 \mu\text{m}$, acute, rarely branched, brown in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, composed of a hymeniform layer of *Siccus*-type broom cells; main body $6.4\text{--}15.2 \times 3.2\text{--}8 \mu\text{m}$, clavate, sometimes nodulose, hyaline, inamyloid, thin- to thick-walled; setulae up to $8.8 \mu\text{m}$ long, acute, rarely branched, brown in KOH, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit, and known distribution: solitary to scattered on wood in submontane tropics, Bolivia, Argentina.

Material Studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 7 Jan 2010, Wenck 014 (LPB, SFSU).

29. *Marasmius trinitatus* Dennis, Trans. Brit. Mycol. Soc. 34: 425. 1951.

Type specimen: Dennis 158, from Trinidad.

Pileus 6–29 mm broad, convex to plano-convex or hemispherical, dry, striate, strongly velutinous, brownish grey (7F2) to olive brown (4E4–6), coffee (5F7–5D4), straw yellow (3B4) or olive (3F5); odor and taste mild. Lamellae adnexed, distant (11–13), lamellulae in 2–3 series, up to 4 mm broad, white to pale yellow (4A2), margin concolorous with pileus. Stipe 21–51 x < 1 mm, fistulose, glabrous, apex concolorous with lamellae, darkening to brown (6E8) or red brown at base. Brownish cream-colored strigose hairs at base.

Basidiospores (8.0–) 9.6–12 (–13.6) x 3.2–4.0 μm [Xmr = 10.4–12.0 x 3.4–3.8 μm , Xmm = 10.98 \pm 0.7 x 3.59 \pm 0.2 μm , Q = 2.0–4.0, Qmr = 2.79–3.27, Qmm = 3.09 \pm 0.2, n = 22.5, s = 4], fusoid to oblong, sometimes concave on inner side, while always curved on outer side, hyaline, smooth, inamyloid. Basidia not observed. Basidioles 10.4–32.4 x 3.2–8.0 μm , clavate to fusoid, some subcylindrical, apex truncated. Cheilocystidia consist of *Siccus*-type broom cells; main body fusoid to clavate, sometimes branched and/or nodulose, hyaline inamyloid, thin- to thick-walled; setulae up to 3.2 μm long, acute, light yellow in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis mottled, consisting of *Siccus*-type broom cells; main body 3.2–28 x 2.4–16 μm , clavate,

sometimes nodulose, hyaline, inamyloid, thin- to thick-walled; setulae up to 9.6 μm long, often shorter, acute, golden brown in KOH, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to scattered on leaf and wood debris.

USA, Mexico, Trinidad, Brazil, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 2 Jan 2011, Wenck 102 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 148 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 169 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 16 Jan 2011, Wenck 209 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Iturralde, S of Rurrenabaque along Rio Beni at junction with Rio Tuichi, Laguna del Tigre, 200 m elev., 14 April 1990, Halling 6435 (LPB, NY).

30. *Marasmius huchuy* sp. nov.

Etymology: huchuy (hoo-choo-I), Quechua, small, tiny, referring to the tiny basidiomes.

Pileus 1–3 mm broad, conical to plano-convex or hemispherical, striate, velutinous, disc chocolate brown (6F4), margin grayish brown; odor and taste mild. Lamellae free, subdistant to subclose (12–16), no lamellulae, yellowish white (4A2), edges chocolate brown (6F4). Stipe 10–25 x < 1 mm, wiry, horse hair-like, glabrous, light brown (5D6). Basal mycelium cream-colored.

Basidiospores (7.2–) 8.0–9.6 x 3.2–4.0 μm [$X = 8.70 \pm 0.68$ x 3.33 ± 0.33 μm , $Q = 2–3$, $Q_m = 2.65 + 0.42$, $n = 25$], ellipsoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 15.2–28.8 x 4.8–6.4 μm , fusoid with widest part of cell half way between midpoint and apex, making the apex appear subacute to subobtuse, hyaline, inamyloid. Cheilocystidia abundant, consisting of *Siccus*-type broom cells; main body 7.2–25.6 x 2.4–4.8 μm , clavate, inamyloid, thin-walled; setulae up to 5.6 μm long, acute, hyaline to yellow in KOH, inamyloid, thin- to thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body 6.4–14.4 x 4–8.8 μm , clavate, hyaline, inamyloid, thin-walled, sometimes thickening towards apex; setulae up to 7.2 μm long, acute rarely branched, grey in KOH, inamyloid, thick-walled. Lamellae trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit, and known distribution: solitary to scattered on leaves in riparian forest.
Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 163 (LPB, SFSU).

Notes: *Marasmius huchuy* differs from *M. leptus* Singer, from Africa, which has a reddish–purple pileus, distant lamellae, and large spores (10.5–12.5 x 3–3.5 μm). The new species differs from *M. pusio* Berk & M.A. Curtis which has fewer, subdistant lamellae (8–12), and an orange to deep brownish orange, pruinose stipe with *Siccus*-type broom cells.

31. *Marasmius rhabarberinus* Berk., Hook. Jour. Bot. 8: 135. 1856.

Type specimen: Spruce 140, from Brazil.

Pileus 22 mm broad, convex, subumbilicate, striate, velutinous, disc reddish golden, margin carrot red to orange (6B7); odor and taste mild. Lamellae adnexed, distant (11) with 1 series of lamellulae, up to 3 mm broad, yellowish white (4A2), non-marginate.

Stipe 39 x 2 mm, narrowed slightly at center, fistulose, glabrous, grayish orange (5B4) at apex, darkening to brownish grey (6F8) at base. Basal mycelium present.

Basidiospores (15.2–) 16.0–20.0 x 3.2–4.0 μm [$X = 17.47 \pm 1.49$ x 3.48 ± 0.41 μm , $Q = 3.8$ – 5.8 , $Q_m = 4.99 \pm 0.49$, $n = 20$], cylindrical-clavate to fusoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 20.8–32 x 2.4–7.2 μm , fusoid to clavate, sometimes narrowed in center, obtuse, hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 10.4–20.8 x 2.4–6.4 μm , clavate, hyaline, inamyloid, thin-walled; setulae up to 5.6 μm long, acute, rarely branched, orange to golden in KOH, inamyloid, thin- to thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid.

Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 5.6–15.2 x 2.4–6.4 μm , squarely clavate, sometimes nodulose, hyaline to orange in KOH, inamyloid, thin-walled; setulae up to 13.6 μm long, acute, orange to brown golden in KOH, sometimes nodulose, sometimes branched, inamyloid. Pileus trama dextrinoid.

Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit, and known distribution: solitary to scattered on leaf debris in low elevation forests. Brazil, Argentina, Bolivia.

Material studied: BOLIVIA. Dept. La Paz Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 193 (LPB).

32. *Marasmius* aff. *rubricosus* Mont., Ann. Sci. Nat. Bot. IV. 1:110. 1854.

Type specimen: French Guyana.

Pileus 20–40 mm broad, convex, striate, dry, velutinous, disc brown (6E8) to yellowish brown (5E7), margin brownish orange (6C8); context pale yellow (3A3), 1–2 mm thick; odor and taste mild. Lamellae adnexed, distant (12) with lamellulae in 1 series, sometimes intervenose and anastomosed, 4 mm broad, pale yellow (3A3–4A2), non-marginate. Stipe 40–68 x 1–4 mm, cylindrical, terete or compressed to cleft, glabrous, fistulose, light brown (6D4) at apex to dark brown (6F8) at base. Tuft of strigose, cream-colored hairs at the base.

Basidiospores (16.8–) 18–21.0 x 4.0–4.8 μm [$X = 19.33 \pm 1.35$ x 4.44 ± 0.29 μm , $Q = 4.0$ – 4.8 , $Q_m = 4.37 \pm 0.31$, $n = 8$], fusoid to clavate, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 24.8–34.4 x 6.4–8 μm , fusoid to clavate, obtuse, with discrete contents in base while apex is hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 13.6–24 x 6.4–7.2 μm , clavate to rarely subglobose, hyaline,

inamyloid, thin-walled; setulae up to 8.8 μm long, cylindrical, acute, golden in KOH, hyaline, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 14.4–24.8 x 6.4–9.6 μm , clavate, rarely nodulose or even branched, golden in KOH, inamyloid, thin-walled at base, thickening towards apex; setulae up to 8 μm long, conical to cylindrical, golden brown in KOH, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: Solitary on leaves in submontane tropics. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairó, N of Coroico along the Rio Huarinilla, 1303 m elev., 13 Jan 2010, Wenck 041 (LPB); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina. 200 m.a.s.l. 14 April 1990. Halling 6437 (LPB, NY).

Notes: The Bolivian material differs subtly from Singer's description in having broad, often intervenose lamellae with only one series of lamelullae. In other features it matches the description nicely.

33. *Marasmius matrisdei* Singer, Sydowia 18: 338. 1965.

Type specimen: Singer B 2523, from Bolivia.

Pileus 10–30 mm broad, plano–convex to plane, dry, subvelutinous, even to subrugulose pitted on disc, golden brown (5D7) fading in time to grayish orange (5B6); context < 1mm thick; odor and taste mild. Lamellae adnexed, crowded, no lamellulae, sometimes forked, light yellow (4A4), not marginate. Stipe 30–50 x 1–2 mm, equal, scantily subpruinose (lens), concolorous with lamellae above, progressively dark red brown below. Dark cream-colored tuft of hairs at base.

Basidiospores 11–14 x 3.5–4.5 μm [$X = 12.44 \pm 0.98 \times 4.0 \pm 0.38 \mu\text{m}$, $Q_r = 2.80\text{--}3.43$, $Q_m = 3.15 \pm 0.23$, $n = 8$], oblong, smooth, hyaline, inamyloid, thin-walled. Basidia not observed. Basidioles 20–28 x 2.4–4.8 μm , fusoid, smooth, thin-walled. Cheilocystidia abundant, consisting of *Siccus*-type broom cells; main body 5.6–12.8 x 5.6–8.8 μm , clavate, hyaline, inamyloid, thin-walled, sometimes thickening at apex; setulae up to 8.8 μm long, acute, simple (never branched), golden brown in KOH, inamyloid.

Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis mottled, consisting of *Siccus*-type broom cells; main body 8.8–16 x 4.8–6.4, clavate, sometimes nodulose to branched, hyaline, inamyloid, thin-walled at base, thickening towards apex; setulae up to 6.4 μm long, acute, golden in KOH, inamyloid. Pileus trama dextrinoid. Stipe abundantly

covered in *Siccus*-type broom cells with setulae 8–16 μm long, hyaline, inamyloid. Setae absent. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, known distribution: On rotting wood in lowland riparian forest. Bolivia.

Material studied: BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 12 April 1990, 200 m elev., Halling 6432 (LPB, NY).

34. *Marasmius beniensis* Singer, Sydowia 18: 334. 1965.

Type specimen: Singer B 2000, from Bolivia.

Pileus 9–17 mm broad, plano-convex to convex, slightly striate to sulcate, velutinous, disc yellowish brown (5E7), fading to grayish orange (5B4) at margin. Lamellae adnexed, close (23–26), lamellulae in 2 series, up to 1 mm broad, grayish orange (5B4), slightly eroded, margin concolorous with pileus. Stipe 17–34 x 1 mm, cylindrical, fistulose, glabrous, light yellow (4A4) apex, darkening to lemon yellow (4B8) at base. Basal mycelium present.

Basidiospores (6.4–) 7.2–8.8 x 3.2–4.0 μm [$X = 7.78 \pm .069$ x 3.42 ± 0.37 μm , $Q = 1.6$ – 2.8 , $Q_m = 2.49 \pm 0.19$, $n = 25$], ellipsoid, smooth, hyaline, inamyloid. Basidia 16.8 x 5.6 μm , clavate, 4-spored. Basidioles 16–24 x 1.6–7.2 μm , clavate, smooth, hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 11.2–18.4 x 1.6–8.8 μm , clavate, hyaline, inamyloid, mostly thin-walled, occasional thick-walled at apex; setulae up to 7.2 μm long, acute, golden brown in KOH, hyaline, inamyloid, thin- to thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body 3.2–11.2 x 3.2–5.6 μm , clavate, sometimes nodulose, hyaline, inamyloid, thin-walled; setulae up to 8.8 μm long but usually shorter, acute, golden brown in KOH, hyaline, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to coupled on buried organic debris (leaves and wood), in low elevation forests. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 198 (LPB, SFSU).

Notes: The Bolivian material differs from the protologue in having more lamellae (close vs. distant).

35. *Marasmius corrugatus* var. *aurantiacus* (Murrill) Singer, Flora Neotropica 17: 193. 1976.

Type specimen: Murrill, from Florida (U.S.A.).

Pileus 14–22 mm broad, plano–convex, velutinous, margin even (non-striate), golden yellow (5B7); odor and taste mild. Lamellae adnate, close to crowded (20+), lamellulae in 3–4 series, sometimes forked, yellowish white (4A2), non-marginate. Stipe 39–67 x 2 mm, glabrous, stuffed, yellowish white (4A2) at apex to dark brown (7F8) or sometimes yellowish brown (5D8) at base. Orange strigose rhizomorph-like hyphae present at base.

Basidiospores 9.6–11.2 x 3.2–4.0 μm [$X = 10.30 \pm 0.56 \times 3.39 \pm 0.39 \mu\text{m}$, $Q = 2.4–3.5$, $Q_m = 3.18 \pm 0.45$, $n = 25$], fusoid to slightly oblong, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 12.8–20 x 4–6.4 μm , fusoid, obtuse, thin-walled. Cheilocystidia consist of *Siccus*-type broom cells; main body 7.2–17.6 x 4–12 μm , clavate, rarely nodulose, hyaline, inamyloid, thin-walled, at least basally so, sometimes thickening towards the apex; setulae few (3–10 per cell), up to 4 μm long, acute, hyaline to yellow in KOH, inamyloid, thin- to thick-walled. Pleurocystidia absent. Lamellae trama strongly dextrinoid. Pileipellis consists of a mottled, hymeniform layer of two types of cells: 1)

Siccus-type broom cells; main body 7.2–18.4 x 3.2–9.6 μm , clavate, hyaline, inamyloid, thin- to thick-walled; setulae up to 8.8 μm long, acute, hyaline to yellow in KOH, inamyloid; 2) *Siccus*-type cells with significantly longer setulae; main body 12–28 x 3.2–9.6 μm , hyaline, inamyloid, mostly thick-walled, rarely thin-walled; setulae upwards of 28 μm long, few (1–10 per cell), acute, sometimes branched, hyaline to yellow in KOH, inamyloid, thick-walled. Stipe covered in simple, cylindrical, obtuse cells and *Siccus*-type broom cells; main body 1.4–20 x 3.2–5.6 μm , clavate; setulae up to 8 μm long, hyaline, inamyloid. Pileus trama strongly dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, and known distribution: solitary to clustered, growing on decaying leaves and wood in low elevation forests. U.S.A., Colombia, Ecuador, Brazil, Bolivia, Argentina.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 170 (LPB, SFSU).

36. *Marasmius durasnu* sp. nov.

Etymology: durasnu (doo-rahs-noo), Quechua, peach, as in the fruit. This refers to the color and velutinous texture of the pileus.

Pileus 6–23 mm broad, convex, sometimes slightly striate, velutinous, margin even (non-striate), grayish orange (5B4) to pale orange (5A3) or golden yellow (5B7); odor and taste mild. Lamellae adnate, distant (11–13), lamellulae in 1–2 series, up to 2 mm broad, white to pale orange (5A3, non-marginate. Stipe 22–47 x < 1 mm broad, glabrous, white at apex, reddish brown (6E7) to brown (6D5) at base. Basal mycelium present.

Basidiospores (8.0–) 8.8–11.2 (–14.4) x 2.4–4.0 μm [$X_{\text{mr}} = 9.1\text{--}10.8 \times 2.5\text{--}3.8 \mu\text{m}$, $X_{\text{mm}} = 9.93 \pm 0.8 \times 3.21 \pm 0.6 \mu\text{m}$, $Q = 2.0\text{--}4.5$, $Q_{\text{mr}} = 2.43\text{--}3.93$, $Q_{\text{mm}} = 3.21 \pm 0.8$, $n = 25$, $s = 3$], ellipsoid to fusoid, smooth, inamyloid. Basidia not observed. Basidioles 13.6–24.8 x 3.2–7.2 μm , fusoid to subclavate. Cheilocystidia consist of scattered *Siccus*-type broom cells; main body 6.4–17.6 x 3.2–8 μm , clavate to rarely fusoid, hyaline, inamyloid, thin-walled; setulae up to 8.8 μm long, acute, hyaline to slightly yellow in KOH, sometimes branched, inamyloid, thick-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 11.2–20 x 4.8–11.2 μm , clavate, rarely nodulose, hyaline, inamyloid, thin-walled; setulae up to 13.6 μm long, bright orange in KOH, acute,

sometimes nodulose, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit and known distribution: Solitary to scattered on decaying leaves and wood in lowland to submontane forest. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 6 Jan 2011, Wenck 138 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 147 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 11 Jan 2011, Wenck 168 (LPB, SFSU).

Notes: *Marasmius durasnu* differs from *M. abundans* var. *auranticus* Corner, from Malaysia, which has close lamellae (14–19), and larger basidiospores (13–17 x 4–5 μm). *Marasmius floriceps* Berk. & M. A. Curtis, from Cuba and Colombia, is similar but has a sulcate, more deeply pigmented pileus (mostly orange to bright orange or bright red–brown), and subclose to subdistant lamellae. *Maramius corrugatus* var. *aurantiacus* (Murrill) Singer is also similar, but it has more numerous lamellae (close to crowded with 22 through lamellae), and a pileipellis composed of smooth cells plus *Siccus*-type broom cells.

37. *Marasmius* aff. *ruber* Singer, Sydowia 18: 342. 1965.

Type specimen: Singer B 1638, from Bolivia.

Pileus 13–23 mm broad, applanate to plano-convex, striate, velutinous, disc brownish red (8C7), margin pale orange (6B4); context <1 mm thick, orange white (5A2); odor and taste mild. Lamellae adnate to subdecurrent, distant (9–12), lamellulae in 2 series, 2 mm broad, orange-white (5A2), non-marginate. Stipe 42–47 x 1.5–2 mm, slightly tapering downwards, pruinose, fistulose, apex orange-white (5A2) darkening to dark brown (6F7) at base. Basal mycelium present.

Basidiospores 8–10.4 x 3.2–4.8 μm [$X = 8.61 \pm 0.67$ x 3.65 ± 0.41 μm , $Q = 2\text{--}3.25$, $Q_m = 2.44 \pm 0.33$, $n = 25$], ellipsoid to fusoid, often phaseoliform, smooth, with oily contents, inamyloid. Basidia not observed. Basidioles 22.4–27.2 x 3.2–5.6 μm , subfusoid to subclavate, narrow. Cheilocystidia consist of *Siccus*-type broom cells; main body 9.6–16.8 x 3.2–6.4 μm , clavate, sometimes slightly nodulose, hyaline, inamyloid, thin-walled at base, thickening towards apex; setulae up to 9.6 μm long, acute, narrowly cylindrical, orange in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body

11.2–16 x 6.4–8.8 μm , clavate, obtuse in comparison to the cheilocystidia, sometimes slightly nodulose to branched, inamyloid, thin- to thick-walled; setulae up to 8 μm , rarely up to 16 μm long, golden to orange to red-brown in KOH, inamyloid, thick-walled.

Pileus trama dextrinoid. Stipe covered in *Siccus*-type broom cells; main body non-existent to 16 μm long, clavate, thick-walled; setulae up to 23.2 μm long, golden-brown in KOH, thick-walled. Stipe trama dextrinoid. Clamp connections present.

Habitat, habit, and known distribution: Scattered to solitary on wood in riparian forest.

Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairó, N of Coroico along the Rio Huarinilla, 1303 m elev., 13 Jan 2010, Wenck 045 (LPB, SFSU).

Notes: The Bolivian material differs from *M. ruber*, described from Bolivia, which has more numerous (at least 20), red to orange lamellae with 2–3 series of lamellulae, and no mention was made in the protologue of stipe broom cells, although it reports the stipe as “glabrous to subglabrous.”

38. *Marasmius berteroi* var. *major* Singer, Sydowia 18: 334. 1965.

Type specimen: Singer T 2886, from Argentina.

Pileus 29–67 mm broad, plano–convex, velutinous, slightly striate to pleated or shallowly sulcate, disc dark brown (6F8), margin light brown (6D7–7D7), orange (6B7) to tomato red (8C8) in pleats; odor and taste mild. Lamellae adnexed to free, distant to remote (11–12), lamellulae in 0–1 series, up to 12 mm broad, white, edges orange (6B7). Stipe 57–90 x 2–3 mm, thinner at apex, enlarged at base, stuffed, glabrous, brown (7F7). Cream-colored basal mycelium present.

Basidiospores (9.6–) 11.6–16.0 (–17.6) x 2.4–4 μm [$X_{\text{mr}} = 11.6\text{--}14.9 \times 2.9\text{--}3.0 \mu\text{m}$, $X_{\text{mm}} = 13.24 \pm 2.34 \times 2.95 \pm 0.08 \mu\text{m}$, $Q = 3.5\text{--}6.3$, $Q_{\text{mr}} = 3.85\text{--}5.25$, $Q_{\text{mm}} = 4.55 \pm 0.99$, $n = 25$, $s = 2$], fusoid to ellipsoid, hyaline, smooth, inamyloid. Basidia not observed. Basidioles 24–31.2 x 3.2–7.2 μm , clavate to fusoid, sometimes with discrete packets of oily contents, thin-walled. Cheilocystidia abundant, consisting of *Siccus*-type broom cells; main body 4.8–20 x 4–7.2 μm , clavate to rarely subglobose, light yellow in KOH, inamyloid, thin-walled; setulae up to 8 μm long, thick-walled, cylindrical, acute, golden in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 11.2–19.2 x 1.6–8 μm , clavate, often nodulose, hyaline, inamyloid, thick-walled; setulae up to 12 μm long,

rarely branched, acute, golden brown in KOH, hyaline, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit, known distribution: Solitary to scattered in buried leaf duff of low elevation forests. Belize, Ecuador, Bolivia, Peru, Brazil, Argentina.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 143 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Choro, 1 hour north of Coroico along Rio Coroico, 800 m elev., 13 Jan 2011, Wenck 184 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6427 (LPB, NY).

Notes: The Halling specimen (#6427) found lower in the tropics has a larger spore average than the samples found by Wenck. Singer came across a similar specimen in Colombia that matched in all characteristics but had slightly larger spore averages. The Bolivian specimens represent the largest basidiocarps of any *Marasmius* species studied during this project. The Bolivian material is very close to *M. rhabarberinus* Berk. which has slightly larger spores (16–20 μm), and a smaller overall stature.

39. *Marasmius bellus* Berk., Hook. Jour. Bot 8: 139. 1856.

Type specimen: Spruce, from Brazil.

Pileus 25–46 mm broad, convex to plano-convex or applanate, slightly depressed, striate, velutinous, hygrophanous, grayish orange (5b4), fading to pale orange (5A3); context white, < 1 mm thick; odor and taste mild. Lamellae adnexed to adnate, distant (11–12), lamellulae in 2 series, up to 4 mm broad, pale yellow (4A3) non-marginate. Stipe 33–90 x 2–3 mm, slightly narrowed towards base, apex velutinous, minutely fibrillose at base, reddish golden to brown orange (6C7) at apex, dark brown (7F7) at base. Basal mycelium present.

Basidiospores (8–) 9.6–14.4 x 3.2–4.0 (–4.8) μm [$X_{\text{mr}} = 10.4\text{--}12.9 \times 3.2\text{--}4.1 \mu\text{m}$, $X_{\text{mm}} = 11.66 \pm 1.79 \times 3.68 \pm 0.63 \mu\text{m}$, $Q = 2.4\text{--}3.5$, $Q_{\text{mr}} = 3.09\text{--}3.18$, $Q_{\text{mm}} = 3.13 \pm 0.06$, $n = 23$, $s = 2$], oblong or fusoid with applanate inner side, smooth, hyaline, inamyloid.

Basidia 31.2–44 x 5.6–6.4 μm , cylindrical to narrowly clavate, hyaline with few distinct oil drops inside, 4-spored. Basidioles 28–44 x 3.2–8 μm , cylindrical to narrowly clavate, hyaline, inamyloid. Cheilocystidia abundant, composed of *Siccus*-type broom cells; main body 10.4–15.2 x 5.6–9.6 μm , clavate to fusoid, hyaline and inamyloid; setulae up to 15 μm , hyaline to yellow in KOH, thick-walled. Pleurocystidia absent. Lamellae trama

slightly dextrinoid. Pileipellis composed of a hymeniform layer of *Siccus*-type broom cells; main body 7.2–16.8 x 2.4–8.8 μm , clavate to widely cylindrical, slightly yellow in KOH, inamyloid; setulae up to 15 μm , cylindrical, long, yellow in KOH, inamyloid. Pileus trama strongly dextrinoid. Stipe hyphae cylindrical, dextrinoid; surface with scattered *Siccus*-type broom cells similar to those on the pileipellis. Clamp connections present.

Habit, habitat and known distribution: solitary in submontane forest on decaying wood and leaf litter. Brazil to Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Chairó, N of Coroico along the Rio Huarinilla, 1303 m elev., 13 Jan 2010, Wenck 052 (LPB); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 11 Jan 2011, Wenck 164 (LPB, SFSU).

Notes: *Marasmius bellus* differs from *Marasmius durasnu* in forming larger pilei (25–46 mm broad vs. 6–23 mm broad), and in forming larger basidiospores (9.6–14.4 x 3.2–4.0 μm vs. 8.8–11.2 x 2.4–4 μm).

40. *Marasmius bellus* var. *pruinostipes* var. *nov.*

Pileus 20–45 mm broad, convex to plane, dry, subvelutinous, even to depressed, rarely subrugulose, disc orange (5A6), orangish white (4A4–5) toward margin, margin even to slightly scalloped; context thin (< 1mm); odor and taste mild. Lamellae adnate, distant to subremote (10–11 reach stipe), no lamellulae, pale orange (4A3), not marginate. Stipe 50–70 x 1–3 mm, equal, glabrous to subpruinose below, concolorous with lamellae above, progressively red brown below. Cream to grayish yellow (4B4) mycelium at the base.

Basidiospores (11.2–) 12–15 x 3.2–4.5 μm [$X = 12.33 \pm 1.10$ x 4.0 ± 0.45 μm , $Q = 2.5$ – 4.0 , $Q_m = 2.86 \pm 0.30$, $n = 25$], ellipsoid to fusoid or broadly cylindrical, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 19.2–25.6 x 4–7.2 μm , subfusoid to subclavate, thin-walled. Cheilocystidia consist of *Siccus*-type broom cells; main body 8.8–13.6 x 2.4–8 μm , clavate, subpedicellate, hyaline, inamyloid, thin- to thick-walled; setulae up to 8 μm long, acute, slightly yellow in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consists of a hymeniform layer of *Siccus*-type broom cells; main body 11.2–17.6 x 2.4–8.8 μm , hyaline, inamyloid, thin-walled at base, thick-walled at apex; setulae up to 14.4 μm long, acute, yellow in KOH, inamyloid. Pileus trama dextrinoid. Caulocystidia consist of abundant *Siccus*-type broom cells,

usually forked or branched, mostly clavate, often lacking differentiated basal body, with acute setulae up to 28 μm long, thick-walled. Stipe trama dextrinoid. Clamp connections present.

Habit, habitat, known distribution: growing on well rotted wood in low forests. Bolivia.

Material studied; BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque, along Rio Beni at Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6424 (LPB, NY).

Notes: *Marasmius bellus* var. *pruinostipes* differs from *M. bellus* var. *bellus* in spore size and stipe surface features. *Marasmius bellus* var. has smaller spores (8–12.7 x 3–4.8 μm) and smooth stipe, lacking conspicuous *Siccus*-type broom cells.

Marasmius durasnu is similar but has smaller spores (8.8–11.2 x 2.4–4 μm) and also has a glabrous stipe lacking broom cells. *Marasmius matrisdei* has a smaller cap (7–17 mm broad) and close gills, otherwise it matches in color, spore size, and stipe surface features.

41. *Marasmius napoensis* Singer, Flora Neotropica 17: 186. 1976.

Type specimen: Singer B 7348, from Ecuador.

Pileus 5–21 mm broad, convex to plano–convex, subvelutinous to velutinous, slightly striate to sulcate at margin, initially canescent, reddish brown (8E7) to orange brown (7D8), fading to reddish orange (7B7), rugulose-pitted at margin; odor and taste mild. Lamellae adnexed to free, distant to subdistant (14–16), lamellulae in 1–2 series, up to 4 mm broad, pale yellow (3–4A3), non–marginate. Stipe 15–75 x 1–2 mm, cylindrical, pruinose, pale yellow (4A3) at apex to reddish brown (8E7) at base. Base with strigose, pale yellow (4A2) mycelium.

Basidiospores (7.2–) 8.0–10.4 x 3.2–5.6 μm [$X = 9.05 \pm 0.87$ x 4.55 ± 0.51 μm , $Q = 1.5$ – 2.5 (–2.8), $Q_m = 1.82 \pm 0.19$, $n = 20$], ellipsoid, occasionally broadly fusoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 17.6–61.6 x 2.4–7.2 μm , narrowly fusoid to narrowly clavate, thin-walled. Cheilocystidia abundant, consist of *Siccus*-type broom cells; main body 8.8–23.2 x 3.2–8.8 μm , clavate, hyaline, inamyloid, thin-walled at base thickening towards apex; setulae up to 16 μm long, acute, sometimes only a few setulae per cell, orange-brown in KOH, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consists of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 11.2–20 x 3.2–8.8 μm , mostly clavate to rarely fusoid, almost always nodulose, hyaline, inamyloid, thin- to thick-walled; setulae up to 13.6 μm , rarely reaching 20 μm long, dark brown in KOH, nodulose, sometimes branched, inamyloid, thick-walled. Pileus trama dextrinoid. *Siccus*-type broom cells abundant on stipe; main

body 5.6–12 x 1.6–13.6 μm , clavate, often nodulose to branched, hyaline, inamyloid, thin- to thick-walled; setulae often longer than 20 μm , acute, often branched, curved or straight, sometimes nodulose, hyaline, inamyloid, thin- to thick-walled. Clamp connections present.

Habitat, habit and known distribution: Solitary to scattered on decaying leaves in submontane forest. Ecuador, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 3 Jan 2011, Wenck 120 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 7 April 1990 Halling 6417 (LPB, NY).

42. *Marasmius leoninus* Berk., Hook. Jour. 8: 135. 1856.

Type specimen: Spruce 112, from Brazil.

Pileus 1.5–40 mm broad, obtusely convex to plano-convex or applanate, typically depressed on the disc, striate towards the warty margin, velutinous, disc golden yellow (5B5) to brownish yellow (5C–D5–4) or yellowish brown (5E5–7), margin pale orange

(5A4), brown with age; context up to 3mm thick; odor and taste mild. Lamellae free to slightly notched or adnexed, distant to subdistant (16–23), lamellulae in 3 series, up to 8 mm broad, sometimes anastomosed and intervenose, orange (5A4) to pale orange (4–5A2), non-marginate. Stipe 45–70 x 2–4 mm, terete or sometimes compressed, fistulose, glabrous, pale orange at apex (5A4), darkening to dark brown (7F8) or reddish brown at base. Arising from pallid, felty mycelium, however a dull brownish (5B5) to cream, strigose basal mycelium present.

Basidiospores (7.2–) 8–10.4 x 3.2–4.8 μm [$X_{\text{mr}} = 8.5\text{--}10.1 \times 3.6\text{--}3.7 \mu\text{m}$, $X_{\text{mm}} = 9.3 \pm 1.1 \times 3.68 \pm 0.06 \mu\text{m}$, $Q = 1.8\text{--}3.3$, $Q_{\text{mr}} = 2.34\text{--}2.74$, $Q_{\text{mm}} = 2.54 \pm 0.28$, $n = 20$, $s = 2$], ellipsoid, smooth, hyaline, inamyloid. Basidia 24–29.6 x 5.6–8 μm , narrowly clavate, hyaline, inamyloid, 4-spored. Basidioles 24–29.6 x 5.6–8 μm , clavate, few are fusoid, hyaline, inamyloid. Cheilocystidia consist of *Siccus*-type broom cells; main body 5.6–20 x 5.6–10.4 μm , fusoid to clavate, hyaline, inamyloid, some thick-walled, mostly thin-walled; setulae up to 6.4 μm , cylindrical, golden in KOH, hyaline, inamyloid.

Pleurocystidia absent. Lamellae trama slightly dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Siccus*-type broom cells; main body 5.6–19.2 x 3.2–8 μm wide, clavate to broadly cylindrical, sometimes pedicellate, hyaline, inamyloid, mostly thin-walled, some thick-walled; setulae up to 9.6 μm long, golden to brown in KOH,

cylindrical, thick-walled, hyaline, inamyloid. Pileus trama dextrinoid. Stipe of cylindrical, parallel hyphae; broom cells absent.

Habit, habitat, and known distribution: Solitary to scattered on decaying leaf detritus. USA, Ecuador, Venezuela, Brazil, Bolivia, Argentina.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 2 Jan 2011, Wenck 101 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 6 Jan 2011, Wenck 133 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni toward Rio Tuichi, 200 m elev., 31 Mar 1990, Halling 6375 (LPB, NY); BOLIVIA. Dept. Beni, Prov. Iturralde, N of Rurrenabaque, along Rio Beni at Pueblito Capeina, 200 m elev., 10 April 1990, Halling 6423 (LPB, NY).

43. *Marasmius floriceps* Berk. & M.A. Curtis, Jour. Linn. Soc. Bot. 10: 298. 1869.

Type specimen: Wright 31, from Cuba.

Pileus 12 mm broad, plano-convex, umbilicate, striate, velutinous, disc brownish yellow (5C8), margin light orange (5A5) to orange (6B7); context < 1 mm thick, pale yellow

(4A3); odor and taste mild. Lamellae adnexed, subdistant (16), lamellulae in 2 series, 2 mm broad, pale yellow (4A3), non-marginate. Stipe 3–32 x 1–2 mm, cylindrical, glabrous, pale yellow at apex (4A3), brownish yellow in middle, dark brown (5F8) to reddish brown at base. Arising from a buff mycelium mat on substrate.

Basidiospores (8.8–) 10.4–12.8 (–13.6) x 3.2–4 μm [Xmr = 11.6–12.3 x 3.4–3.8 μm Xmm = 11.94 \pm 0.45 x 3.58 \pm 0.27 μm , Q = 2.6–4.3, Qmr = 3.06–3.54, Qmm = 3.30 \pm 0.34, n = 25, s = 2], ellipsoid to oblong, some with a suprahilar depression, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 18.4–31.2 x 5.6–7.2 μm , fusoid to subclavate, obtuse, thin-walled. Cheilocystidia consist of *Siccus*-type broom cells; main body 13.6–17.6 x 5.6–8 μm , clavate, hyaline, inamyloid, thin-walled; setulae up to 6.5 μm long, acute, hyaline to pale yellow in KOH, inamyloid. Pleurocystidia absent.

Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body 14.4–28 μm , clavate, hyaline, inamyloid, thin-walled; setulae up to 10.4 μm long, acute, hyaline to pale yellow in KOH, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat and known distribution: solitary to scattered on decaying leaves and palm parts in low elevation forests. Cuba, Mexico, Colombia, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Hotel Verde, half way between Yolosa and Yolosita, 1207 m elev., 17 Jan 2010, Wenck 064 (LPB); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, S of Rurrenabaque, along Rio Beni near mouth of Rio Tuichi (Laguna del Tigre), 200 m elev., 3 April 1990, Halling 6391 (LPB, NY).

44. *Marasmius* aff. *bezerrae* Singer, Flora Neotropica 17: 184. 1976.

Type specimen: Singer B 3409, from Brazil.

Pileus 5–20 mm broad, conical to convex or plano-convex, dry, striate to subpubescent or subsulcate, velutinous, disc rugulose, yellowish brown (5E7–8), fading to grayish orange (5C4) or yellowish brown (5F7; odor and taste mild. Lamellae notched to adnexed, subdistant (14–15), lamellulae in 2–3series, up to 1 mm broad, white, with brown edges. Stipe 4–49 x < 1–2 mm, glabrous, pale yellow (4A2) at apex, darkening to brown or reddish brown at base (6E7). Arising from pale yellow (4A2), felty to strigose mycelium.

Basidiospores 8–10.4 (–11.2) x 3.2–4.0 μm [$X = 9.78 \pm 0.65 \times 3.42 \pm 0.33 \mu\text{m}$, $Q = 2.0$ – 3.5 , $Q_m = 2.93 \pm 0.32$, $n = 22$], ellipsoid to fusoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 18.4–24 x 5.6–7.2 μm , fusoid to subclavate. Cheilocystidia scattered, consisting of *Siccus*-type broom cells; main body 13.6–16.8 x 4.8–9.6 μm ,

clavate, hyaline, inamyloid, thin-walled; setulae up to $3.2\ \mu\text{m}$ long, acute, slightly yellow in KOH, thin-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type cells; main body $7.2\text{--}11.2 \times 5.6\text{--}8\ \mu\text{m}$, clavate, often pedicellate, hyaline, inamyloid, thin-walled at base sometimes becoming thick-walled at apex; setulae up to $7.2\ \mu\text{m}$ long, conical, acute, slightly yellow in KOH, inamyloid, thick-walled. Pileus trama dextrinoid. Stipe sometimes smooth, sometimes covered in *Siccus*-type broom cells; Main body $3.2\text{--}13.6 \times 2.4\text{--}8.8\ \mu\text{m}$, clavate, often nodulose, light yellow in KOH, inamyloid; Setulae up to $8\ \mu\text{m}$ long, conical, acute, light yellow in KOH, inamyloid. Stipe trama dextrinoid. Clamp connections present.

Habit, habit, and known distribution: solitary to scattered on leaves in low elevation forests of Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 152 (LPB, SFSU); BOLIVIA. Dept. Beni, Prov. Gral. José Ballivián, N of Rurrenabaque along Rio Beni, Pueblito Capeina, 200 m elev., 5 April 1990, Halling 6410 (LPB, NY).

Notes: The Bolivian material differs from the protologue in having longer spores (8.8–10.4 μm vs. 7–8.2 μm), and a smaller pileus (9–12 mm vs. up to 24 mm broad).

45. *Marasmius bezerrae* Singer, Flora Neotropica 17: 184. 1976.

Type specimen: Singer B 3409, from Brazil.

Pileus 7–20 mm broad, plano–convex, velutinous, margin even (non-striate), brownish orange to reddish brown (6D8); odor and taste mild. Lamellae adnexed, up to 3 mm deep, subdistant to close (15–18), lamellulae in 2 series, yellowish white (4A2), edges brown. Stipe 35–57 x < 1 mm, glabrous, yellowish white (4A2) at apex, darkening to brown (6F8) at base. Basal mycelium present.

Basidiospores 9.6–12.8 x 2.4–4.0 μm [$X = 10.80 \pm 1.2$ x 3.08 ± 0.56 μm , $Q = 2.8$ – 4.0 , $Q_m = 3.75 \pm 0.35$, $n = 20$], fusoid, smooth, hyaline, inamyloid. Basidia not observed.

Basidioles 20–27.2 x 2.4–6.4 μm , clavate, obtuse, thin-walled. Cheilocystidia abundant, consisting of *Siccus*-type broom cells; main body 20–25.6 x 4–8 μm , clavate, hyaline, inamyloid, thin-walled; setulae up to 8 μm long, acute, golden in KOH, inamyloid.

Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis not mottled, consisting of a hymeniform layer of *Siccus*-type broom cells; main body 20–28.8 x 4.8–8.8 μm , clavate,

rarely nodulose, hyaline, inamyloid, thin-walled; setulae up to 10.4 μ m long, acute, golden in KOH, inamyloid, thin-walled. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habitat, habit, and known distribution: Solitary to scattered on leaves in submontane forest. Brazil, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 6 Jan 2011, Wenck 141 (LPB, SFSU).

Mushrooms not included in the *Marasmius sensu stricto*, but notable finds in Bolivia.

Marasmius thwaitesii Berk. & Broome, J. Linn. Soc., Bot. 14: 39. 1875.

Section *Hygrometrici* - no longer accepted in *Marasmius s.s.*

Pileus 1–3 mm broad, conical to obtusely conical, striate, velutinous, with tufts of erect hairs on pileus disc and at plicate margin, disc dark brown (6F8) to raw umber (5F8) with brown (6E8) plicae, fading to grayish orange (5B5) to grayish yellow (4B5) inside plicae;

hairs up to 1mm tall, radiating from each pleat on margin; context white, < 1 mm thick; odor and taste mild. Lamellae adnexed to adnate, close (20+), no lamellulae, up to 1 mm broad, pale yellow (4A3), edges white to grayish orange (5B5). Stipe 4–27 x 1 mm, wiry, velutinous, brown (5E8–5F8). Basal mycelium present.

Basidiospores 6.4–8.8 x 3.2–4.8 μm [$X_{\text{mr}} = 7.6\text{--}8.0 \times 3.7\text{--}4.0 \mu\text{m}$, $X_{\text{mm}} = 7.82 \pm 0.2 \times 3.80 \pm 0.2 \mu\text{m}$, $Q = 1.5\text{--}2.8$, $Q_{\text{mr}} = 1.99\text{--}2.18$, $Q_{\text{mm}} = 2.08 \pm 0.1$, $n = 24$, $s = 3$], ellipsoid, often with a suprahilar depression, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 20–26.4 x 6.4–8.8 μm , fusoid, acute to obtuse. Cheilocystidia consist of *Rotalis*-type broom cells; main body 12–44 x 4–10.4 μm , clavate to cylindrical to subglobose, sometimes nodulose, sometimes pedicellate; setulae up to 2.4 μm long, acute, appearing apically or covering most of the way to the base, hyaline, inamyloid. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis composed of a mottled, hymeniform layer of *Rotalis*-type broom cells; main body 14.4–20 x 4.8–12 μm , clavate to cylindrical or subglobose, sometimes pedicellate, hyaline, inamyloid; setulae up to 2.4 μm long, usually apical, however sometimes covering down to the base of the cell, hyaline, inamyloid. Pileus hairs are chains of globose cells extending away from the pileus surface, with setulae as on broom cells. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat and known distribution: solitary to scattered on wood and leaves in riparian areas of low and submontane forests. Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Santa Barbara, east of Coroico along the Rio Coroico, 1062 m elev., 20 Jan 2010, Wenck 084 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, S of Coroico, towards the waterfalls, 2030 m elev., 3 Jan 2011, Wenck 116 (LPB, SFSU); BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing, 1134 m elev., 8 Jan 2011, Wenck 144 (LPB).

Marasmius sp. - Wenck #126

Section *Hygrometrici* - no longer accepted in *Marasmius* s.s.

Pileus 1–2 mm broad, hemispherical, striate, velutinous, margin crenate, black; odor and taste mild. Lamellae, attachment unknown (no collarium), distant, no lamellulae, up to 1 mm broad, white, edges black. Stipe 20–43 x < 1 mm, wiry, horse hair-like, insititious, glabrous, coffee (5F7).

Basidiospores not found. Basidia not observed. Basidioles $17.6\text{--}20.8 \times 4.8\text{--}7.2 \mu\text{m}$, fusoid to clavate, acute to obtuse, thin-walled. Cheilocystidia consist of 2 types of cells; 1) *Rotalis*-type broom cells with short brown setulae, located nearest the pileus edge; 2) long setoid cells, $29.6\text{--}40 \times 5.6\text{--}7.2 \mu\text{m}$, fusoid, most frequently acute, hyaline, inamyloid, thin-walled. Pleurocystidia absent. Lamellae trama dextrinoid. Pileipellis consist of a hymeniform layer of *Rotalis*-type broom cells; main body $13.6\text{--}20.8 \times 5.6\text{--}11.2 \mu\text{m}$, clavate, pedicellate, hyaline, inamyloid, thin-walled at base, thickening at apex; setulae up to $1.6 \mu\text{m}$ long, acute, brown in KOH, inamyloid. Pileus trama dextrinoid. Stipe smooth, dextrinoid. Clamp connections present.

Habit, habitat, known distribution: solitary, growing on leaves in montane forest of Bolivia.

Material studied; BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Uchumachi, W of Coroico, 2504 m elev., 5 Jan 2011, Wenck 126, (LPB).

Notes: Only two specimens were found. Due to the small stature of the samples it is difficult to examine without completely destroying the specimens. More material needs to be collected and examined; specifically spores need to be observed before this taxon can be accurately classified.

Marasmius sp. — Wenck #104

Section *Epiphylli* – no longer accepted in *Marasmius* s.s.

Pileus 3–5 mm broad, plano-convex, striate, velutinous, white; odor and taste mild.

Lamellae adnate, subdistant, lamellulae in 1 series, furcate, < 1 mm broad, white, non-marginate. Stipe 7–9 x < 1 mm, glabrous, white at apex to grayish yellow (4B4) at base.

Basal mycelium present.

Basidiospores (7.2–) 8–9.6 x 3.2–4.8 μm [$X = 8.73 \pm 0.88 \times 4.10 \pm 0.64 \mu\text{m}$, $Q = 2\text{--}2.75$, $Q_m = 2.24 \pm 0.31$, $n = 8$], ellipsoid, smooth, hyaline, inamyloid. Basidia 23.3 x 6.4 μm , only two noted, clavate, 4-spored, hyaline, inamyloid, thin-walled. Basidioles 17.6–24.8 x 4–6.4 μm , clavate, thin-walled. Cheilocystidia 31.2–37.6 x 7.2–8.8 μm , fusoid, acute to subobtuse, hyaline, inamyloid, thin-walled. Pleurocystidia absent. Pileipellis consists of a hymeniform layer of *Globulares*-type cells; main body 15.2–19.2 x 8–9.6 μm , broadly conical, often pedicellate, acute to obtuse, hyaline, inamyloid. Stipe covered in simple, erect hairs, up to 10.4 μm long, by 3.2–4.8 μm broad. Clamp connections present.

Habit, habitat, known distribution: growing on leaves in submontane forest, Bolivia.

Material studied: BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Coroico, Hotel Sol y Luna, 1827 m elev., 2 Jan 2011, Wenck 104, (LPB, SFSU).

Gloiocephala sp. - Wenck #175

Pileus 2–8 mm broad, plano–convex, striate, slightly fibrillose, slightly umbilicate, velutinous, light orange (5A4). Lamellae adnexed, distant, no lamellulae, yellowish white (4A2), slightly marginate, margin concolor to pileus. Stipe 7–14 x < 1 mm, horse hair-like, glabrous, yellowish white (4A2) at apex to brown (6F8) at base. Basal mycelium present.

Basidiospores (12–) 12.8–14.4 x 2.4–3.2 μm [$X = 13.44 \pm 0.71 \times 3.07 \pm 0.33 \mu\text{m}$, $Qr = 4–5.67$, $Qm = 4.35$, $n = 25$], narrowly fusoid, smooth, hyaline, inamyloid. Basidia not observed. Basidioles 27.2–34.6 x 4.8–7.2 μm , fusoid, thin-walled. Cheilocystidia consist of fusoid, setoid cells up to 59.2 x 12.4 μm , smooth, hyaline, inamyloid, thick-walled. Pleurocystidia similar to cheilocystidia except somewhat smaller (up to 49.6 μm long). Lamellae trama inamyloid. Pileipellis consists of two types of cells: 1) *Globulares*-type cells, 22.4–33.6 x 13.6–16.8 μm , globose, pedicellate, golden orange in KOH, inamyloid,

thin- to thick-walled; 2) small setae, 16.8–28.4 x 5.6–13.6 μm , subglobose to cylindrical to subfusoid, dark brown in KOH, inamyloid, thick-walled. Pileus trama inamyloid. Stipe smooth. Clamp connections present.

Habit, habitat, known distribution: growing on leaf litter in submontane riparian corridor.
Bolivia.

Material studied; BOLIVIA. Dept. La Paz, Prov. Nor Yungas, Charobamba, near Rio Huarinilla crossing. 1134 m elev., 11 Jan 2011, Wenck 175, (LPB, SFSU).

Appendix: Pictures and Illustrations

1. *Marasmius aripoensis*



Figures 3 & 4. Basidiomes.

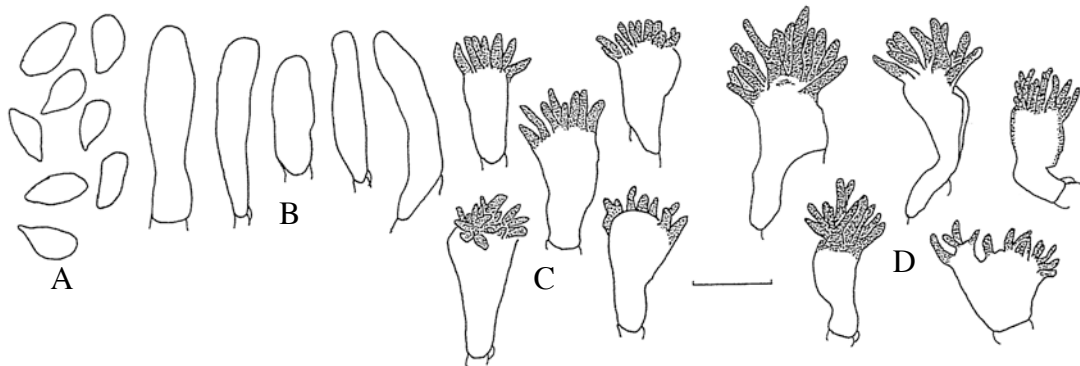


Fig. 5. A. Basidiospores. B. Cheilocystidia. C. Basidioles. D. Pileipellis. Bar = 10 μ m



Fig. 6. Samples found near town of Chairu, 1303 m elev.

2. *Marasmius wilapi* sp. nov.



Figs. 7 & 8. Basidiomes from top and from bellow.

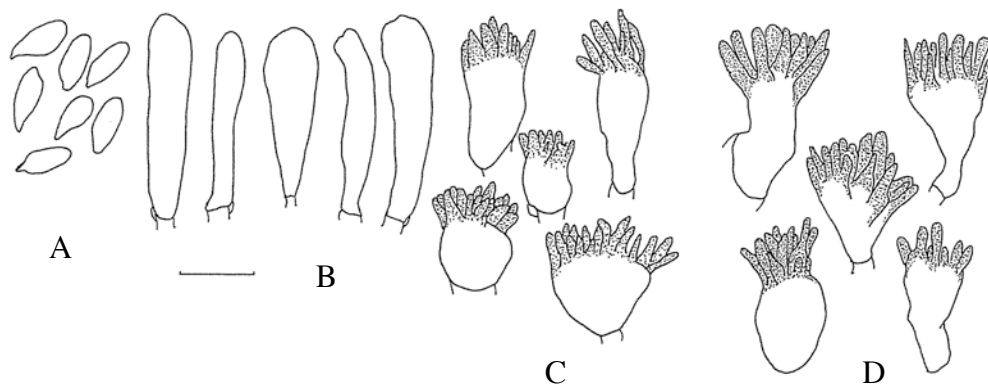


Fig. 9. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10µm



Fig. 10. Sample found near Yolosita, 1277m elev.

3. *Marasmius aciculaeformis* var. *albus*



Figs. 11 & 12. Basidiomes from above and from below.

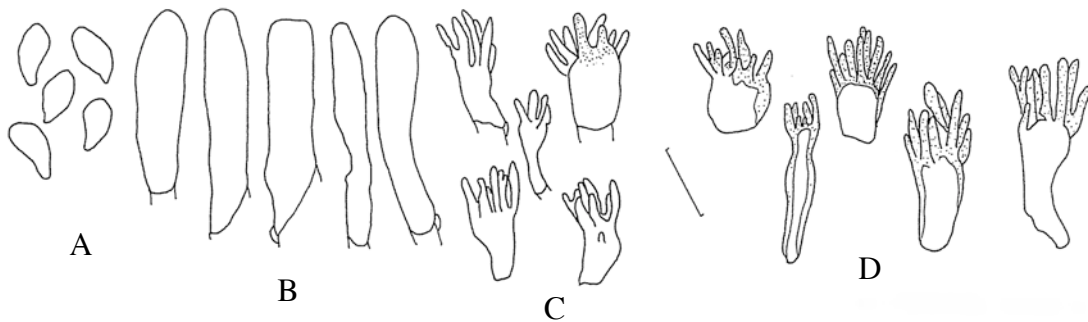


Fig. 13. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10 μ m



Fig. 14. Samples found near town of Chairu, 1303 m elev.

4. *Marasmius guyanensis*

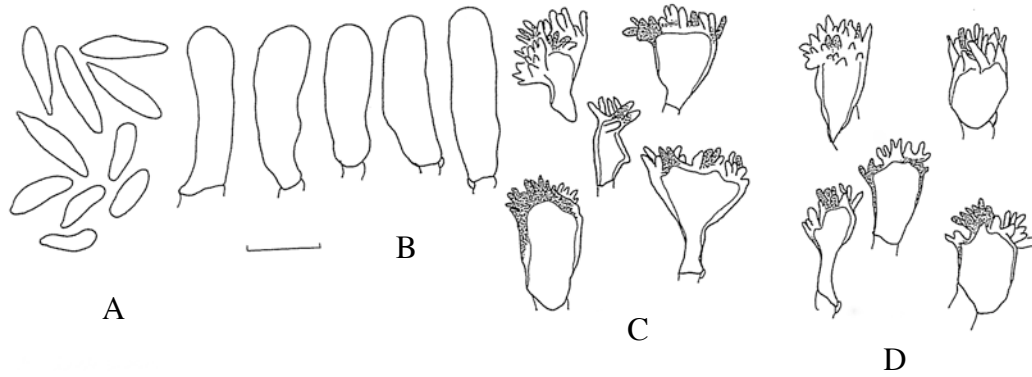


Fig. 15. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10 μ m

Halling, samples found near Rurrenabaque, 200 m elev.

5. *Marasmius rubromarginatus*



Fig. 16. Basidiomes.

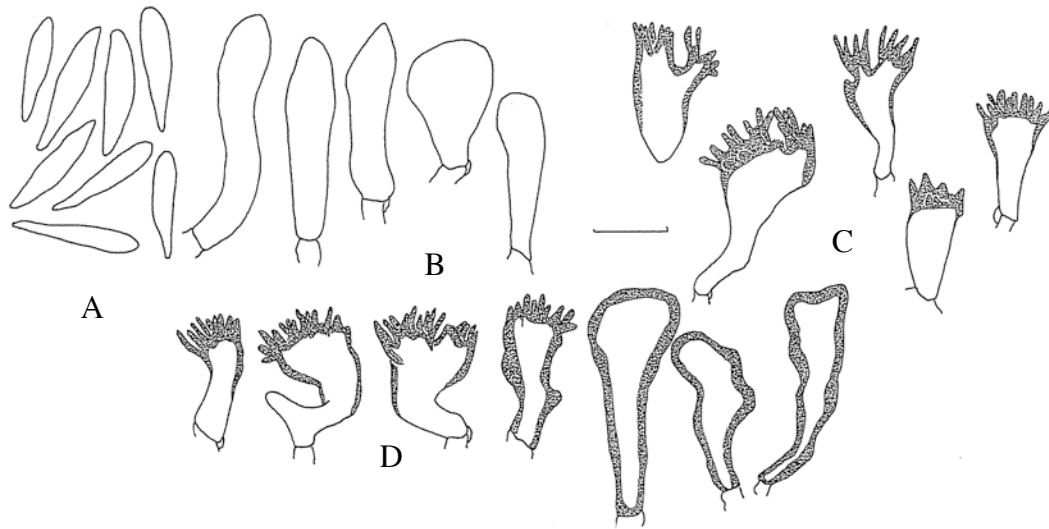


Fig. 17. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10µm



Fig. 18. Samples found near waterfall, 2030 m elev.

6. *Marasmius vigintifolius*



Fig. 19. Basidiomes.

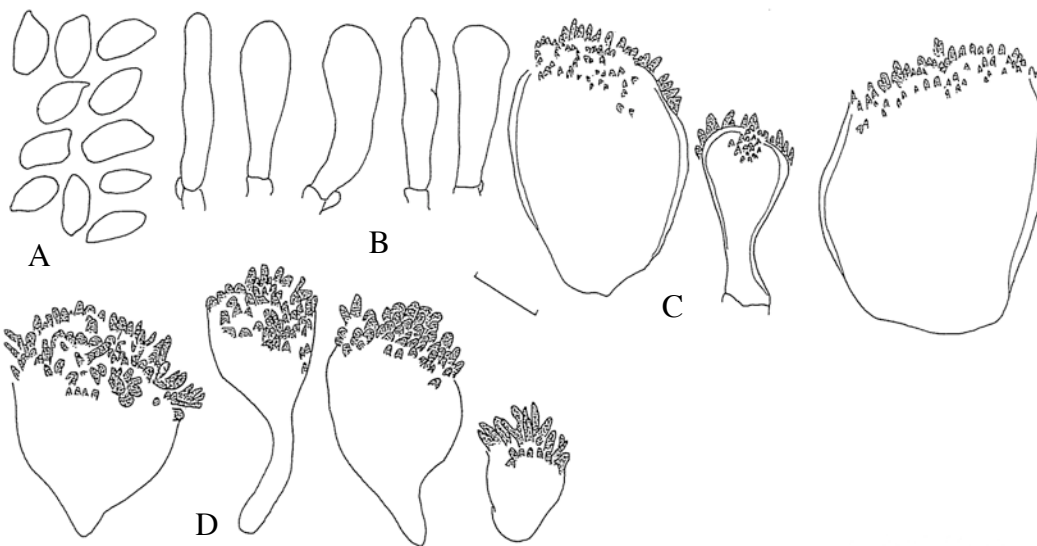


Fig. 20. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10µm

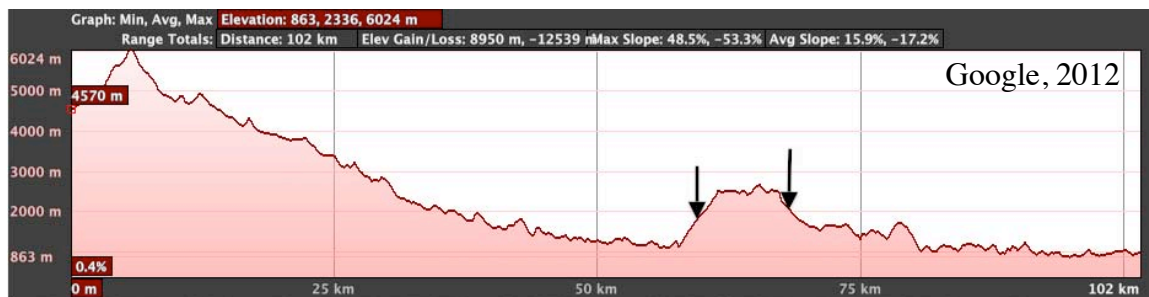


Fig. 21. Samples found near Hotel Esmeralda, 1818 m elev., & near waterfalls, 2030 m elev.

7. *Marasmius variabiliceps* var. *variabiliceps*¹¹⁵

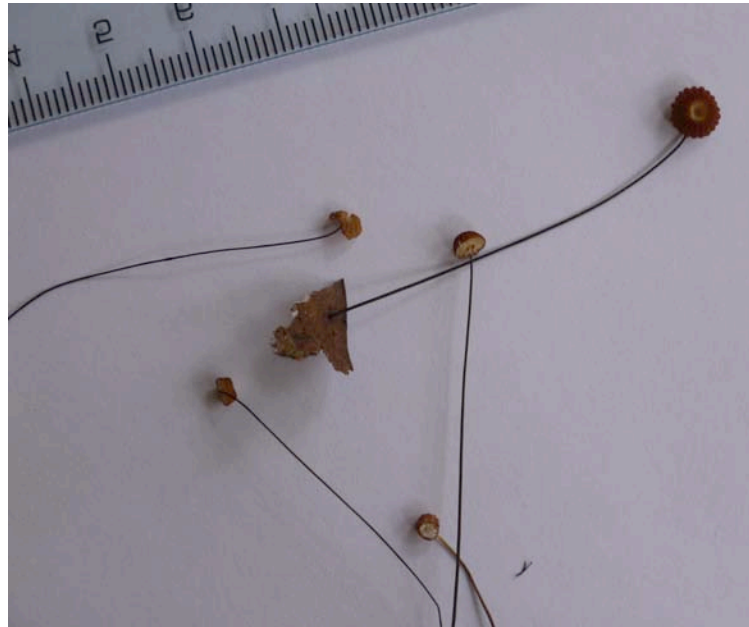


Fig. 22. Basidiomes.

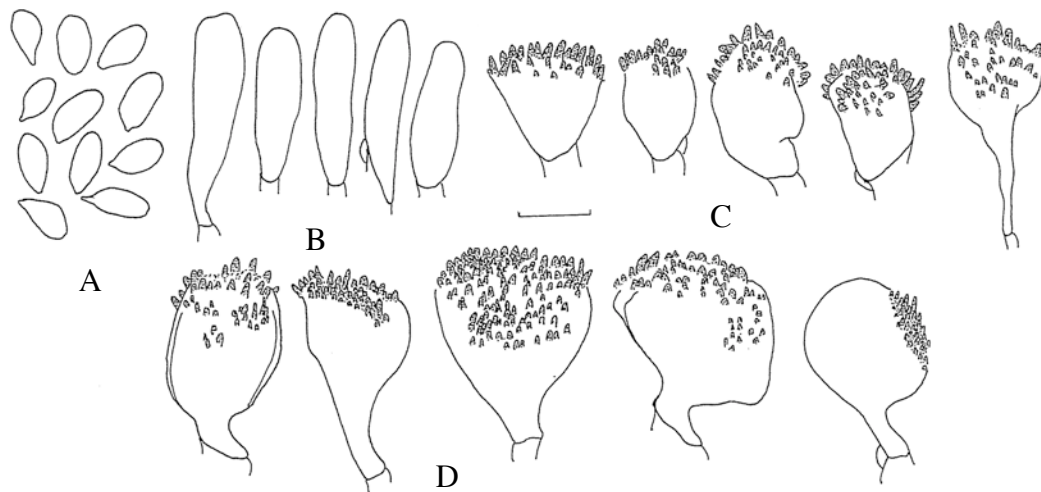


Fig. 23. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10 μ m



Fig. 24. Samples found near waterfall, 2030 m elev.

8. *Marasmius variabiliceps* var. *separatus*¹¹⁶



Fig. 25. Basidiolium

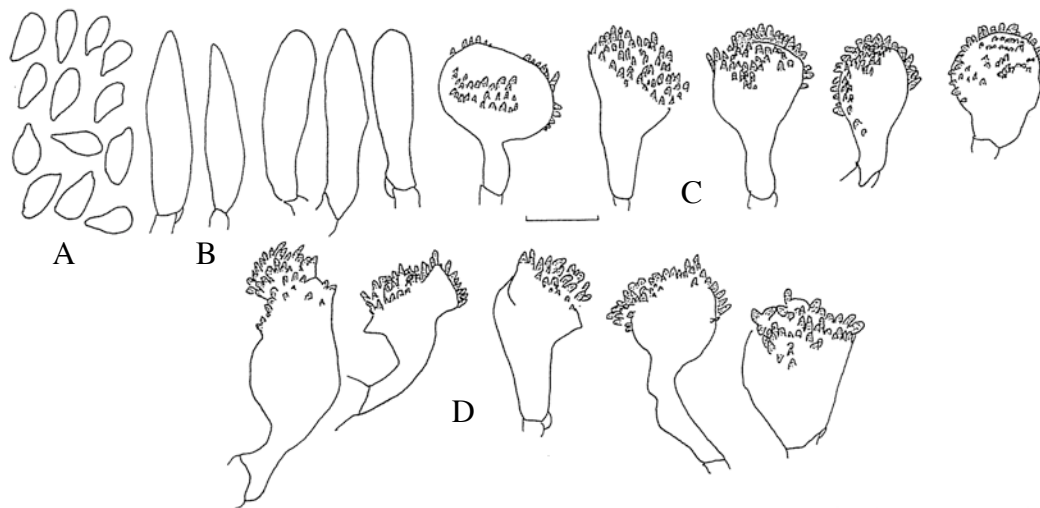


Fig. 26. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10 μ m



Fig. 27. Samples found near Hotel Sol y Luna, 1818 m elev., & near waterfalls, 2030 m elev.

9. *Marasmius arborescens*



Fig. 28. Basidiomes

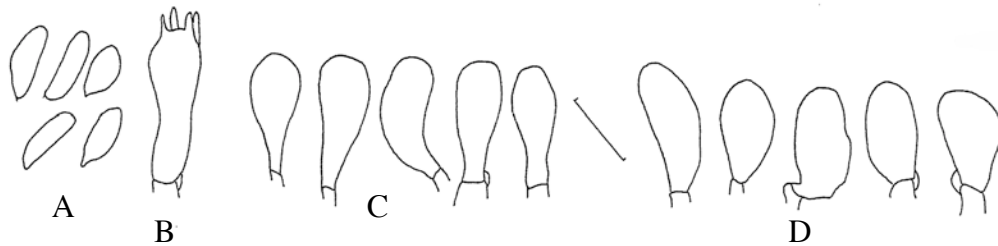


Fig. 29. A. Basidiospores. B. Basidium. C. Basidioles & Cheilcystidia. D. Pileipellis. Bar = 10 μ m.



Fig. 30. Samples found near waterfall, 2030 m elev.

10. *Marasmius cohortalis* var. *cohortalis*



Fig. 31. Basidiomes.

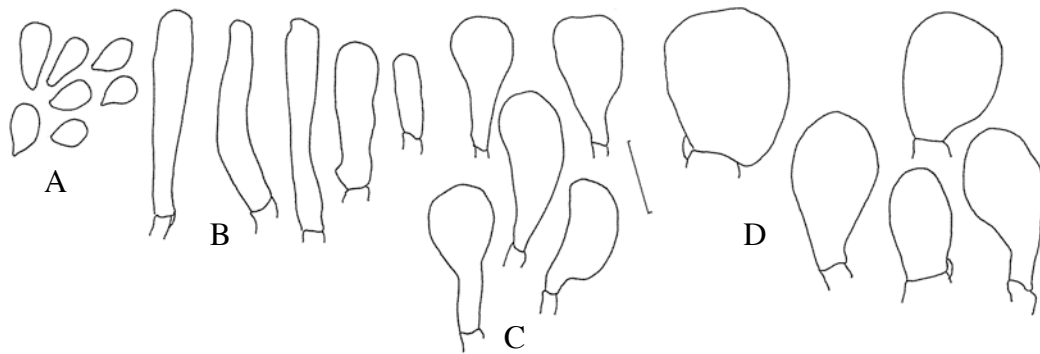


Fig. 32. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. Bar = 10 μ m



Fig. 33. Samples found near Charobamba crossing, 1134 m elev.
Halling samples found near Rurrenabaque, 200 m elev.

11. *Marasmius cohortalis* var. *arenicolor*



Fig. 34. Basidiomes.

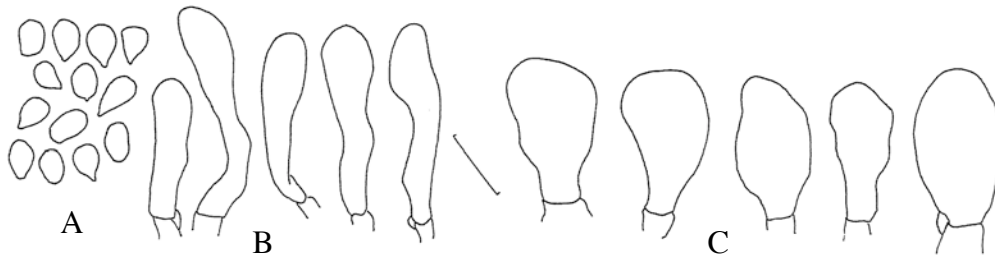


Fig. 35. A. Basidiospores. B. Basidium. C. Basidioles & Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.



Fig. 36. Samples found near Charobamba crossing, 1134 m elev.
Halling samples found near Rurrenabaque, 200 m elev.

12. *Marasmius spiculosus*

120

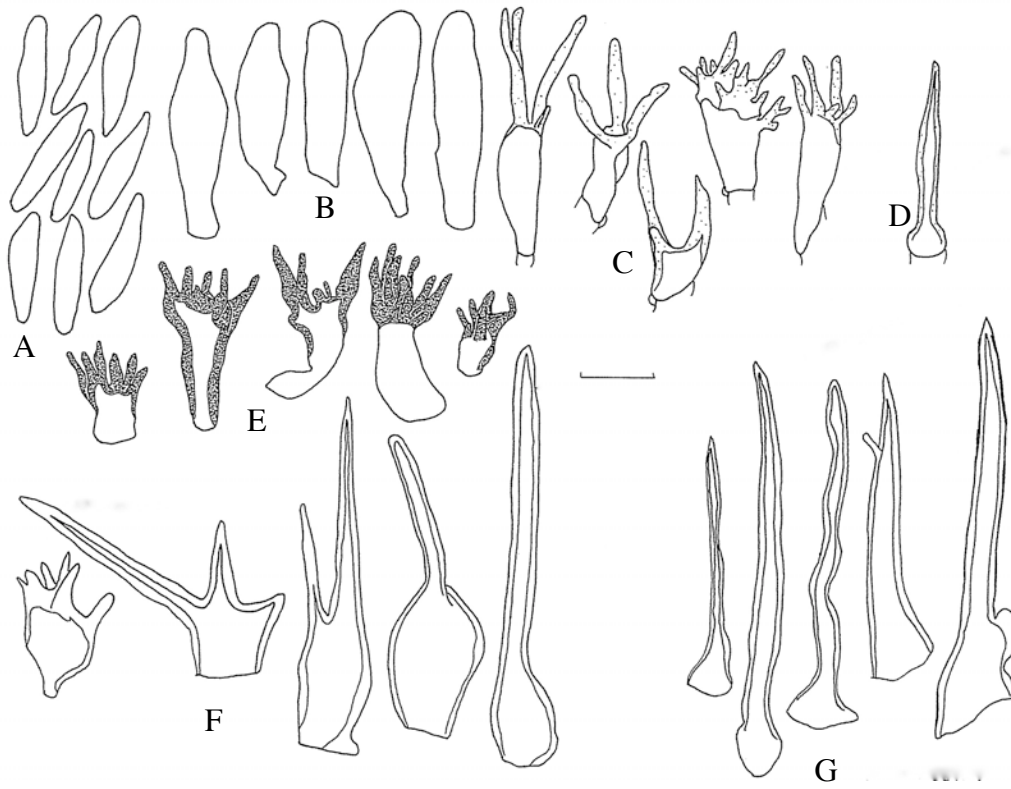


Fig. 37. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Cheiloseetae. E. Pileipellis. F. Cauloseetae. G. Pileoseetae. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m elev.

13. *Marasmius venezuelanus*

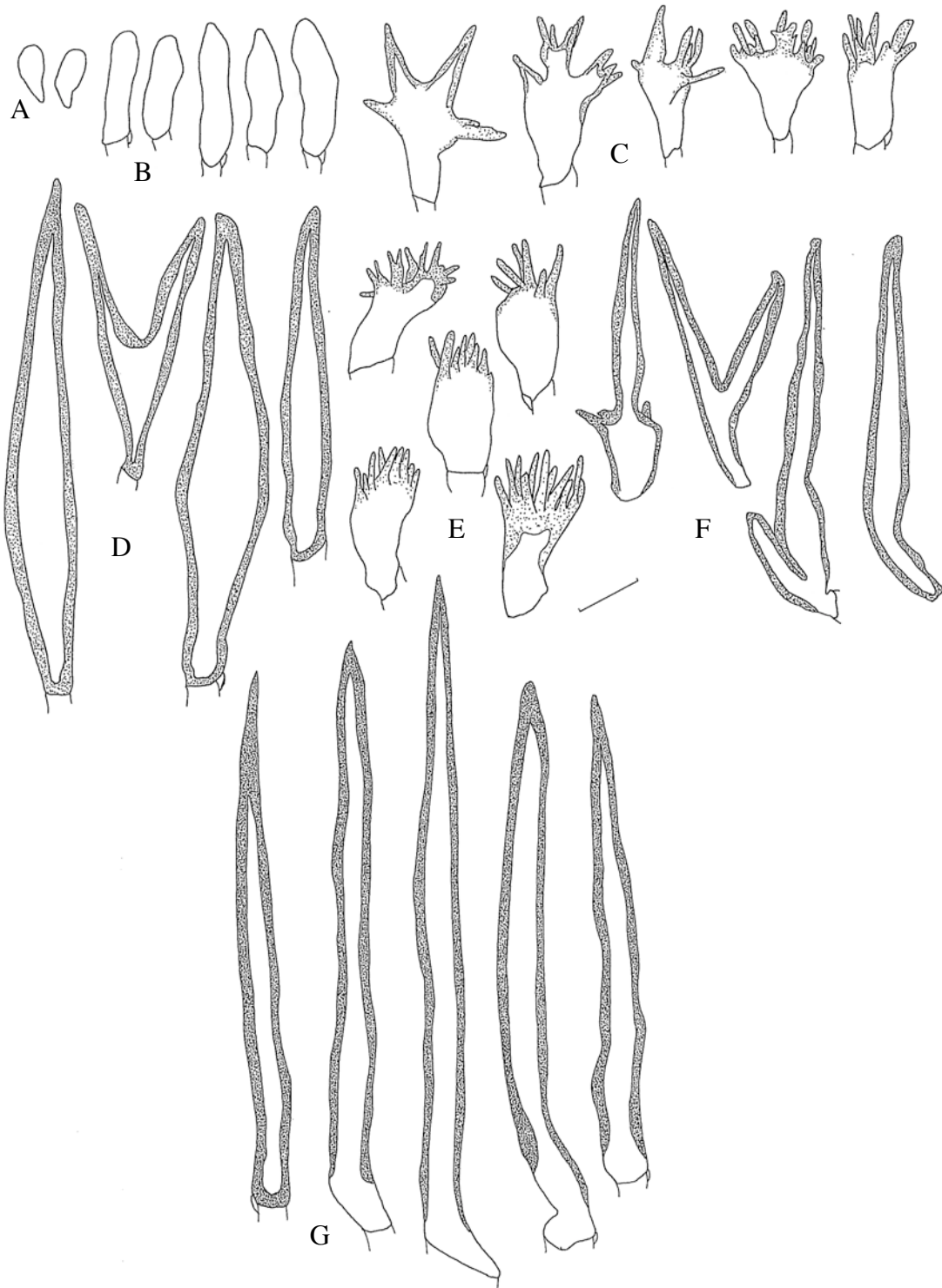


Fig. 38. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pleurosetae. E. Pileipellis. F. Pileosetae. G. Caulosetae. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m elev.

14. *Marasmius* aff. *echinatulus*

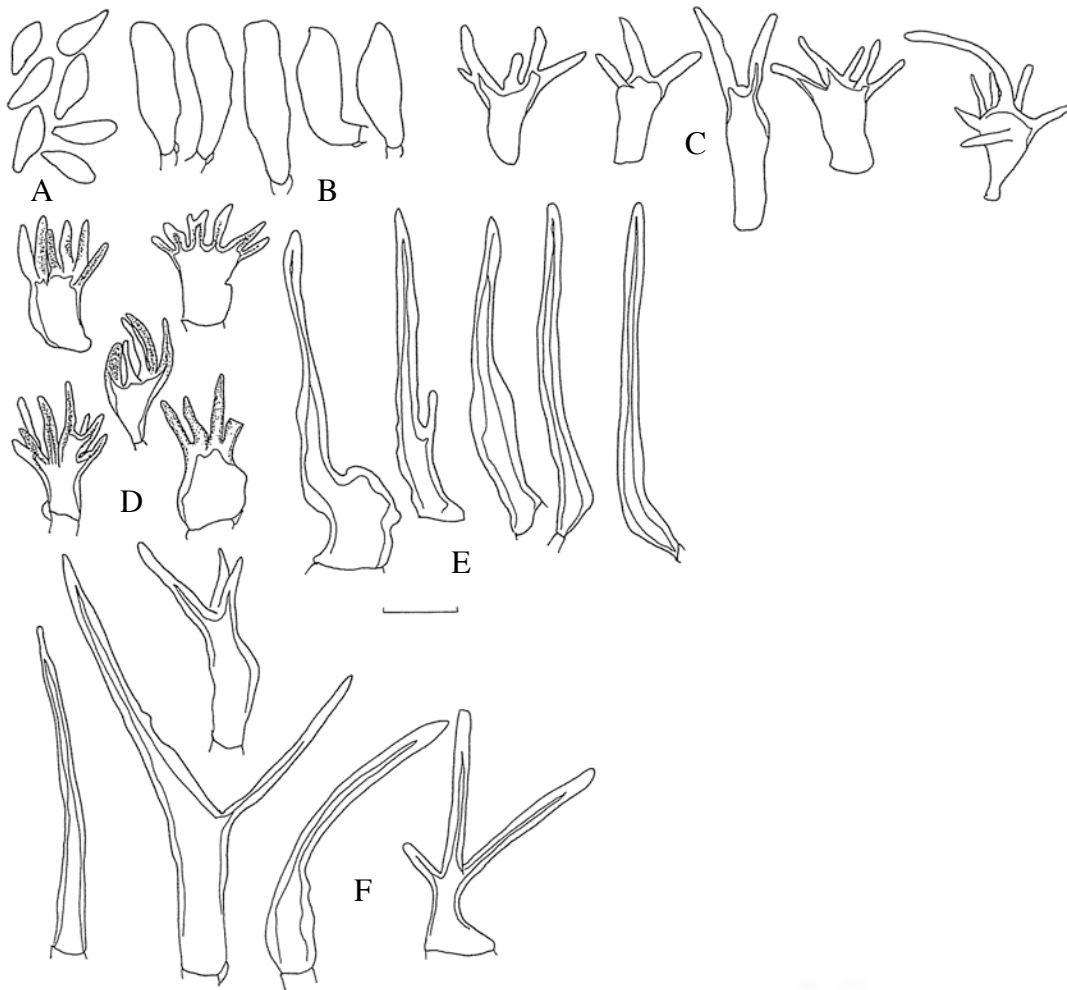


Fig. 39. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Pileosetae. F. Caulosetae. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m elev.

15. *Marasmius* aff. *variabilis*

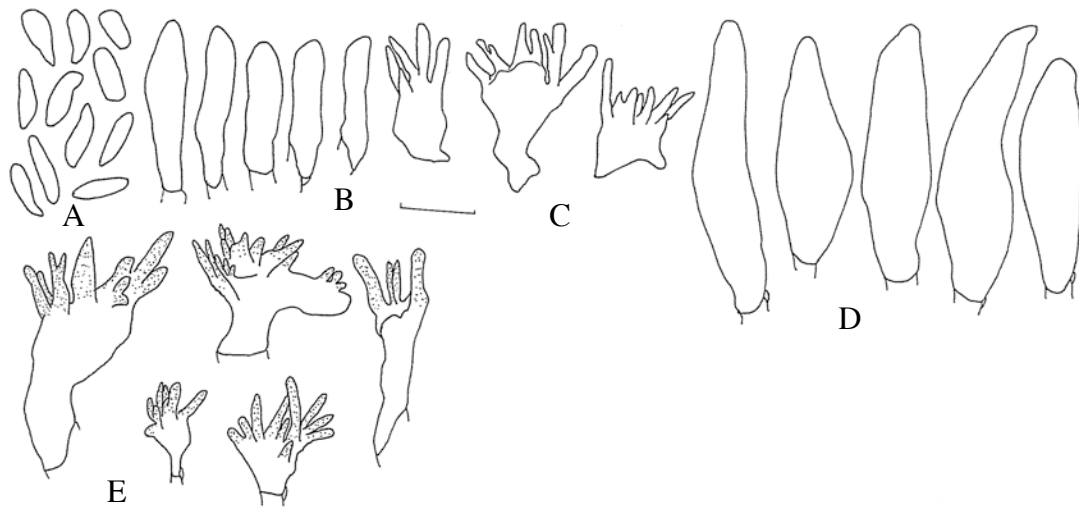


Fig. 40. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pleurocystidia
E. Pileipellis. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m elev.

16. *Marasmius askhapukukuna* sp. nov.



Fig. 41. Basidiomes.

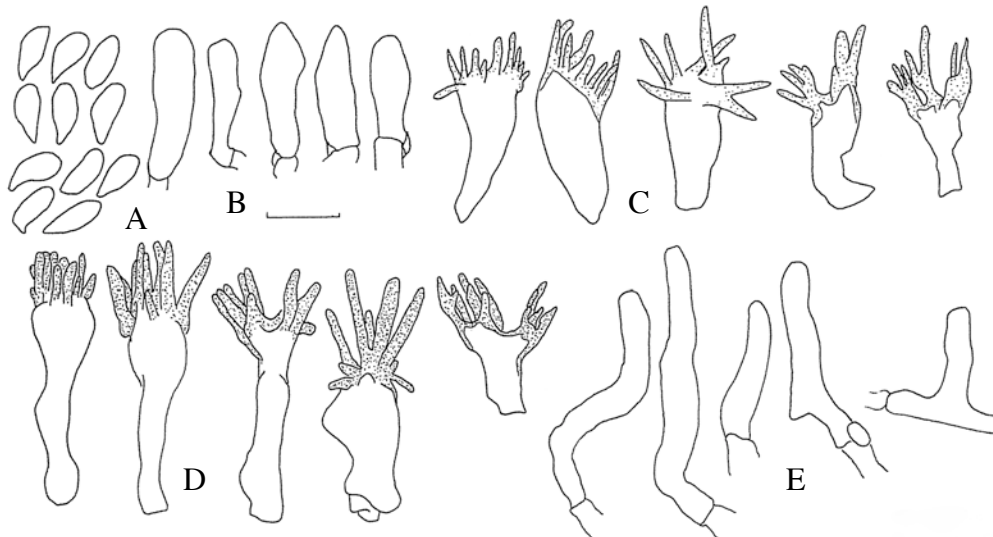


Fig. 42. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10µm.



Fig. 43. Samples found at Hotel Esmeralda, 1818 m elev., and near Charobamba crossing, 1134 m elev.

17. *Marasmius chrysolepharis*



Figs. 44 & 45. Basidiomes.

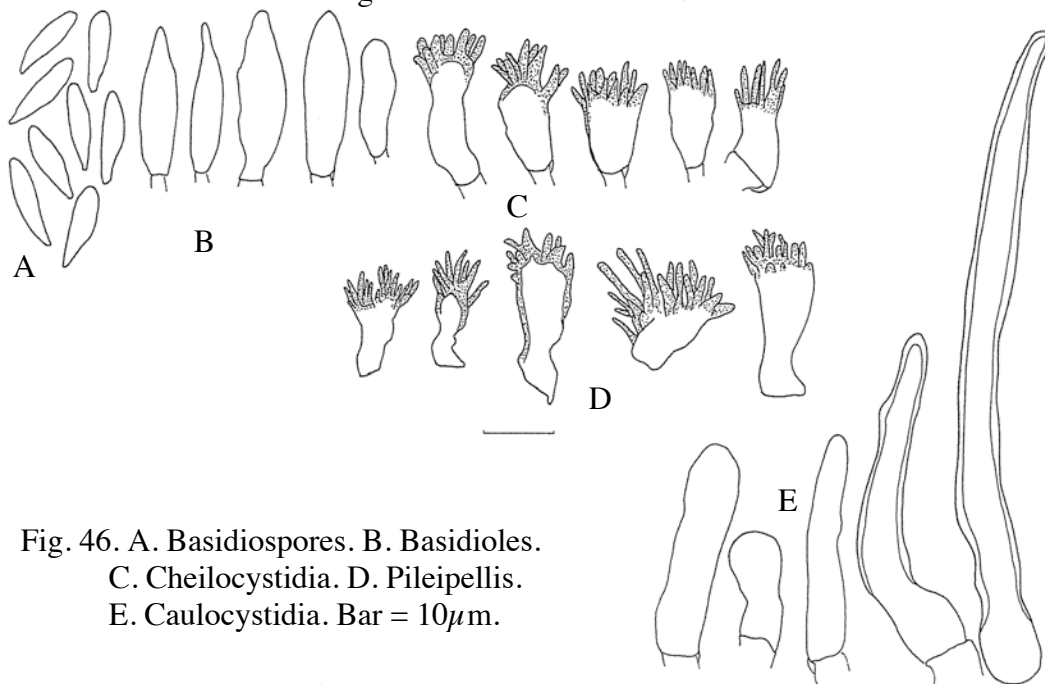
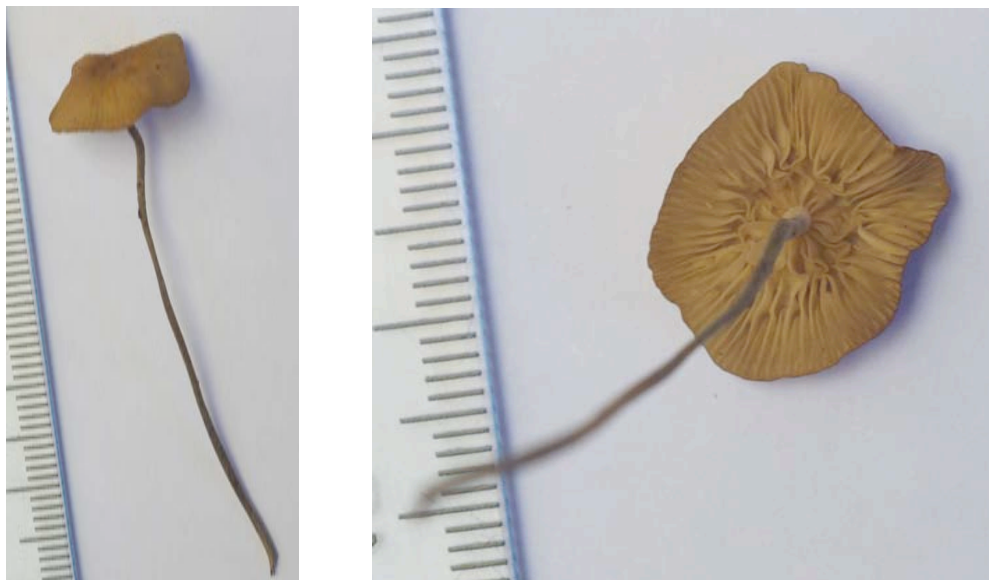


Fig. 46. A. Basidiospores. B. Basidioles.
C. Cheilocystidia. D. Pileipellis.
E. Caulocystidia. Bar = 10µm.



Fig. 47. Samples found near Hotel Sol Y Luna, 1818 m elev., & near Choro, 800 m elev.

18. *Marasmius actinopus*



Figs. 48 & 49. Basidiomes.

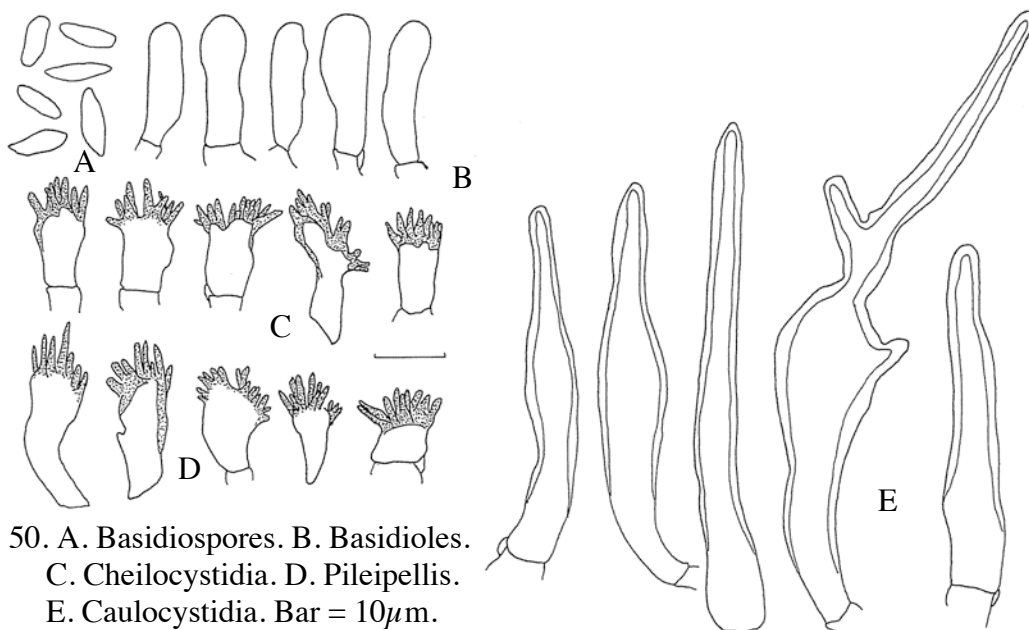


Fig. 50. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10µm.



Fig.51. Samples found near Charobamba crossing, 1134 m elev.

19. *Marasmius* aff. *spegazzinii*

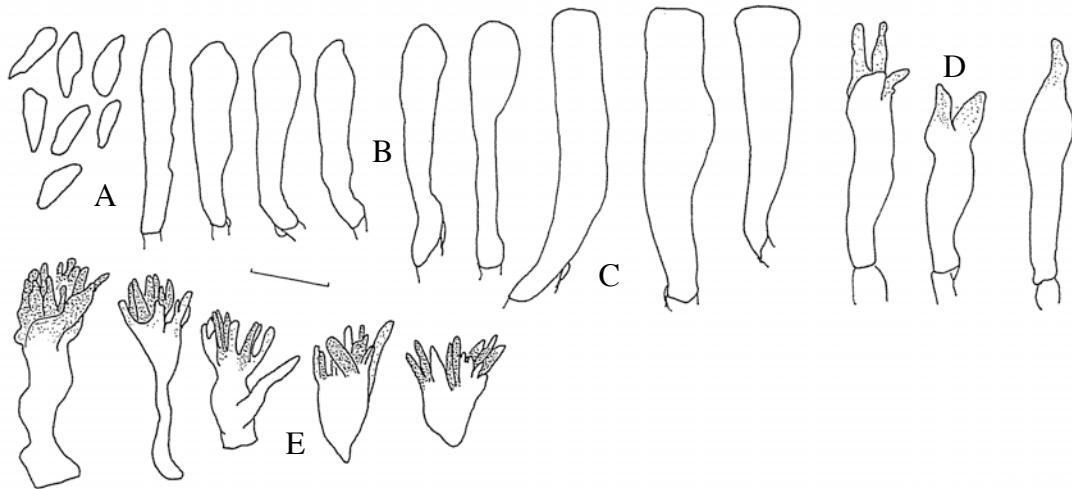


Fig. 52. A. Basidiospores. B. Basidioles. C. Pleurocystidia. D. Cheilocystidia. E. Pileipellis. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m elev.

20. *Marasmius hatun* sp. nov.



Fig.53. Basidiomes.



Fig. 54. Samples found near waterfalls, 2030 m elev.

Continued on next page.

20. *Marasmius hatun* sp. nov. (cont.)

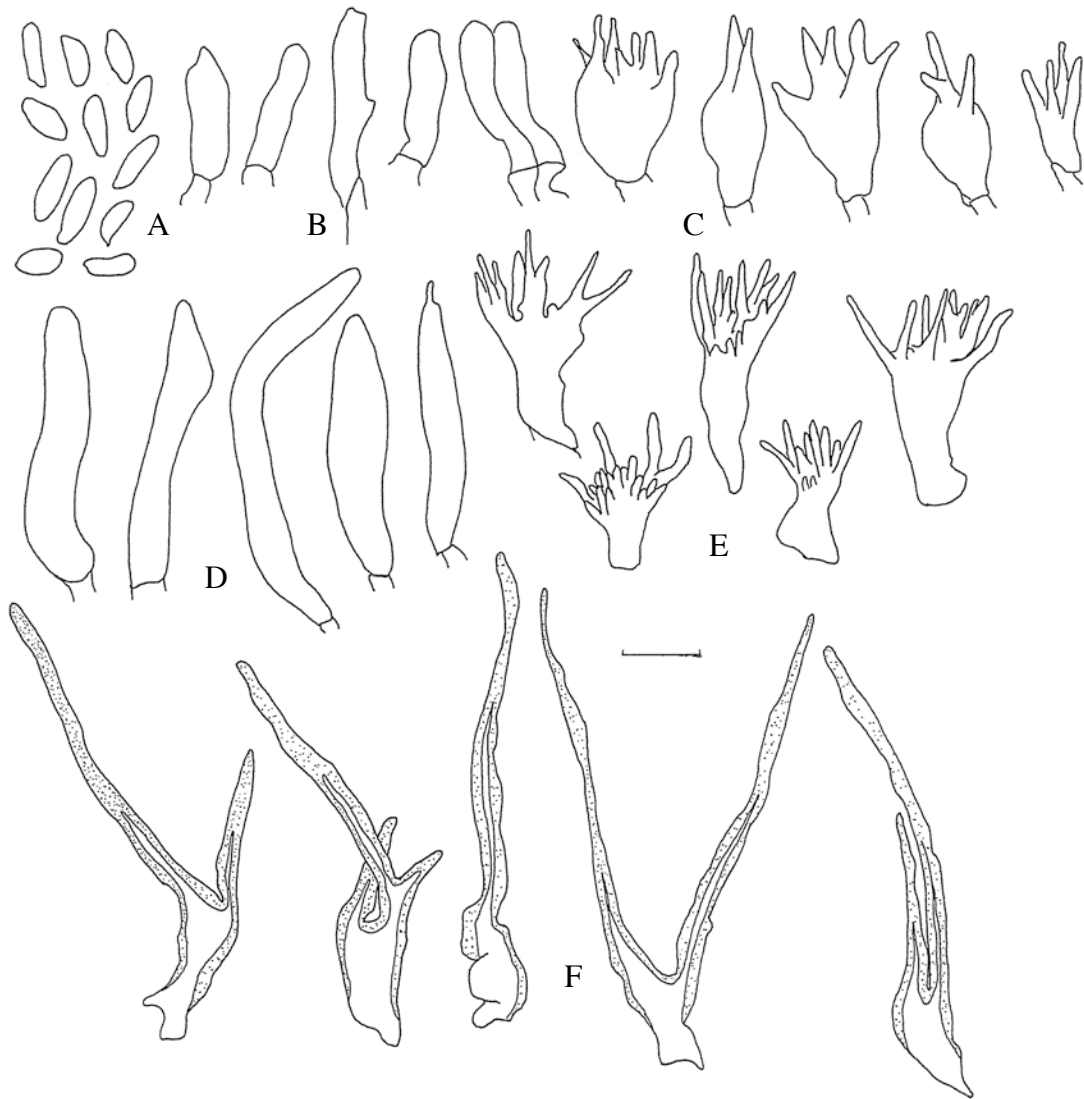


Fig. 55. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pleurocystidia
E. Pileipellis. F. Caulocystidia. Bar = 10 μ m.

21. *Marasmius qellu* sp. nov.



Fig. 56. Basidiomes

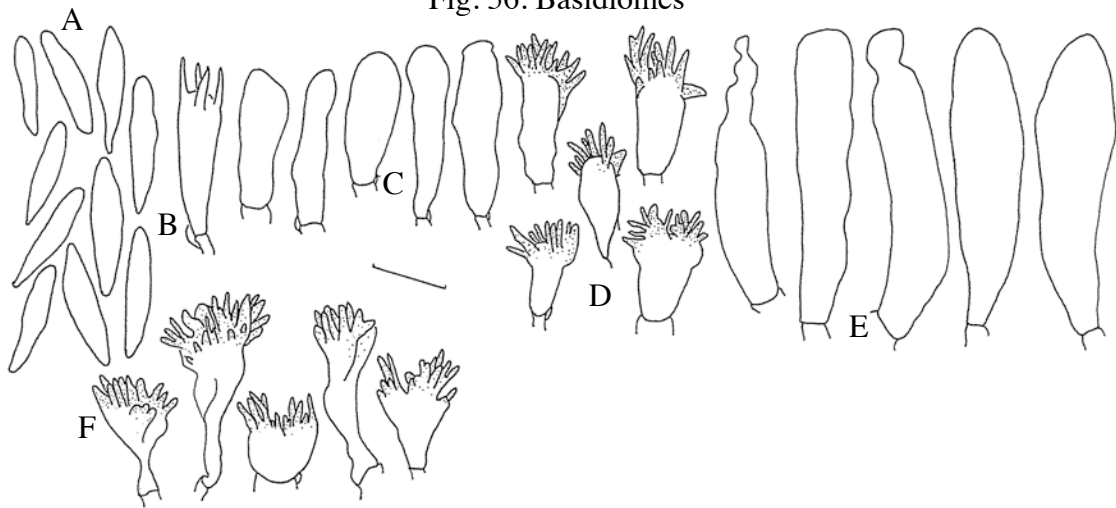


Fig. 57. A. Basidiospores. B. Basidium. C. Basidioles. D. Cheilocystidia. Bar = 10 μ m
E. Pleurocystidia. F. Pileipellis

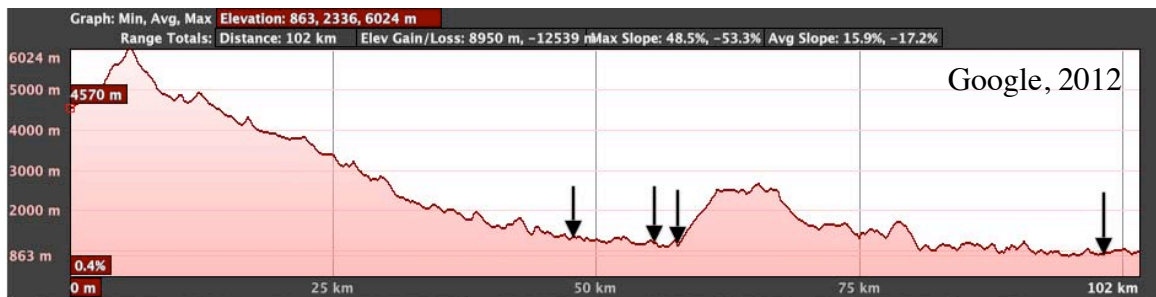


Fig. 58. Samples found in Chairu, 1134 m elev., Hotel Verde, 1207 m elev., Santa Barbara, 1062 m elev., Charobamba crossing, 1134 m elev., & Choro, 800 m elev.

22. *Marasmius setulosifolius*

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Fig. 59. Basidiomes.

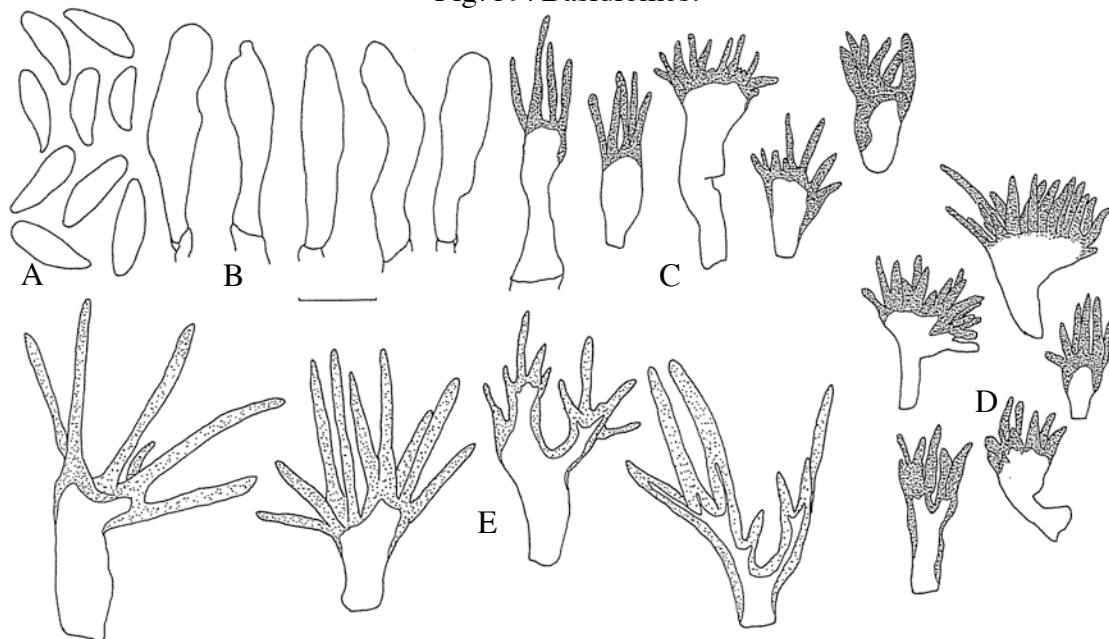


Fig. 60. A. Basidiospores. B. Basidioles. C. Cheilocystidia & Pleurocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.



Fig. 61. Samples found near Charobamba crossing, 1134 m elev.,
 Halling samples found near Rurrenabaque, 200 m elev.

23. *Marasmius oleiger*



Figs. 62 & 63. Basidiomes.

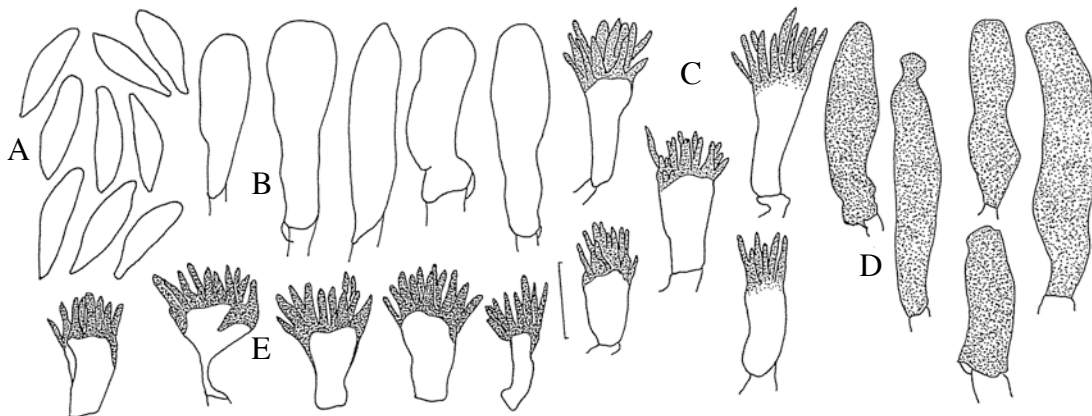


Fig. 64. A. Basidiospores. B. Basidioles. C. Cheilocystidia D. Pleurocystidia. E. Pileipellis. Bar = 10 μ m.



Fig. 65. Samples found near Chairu, 1134 m elev., Yolosita, 1277 m elev., Charobamba crossing, 1134 m elev., & Choro, 800 m elev.

24. *Marasmius allocystis*



Fig. 66. Basidiomes.

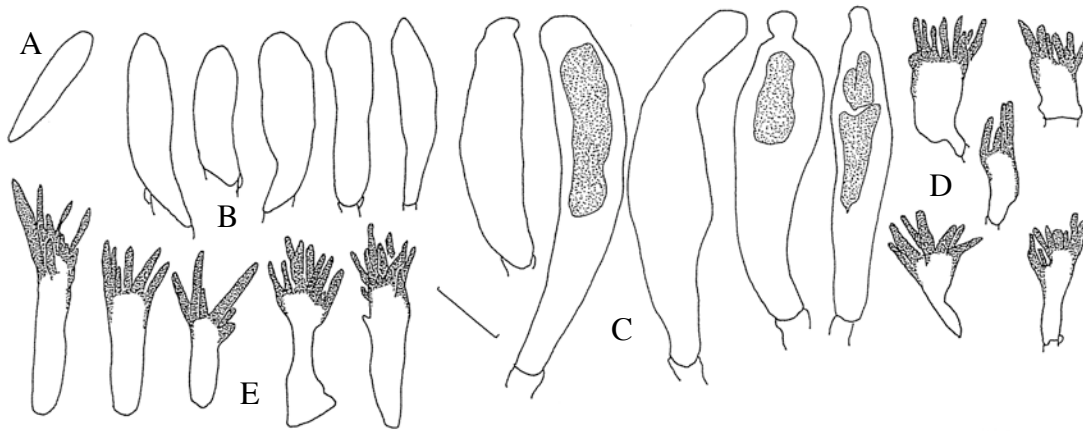


Fig. 65. A. Basidiospore. B. Basidioles. C. Pleurocystidia. D. Cheilocystidia. E. Pileipellis. Bar = 10 μ m.

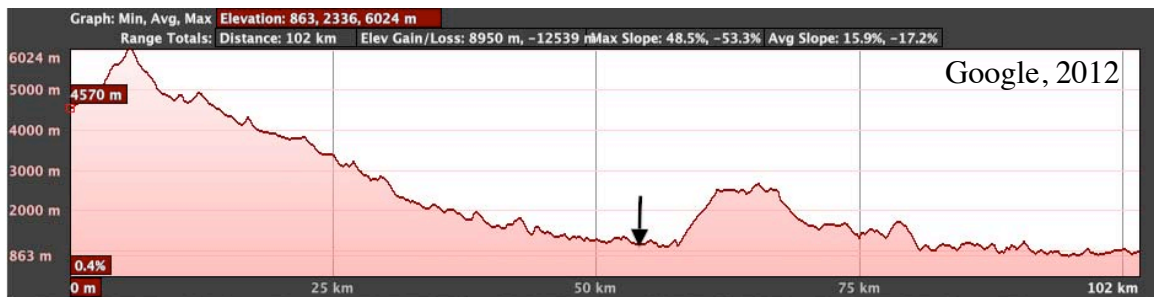


Fig. 66. Samples found near Charobamba crossing, 1134 m elev.

25. *Marasmius haematocephalus* var. *haematocephalus* ¹³⁴



Figs. 67, 68, & 69. Basidiomes.

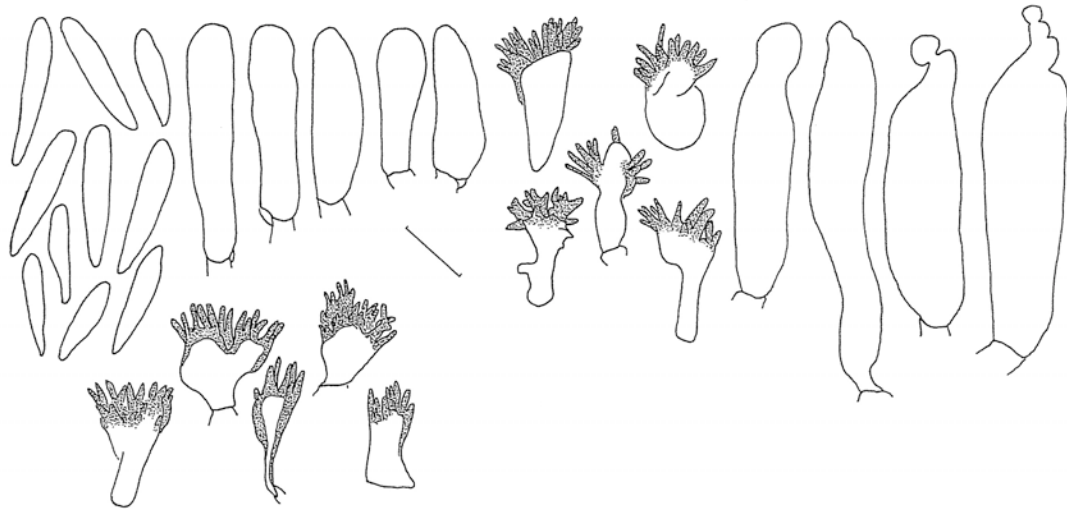


Fig. 71. Samples found in Chairo, 1134 m elev., Yolosita, 1277 m elev., Hotel Verde, 1207 m elev., Santa Barbara, 1062 m elev., Charobamba crossing, 1134 m elev., & Choro, 800 m elev.

26. *Marasmius haematocephalus* var. *leucophyllus*¹³⁵



Fig. 72. Basidiomes.

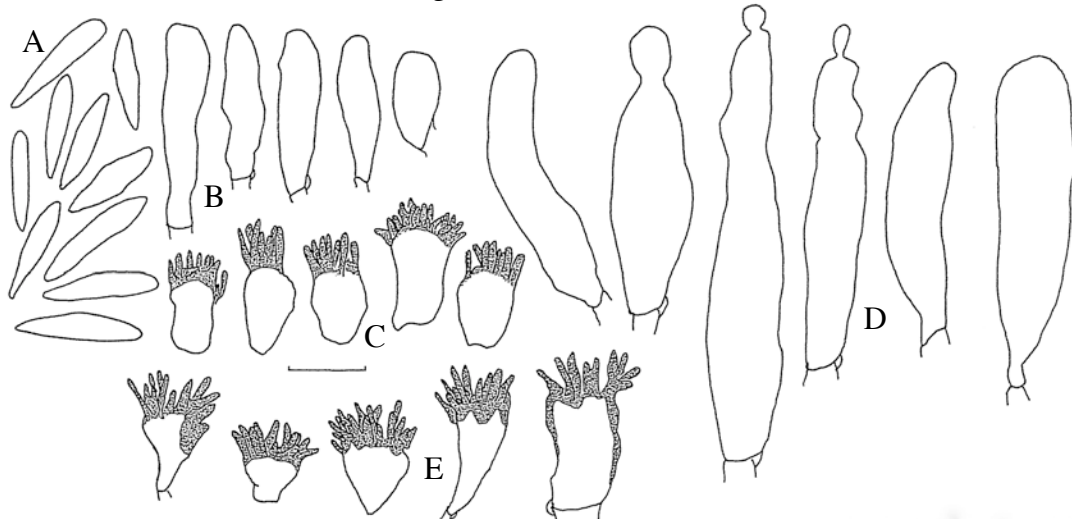


Fig. 73. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pleurocystidia. E. Pileipellis. Bar = 10 μ m.

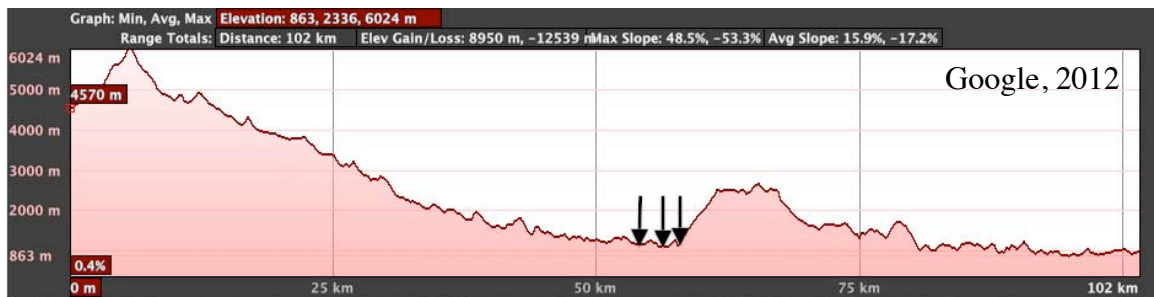


Fig. 74. Samples found near Yolosita, 1277 m elev., Hotel Verde, 1207 m elev., Santa Barbara, 1062 m elev., & Charobamba crossing, 1134 m elev.

27. *Marasmius ferrugineus*



Fig. 75. Basidiomes

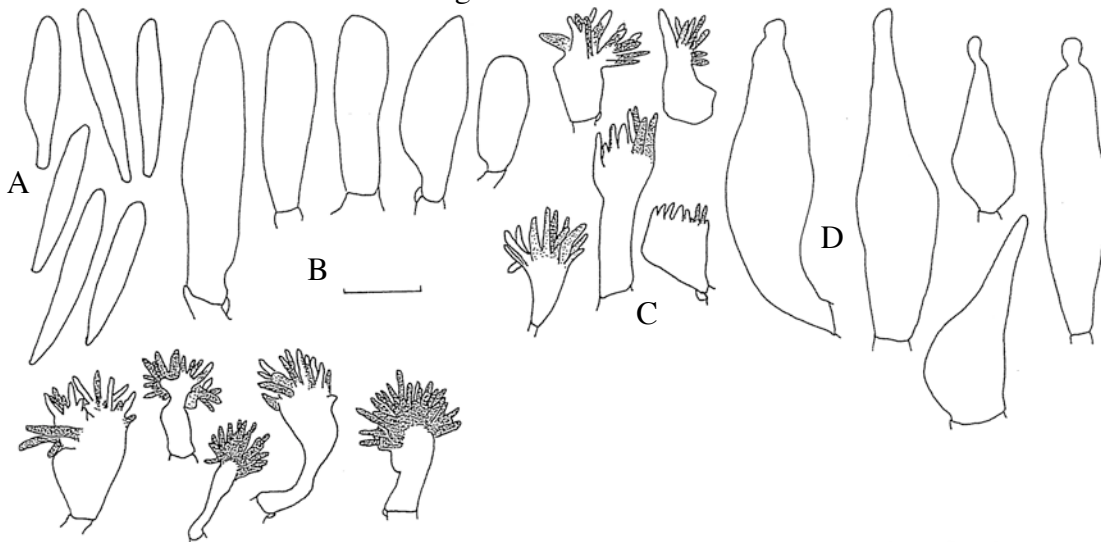


Fig. 76. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pleurocystidia. E. Pileipellis. Bar = 10 μ m.

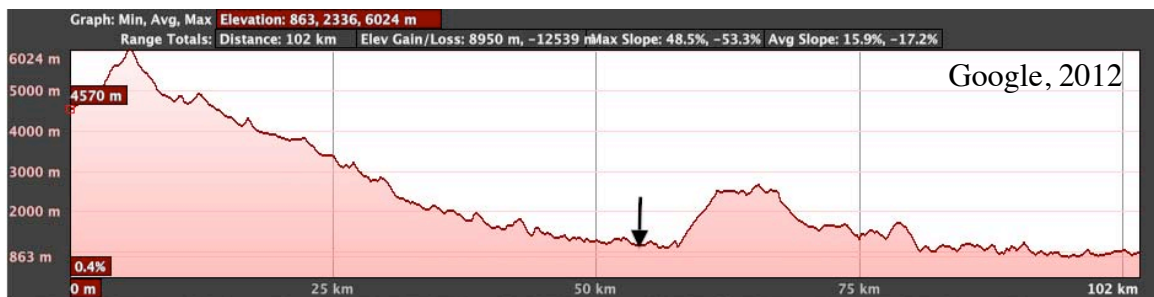


Fig. 77. Samples found near Charobamba crossing, 1134 m elev.

28. *Marasmius digilii*

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Fig . 78 & 79. Basidiomes.

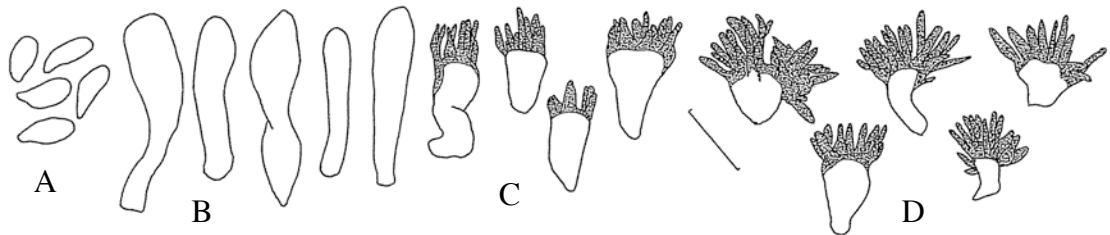


Fig. 80. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.

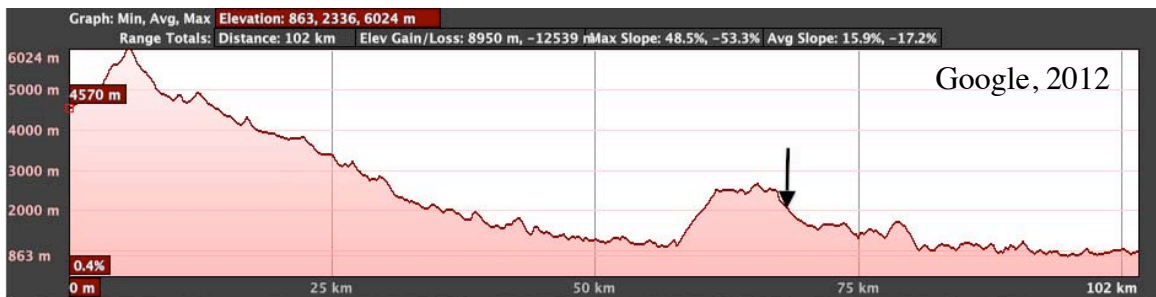


Fig. 81. Samples found near waterfalls, 2030 m elev.

29. *Marasmius trinitatus*



Fig. 82. Basidiomes

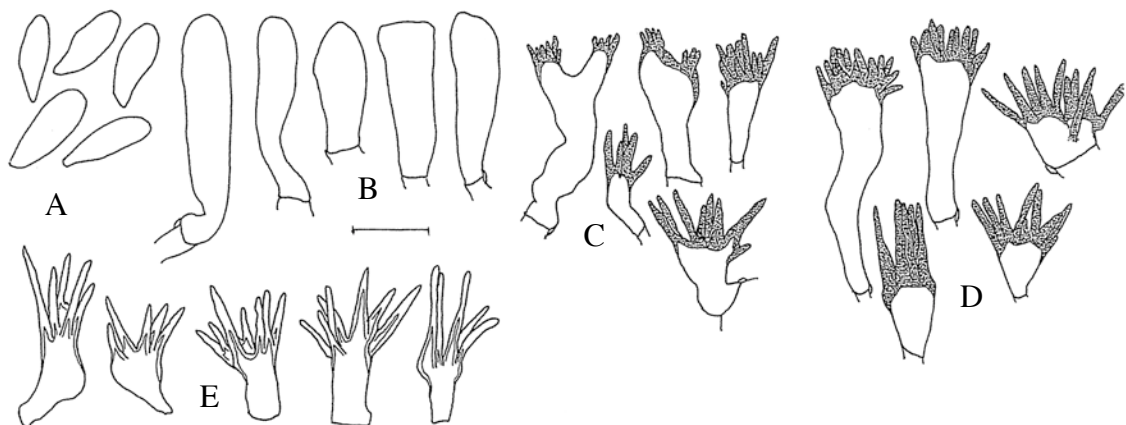


Fig. 83. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.

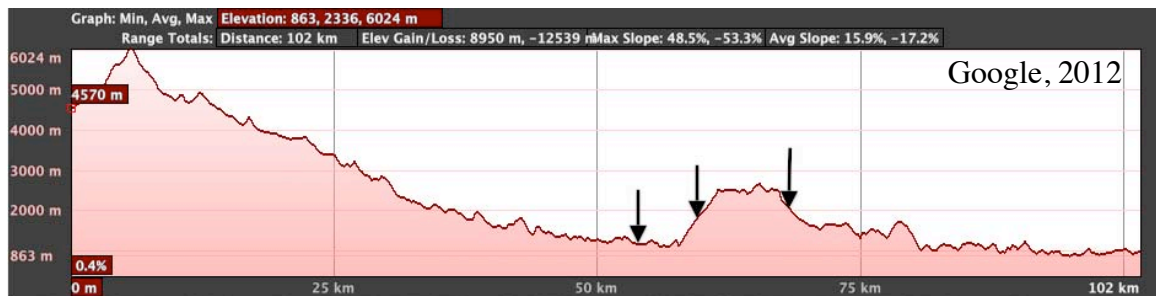


Fig. 84. Samples found near Charobamba crossing, 1134 m elev., near Hotel Sol Y Luna, 1827 m elev., near waterfalls, 2030 m elev., & Halling's samples found near Rurrenabaque, 200 m elev.

30. *Marasmius huchuy* sp. nov.



Fig. 85. Basidiomes.

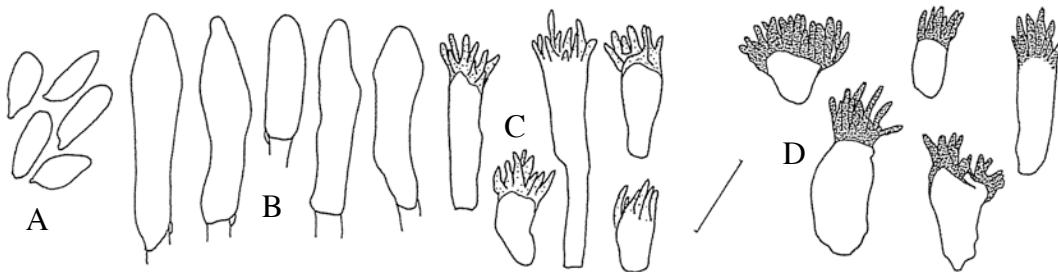


Fig. 86. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.



Fig. 87. Samples found near Charobamba crossing, 1134 m elev.

31. *Marasmius rhabarberinus*



Figs 88 & 89. Basidiomes.

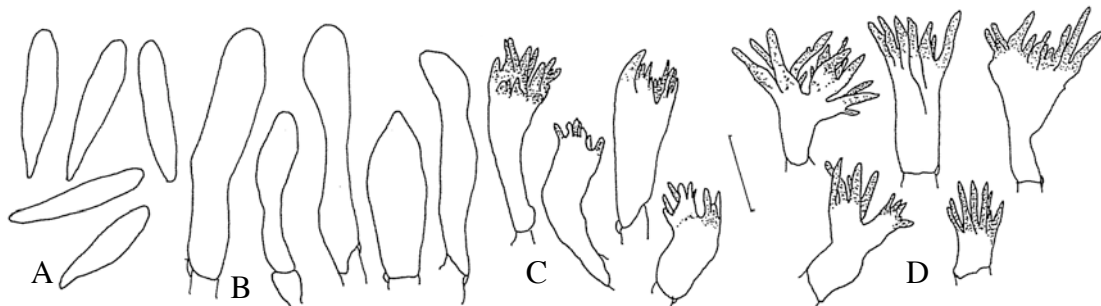


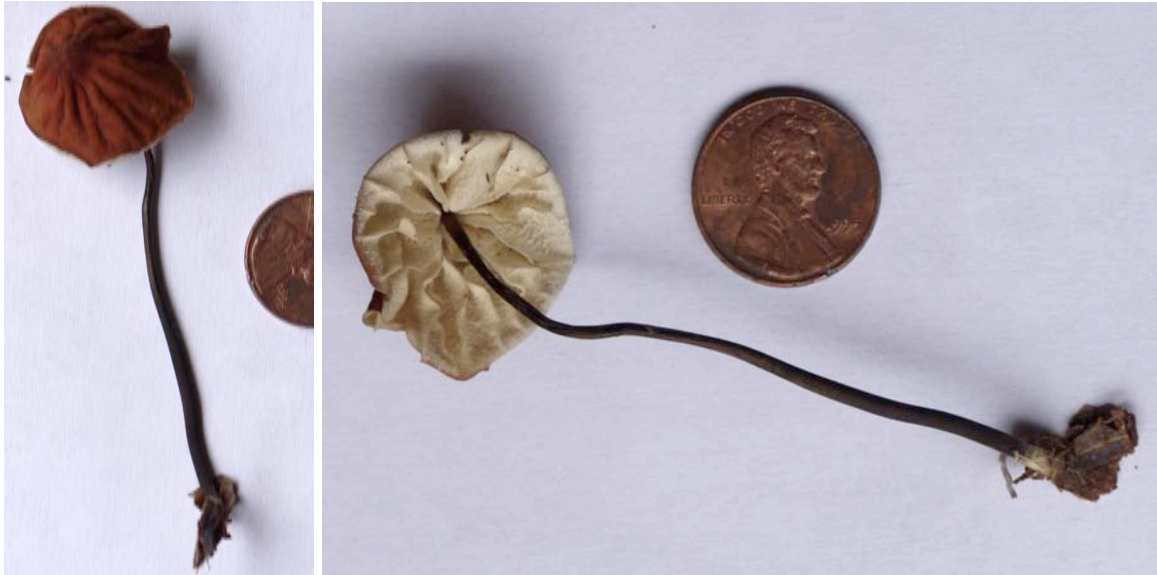
Fig. 90. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.



Fig. 91. Samples found near Choro, 800 m elev.

32. *Marasmius* aff. *rubricosus*

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Figs. 92 & 93. Basidiomes

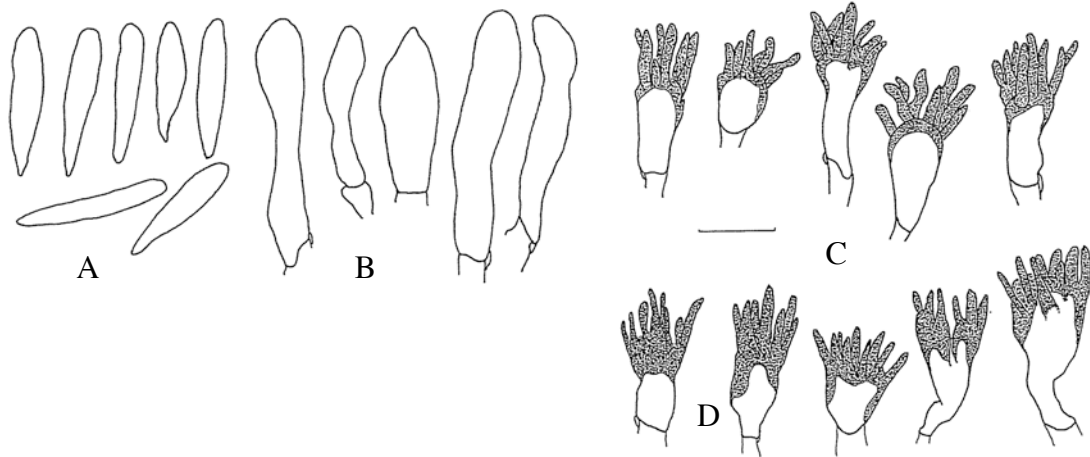


Fig. 94. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.

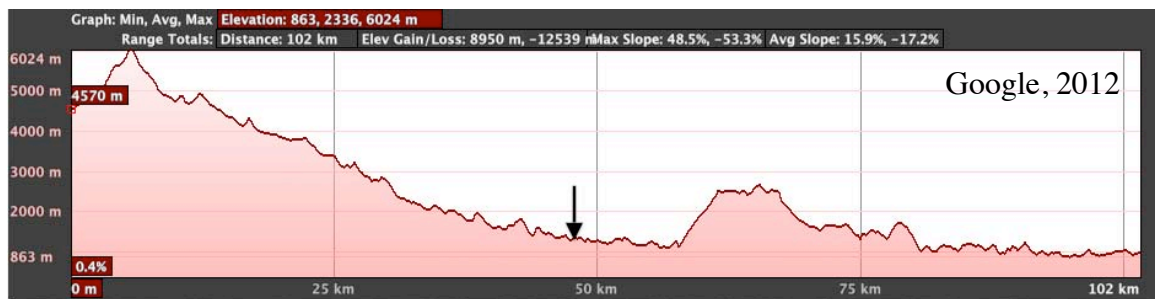


Fig. 95. Samples found near Chairó, 1303 m elev.,
Halling's samples found near Rurrenabaque, 200 m elev.

33. *Marasmius matrisdei*

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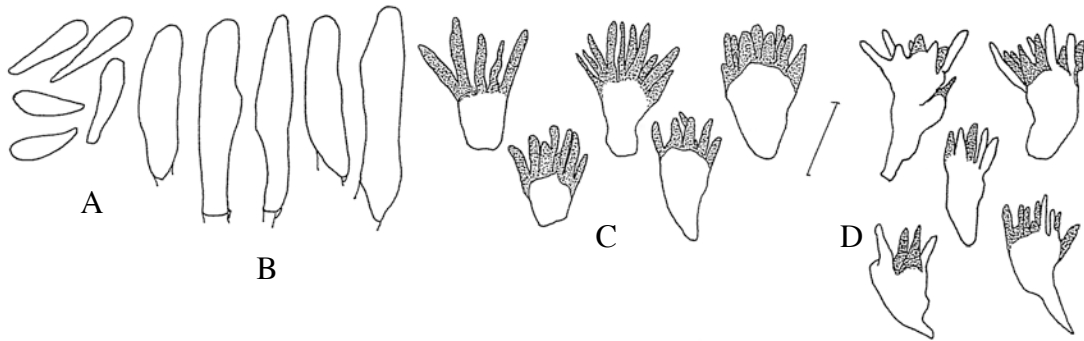


Fig. 96. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.

Halling's samples found near Rurrenabaque, 200 m elev.

34. *Marasmius beniensis*



Fig. 97. Basidiomes.

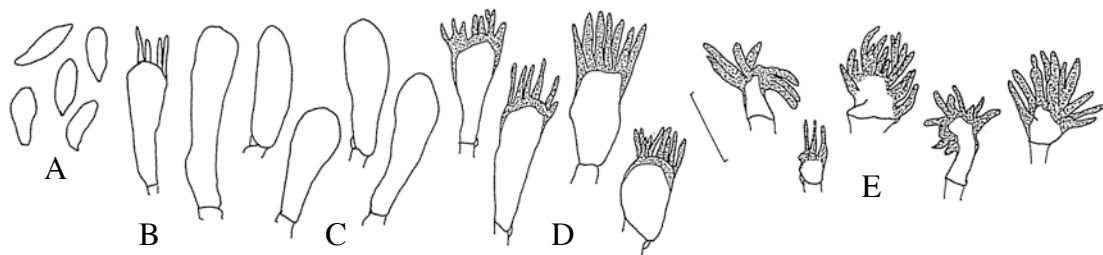


Fig. 98. A. Basidiospores. B. Basidium. C. Basidioles. D. Cheilocystidia. E. Pileipellis. Bar = 10 μ m.



Fig. 99. Samples found near Choro, 800 m elev.

35. *Marasmius corrugatus* var. *aurantiacus*



Fig. 100. Basidiomes.

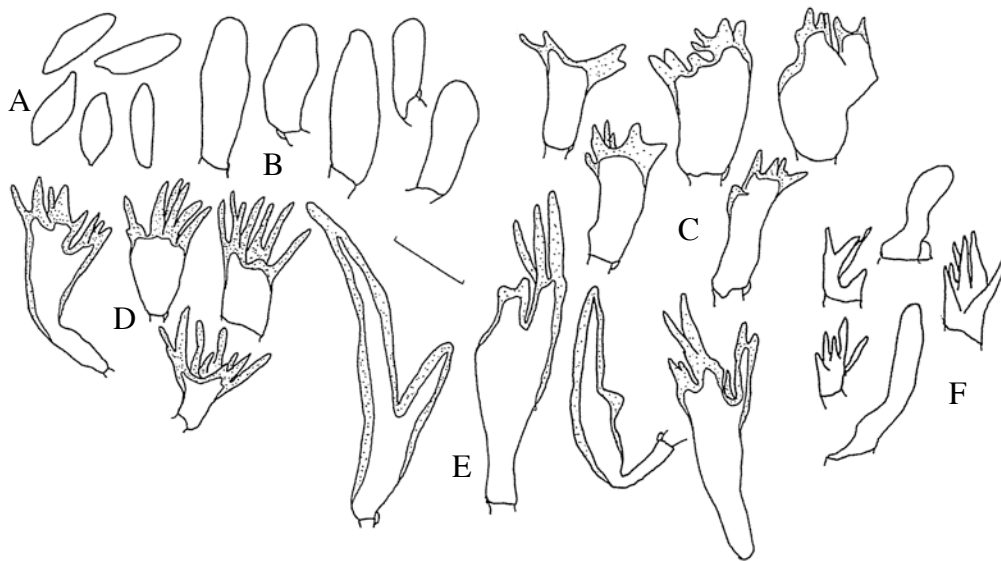


Fig. 101. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D & E. Pileipellis. F. Caulocystidia. Bar = 10 μ m.



Fig. 102. Samples found near Charobamba crossing, 1134 m elev.

36. *Marasmius durasnu* sp. nov.



Figs. 103 & 104. Basidiomes.

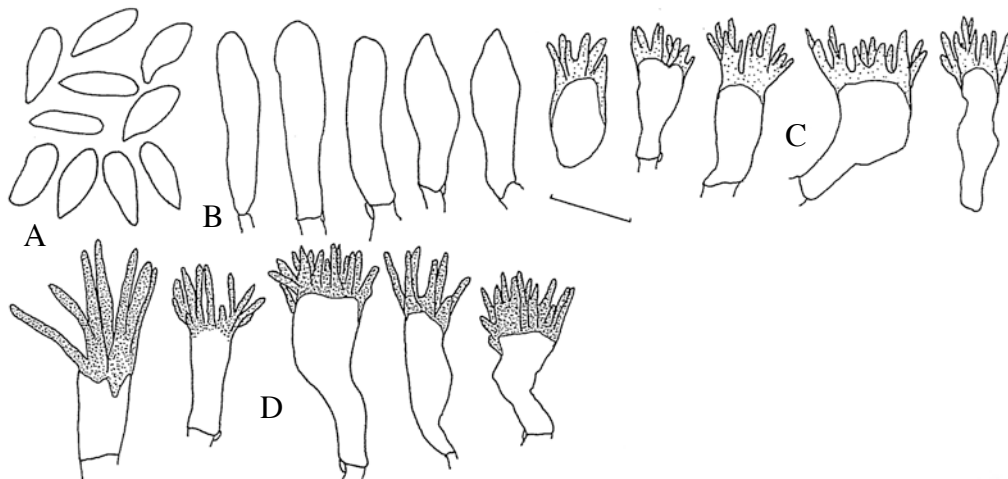


Fig. 105. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.

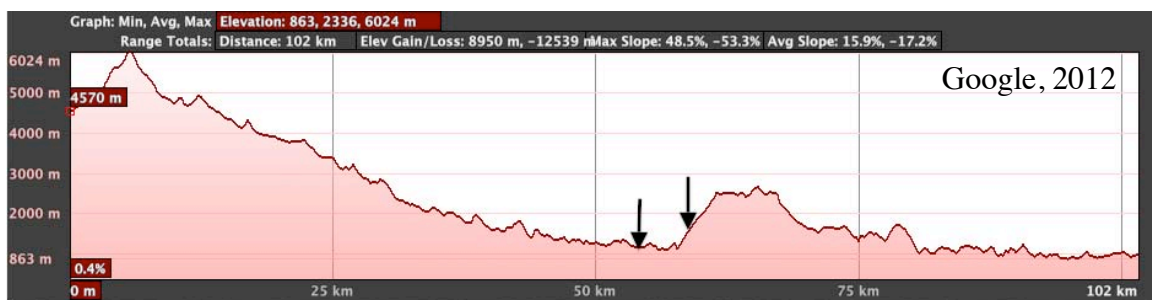


Fig. 106. Samples found near Hotel Sol y Luna, 1827 m elev., & near Charobamba crossing, 1134 m elev.

37. *Marasmius* aff. *ruber*



Fig. 107. Basidiomes.

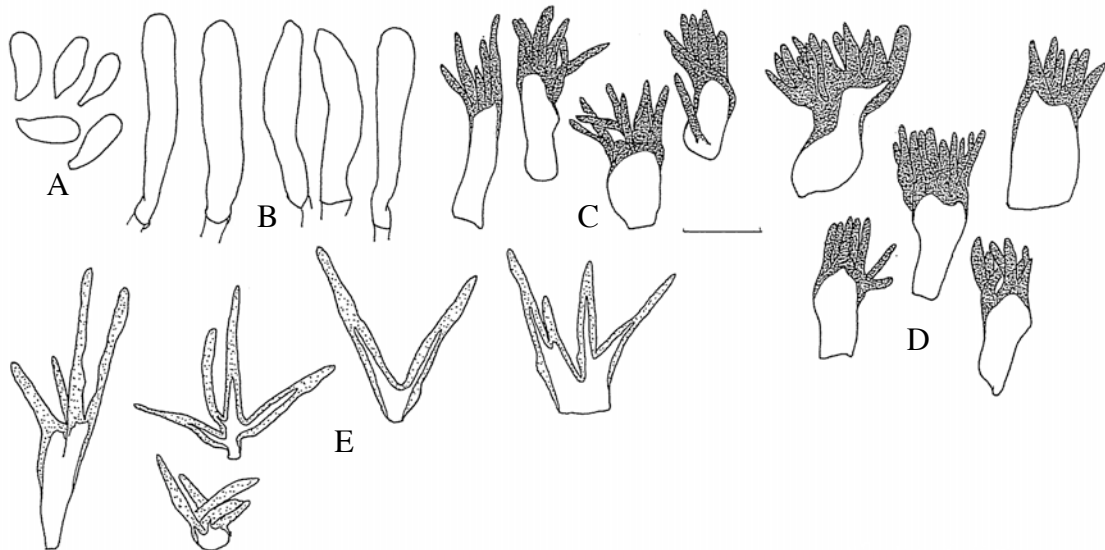


Fig. 108. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.



Fig. 109. Samples found near Chairo, 1303 m elev.

38. *Marasmius berteroi* var. *major*

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Figs. 110 & 111. Basidiomes.

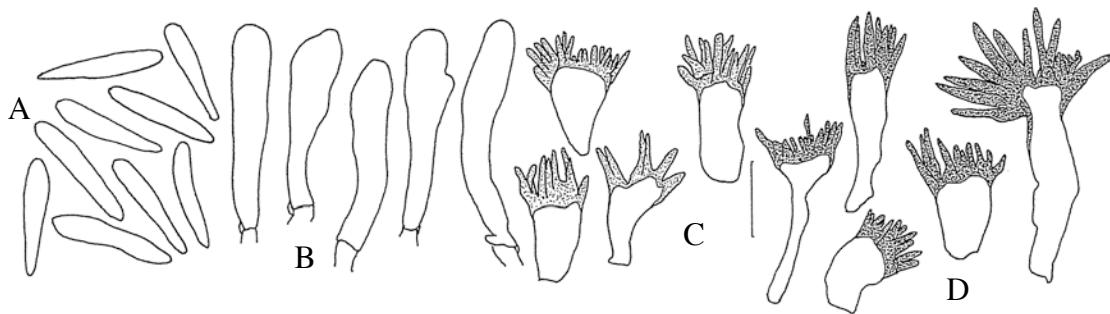


Fig. 112. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.



Fig. 113. Samples found near Charobamba crossing, 1134 m elev., near Choro, 800 m elev., & Halling samples found near Rurrenabaque, 200 m elev.

39. *Marasmius bellus*



Fig. 114. Basidiomes.



Fig. 115. Samples found near Chairu, 1303 m elev., and near Charobamba crossing, 1134 m elev.

Continued on next page.

39. *Marasmius bellus* (cont.)

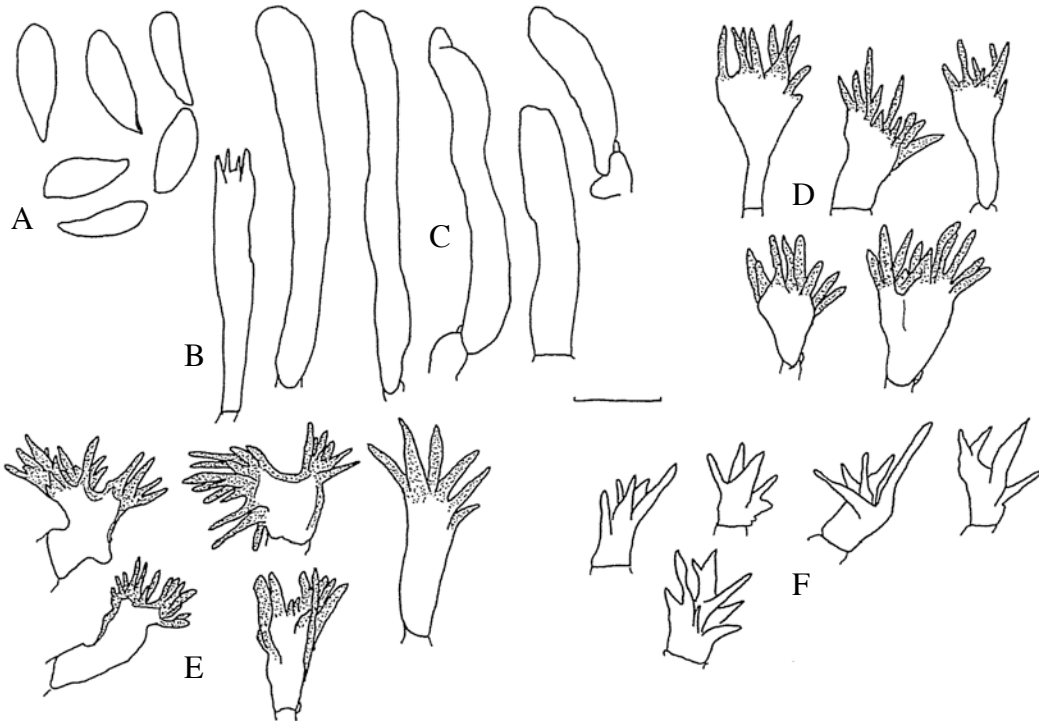


Fig. 116. A. Basidiospores. B. Basidium. C. Basidioles. D. Cheilocystidia. E. Pileipellis. F. Caulocystidia. Bar = 10 μ m.

40. *Marasmius bellus* var. *pruinostipes* var. nov. ¹⁵⁰

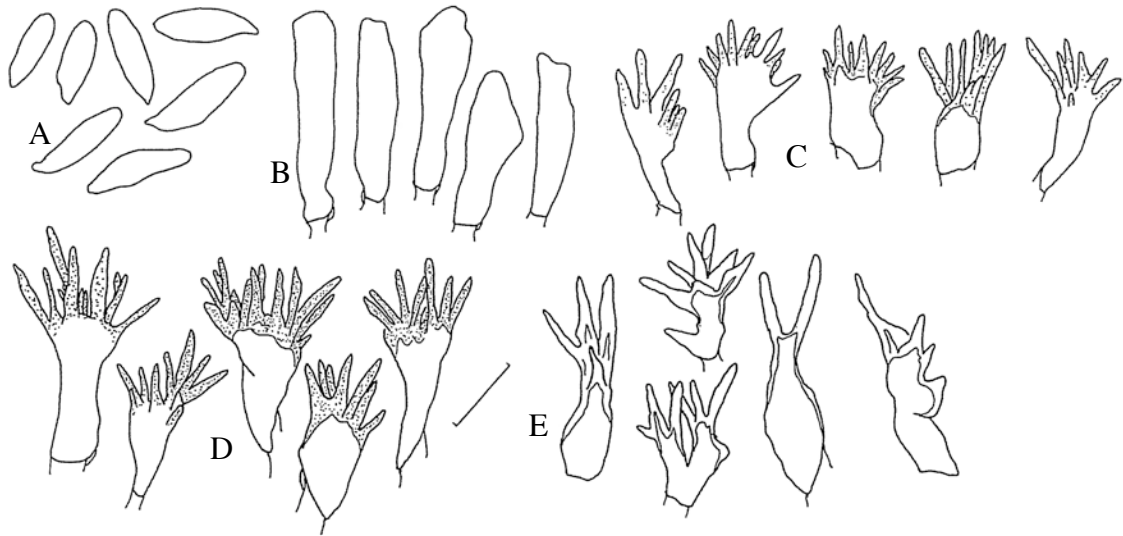


Fig. 117. A. Basidiospores. B. Basidioles. C. Cheilocystidia.
D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.

Halling samples found near Rurrenabaque, 200 m Elev.

41. *Marasmius napoensis*



Fig. 118. Basidiomes.

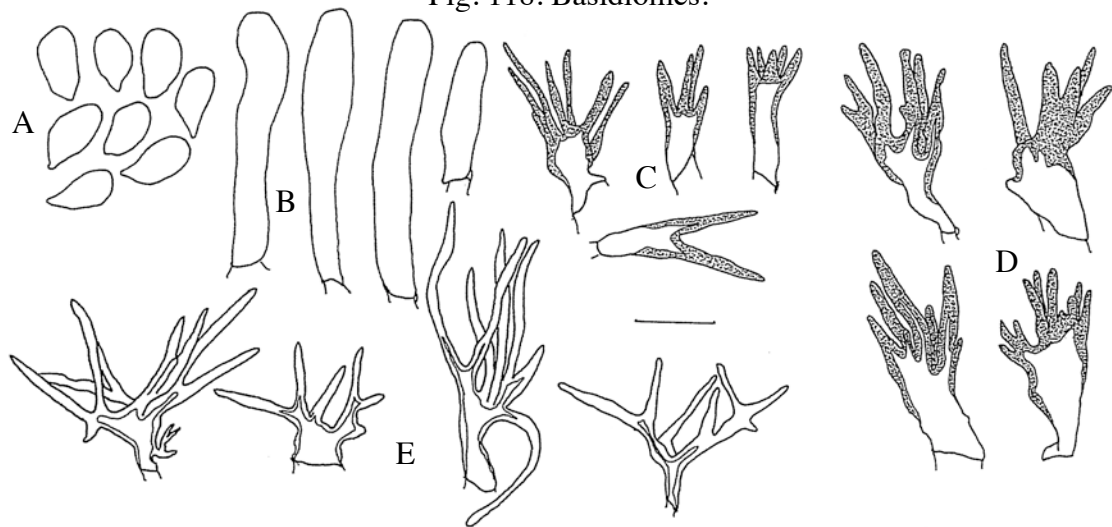


Fig. 119. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.



Fig. 120. Samples found near waterfalls, 2030 m elev.,
Halling samples found near Rurrenabaque, 200 m elev.

42. *Marasmius leoninus*



Fig. 121 & 122. Basidiomes.

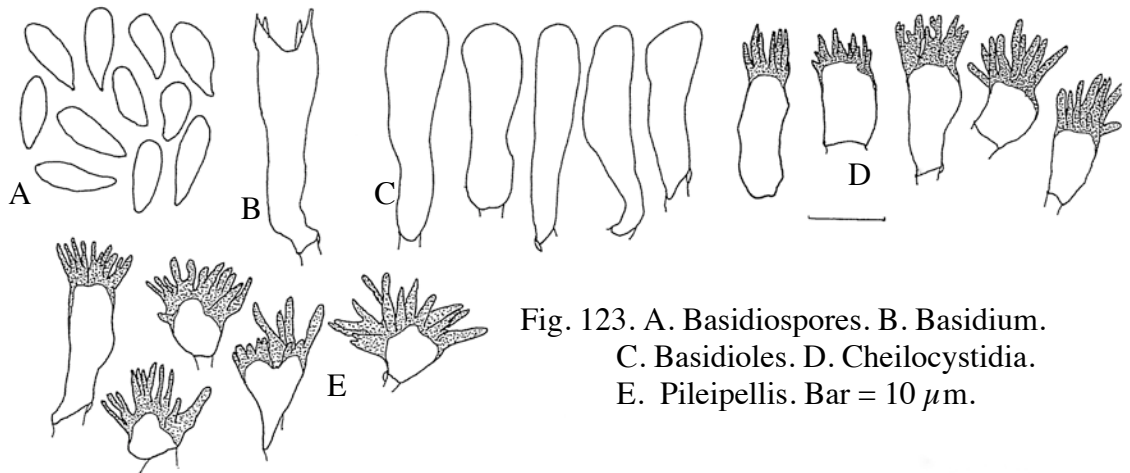


Fig. 123. A. Basidiospores. B. Basidium. C. Basidioles. D. Cheilocystidia. E. Pileipellis. Bar = 10 μ m.



Fig. 124. Samples found at Hotel Sol Y Luna, 1827 m elev.,
Halling samples found near Rurrenabaque, 200 m elev.

43. *Marasmius floriceps*



Figs. 125 & 126. Basidiomes.

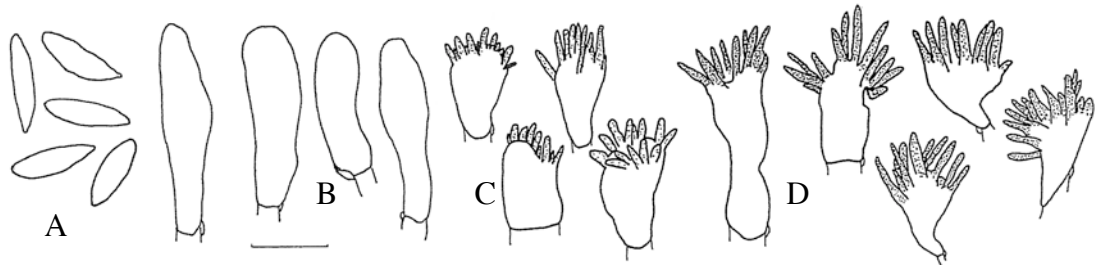


Fig. 127. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis.
Bar = 10 μ m.



Fig. 128. Samples found near Hotel Verde, 1207 m elev.,
Halling samples found near Rurrenabaque, 200 m elev.

44. *Marasmius* aff. *bezerrae*



Fig. 129. Basidiomes.

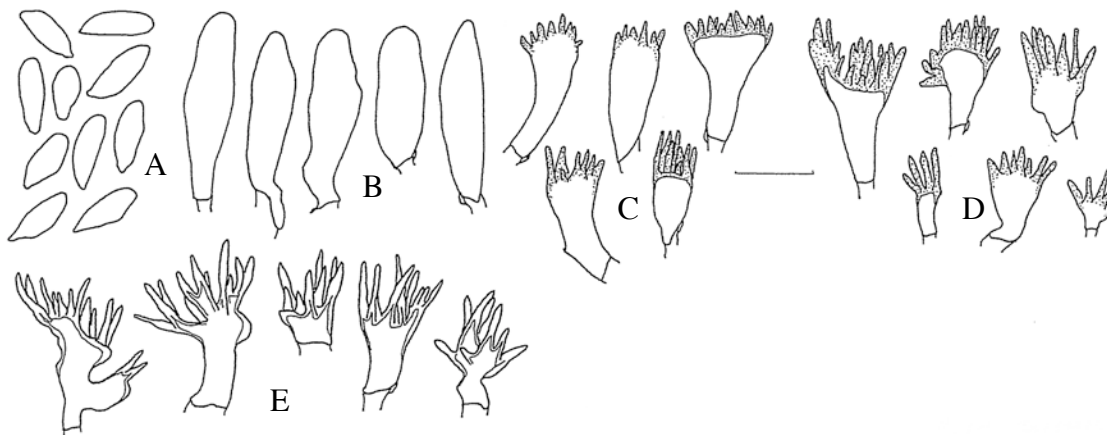


Fig. 130. A. Basidiospores. B. Basidioles. C. Cheilocystidia. D. Pileipellis. E. Caulocystidia. Bar = 10 μ m.



Fig. 131. Samples found near Charobamba crossing, 1134 m elev.,
Halling samples found near Rurrenabaque, 200 m elev.

45. *Marasmius bezerrae*



Fig. 132. Basidiomes.

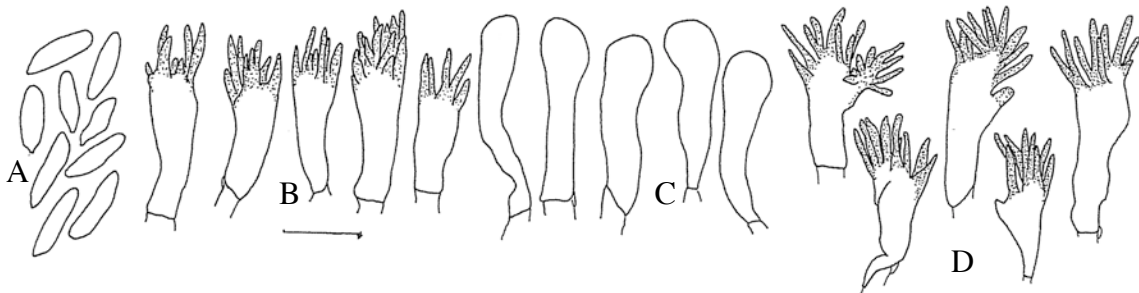


Fig. 133. A. Basidiospores. B. Cheilocystidia. C. Basidioles D. Pileipellis.
Bar = 10 μ m.



Fig. 134. Samples found at Hotel Sol y Luna, 1827 m elev.

Marasmius thwaitesii



Fig. 135. Basidiomes.

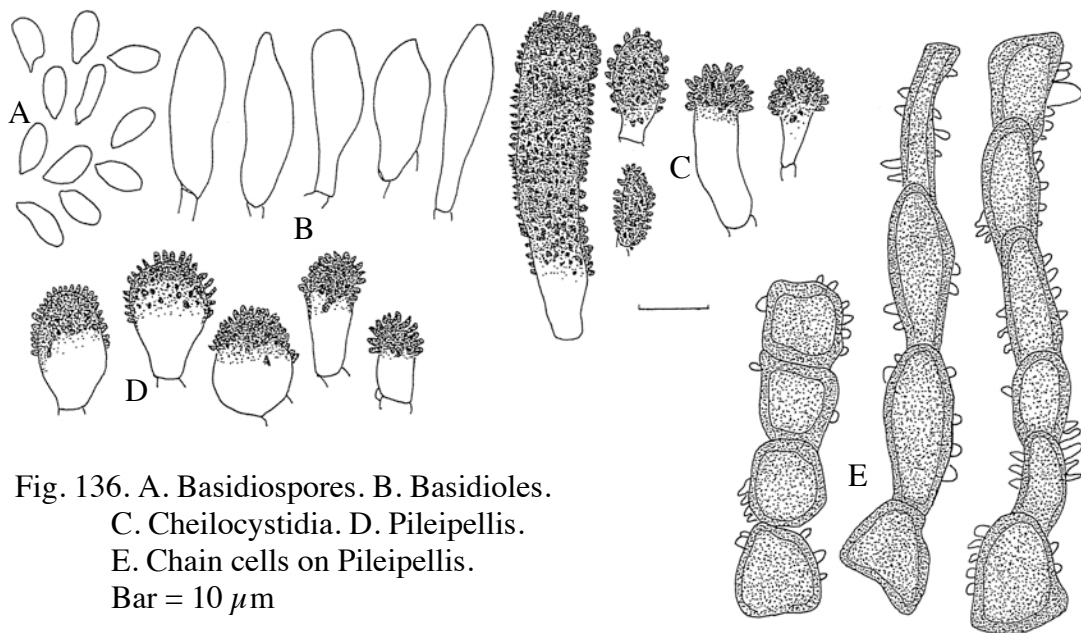


Fig. 136. A. Basidiospores. B. Basidioles.
C. Cheilocystidia. D. Pileipellis.
E. Chain cells on Pileipellis.
Bar = 10 μ m

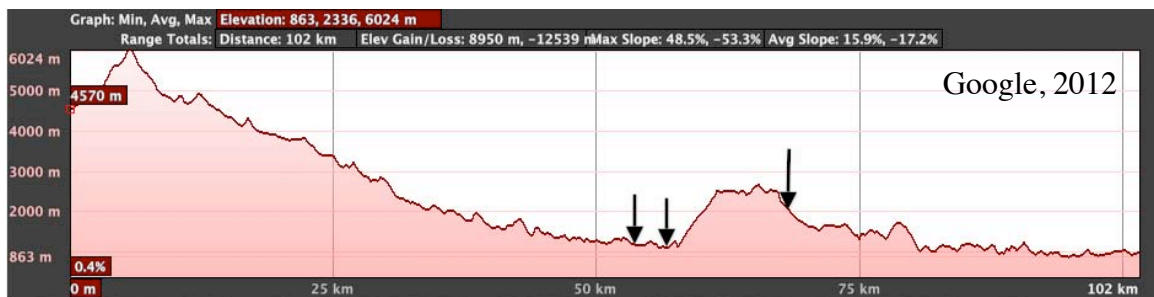


Fig. 137. Samples found near Charobamba crossing, 1134 m elev., near Santa Barbara, 1062 m elev., & near waterfall, 2030 m elev.

Marasmius sp. Section *Hygrometrici*



Fig. 138. Basidiomes.

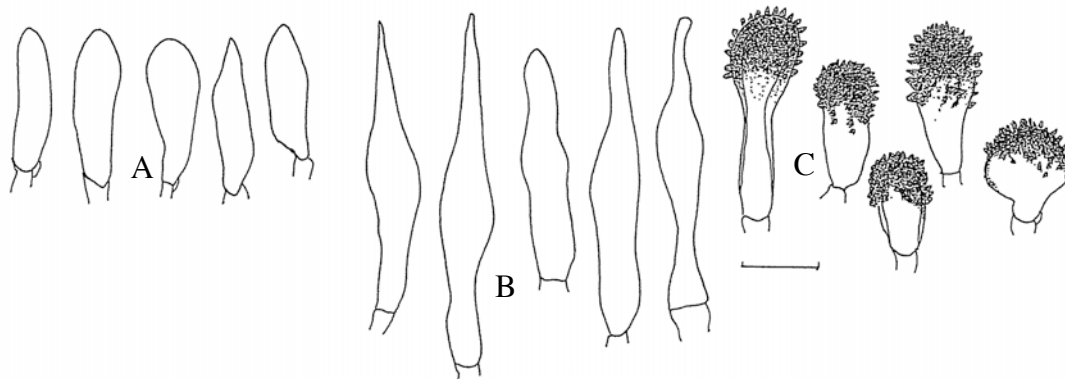


Fig. 139. No spores observed. A. Basidioles. B. Cheilocystidia. C. Pileipellis.
Bar = 10 μ m.

Marasmius sp. Section *Epiphylli*



Fig. 140. Basidiomes.

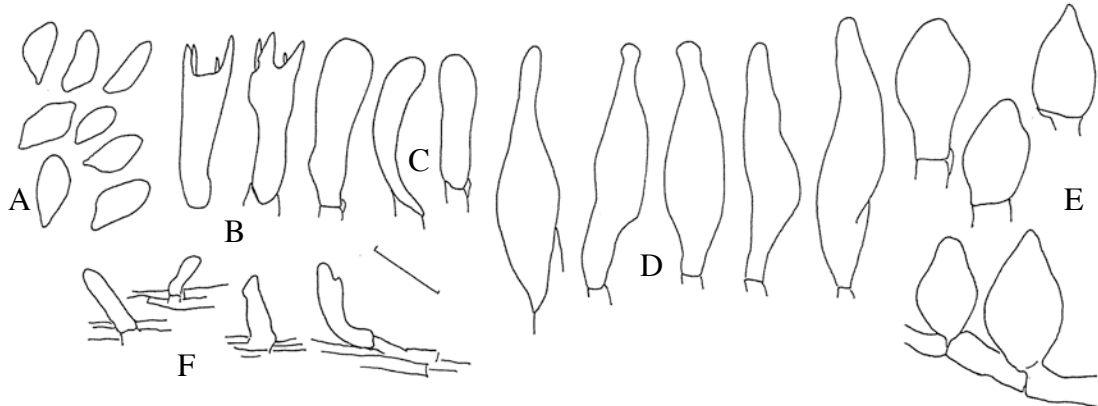


Fig. 141. A. Basidiospores. B. Basidia. C. Basidioles. D. Cheilocystidia. E. Pileipellis. F. Caulocystidia. Bar = 10 μ m.



Fig. 142. Samples found at Hotel Sol y Luna, 1827 m elev.

Gloiocephala sp.



Figs. 143 & 144. Basidiomes.

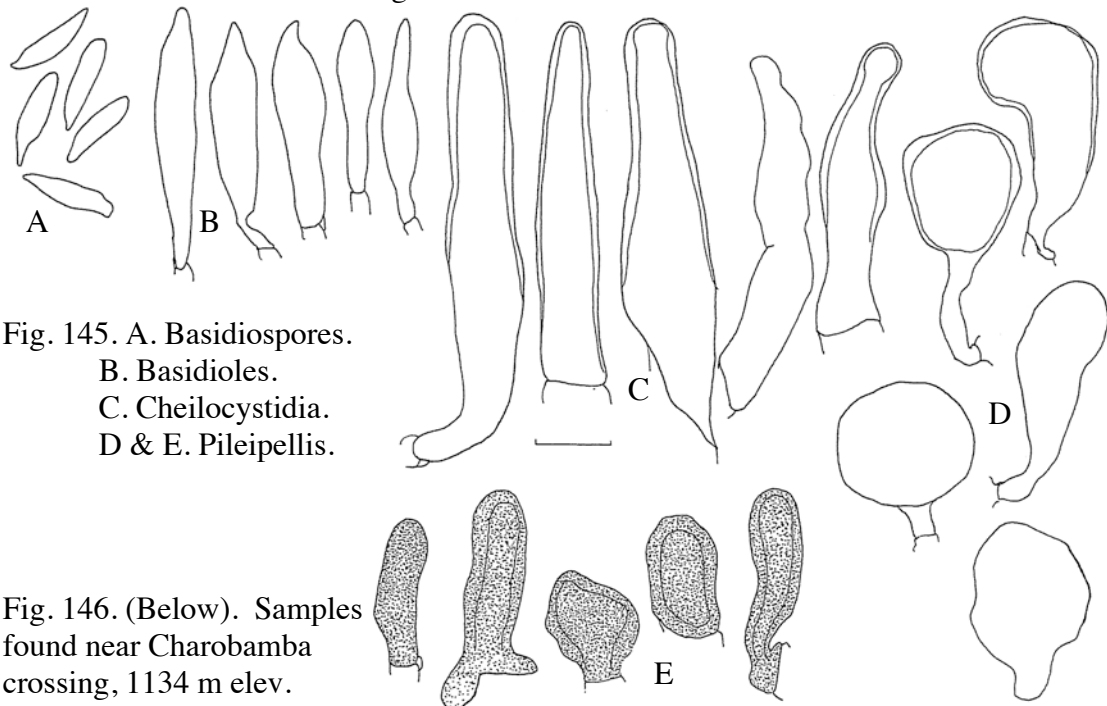


Fig. 145. A. Basidiospores.
B. Basidioles.
C. Cheilocystidia.
D & E. Pileipellis.

Fig. 146. (Below). Samples found near Charobamba crossing, 1134 m elev.



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