A New “Horned” Fungus Growing Ant, *Cyphomyrmex castagnei*, from Colombia (Hymenoptera: Formicidae)

by

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ABSTRACT

We describe a new species of *Cyphomyrmex* from Colombia. This species is superficially similar to *C. cornutus* in that the occipital corners are extended by occipital spines, but differs in a number of characteristics, especially the structure of the mesosoma.

RESUMEN

Se describe una nueva especie de hormiga del género *Cyphomyrmex* de Colombia. La nueva especie es semejante a *C. cornutus* en que las esquinas occipitales se extienden en forma de espinas, pero difiere en otras características, especialmente la estructura del mesosoma.

INTRODUCTION

We are currently undertaking intensive studies of the ants of Colombia, during which we have collected a number of rare and undescribed ants. One of the most remarkable is a new species of “horned” *Cyphomyrmex*. One of the “compañeros” of our Colombian ant group, Francisco Castaño Lozano, recently died, and thus we are taking this opportunity to describe this interesting species and to dedicate it to our dear colleague.

*Diagnosis:* This species is a member of the *rimosus* group as defined by Kempf (1965) and the *salvini* subgroup as defined by Snelling & Longino (1992), possessing a curved preocular carina and 5-toothed mandible (Fig. 1), a large anterior mesonotal tubercle and a large and tooth-like posterior pronotal tubercle (Fig. 4). It is one of the 2 species known to have long horn-like extensions of the occipital corners (the other species is *C. cornutus* Kempf 1968). This species would key to couplet 4 of Kempf’s (1965) key, but wouldn’t fit either alternative. It would key to *C. vorticis* in Snelling and Longino (1992). *Cyphomyrmex castagnei* is superficially similar to *C. cornutus* and would only be

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confused with this species. It differs in that the paired mid-pronotal denticles are present (Fig. 9), the postero-lateral tubercles are not as long and sharp (compare Figs. 3 & 4), the antero-lateral tubercles are much more developed (Fig. 4), the mesonotal protuberances of *C. castagnel* are much more spine-like (Fig. 4) than in *C. cornutus* (Fig. 3), and the anterior-inferior region is angulate in *C. cornutus*, and rounded in *C. castagnel*. In addition, the meso-soma of *C. castagnel* has squamate hairs (Fig. 4), whereas the mesosomal hairs of *C. cornutus* are simple (Fig. 3). It is easily distinguished from *C. vorticis* as the posterior mesonotal tubercles are large and tooth-like, and the occipital lobes are prolonged into long spine-like processes (Figs. 1 & 2).

**Cyphomyrmex castagnel** New Species
(Figs. 1, 2, 4-7, 9-12)

Description: (Note on measurements- HL head length from anterior medial border of clypeus to posterior medial edge of head. HW is head width between outer eye margins. Holotype [worker] measurements in parentheses, all measurements in mm.). Worker: HL 0.71 - 0.80 (0.71), HW 0.76 - 0.83 (0.78), scape length 0.81 - 0.90 (0.83), eye length (maximum) 0.16 - 0.18 (0.16), Weber’s length 1.19 - 1.24 (1.20), petiole length (total) 0.28 (0.28), petiole width 0.14 - 0.16 (0.16), post petiole length (node) 0.20 - 0.24 (0.23), post petiole width 0.33 - 0.34 (0.34), scape index (scape length/head length X 100) 112 - 116 (116), cephalic index (width/length X 100) 103 - 109 (109), petiole index (length/width X 100) 169 - 183 (169).

Mandible finely striate and punctate with 5 teeth; clypeus with wide, depressed apron, conspicuously impressed in center with prominent, parafrontal denticles on each side; head as in other *Cyphomyrmex*, with broadly expanded frontal lobes, carinae extending almost to occipital corners; preocular carinae curves mesad above eye; frontal area depressed; eyes strongly convex with 10 facets in maximum diameter; supraocular tooth well developed; occipital corners drawn out into horn-like protuberances which curve anteriorly (as seen from above, Fig. 2); scapes extending past horns by about 2 scape diameters; mesosoma very distinctive: median paired pronotal denticles well developed (Fig. 9); antero-lateral tubercles moderately developed, pointed; postero-lateral tubercles very well developed, much larger than median tubercles; anterior mesonotal tubercles large, well developed and sharply pointed, antero-inferior region broadly rounded (Fig. 4); posteri- or mesonotal tubercles large, toothlike; propodeum with poorly defined lateral, longitudinal raised region; hind femora not conspicu-
ously broadened; petiole, postpetiole and gaster similar to most other species in genus.

Color ranging from reddish brown to dark brown, some specimens have a waxy, light colored material as commonly occurs in various genera in the Attini. Entire body (especially head and gaster) with appressed, spatulate, golden hairs.

Female (paratype): HL 0.83, HW 0.88, SL 0.89, EL 0.23, WL 1.40, PL 0.23, PW 0.36, PPL 0.30, PPW 0.51, SI 107, CI 106, PL 64.

Mandibles, clypeus and head as in worker, except 3 ocelli present; eye with 14 facets in maximum diameter; posterior occipital spines well developed and directed anteriorly as in worker; postero-lateral pronotal spines well developed, directed anteriorly (Fig. 12), other tubercles evident only as insignificant bumps; petiole and postpetiole similar to worker.

Color dark reddish brown, hairs present as in worker.

Male (paratype): HL 0.61, HW 0.70, SL 0.80, EL 0.26, WL 1.20, PL 0.18, PW 0.25, PPL 0.36, PPW 0.24, SI 131, CI 115, PL 72.

Mandible with 3 well developed apical teeth, other 2 teeth poorly defined (Fig. 11); clypeus with strongly depressed apron; frontal lobes well developed, strongly upraised; frontal area depressed; 3 ocelli well developed; occipital spines well developed (Figs. 6, 11); scape extending past occipital spines by approximately 4 diameters; postero-lateral pronotal spines well developed, directed anteriorly (Fig. 10), other spines poorly developed, represented by slight bumps; propodeal carinae well developed, with well developed propodeal angles; petiole and postpetiole similar to that of workers, but with more rounded angles.

Dark reddish brown with sparse, simple, golden, appressed hairs on mandible, clypeus, underside of head; standing, golden hairs on underside of gaster and at posterior edges of terga; fine fringe of hairs on posterior edge of hind wing.

Type material: Holotype, 39 paratype workers, 1 paratype female, 1 paratype male. COLOMBIA, Nariño, Sanquinga, 2°35'N, 78°21'W, 20 m elevation, 19-1-1990, #SQ07.

Material examined: One hundred seventy workers, 24 females and 4 males, including type series; COLOMBIA: Nariño, Sanquinga, 20-1-1990, #SQ-21, 20 workers, 4 females, 2 males. COLOMBIA: Valle, Puesto Merizalde, 3°10'N 77°20'W, 40 m elevation, 8-xii-1988, #MPQ14, 20 workers, 11 females, 1 male. COLOMBIA: Caucá, Isla Gorgona, 2°58'10" N 78°11'05" W, 35 m elevation, 16-1-1990, #GAcd-19, 20 workers, 2 females; 16-1-1990, #GAcd-01, 30 workers, 5 females; 29-ix-1989, #GG04, 40 workers, 1 female. All specimens collected by M.

Baena.

Distribution: western Colombia and adjacent Gorgona Island.

Biology: Nests inside rotten logs and underlying soil to a depth of 7 cm (4 nests), one nest under a brick. Workers feign death when discovered and are difficult to see as they are the same color as the soil. Activity is primarily nocturnal. Most nests are in dense forest, although one nest was in an open area.

Type deposition: The holotype, 27 paratype workers, the paratype female and the paratype male are deposited in the Museo de Entomología, Universidad del Valle (Cali, Colombia) together with most of the specimens from other series. Other paratypes workers and non paratype sexuals from other series deposited in the Museo de Historia Natural, Universidad Nacional de Colombia (Bogotá), Instituto Colombiano Agropecuario (Tibaitatá), Instituto de Zoología Agrícola (Caracas), Museu de Zoologia da Universidade de São Paulo, Museum of Comparative Zoology, Los Angeles County Museum of Natural History, and the British Museum of Natural History.

Etymology: It gives us some degree of consolation to name this attractive species to honor our deceased colleague, Francisco Castaño Lozano, one of the members of our "Grupo de myrmécologos de Colombia".

Francisco was born in Santa Fé de Bogotá, Colombia in 1953. He was a successful scientist, although he had to overcome tremendous obstacles. He was unable to finish high school, but finally had the opportunity to obtain his degree by exam. Francisco was not able to graduate from a university, but did take classes at the Universidad Nacional de Colombia and was awarded a diploma honoris causa by the Universidad in 1984. He never had a permanent position and funded much of his own research by marketing solar heating units, together with funds provided by his wife Margarita Garcia. He began his research on leaf cutting ant behavior at about 20 years of age and prepared a proposal which was submitted to COLCIENCIAS (Colombian Sciences Foundation) in 1976. Dr. Efraim Otero, director of COLCIENCIAS, felt the proposal had merit and sent it for review to Dr. Charles Kugler, who was working on ants at Tayrona Park in northern Colombia. Dr. Kugler recognized Francisco's potential and recommended that the proposal be funded. Dr. Kugler later invited Francisco to Santa Marta to attend a workshop on ant taxonomy, which launched him into his research program. Francisco was funded almost continuously after 1976 by COLCIENCIAS. Francisco presented papers on ants at several conferences and national meetings and at universities. More information is available in an article by López (1992).
We have known Francisco for over 10 years, during which our group has been working in various projects with the ants of Colombia. We were especially impressed by Francisco’s abilities as a scientist. He was able to accomplish an impressive amount of work, even under difficult financial conditions. He had completed an extensive series of studies on leaf cutting ants, which are so economically important in Colombia. Francisco had a number of experimental colonies in his laboratory at the time of his death. He was especially interested in the biological control of Atta, using alarm pheromones.

His primary goal was to assemble the largest collection of Colombian ants, a goal which he probably achieved before his death. He had collected throughout Colombia in some of the most interesting and inaccessible places. He had especially extensive collections from his 2 favorite areas: Bajo Calima and the Bosque de Yotoco (Valle de Cauca State). Other extensive collections are from Las Gaviotas area, Arauca, alto Rio Escalerete (virgin forest in western Valle department), alto Rio Bravo, La Cristalina and Bajo San Juan. Francisco published a paper on Pheidole from work he did in Las Gaviotas (Castano 1981). At the time of his death he was planning an extensive 3 month collecting trip to the Reserva La Planada in the state of Nariño and was preparing an illustrated catalogue of colombian ants.

Even though we were impressed by his scientific abilities, we were more impressed by his qualities as a friend. It was always an adventure to hop on the back of his motorcycle and head for his favorite collecting sites. He always knew where the most interesting and beautiful areas were located. He was saddened and very concerned with the habitat destruction that has occurred in Colombia. He would sit in the tiny island of virgin tropical rain forest at Bosque de Yotoco and speculate on how beautiful the surrounding areas may have looked before man arrived. Francisco would become enraged when someone would cut trees within the Bosque de Yotoco area. He was very generous with the specimens he collected. He would always insist on giving duplicate specimens to his friends. He once gave one of us (WPM) a specimen of Dolichoderus rosenbergi, which was previously known only from the holotype from Ecuador.

Francisco died on November 28, 1991 of a heart attack. Francisco is survived by his wife Margarita and daughter Sursay Marjory of Santa Fe de Bogotá. Mrs. Garcia de Castano has transferred his collection to the Universidad de Los Andes, Santa Fe de Bogotá. Dr. Fernando Fernández of the Universidad Nacional will sort and curate the material. We have lost a good friend and one of the best tropical ant biologists that we had.

ACKNOWLEDGMENTS

We would like to thank Emma Sánchez de MacKay for reviewing the manuscript. The research was supported by the Instituto Nacional de los Recursos Naturales (INDERENA - Colombia), the Universidad del Valle (Cali, Colombia) and the Center for Inter-American and Border Studies (University of Texas, El Paso, USA).

REFERENCES


ADDENDUM

The following are additional localities for the rarely collected C. cornutus:

Colombia: Valle de Cauca, San Cipriano, 3°8'N 77°15'W, 70m elevation, 3-xl-1988, between bark of tree and moss, 6m from soil surface, #SC05A. COLOMBIA: Cauca, Isla Gorgona, 23-i-1990, inside log, #CAcd22.