Sporocarps of the hypogeous ascomycete Car- 

bomyces emergens Gilky were collected in the 

northern Chihuahuan Desert, at the entrance to 

the Jornada Experimental Range, 25 km NNE 

of Las Cruces, New Mexico on March 13, 1985. 

The site consisted of coppiced dunes vegetated 

with Atriplex canescens (Pursh) Nutt., Prosopis 

glandulosa Torr., and several spring flowering 

annuals, Lepidium lasiocarpum Nutt., and Les-

querella gordonii (Gray) Wats. The interdune 

spaces were generally devoid of vegetation. The 

ascocarps were discovered 2-5 cm below the soil 

surface in and around recent rodent digs located 

in the interdune areas. Dried specimens were 

subsequently discovered on the soil surface (April 

10, 1985) in the ecotone between the Larrea tri-

dentata (DC.) Cov. and the Bouteloua eriopoda 

(Torr.) Torr. vegetation zones of the Jornada Long 

Term Ecological Research site, located on the 

New Mexico State University college ranch, 15 

km north of the original collection area.

Ascocarps (Fig. 1) were subglobose, ovoid to 

irregular (0.5-2.1 × 0.8-2.0 cm diam), cream to 

honey yellow in color, and produced singularly 

and in clusters. Glebal mass was white when im-

mature becoming yellowish brown with the mat-

uration of the fertile pockets of asci. Flesh of 

mature specimens turning yellow when cut, oth-

erwise remaining white at maturity. Dried spec-

imens found on the soil surface were as described 

by Trappe (1979).

The genus Carbomyces, which consists of 3 

species (Trappe, 1979), is known only from the 

deserts of southwestern United States. Carbo-

myces emergens was originally described from 

material collected at Carlsbad, New Mexico (Gilkey, 

1954). In her description, Gilkey (1954) 

stated that ascocarps occurred epigeously or hy-

pogeously in sandy soil under shrubs in New 

Mexico and California. In his monograph of the 

hypogeous ascomycetes, Trappe (1979) indicat-

ed, however, that there was only indirect evi-

dence that Carbomyces developed hypogeously. 

The collection reported here is the first docu-

mented account of Carbomyces developing be-

low ground and the apparent mycophagy of the 

fruitbodies by rodents.

The ingestion of hypogeous sporocarps by ro-

dents is a well known occurrence (Maser et al., 


the prevalence of hypogeous fungi in the arid 

coniferous forests of the southwestern United 

States was due in part to the widespread con-

sumption of their sporocarps by squirrels and 

other rodents. Although there is no direct evi-

dence, considering the time of year and location 

where the ascocarps of C. emergens were col-

lected, Spermophilus spilsoma, the spotted 

ground squirrel (Wood, 1969), could be respon-

sible for digging up the fruitbodies.

Since the original collection of C. emergens 

was a fortuitous event, the length of the fruiting 

period is unknown. Attempts to collect the as-

cocarps in succeeding weeks from rodent digs 

were unsuccessful, suggesting that late March may 

be the end of the fruiting period in this region. 

It is likely that ascocarps may be produced in the 

northern Chihuahuan Desert during late winter 

(January–March) since soil moisture levels are 

high during this period.

Hypogeous ascomycetes are generally pre-

sumed to form ectomycorrhizal associations with 

perennial hosts (Miller, 1982). Awamah et al. 

(1979) reported, however, that four species of 

desert truffles from Kuwait (Terfezia bouldieri, 

T. clovergi, Tirmania nivea, and T. pinoyi) 

formed a specific type of mycorrhizae with two 

annual species of Helianthemum. Although there 

is no direct evidence that Carbomyces forms my-
corrhizae, studies of the ecology of hypogeous ascomycetes from deserts in north Africa and west Asia (Alsheikh and Trappe, 1983a, b) suggest that *C. emergens* is probably symbiotic.

Specimens have been deposited in the herbarium of Oregon State University.

Key Words: *Carbomyces*, hypogeous ascomycete, Chihuahuan Desert.

**LITERATURE CITED**


