

230 km NW of Gainesville. We suspect that *O. pumilus* is rare and local, but widespread, on cave-dwelling bats in the southeastern United States.

We thank Carleton M. Clifford for identifying the ticks and H. A. Denmark for putting us in touch with him. S. R. Telford, Jr. read the manuscript.

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## Oxyurid (Nematoda) Egg from Coprolites from Brazil

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Paleoparasitology began with the pioneering works of Ruffer (1910, *Brit. Med. J.* 1: 16) and Szidat (1944, *Zeitschr. Parasitenkd.* 13: 265-274). Human tissues and coprolites were used for analysis; however animal coprolites also have been found and examined for parasites. We report here the results of parasitological examination of 9,000-year-old coprolites of lizards in which nematode eggs were found.

Archeological excavations were performed at Santana do Riacho, Minas Gerais, Central Brazil by the staff of Museu de História Natural (UFMG) headed by Dr. André Frous. A number of small, slender, dark-brown coprolites (Fig. 1), measuring from 1 to 3 cm in length and with a smooth surface containing small brilliant points, were found in close contact with ancient human burials under a rock shelter at depths varying from 60 to 140 cm, corresponding to levels with maximum dating of  $9,640 \pm 110$  BP, estimated by the radiocarbon method from charcoal of fire places. Coprolites were distributed in groups of 50 to 200 inside small chambers communicating with tunnels 2 to 3 cm in diameter that were obstructed and directed upward to a maximum depth of 60 cm below the surface of the soil, i.e., they were all in the layer dated from 9,000 years and they did not communicate with the layers above dated from 0 to 5000 BP.

The coprolites were collected by Dr. A. Frous and sent to our laboratory for parasitological examination. They were rehydrated through immersion in a 0.5% aqueous triso-

dium phosphate for 72 hr, following the technique of Callen and Cameron (1960, *New Scient.* 8: 35-40) and then searched for parasites using the spontaneous sedimentation technique proposed by Lutz (1919, *Mem. Inst. Oswaldo Cruz* 11: 121-150). Microscopic examination of the sediment revealed several nematode eggs with a striated and brown shell formed by three layers, and measuring  $80.57 \pm 4.14 \mu\text{m} \times 39.21 \pm \mu\text{m}$  (Fig. 2). Small rounded forms similar to amoebic cysts were also observed but accurate identification was not possible.

The brilliant points on the surface of the coprolites were remnants of insects that formed the major part of the coprolites; these were mostly heads of Isopterans (*Nasutitermes* sp.) and mandibles of Hymenopterans (Formicidae).

To collect information on the local fauna in order to formulate a hypothesis about the origin of the coprolites, small animals were trapped around the shelter and their intestinal helminths recorded. In one of them, a chameleon of the genus *Tropidurus* (Sauria: Iguanidae), several *Parapharyngodon scleratus* (Travassos, 1923) (Nematoda: Oxyuridae) were collected and eggs identical to those found in the coprolites were taken from the worms. The coprolites were also compared with recent, artificially desiccated feces of *Tropidurus torquatus* captured on the campus of the Instituto Oswaldo Cruz, Rio de Janeiro, and a striking morphological similarity was noted. Taking into account these observations, the shell morphology of the eggs

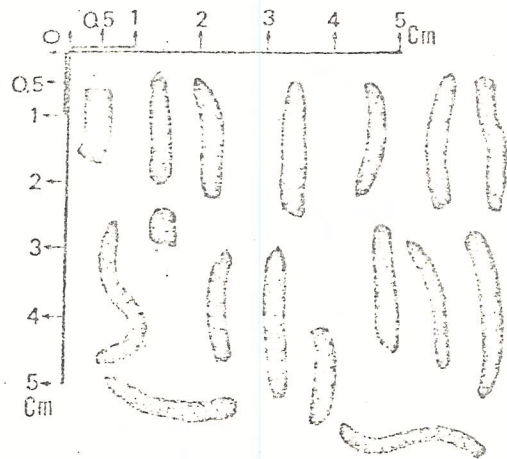


FIGURE 1. Coprolites.

found in the coprolites as well as the geographical and host distribution of the known species of the genus *Parapharyngodon* recorded by Baris (1973, *Folia Parasit.* 20: 131-139), we have tentatively identified the coprolite eggs as those of *P. sceleratus*. Although the origin of the coprolites could not be established beyond doubt, they probably were eliminated by a species of the genus *Tropidurus*.

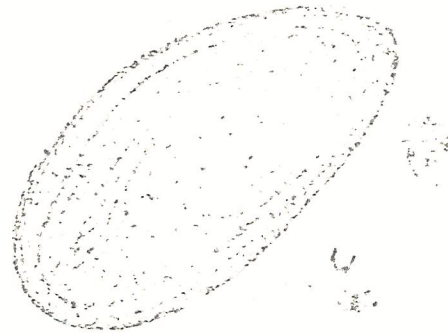


FIGURE 2. Nematode egg from coprolite.

The knowledge of parasitic infestations in animals that lived in paleoenvironments which have undergone significant modifications during past millenia could have a bearing on some biological questions. These include speciation rates and other historical aspects of host-parasite relationships as well as host migrations and faunistic origins in specific geographical situations.

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