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WORKSHOP LEPE 2010
ON CRUSTACEAN
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ABSTRACT VOLUME

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 UNIVERSITAT DE BARCELONA
Facultat de Geologia



Grup de Recerca
PALEOBIOLOGIA
DEL NEOGEN
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BURROW MORPHOLOGY OF THE BAHAMIAN LAND CRAB *Gecarcinus lateralis*

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Burrows of the Bahamian Land Crab *Gecarcinus lateralis* are prominent biogenic structures on the vegetated coastal areas in the tropical western Atlantic-Caribbean region. However, the many previous studies of this crab provide scant information about the morphology of its burrows and virtually nothing is known about its bioturbation effects. The present study describes the morphology and dimensions of *Gecarcinus lateralis* burrows of the coastal dunes system of East Beach, on the windward Atlantic coast of San Salvador Island, The Bahamas. Here the dune field is extensive and forms a system of ridges and troughs with meter-scale topographic undulation that has prograded seaward from mid-Holocene to present. The dunes are seasonally dry, heavily vegetated, and with no standing water present. In addition, we conducted a survey of the burrows of the ghost crab *Ocypode quadrata* on the backshore of East Beach. The characteristics of the land crab burrows are compared with those of ghost crab burrows which are well studied throughout the world. Also, we report a possible sub-fossil counterpart of the land crab burrow from latest Holocene coastal dune deposits on San Salvador.

A total of 10 near-complete land crab burrow casts were made by pouring plaster down each burrow (Fig. 1). The observed diameter of the burrow, burrow length, and burrow depth varied from 32 to 58 mm, 19 to 103 cm, and 8 to 47 cm, respectively. The transverse sections of the burrow shafts exhibited compressed shapes; average ratio between width and height was 0.67. Shaft inclination to the horizontal plane ranged from 18° to 47°. Overall burrow morphology was variable, with almost all burrows having a meandering form without branching.

For the ghost crab, a total of 21 near-complete burrow casts were obtained (Fig. 2). Diameter, length, and depth of the burrows varied from 15 to 47 mm, 11 to 116 cm, and 10 to 73 cm, respectively. The average ratio of width to height of the shaft transverse section was 0.93. Shaft inclination ranged from 34° to 79°, and half of these burrows exhibited Y-shaped branching (Fig. 2).

In comparing the land crab burrows to those of the ghost crab, the former are simpler but more variable in overall shape, show compressed form on the transverse section of the burrow shaft (Fig. 3), and possess low shaft inclination. In the latest Holocene dune deposits of the Hanna Bay Member, Rice Bay Formation on San Salvador, a simple, compressed burrow form was observed. On the basis of the documented morphologic differences between the modern burrows of these two crab species, these sub-fossil burrows can be interpreted with confidence as having been produced by the Bahamian Land Crab.

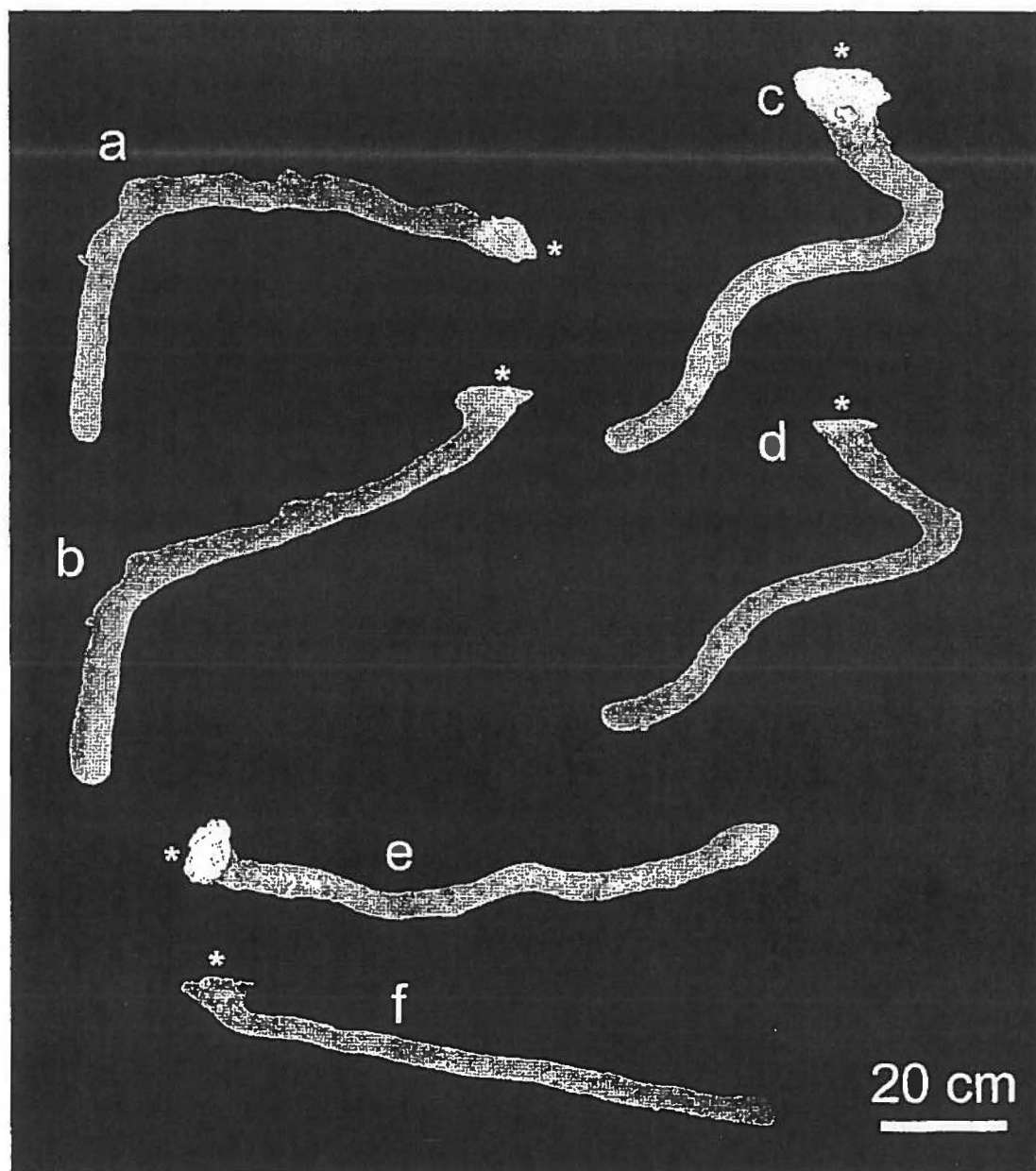


Fig. 1. Plaster burrow casts of the Bahamian Land Crab *Gecarcinus lateralis*. a) Vertical view. b) Side view of a. c) Vertical view. d) Side view of c. e) Vertical view. f) Side view of e. The asterisks indicate burrow openings.

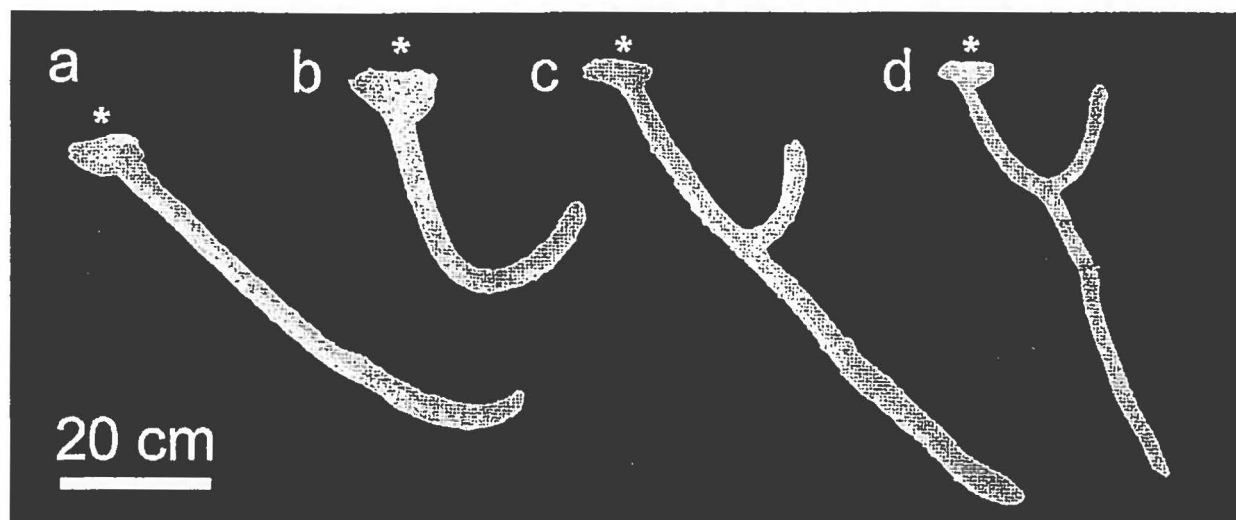


Fig. 2. Plaster burrow casts showing representative morphologies of the ghost crab *Ocypode quadrata*. Side views. The asterisks indicate burrow openings. These burrows can be classified into two forms: unbranched (a, b) and branched (c, d).

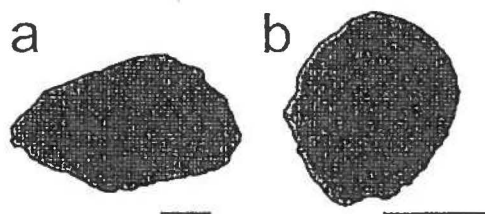


Fig. 3. Transverse section of the burrow shafts. a) The Bahamian Land Crab *Gecarcinus lateralis*. b) The ghost crab *Ocypode quadrata*. Scale bars are 1 cm.