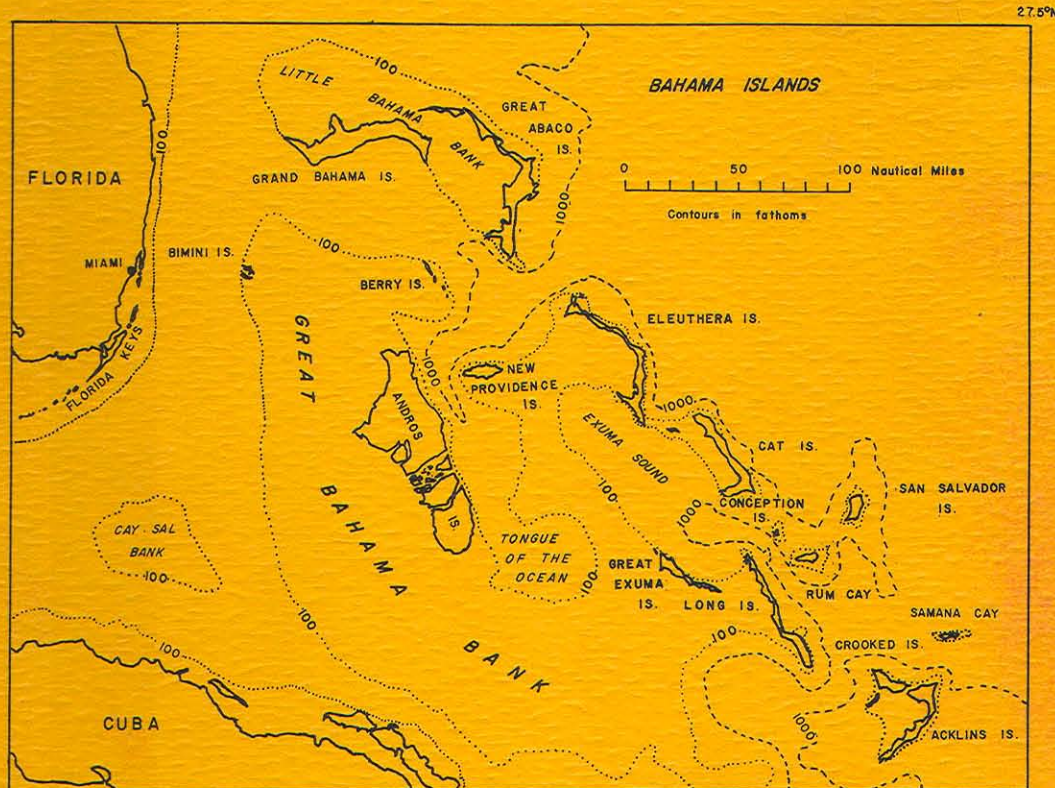


PROCEEDINGS OF THE FIRST SYMPOSIUM ON THE GEOLOGY OF THE BAHAMAS

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VARIATION OF CERION POPULATIONS
ON SAN SALVADOR

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Cerion is a genus of West Indian pulmonate land snail, the sole genus of the family Cerionidae. The genus has been divided into more than 600 named entities, but the number of valid species is unknown (Mayr and Rosen, 1956). The profusion of named species has resulted from the high degree of variation present at the species level. Investigations concerning the causes of variation in Cerion populations were conducted by the author during 1979 and 1980 at the CCFL Bahamian Field Station on the island of San Salvador in the Bahamas.

San Salvador supports many local populations of Cerion. (Fig. 1) Data on shell structure in thirty populations has been collected and statistically analyzed, demonstrating that variation between the local populations is significant. Two factors, predation and sandblasting, were observed which may help to explain population variability in Cerion.

Land crabs are known to prey upon Cerion (Woodruff, 1978). Predation of Cerion populations by the land crab Cardisoma is intense on San Salvador and is thought to be an important selective force resulting in variation between individual populations. The jagged holes on opposing side of Cerion shells appear to be the result of damage by land crabs. It is thought that the snail is gripped by one claw of the land

crab while the other claw is used to remove the lip of the snail. The crab then attempts to extract the snail from its shell using the small chelae adjacent to the mouth. Successful predation results in a characteristically damaged empty shell. An unsuccessful attack results when the snail, because of a narrowed or restricted aperture or the ability to withdraw far back into its shell, resists the attempts of the crab to extract it. The snail will then regenerate the lip of the shell and repair any holes. In this way crab predation selects for such shell features as large size, thickened lips, extra parietal teeth and cryptic coloration.

Another variable trait in Cerion populations is shell sculpture, or ribbing. Specimens vary from nearly smooth to coarsely ribbed. Inland populations are finely ribbed whereas coastal populations have coarse ribs with high relief. In the open coastal areas where sandblasting by trade winds is intense populations show a combination of smooth ribs on early whorls grading to coarse ribs on later whorls. This sculpture pattern indicates that protection from sandblasting may be a significant function of ribbing.

Isolation of specific forces in nature which alter shell form in Cerion may help to clarify the systematics of the genus. When assimilated with other studies on the effects of predation on land and marine snails, this information will contribute to a better understanding of gastropod evolution.

References Cited

Mayr, Ernst and C. B. Rosen. 1956. Geographic variation and hybridization in populations of Bahama snails (Cerion). American Museum Novitates. 1806:1-47.

Woodruff, David S. 1978. Evolution and adaptive radiation of Cerion: a remarkably diverse group of West Indian land snails. Malacologia. 17 no.2:223-239.

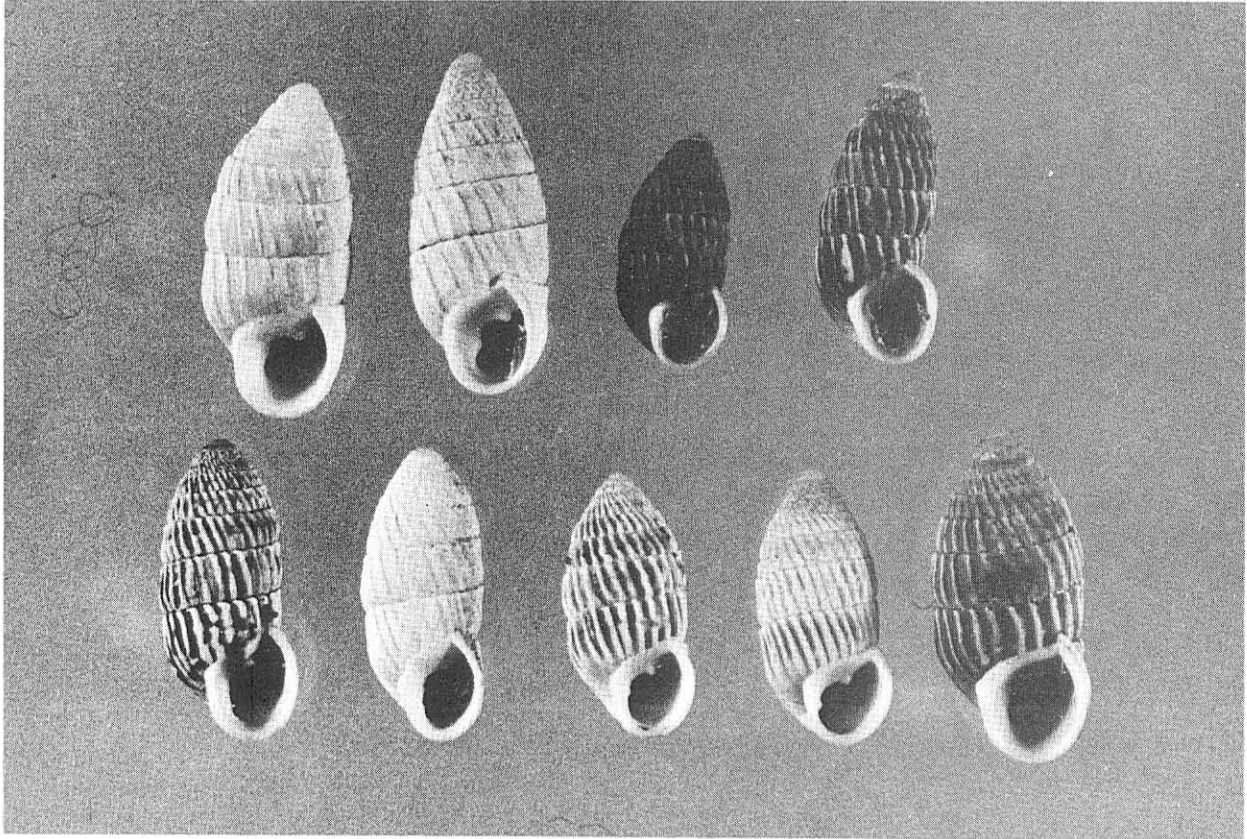


Fig. 1: Cerion specimens from San Salvador