

## THE ZOOGEOGRAPHY OF CARIBBEAN CRINOIDS: A MODEL FOR PALEONTOLOGICAL INTERPRETATION

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Analysis of modern Caribbean crinoids obtained by dredging at over 240 new deep-water stations and by diving has provided a comprehensive picture of the geographic and bathymetric distribution of a crinoid fauna. Some 30 species of comatulid crinoids and 11 stalked species are known to inhabit the Caribbean and adjacent tropical western Atlantic. About half are endemic to the Caribbean while most of the rest are western Atlantic. At least 3 species are trans-Atlantic, but only one occurs in the Indo-Pacific. Of the genera, 8 also have representatives in the Indo-Pacific. Within the Caribbean, most species are fairly uniformly distributed. Thus, while long-range dispersal is low, regional dispersal is high.

Both stalked and unstalked crinoids are most abundant above about 700 m in the Caribbean. Up to 7 species of comatulids (mostly comasterids) inhabit coral reefs. A different comatulid fauna occurs below 100 m, joined by stalked crinoids commonly in the range 200-700 m. The richest crinoid populations, in numbers of species and individuals, occur in proximity to larger landmasses, while small offshore islands are depauperate. Increased primary productivity close to large landmasses may provide greater food availability for crinoids in these areas. While many of these crinoids are rheophilic, currents prevailing in the habitats are often too weak to influence sedimentary structures.

If they are similar, most fossil crinoid species should have had wide geographic ranges and bathymetric ranges up to several hundred meters; high diversity would reflect high plankton productivity.

## U.S. DEPARTMENT OF THE INTERIOR ENERGY DATA FILES

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Interior Department energy-related data files are maintained in the Bureau of Mines and Bureau of Land Management and in the Geological Survey. Most such files were operational or in process of construction before the recent oil embargo accentuated their need. The files cover leasing, production, reserves, and geological occurrence of petroleum liquids, natural gas, oil shale, nuclear fuels, coal, and geothermal resources. Most of the files are built and maintained in-house, such as the Geological Survey's CRIB system but others are operated through contract. An example of the latter is the Survey's Petroleum Data System. The CRIB file is comprised of 25,000 records of 150 entries each and utilizes IBM 360/370 hardware with GIPSY software. This file is in the process of being made publicly available. The Petroleum Data System was built under contract to the University of Oklahoma, uses hardware and software compatible with CRIB, is open to the public, and consists of 65,000 oil and gas pool records as well as a separate file of well records. The oil and gas pool records are derived from published documents and are continually up-dated. The other energy-related files are similarly prepared, with major efforts now being made to make them compatible in both hardware and software. Significant steps are being taken within Government to identify existing and proposed data systems and coordinate their inputs as well as outputs.

## THE CARIBBEAN "PLATE"

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According to the new geologic map of the continental lands surrounding the Caribbean margin is the Barbados margin. The western margin is Central American and the eastern two margins are subducting under the Caribbean plate. The northern margin is the Caribbean and South Caribbean margins.

Some workers have argued that the spreading which separates the Caribbean from the Atlantic has no evidence for a Caribbean margin. Seismic data prove that the Caribbean margin does not exist. La Desirade is a volcanic island in the Lesser Antilles. Barbados is a volcanic island in the Caribbean (the alleged Lesser Antilles) and the Barbados margin of Barbados are correlated with the Caribbean. Structural trends on Barbados are Eocene, and parallel to the Caribbean margin. Barbados' position with respect to the Caribbean margin is more than 140 m.y. Yet the Caribbean margin and the Barbados margin are separated by 140 m.y. ago. On the basis of the Caribbean margin and the regions relative to one another at that time. Plate tectonics of the Caribbean area.

## PETROLEUM RESOURCES OF THE CARIBBEAN

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The principal known petroleum resources are in Venezuela, Colombia, and Ecuador. These three countries possess about 80% of the ultimate recoverable gas in the Caribbean area.

For the Caribbean area, the ultimate recoverable gas can be estimated at this time to be about 300 trillion barrels and 300 trillion cubic feet. Tertiary, Cretaceous, and Jurassic rocks are very important in the Caribbean area.

Of the undrilled areas, the most promising results have been wholly in Honduras-Nicaragua (Nicaragua). The largest gas field found in Central America is in Honduras. However, the smaller basins in the Caribbean area are also being developed.

## FACIES AND SUCCESSION OF THE CARIBBEAN

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A major problem of Caribbean geology is the correlation and the attending