

# CARBONATE SANDS OF ISLA PEREZ, ALACRAN REEF COMPLEX, YUCATÁN<sup>1</sup>

ROBERT L. FOLK<sup>2</sup> AND ROGELIO ROBLES<sup>3</sup>

## ABSTRACT

Beach sediments of Isla Perez consist of about 60 per cent *Halimeda* algae, 25 per cent coral, and 15 per cent foraminifera and others. Six discrete sediment populations are present, distinct in skeletal origin, grain size, grain shape, and position on the island. Large blocks of massive coral occur on the southeast margin, facing the strongest waves. Sticks of staghorn coral make up extensive ramparts chiefly along the south coast, and also form a pavement with sticks oriented perpendicular to shore just below the water line. The most abundant sediment is  $0\phi$  sand, chiefly discoidal *Halimeda* segments; superbly sorted  $2\phi$  sand, chiefly coral grit, blankets the west coast where waves are gentlest. Gastropod fecal pellets form a thick layer at the back ends of two shallow, calm, restricted bays. Carbonate mud, resulting from abrasion of coral and *Halimeda*, is present in small amounts in the subtidal sediments. All the pure sediment populations have very similar good sorting values,  $\sigma$  ranging from  $0.3$  to  $0.6\phi$  over a thousandfold range of mean size; these values are equivalent to those achieved on terrigenous beaches, therefore surf action tends to produce similar sorting values on pure materials no matter whether the beach material is calcareous or siliceous. Mean size, sorting, and skewness form a helical trend when coplotted for these samples. Subtidal sediments, particularly those from marine grass flats, are much more poorly sorted, give more non-normal curves, and have a much larger content of material finer than  $3\phi$ . Staghorn coral breaks down selectively into two size fractions: sticks, the size of the joints in the parent colony, and  $2\phi$  grit, the size of the crystal packets composing the skeleton. *Halimeda* breaks down into  $0\phi$  flakes and into  $10\phi$  dust, the size of the component microcrystals. Grains of all sizes are uniformly angular and dull except on one part of the coast, where measurable rounding and polish occur. This is probably caused by the low rate of supply of fresh coral at this site.