

THE HOLOCENE-AGE CONTACT BETWEEN CORAL REEF COLONIES AND SERPULID TUBE/TUFA MOUNDS OF THE ENRIQUILLO VALLEY, DOMINICAN REPUBLIC: PALEOENVIRONMENTAL IMPLICATIONS

KELSEY WINSOR, Smith College

In mid-Holocene time, the Enriquillo Valley of the southwestern Dominican Republic was a coastal embayment of normal marine salinity. The shores of this bay hosted a healthy fringing coral reef. After period of high precipitation, the mouth of the bay became blocked with sediment, creating an isolated lake. Salinity and water level changes caused the demise of the coral reef, the final years of which were examined in several samples using carbon and oxygen isotopes. Radiocarbon age dates for these samples show younger corals growing at lower elevations and in waters of higher salinity. About 1000 years after coral death, opportunistic serpulid worms began to aggregate in the lake, directly above the hard substrate provided by the fossil corals. Serpulid worm tubes, in combination with tufa precipitate, bivalves, gastropods, and sediment, formed meter-scale mounds around the periphery of the Enriquillo Valley. Age dates of tubes from the coral/mound contact demonstrate that younger mounds are also found at lower elevations. This indicates that the valley experienced at least two episodes of lake level drop, in addition to periods of high precipitation and freshwater influx. While causes for mound formation and distribution are as yet undetermined, age dating and isotope results support the existence of a freshwater lens on the surface of the lake. This lens would have caused tufa precipitation by concentrating calcium carbonate, and would have maintained the hyposaline conditions necessary for serpulid aggregation.