

An ~1000 year sedimentary record of past high-energy wave events from Conanicut Island, Rhode Island, USA







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lentifier	Depth (cm)	Lab-reported age	Calibrated age	Provenance interpretation
		(¹⁴ C yr BP at 1 0)	range	
			(cal yr BP at 2 0)	
100.A.47.5	47-48	230±15	215-245	Maximum
.100.A.79	70.5-71.5	185±15	170-200	Maximum
100.A.87.5	87-88	140±15	125-155	Maximum
1100.A.92	92	320±25	295-345	Maximum
100.A.122.5	122-123	650±20	630-670	Maximum
100.A.135.5	135-136	830±15	815-845	Maximum
100.A.142.5	142-143	910±15	895-925	Maximum
.100.A.150	149.5-150.5	950±20	930-970	Maximum

× 500 1450 🧲 1000 Fig. 9: Comparison of Fox Hill and Succotash storm record dates.

Deposits from below 85cm (fig. 6) display higher concentrations of fine sediment, likely due to sea level transgression over time. Deeper sediment is probably from farther back in the paleo-marsh, so it contains finer-grained material Comparison of the Modern Beach Sand composition to that of shallower deposits shows a strong similarity. From this we can infer that sand deposits made in the low-energy marsh system are high-energy overwash fan deposits from the wind-

Historical records indicate five category-3 or greater hurricanes in 1635, 1638, 1815, 1869, and 1938. In a study of nearby Succotash marsh (Donnelly, 2001), two pre-historic storm deposits were dated to 1295-1407 and 1404-1446 CE. The maximum date found at FHM.17.100.A.122.5 could support either of these dates. Three more storm deposits were dated beyond the record at Succotash, dating from AD 1256-1170, 1165-1041, and 1154-1025, thus extending the record of high-energy events in Rhode Island. To help identify storms too young for accurate radiocarbon dating, Cesium-137 activity was an-

alyzed (Fig. 8). From this data, we can identify hurricane Donna (1960), hurricane Carol (1954), and

The storm deposit record found at Fox Hill gives an unprecedented look nearly 1000 years into the past. It extends the existing record from Succotash marsh by approximately 300 years, allowing us to better understand recurrence intervals of large storms in the New England area. However, there is still plenty of work to be done. Our radiocarbon data cannot yet be clearly correlated to the existing record at Succotash marsh. Sand deposits in core 3 need to be constrained by minimum dates, which will allow us to better approximate the date of deposition so that we may correlate more clearly to the Succotash record. This would also allow us to better understand recurrence intervals of large storms (category-3 or greater) in the New England area, as the record at Fox Hill marsh contains 3 storm deposits that are older than any

Jeffrey P. Donnelly, et. al.; 700 yr sedimentary record of intense hurricane landfalls in southern New England. GSA Bulletin ; 113

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