Electronic Supplementary Material for:
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Table S1. Core characteristics including core length, bulk density, % organic carbon, ^{210}Pb and ^{137}Cs data, and age estimates for each core collected. The section containing the 1963 peak for ^{137}Cs is shown in bold. ^{137}Cs data are underlined for those cores for which there was no clearly defined peak. These cores were not used in the study. Grey shading indicates the age limit beyond which uncertainty is greater than the section age interval covered by dating. The uncertainty limit is also the cutoff for inclusion in the table except for Wardlaw I Core 2, for which uncertainty in the CRS method remained low despite the fact that no ^{137}Cs peak could be discerned.

Core (total length)	Mid-interval depth below surface (cm)	% Organic Carbon	Bulk density (g cm^{-3})	Total ^{210}Pb (dpm g^{-1})	Total ^{210}Pb Error (dpm g^{-1})	Excess ^{210}Pb (dpm g^{-1})	Excess ^{210}Pb Error (dpm g^{-1})	^{137}Cs (pCi g^{-1})	^{137}Cs Error (pCi g^{-1})	CRS age estimate based on ^{210}Pb	Uncertainty in mid-interval CRS date (+/- yrs)
Wardlaw I Core 1 (19 cm)	1.5	34.7	0.13	16.53	0.71	15.53	0.72	0.242	0.033	2005.2	0.4
	4.5	17.8	0.26	9.19	0.67	6.97	0.69	0.835	0.075	1993.0	1.8
	7.5	13.2	0.45	5.52	0.44	2.85	0.45	**0.994**	0.075	1978.0	3.6
	10.5	13.2	0.39	4.86	0.40	2.42	0.41	0.740	0.058	1960.2	6.5
	13.5	9.8	0.51	3.86	0.29	1.39	0.30	0.587	0.044	1933.6	20.1
	17	5.9	0.66	3.40	0.26	0.38	0.27	0.022	0.014	1884.9	155.0
Wardlaw I Core 2 (16 cm)	1	43.9	0.03	8.44	0.78	7.89	0.80	0.073	0.052	2010.0	0.0
	3	43.7	0.06	10.52	0.74	9.91	0.76	-0.005	0.046	2008.7	0.1
	5	36.1	0.15	15.82	1.03	15.09	1.05	0.179	0.058	2003.6	0.4
	7	26.6	0.17	12.49	0.59	10.90	0.59	0.346	0.037	1995.0	0.7

	9	14.5	0.42	7.80	0.53	5.62	0.54	0.513	0.049	1981.8	1.7
	11	9.0	0.50	4.48	0.32	1.57	0.33	0.480	0.039	1968.9	3.3
	13	8.3	0.79	4.49	0.45	1.63	0.47	0.450	0.045	1953.3	5.9
	15	9.3	0.85	4.38	0.29	1.42	0.30	0.597	0.044	1910.1	37.7
Hasty Point Core 1 (16 cm)	1	27.0	0.05	8.02	1.00	6.07	1.03	0.322	0.075	2009.7	0.1
	3	22.3	0.15	10.33	0.85	8.93	0.86	0.438	0.062	2005.8	0.6
	5	13.5	0.32	10.08	0.63	7.54	0.64	0.471	0.050	1994.2	2.0
	7	5.9	0.62	5.18	0.46	1.84	0.47	0.605	0.052	1979.4	5.3
	9	5.3	0.62	5.46	0.41	2.06	0.42	**0.649**	0.052	1960.7	9.1
	11	5.0	0.61	4.01	0.42	0.47	0.43	0.449	0.042	1943.2	22.0
Hasty Point Core 2 (24 cm)	1	22.6	0.14	14.17	0.91	12.20	0.92	0.414	0.062	2006.3	0.6
	3	11.4	0.36	8.51	0.63	5.79	0.65	0.614	0.060	1996.3	2.0
	5	6.9	0.56	6.16	0.49	3.05	0.51	0.574	0.052	1983.0	3.9
	7	7.0	0.47	5.48	0.54	1.97	0.56	0.691	0.063	1969.8	6.3
	9	5.8	0.83	4.88	0.45	1.36	0.46	**0.758**	0.062	1951.7	13.5
	11	4.6	0.68	4.29	0.38	0.60	0.40	0.455	0.041	1930.6	32.7
Bird Field Core 1 (36 cm)	1	35.4	0.06	13.98	0.73	13.17	0.74	0.910	0.075	2009.0	0.1
	3	39.5	0.05	11.44	0.66	10.98	0.67	0.607	0.059	2006.4	0.2
	5	36.5	0.08	10.92	0.87	9.74	0.89	0.937	0.091	2003.4	0.3
	7	24.0	0.18	9.60	0.55	7.68	0.56	**3.687**	0.250	1998.0	0.6
	9	21.6	0.17	8.81	0.60	7.32	0.62	3.171	0.219	1990.2	1.0
	11	21.1	0.18	9.47	0.61	7.16	0.63	3.443	0.237	1980.0	1.6
	13	18.2	0.16	7.36	0.42	5.47	0.43	2.600	0.176	1968.1	2.5
	15	16.3	0.27	4.82	0.41	2.12	0.42	0.556	0.048	1956.6	3.9
	17	11.9	0.29	4.29	0.28	1.23	0.29	0.135	0.019	1946.3	4.7
	19	8.7	0.36	3.53	0.28	0.33	0.29	0.027	0.016	1939.5	6.9
Bird Field Core 2 (66 cm)	1.5	30.0	0.10	12.01	0.85	11.19	0.87	0.446	0.062	2007.3	0.3
	4.5	27.5	0.11	13.13	0.69	11.93	0.70	0.690	0.061	1999.7	0.9

	7.5	30.9	0.12	9.53	0.59	8.49	0.60	0.728	0.064	1990.7	1.4
	10.5	30.8	0.12	6.35	0.57	5.14	0.59	1.049	0.085	1982.5	1.7
	13.5	30.1	0.10	5.87	0.54	4.60	0.56	2.578	0.181	1975.6	1.7
	16.5	25.7	0.11	4.88	0.45	3.50	0.46	**2.827**	0.193	1968.7	2.1
	19.5	25.2	0.09	4.57	0.51	2.96	0.53	2.130	0.152	1962.1	2.5
	22.5	30.0	0.10	4.03	0.34	2.72	0.35	0.517	0.043	1955.4	2.9
	25.5	26.1	0.10	2.90	0.38	1.35	0.40	0.223	0.032	1949.3	3.6
	28.5	24.2	0.11	3.48	0.37	2.09	0.38	0.097	0.027	1942.3	4.5
	31.5	16.9	0.15	3.08	0.33	0.86	0.34	0.043	0.022	1930.9	11.1
	34.5	14.8	0.14	3.08	0.34	0.29	0.36	0.021	0.023	1919.8	19.8
Sandy Is. Managed Core 1 (84 cm)											
	1.5	41.1	0.02	7.88	1.07	7.42	1.11	-0.138	0.072	2010.2	0.0
	4.5	37.1	0.03	12.53	0.71	12.05	0.72	0.068	0.039	2009.2	0.1
	7.5	39.8	0.02	12.31	0.93	11.33	0.95	-0.020	0.058	2008.0	0.1
	10.5	39.0	0.02	15.05	0.77	13.98	0.78	0.108	0.037	2006.9	0.1
	13.5	35.9	0.02	15.12	0.78	14.31	0.79	0.141	0.041	2005.6	0.1
	16.5	36.8	0.03	13.30	0.84	12.60	0.85	0.238	0.052	2003.9	0.2
	19.5	33.8	0.05	14.02	0.81	13.14	0.82	0.601	0.064	2001.2	0.3
	22.5	23.4	0.12	11.57	0.64	10.11	0.65	1.766	0.127	1995.9	0.7
	25.5	18.9	0.13	9.74	0.50	8.39	0.51	**2.447**	0.167	1987.7	1.3
	28.5	11.6	0.19	6.27	0.51	4.02	0.52	2.200	0.155	1979.1	2.0
	31.5	11.1	0.23	5.08	0.42	2.56	0.44	1.445	0.103	1970.9	2.4
	34.5	10.2	0.26	4.11	0.25	1.45	0.26	0.466	0.035	1963.5	2.6
	37.5	10.1	0.27	4.05	0.31	1.26	0.32	0.185	0.023	1956.6	3.2
	40.5	10.0	0.21	3.65	0.27	0.88	0.28	0.088	0.017	1950.6	3.4
	46.5	8.2	0.28	3.09	0.26	0.08	0.27	0.063	0.017	1947.5	10.9
Sandy Is. Managed Core 2 (65 cm)											
	1.5	39.2	0.02	12.37	0.95	11.98	0.97	0.169	0.062	2010.0	0.1
	4.5	40.0	0.01	13.91	1.17	13.56	1.21	0.234	0.078	2009.0	0.1
	7.5	39.4	0.02	15.64	0.73	15.17	0.75	0.229	0.040	2007.7	0.2
	10.5	38.1	0.02	15.43	0.89	14.92	0.90	0.402	0.059	2005.9	0.3
	13.5	31.7	0.04	13.43	0.83	12.53	0.85	0.922	0.083	2003.4	0.4

	16.5	22.0	0.08	11.66	0.61	10.40	0.62	1.980	0.138	1999.0	0.8
	19.5	21.6	0.12	12.31	0.75	10.92	0.76	1.859	0.137	1990.5	2.0
	22.5	15.1	0.18	8.77	0.59	7.05	0.60	**2.553**	0.178	1976.2	5.0
	25.5	10.9	0.23	6.59	0.47	4.57	0.48	2.141	0.149	1954.0	15.1
	28.5	8.8	0.25	5.08	0.39	2.28	0.40	0.374	0.037	1917.9	72.2
Sandy Island Tidal Core 2 (60 cm)	1.5	32.3	0.07	8.47	0.49	7.54	0.50	0.249	0.033	2009.4	0.1
	4.5	36.4	0.09	7.37	0.62	6.69	0.63	0.165	0.043	2007.1	0.2
	7.5	39.6	0.06	6.34	0.63	5.98	0.65	0.272	0.048	2005.0	0.2
	10.5	37.1	0.12	7.39	0.68	6.58	0.69	0.342	0.053	2002.3	0.3
	13.5	37.0	0.08	8.92	0.55	8.32	0.56	0.361	0.041	1998.7	0.3
	16.5	36.3	0.08	7.35	0.60	6.69	0.61	0.290	0.045	1995.4	0.4
	19.5	35.3	0.07	7.62	0.49	6.82	0.50	0.261	0.036	1992.3	0.3
	22.5	29.5	0.11	7.47	0.44	6.28	0.45	0.453	0.042	1988.1	0.5
	25.5	26.9	0.10	5.37	0.45	3.95	0.46	0.798	0.064	1983.8	0.6
	28.5	26.8	0.11	5.53	0.41	4.30	0.42	1.244	0.090	1979.7	0.6
	31.5	30.4	0.09	5.46	0.50	4.40	0.51	1.571	0.115	1975.3	0.8
	34.5	25.1	0.10	4.60	0.47	3.13	0.49	**3.779**	0.257	1971.0	0.9
	37.5	18.9	0.16	4.21	0.43	2.05	0.44	3.411	0.232	1966.6	1.2
	40.5	13.9	0.17	4.30	0.27	2.22	0.27	2.214	0.148	1960.9	1.3
	46.5	12.4	0.22	3.75	0.39	1.79	0.40	0.221	0.030	1947.7	4.9
	52.5	10.4	0.27	2.99	0.28	0.78	0.29	0.033	0.017	1927.3	14.3
	58.5	6.6	0.33	3.50	0.21	0.67	0.22	0.035	0.012	1884.8	79.0
Sandy Island Tidal Core 3 (69 cm)	1.5	36.7	0.08	8.51	0.61	7.11	0.62	0.226	0.039	2009.0	0.1
	4.5	33.5	0.08	9.40	0.56	8.20	0.57	0.272	0.036	2005.9	0.3
	7.5	36.6	0.06	8.07	0.61	6.99	0.63	0.257	0.042	2003.1	0.3
	10.5	33.8	0.09	9.07	0.65	7.82	0.66	0.193	0.042	1999.9	0.3
	13.5	35.0	0.07	9.33	0.64	8.15	0.65	0.249	0.043	1995.7	0.4
	16.5	28.8	0.10	6.61	0.43	5.61	0.43	0.414	0.039	1991.3	0.5
	19.5	31.9	0.12	5.68	0.47	4.45	0.48	0.679	0.058	1986.5	0.6
	22.5	33.9	0.10	5.77	0.51	4.80	0.53	0.675	0.060	1981.5	0.7

	25.5	29.7	0.10	6.18	0.39	5.03	0.39	1.448	0.101	1975.8	0.8
	28.5	29.7	0.09	5.71	0.45	4.59	0.46	3.825	0.259	1969.4	1.1
	31.5	20.8	0.13	5.70	0.42	3.70	0.43	**4.874**	0.326	1961.4	1.7
	34.5	16.9	0.12	4.71	0.46	2.92	0.48	2.922	0.201	1951.4	3.0
	37.5	18.1	0.14	3.96	0.48	2.25	0.49	1.220	0.094	1940.0	4.8
	40.5	15.7	0.17	3.58	0.39	1.38	0.40	0.836	0.065	1926.5	8.5
	43.5	13.7	0.19	3.56	0.27	0.98	0.28	0.313	0.028	1909.7	16.4
	46.5	15.0	0.17	3.62	0.32	0.82	0.33	0.117	0.022	1884.9	50.3
Coastal EDU Tidal Core 1(72 cm)	1.5	32.9	0.07	9.78	0.81	9.08	0.83	0.276	0.057	2009.1	0.1
	4.5	35.7	0.10	6.83	0.62	5.92	0.64	0.172	0.043	2006.4	0.3
	7.5	34.1	0.08	9.29	0.52	8.04	0.53	0.168	0.032	2003.3	0.3
	10.5	33.7	0.10	9.23	0.67	7.88	0.69	0.262	0.047	1999.3	0.5
	13.5	36.2	0.09	7.50	0.49	6.33	0.50	0.257	0.036	1995.2	0.5
	16.5	30.5	0.09	7.02	0.53	5.75	0.54	0.344	0.042	1991.4	0.5
	19.5	28.5	0.08	6.45	0.58	5.03	0.60	0.395	0.048	1987.8	0.6
	22.5	25.7	0.10	6.38	0.32	4.65	0.33	0.509	0.039	1983.9	0.6
	25.5	26.4	0.08	5.68	0.50	3.92	0.51	0.716	0.062	1979.8	0.8
	28.5	26.9	0.08	6.10	0.47	4.45	0.48	0.820	0.066	1975.8	0.8
	31.5	28.1	0.07	5.01	0.43	3.68	0.44	0.674	0.056	1972.0	0.8
	34.5	25.3	0.10	5.14	0.43	3.62	0.44	1.051	0.079	1967.4	1.1
	37.5	16.2	0.14	4.12	0.45	1.78	0.47	**2.951**	0.203	1962.2	1.9
	40.5	13.6	0.15	4.48	0.47	2.11	0.48	2.788	0.193	1956.4	2.2
	46.5	9.5	0.18	4.21	0.43	1.31	0.45	1.031	0.079	1945.3	6.0
	52.5	6.3	0.22	3.67	0.33	0.72	0.34	0.157	0.024	1929.8	13.1
	58.5	6.6	0.23	3.54	0.26	0.33	0.27	0.086	0.017	1915.5	20.1
Coastal EDU Tidal Core 2 (80 cm)	1.5	36.5	0.06	9.97	0.79	8.71	0.81	0.212	0.054	2009.3	0.1
	4.5	36.5	0.07	7.69	0.79	6.50	0.81	0.321	0.060	2007.1	0.3
	7.5	38.4	0.08	8.03	0.86	7.15	0.88	0.149	0.063	2004.5	0.4
	10.5	38.4	0.08	7.52	0.72	6.59	0.74	0.247	0.055	2001.4	0.4
	13.5	36.6	0.08	7.75	0.50	6.10	0.51	0.282	0.035	1998.2	0.4

16.5	33.9	0.07	6.39	0.67	5.10	0.68	0.253	0.052	1995.3	0.5
19.5	35.7	0.08	6.11	0.63	4.99	0.65	0.267	0.048	1992.4	0.5
22.5	32.1	0.08	6.26	0.45	5.15	0.46	0.377	0.040	1988.9	0.5
25.5	30.9	0.08	6.07	0.36	4.93	0.37	0.392	0.036	1985.1	0.5
28.5	27.9	0.09	5.58	0.50	4.09	0.51	0.694	0.061	1981.0	0.7
31.5	27.4	0.07	4.89	0.49	3.34	0.50	0.677	0.060	1977.5	0.7
34.5	22.4	0.10	4.74	0.45	2.88	0.46	1.026	0.079	1974.1	0.8
37.5	23.7	0.10	4.60	0.31	2.91	0.32	1.202	0.084	1969.7	0.9
40.5	18.9	0.12	4.40	0.45	2.08	0.47	1.567	0.114	1965.0	1.4
43.5	17.1	0.14	4.48	0.44	2.22	0.45	2.468	0.171	1959.3	1.9
46.5	14.8	0.14	4.36	0.46	1.87	0.48	**3.638**	0.248	1952.3	2.9
49.5	11.4	0.17	3.98	0.25	1.22	0.26	2.445	0.163	1945.1	3.3
52.5	9.3	0.19	3.82	0.40	1.02	0.42	1.626	0.115	1937.4	5.1
55.5	8.8	0.17	3.59	0.32	0.59	0.33	1.097	0.078	1921.1	6.0