

## APPENDIX 1

### SUMMARY OF THE 2019 ANNUAL SPRING COCKLE SURVEYS

The Authority conducted the 2019 spring cockle surveys between March 20<sup>th</sup> and May 7<sup>th</sup> 2019. The timing of these surveys, which took advantage of the spring tides in late March, through April and into the beginning of May, is consistent with the majority of Eastern-IFCA's and ESFJC's previous spring cockle surveys. During the course of these surveys, 1,028 stations from a total of 22 sands were sampled. This is fewer than the 1,250-1,300 stations that are usually sampled, mainly due to an agreed change in survey regime that saw the removal of the stations that had not contained any cockles during the previous ten years, and the re-aligning of 450 stations in the South West area of The Wash that had formally been sampled at a higher resolution to the rest of the beds. Although managed under a separate byelaw to the other stocks, 100 stations were also sampled along the edge of the Ferrier sand during this year's surveys.

Analysis of the survey data has found the stocks to be at the following levels:

#### **WFO 1992 regulated beds**

Total Adult Stock ( $\geq 14$ mm width)	12,011 tonnes
Total Juvenile Stock ( $< 14$ mm width)	6,654 tonnes
Total Stock (all sizes)	18,665 tonnes

#### **Wash Restricted Area (Ferrier)**

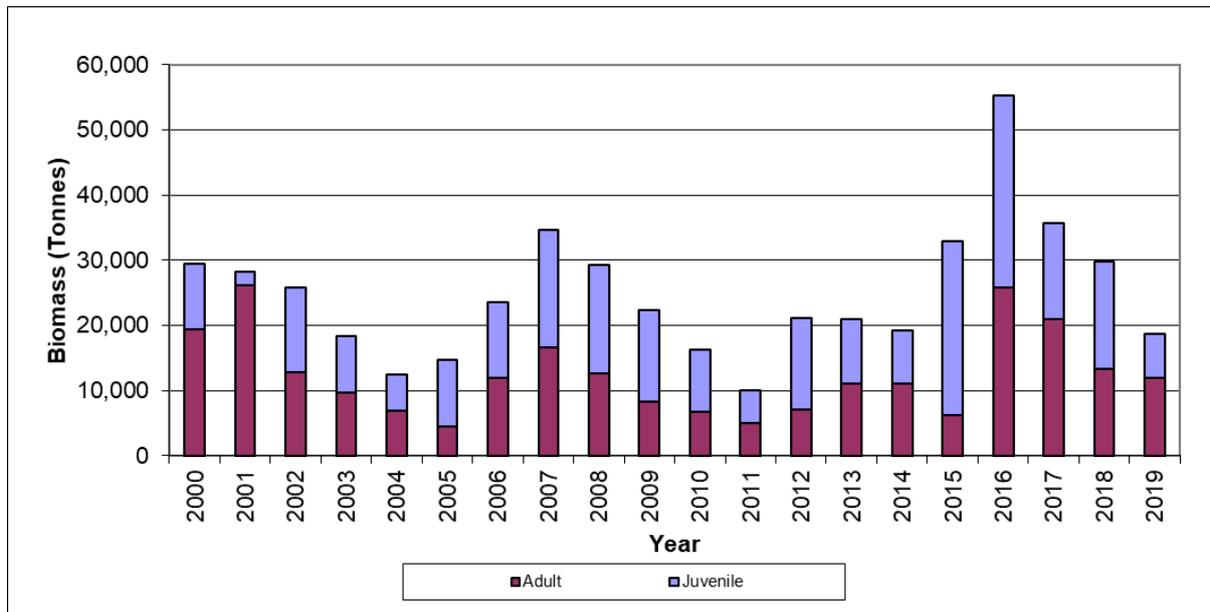
Total Adult Stock ( $\geq 14$ mm width)	969 tonnes
Total Juvenile Stock ( $< 14$ mm width)	174 tonnes
Total Stock (all sizes)	1,143 tonnes

These figures highlight that the cockle stocks on the regulated beds have declined for the third successive year since their peak in 2016. As can be seen from figure 1, however, which shows the state of the cockle stocks since 2000, this is part of a cyclic pattern of recovery and decline driven by successful spatfalls, fisheries and natural mortality.

This year the stocks are composed primarily of larger 2016 year-class cockles that survived the previous fishery and year-0 juveniles that settled in 2018. Since 2008, when larger cockles became vulnerable to high mortality rates from "atypical mortality", the average biomass of  $\geq 14$ mm width cockles has only been 46% of the total stock. This year, however, their biomass is 64% of the total stock. Because the biomass of these larger cockles is used to calculate the annual TAC, this relatively high proportion of large cockle means the TAC for the fishery is relatively high at **4,004 tonnes**. There will be a further TAC of **323 tonnes** on the public areas of the Ferrier Sand.

Although the biomass of large cockles is relatively high, they are spread thinly over large areas rather than being present in high-density patches. This will make them harder to harvest and more difficult for fishers to achieve their 2 tonne daily quotas. Figures 2-4 show the distribution of the adult ( $\geq 14$ mm width), juvenile ( $< 14$ mm width) and Year-0 cockles across the beds, while table 1 summarises the stocks on each

bed. The stocks of smaller cockles are dominated numerically by the Year-0 cohort, making figures 3 and 4 very similar.



**Figure 1 – Adult and juvenile cockle stock levels between 2000 and 2019 on the WFO 1992 regulated beds**

**Table 1 - Summary of cockle stocks on the Wash intertidal beds – May 2019**

SAND	Adult (≥14mm)				Juvenile (<14mm)				Total Biomass (t)	% Adult
	Area (ha)	Mean Density (no/m <sup>2</sup> )	Mean Weight (t/ha)	Biomass (t)	Area (ha)	Mean Density (no/m <sup>2</sup> )	Mean Weight (t/ha)	Biomass (t)		
<b>Butterwick</b>	269	40.45	1.70	629	211	451.43	1.04	218	847	74
<b>Wrangle</b>	865	47.10	2.18	1889	673	451.25	0.88	594	2483	76
<b>Friskney</b>	259	20.00	1.37	355	441	662.33	2.50	1103	1458	24
<b>Butterwick Ext</b>	107	32.86	1.24	133	144	890.00	1.94	280	413	32
<b>Wrangle Ext</b>	0	0.00	0.00	0	0	0.00	0.00	0	0	0
<b>Friskney Ext</b>	35	10.00	0.89	31	67	10.00	0.07	5	36	86
<b>Roger/Toft</b>	491	53.75	2.80	1373	273	800.14	1.85	505	1878	73
<b>Gat</b>	216	87.78	4.86	1050	136	304.17	0.77	104	1154	91
<b>Herring Hill</b>	157	23.84	0.80	126	274	122.73	0.42	116	242	52
<b>Black Buoy</b>	149	46.67	1.92	285	208	1501.18	3.86	803	1088	26
<b>Mare Tail</b>	358	85.56	3.58	1281	420	318.39	1.35	568	1849	69
<b>Holbeach</b>	630	54.34	2.28	1434	658	200.18	0.65	424	1858	77
<b>IWMK</b>	210	51.72	2.27	475	251	1004.24	1.98	496	971	49
<b>Breast</b>	598	57.37	2.30	1374	665	182.62	1.69	1125	2499	55
<b>Thief</b>	131	22.14	1.62	213	43	182.50	0.43	18	231	92
<b>Whiting Shoal</b>	10	50.00	3.29	32	0	0.00	0.00	0	32	100
<b>Daseley's</b>	524	36.74	1.50	786	259	28.57	0.40	105	891	88
<b>Styleman's</b>	30	76.67	4.22	126	41	75.00	0.26	11	137	92
<b>Pandora</b>	52	20.00	0.87	45	87	71.25	0.24	21	66	68
<b>Blackguard</b>	35	13.33	0.51	20	11	10.00	0.05	0.5	21	98
<b>Peter Black</b>	283	32.61	1.25	354	260	75.71	0.60	157	511	69
<b>TOTAL</b>	<b>5409</b>			<b>12011</b>	<b>5122</b>			<b>6653.5</b>	<b>18665</b>	<b>64</b>
<b>Outer Ferrier</b>	0	0	0	0	12	410	1.77	20	20	0
<b>Inner Ferrier</b>	343	58.57	2.83	969	207	191.77	0.74	154	1123	86
<b>TOTAL</b>	<b>343</b>			<b>969</b>	<b>219</b>			<b>174</b>	<b>1143</b>	<b>85</b>

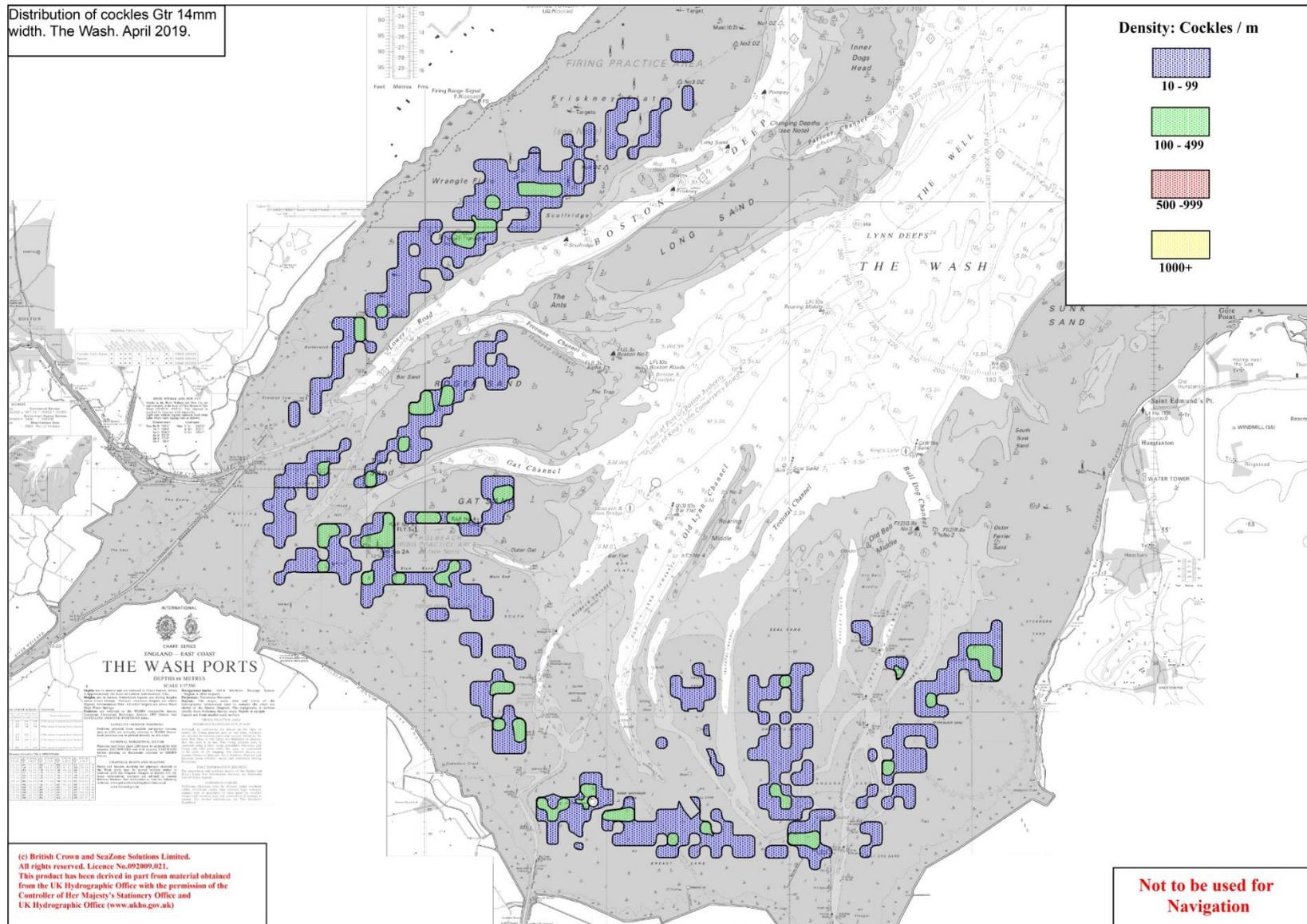


Figure 2 – Chart showing the distribution of adult cockles ( $\geq 14$ mm width) at the time of the May 2019 surveys

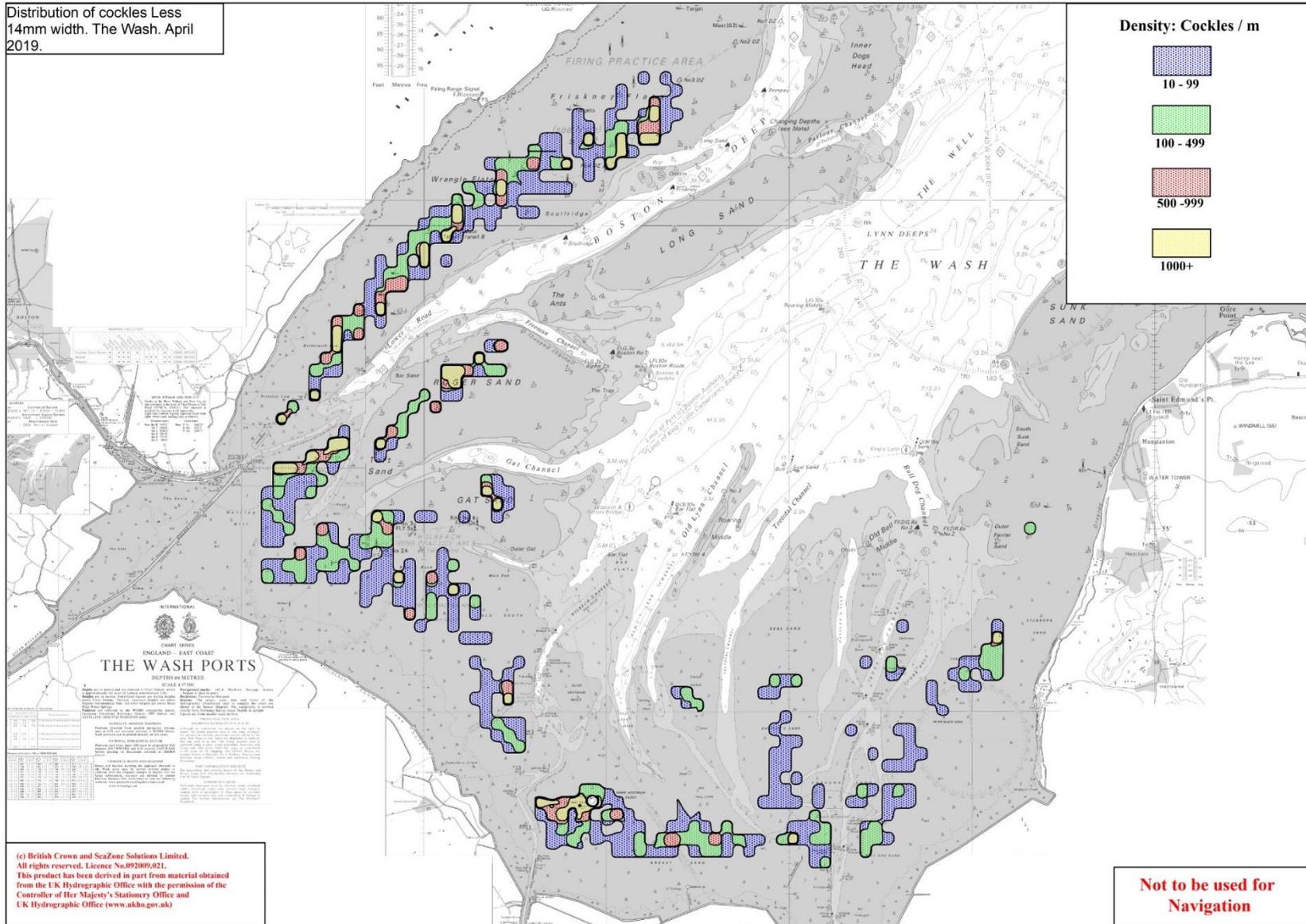


Figure 3 – Chart showing the distribution of juvenile cockles (<14mm width) at the time of the May 2019 surveys

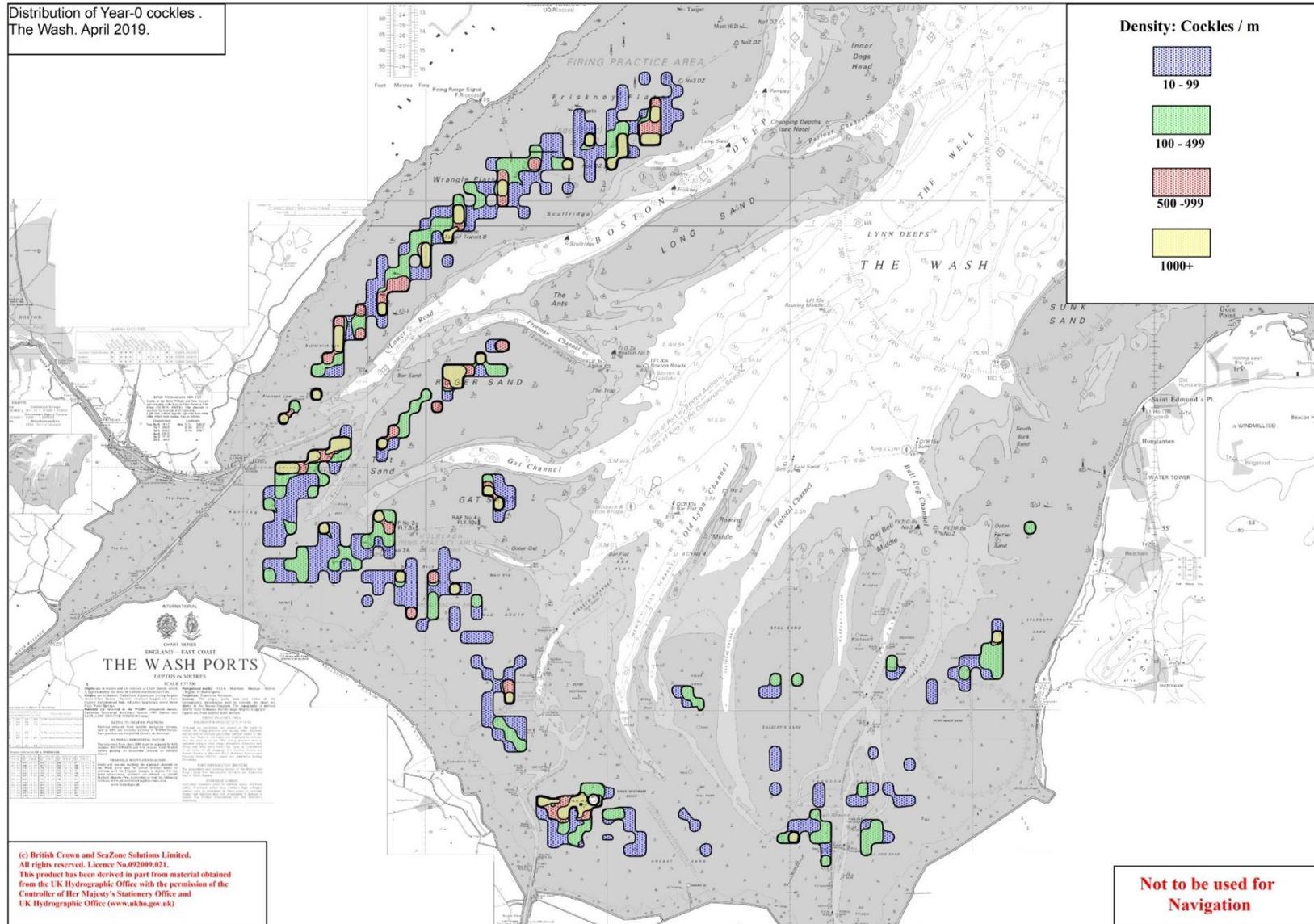


Figure 4 – Chart showing the distribution of 2016 year-class juvenile cockles at the time of the May 2019 surveys

## DETERMINING MANAGEMENT MEASURES FOR THE 2019 COCKLE FISHERY

When determining management measures for the cockle fisheries in The Wash, the Authority must comply with local byelaws and the Wash Fishery Order regulations. Further, as The Wash is designated a Special Area of Conservation (SAC) and a Site of Special Scientific Interest (SSSI), management measures applied to the shellfisheries must not have a detrimental impact to the Conservation Objectives for the site. To this end, when determining management measures for these fisheries, the Authority follows a number of management policies that were agreed in 2007 with Natural England and industry representatives (and are currently under review and being updated into a Wash Cockle Fishery Management Plan). These policies have helped guide the following proposals for the 2019 cockle fishery.

### Total Allowable Catch (TAC)

The TAC for the cockle fishery has traditionally been 33.3% of the adult ( $\geq 14$ mm width) cockle biomass. The adult biomass identified during the surveys within the WFO 1992 regulated beds was 12,011 tonnes. Based on this figure, **the TAC for the 2019 WFO 1992 fishery should be 4,004 tonnes.** In addition to this, there will be a further **TAC of 323 tonnes on the public areas of the Ferrier sand.**

### Method of fishing

The fishery is hand-worked by default unless exceptional circumstances apply that support the use of hydraulic suction dredges. The size and age of the predominant year-class of cockles in The Wash this year does not suggest losses due to “atypical” mortality to be unusually high – rather large numbers of high-density patches of Year-0 cockles that will need protecting. As such, it is not felt there are exceptional circumstances necessitating the requirement to use dredges for the 2019 fishery, so there is no recommendation for an exceptional dredge fishery.

**The 2019 cockle fishery will, therefore, be hand-worked only.**

### Beds proposed to be opened

Successful settlements of juveniles are vital for the sustainability of the fishery. To protect juvenile stocks, the Authority has a policy whereby high-density patches of Yr-0 juvenile cockles are kept closed from the fishery. While it is good to see there was a successful settlement in 2018, our requirement to protect patches exceeding 1,000/m<sup>2</sup> means there will be a lot of closures this year. These are shown in figures “Closures 1-8”.

These closures will include the high-density patches of Year-0 cockles on Friskney and Wrangle. Because cockles in these areas tend to be fast growing, if kept closed there is a risk, they will either ridge out in late summer, or succumb to atypical mortality before the fishery can be opened next year. Because of these risks, it is planned to monitor the juvenile stocks on these two sands with the potential view of opening them in August if it appears they may otherwise be lost.

**It is recommended that all beds are opened, subject to closures to protect high-density juvenile stocks**