

Solent Oyster Survey.

August 2021

Purpose

As part of Southern IFCA's management of Bivalve species in the Solent, an annual survey is required to provide data on the population and range of the native oyster (*Ostrea edulis*) within its traditional beds in the Solent. This survey aims to add to an ongoing time series which feeds directly into management of the native oyster fishery through the provisions of the Solent Dredge Permit Byelaw described in its Management intentions document (SIFCA, 2021). Data is collected at sites across the Solent split into bivalve management areas and again into shellfish beds. The survey is conducted with members of the local fishing industry in order to promote co-management. The survey was previously undertaken by CEFAS until 2011, but Southern IFCA took this on in 2014 following a requirement for data to inform local management of the fishery.

Method

Areas of the survey have been defined adapting the previous CEFAS survey as well as incorporating new survey stations to best reflect the most recent iterations of the fishery. Stations are distributed across the various shellfish beds, and the number of tows at each station is reflective of the size of the bed (with a minimum of three stations sampled across any bed). Sampling involves the chartering of a local fishing vessel to provide local knowledge and undertake the sampling. The equipment used is a 1.4m ladder dredge, similar to those used within the fishery. At each station:

- The ladder dredge is towed for 2 minutes with the skipper choosing the direction/speed of the tow depending on local conditions.
- Metadata is collected including:
 - Start/End Time
 - Start/End location
 - Depth
 - Speed
- On completion of the tow the dredge is emptied onto the back deck and the contents sorted removing oysters and any other bycatch of interest.
- Oysters are measured across their widest edge, split into over 70mm and under 70mm (due to the terms set out in the Southern IFCA Oyster Byelaw). The over 70mm oysters are then weighed before being returned to the fishery.
- As required other commercial bycatch may be measured, and depending on staff availability additional data on associated species collected in the dredge is recorded.

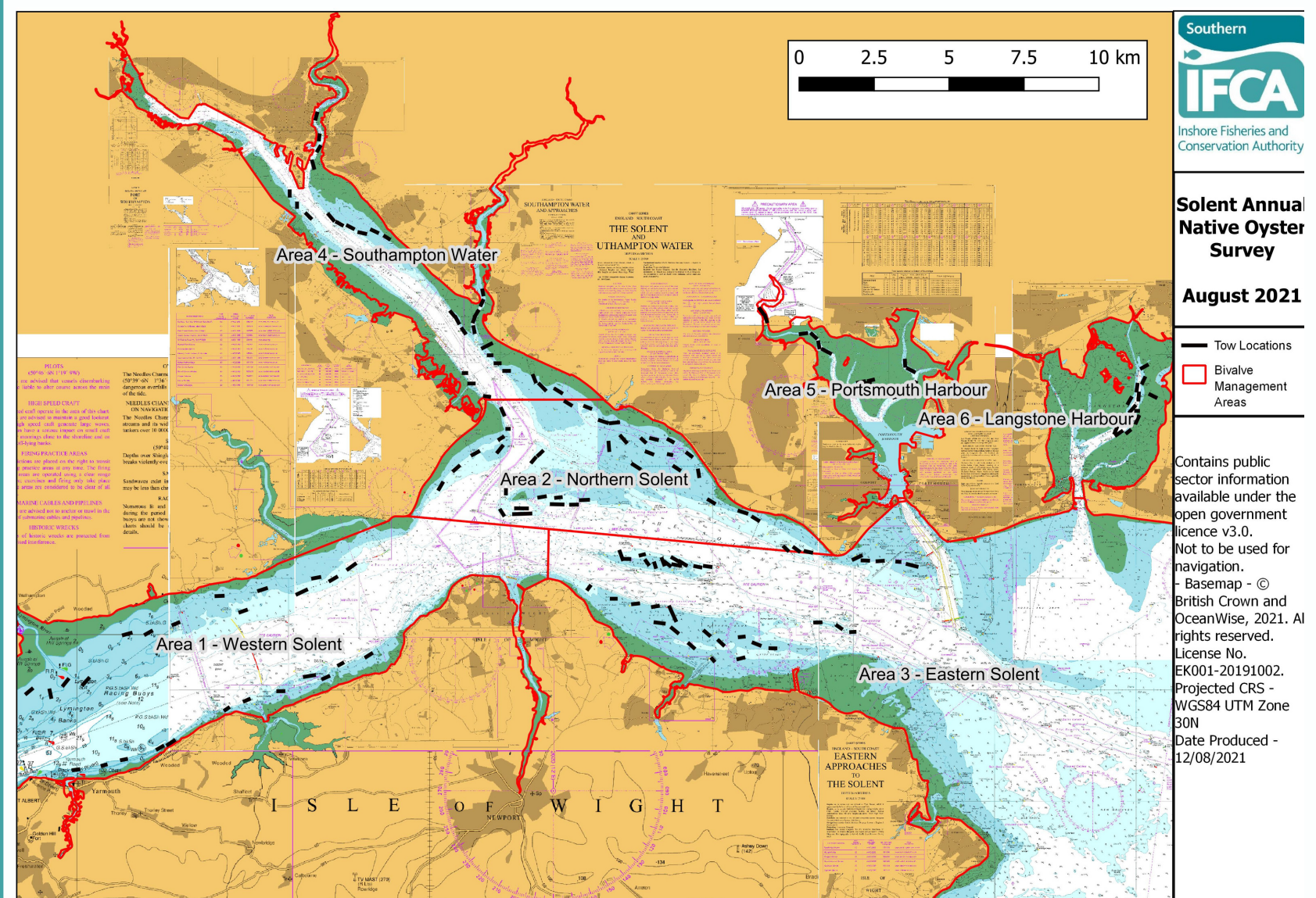


Figure 1 - Survey areas and Tow locations



Figure 2 - The ladder dredge used for the Survey

Results

The survey took place over 5 days between the 31st of July and the 9th of August, visiting a total of 26 pre defined shellfish beds, completing 166 tows. In total 151 oysters were caught, measured, weighed and returned. Table 1 provides a summary of each oyster bed including the number of tows, number of oysters caught, % above 70mm and the Catch Per Unit of Effort.

Table 1 - Results summary for the Solent native oyster survey split into Bivalve Management Area and shellfish bed. CPUE values are recorded in kg/m/hr (kg per metre of dredge per hour) for all oysters above 70mm

Area 1 - Western Solent					Area 4 - Southampton Water				
Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE	Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE
Newtown	7	3	100.00%	2.8	Itchen	5		50.00%	0.6
Yarmouth	5	1	100.00%	1.6	Hythe	3	0	N/A	0
Pennington	3	2	100.00%	4	Weston	6	5	0.00%	0
Sowley	4	1	100.00%	1.5	Hamble	12	26	0.14%	0.5
Lepe	7	3	100.00%	3.4	Ashlett Creek	3	0	N/A	0
BMA Total	26	10	100%	2.5	BMA Total	29	31	19.35%	0.32
Area 2 - Northern Solent					Area 5 - Portsmouth Harbour				
Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE	Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE
Bramble	8	6	100.00%	6.2	Fareham	6	9	55.56%	2.3
Thorn Knoll	5	0	N/A	0	Portchester	6	0	0.00%	0
Calshot Spit	3	3	N/A	0	Bomb Ketch	3	2	100.00%	2.3
Lee-on-the-Sol	8	8	100.00%	4.3	BMA Total	15	11	77.78%	1.4
Browdown	3	3	100.00%	2	Area 5 - Langstone Harbour				
Stokes Bay	3	2	50.00%	1.5	Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE
North Channel	11	11	100.00%	13.3	Langstone Mai	14	22	40.91%	2.5
Chilling	5	2	0.00%	0	BMA Total	14	22		2.5
BMA Total	46	35	75.00%	3.02					
Area 3 - Eastern Solent									
Shellfish Bed	No. Tows	No. Oysters	%>70mm	Average CPUE					
Ryde Middle	12	23	0.73913	6.3					
Osbourne Bay	15	7	0.71429	3.8					
Sturbridge	3	8	0.625	5.6					
Spit Sands	4	4	1	6.9					
BMA Total	34	42	76.96%	4.67					

As demonstrated in the above table catch rates were low throughout the survey. Cath Rates per Unit of Effort for each bivalve management area remained under 5kg/m/hr and no single bed was above 15kg/m/hr (the thresholds for considering management under the SDPB Management Intentions document).

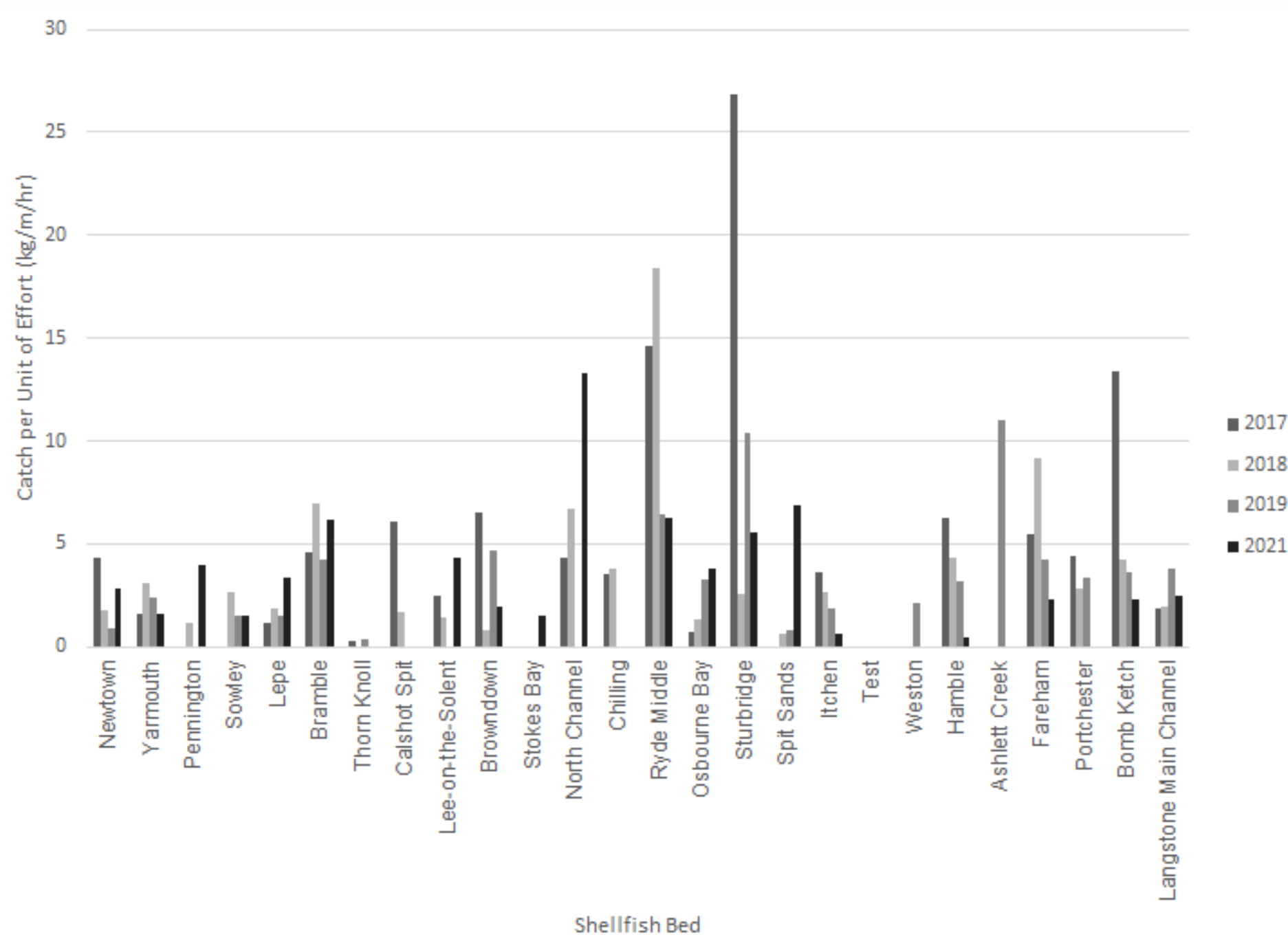
- The shellfish bed with the highest CPUE was North Channel, where an average CPUE of 13.3 was recorded
- Thorn Knoll, Calshot Spit, Hythe, Ashlett Creek and Portchester all returned no oysters over a combined total of 17 tows.
- Areas 1, 2 3 and 5 were all dominated by larger oysters (>= 75% greater than 70mm). In most instances, these appeared to be old heavy oysters, not recently reaching 70mm in size (see figure 3.1). Where smaller oyster in these areas were noted, they tended to be recently settled (estimate majority 2nd year) still attached to cultch.
- Areas 4 and 6 demonstrated a higher proportion of smaller oysters, with 80.65% and 59.09% of oyster sampled falling below 70mm in Southampton Water BMA and Langstone harbour. This was both due to sampling of oyster spat settled at the mouth of the Hamble in particular and in the shallower tows outside the main channel in Langstone Harbour. At these sites juvenile oysters were observed to be settled on slipper limpet shell, rocks and oyster shell (Hamble) as well as on Pacific oysters (*Magallana gigas*), rocks and a glass bottle (Langstone) (See figure 3.2-3).



Figures 3.1-3.3 (left to right). 3.1 - Typical oysters found throughout the Solent, well above 70mm and with significant thick shell growth. 3.2 - Juvenile oyster found in Langstone settled on Crepidula. 3.3 - Pacific Oyster sampled in Langstone with juvenile settlement of both native and Pacific oysters on its outer shell.

Time Series

- Figure 4 provides the average catch per unit effort of each bed for 2017-2021 (no data was collected for 2020 due to COVID restrictions)
- The chart indicates that over the period of 2017-2021 there have been very few instances of oysters reaching a CPUE over 15 kg/m/hr. These include Sturbridge in 2017 and Ryde Middle in 2018.
- In the case of Sturbirdge, this included data from 3 tows, 2 of which returned 8-9 large oysters each weighing approximately 300g indicating they were older oysters, not recently recruited to the fishery.
- Ryde Middle previoys showed higher CPUE than most beds, however following fishing effort following the 2018 survey it does not appear to have recovered to previous levels.



Conclusions

- Further analysis is due to be undertaken but this report summarises the initial findings and observations necessary to feed into management.
- CPUE remains low across all Solent beds as indicated by Table 1 and shown in Figure 4.
- A comparison to sites shows little improvement on previous years of oysters within the fishery (over 70mm)
- Limited signs of spat fall were observed in Langstone, Portsmouth and the Hamble with juvenile oysters (still settled) present in these areas.
- Outside of these areas, almost no oysters were observed likely to enter the fishery in the next few years. Further work will be undertaken on the size class data, but initial observations from surveyors would suggest that there does not appear to be many oysters between 60-70mm that are due to enter the fishery - although some of this may be due to sampling technique and the dredge not picking up smaller oysters, the majority of those sampled above 70mm were much larger, heavier oysters indicating they were not from a recent spatfall and had not recently grown above 70mm.

Acknowledgements

The successful completion of the survey was due to assistance provided by local members of the fishing community fengaged in the fishery, the skipper and the owner of vessel Angelle Marine for undertaking the survey, and CEFAS for the loaning of bluetooth callipers which contributed significantly to the efficiency of the sampling as well as helping reduce the number of surveyors required.