EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2022 - Report

Project Summary Report

March 2026

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Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

This report was commissioned in line with the work of LIFE Recreation ReMEDIES (LIFE18NAT/UK/000039), action C1 – Behaviour Change. This work surveyed recreational activity across five known seagrass sites within the Solent to help monitor behaviour change and identify areas of above average pressure on seagrass habitats.

Executive summary

The Solent is a known hotspot for maritime recreational activities including boating, anchoring, angling, swimming, jet skiing, paddle boarding and more. These activities can be damaging to the seagrass and halt its recover; therefore, it is vital to obtain an understanding of boating and recreational activity to support the ongoing management of seagrass habitats.

The LIFE Recreation ReMEDIES (Reducing and Mitigation Erosion and Disturbance Impacts affEcting the Seabed) project is surveying the ongoing recreational activity at five sites within the Solent Maritime Special Area of Conservation (SAC): Yarmouth West, Bouldnor, Osborne Bay, Kings Quay and Langstone Harbour.

This was started in 2021 and is being continued throughout the project. For 2022, surveys were undertaken from 30th July to 28th September with the aim for each site to be surveyed once midweek and once on the weekend each week.

The occurrence and frequency of a number of recreational activities such as boat movements, anchoring and mooring, and activities like bait digging and dog walking were recorded, and the results are presented in this report.

Overall, the 2022 results strongly supported the key conclusions of the 2021 surveys. The patterns of activity and use varied considerable across the sites, showing the highest at Osborne Bay and Yarmouth West. In particular, Osborne Bay showed higher levels of anchoring pressure compared to other sites. This data is being used to develop and further management of seagrass habitats through the ReMEDIES project.

LIFE Recreation ReMEDIES

EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2022 - Report

13/03/2023

Tim Ferrero
HAMPSHIRE & ISLE OF WIGHT WILDLIFE TRUST

LIFE Recreation ReMEDIES (*LIFE18 NAT/UK/000039*)

Reducing and Mitigating Erosion and Disturbance impacts affecting the Seabed.

EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2022 - Report

March 2023

Report No. HIWWT-LS 20230313

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Introduction

Following discussions with Natural England, the lead partner for the EU Life Recreation ReMEDIES (ReMEDIES) project, a scheme of surveys was proposed to provide quantitative evidence designed to inform the current understanding and create a baseline of patterns of recreational activity taking place adjacent to, or directly over protected seagrass meadows within the Solent Maritime Special Area of Conservation (SAC). The first series of surveys was undertaken in August-September 2021 and reported in Ferrero, 2022.

The survey scheme devised in 2021, was closely aligned with similar surveys at two of the other ReMEDIES sites on the Helford and Essex. Following feedback from volunteers either during the survey period or in the pre-survey training, the volunteer manual was revised in areas for 2022 to clarify details and procedures. The survey protocol was not changed in any way, revisions being confined to typos and any ambiguities or omissions in the text.

The survey was repeated through the months of August and September 2022. Volunteer surveyors and Hampshire and Isle of Wight Wildlife Trust (HIWWT) staff aimed to survey the five inshore shallow subtidal and intertidal locations twice a week, over one-hour observation periods.

The occurrence and frequency of a number of recreational activities such as boat movements, anchoring and mooring, and activities like bait digging and dog walking were recorded, and the results are presented in this report.

The overall aims of this survey are to establish a baseline of recreational activity in the Solent Region, with particular focus on the Solent Maritime SAC and the habitats and species it supports and identify the potential impacts on seagrass meadows. Plans are in place to repeat these surveys in 2023 and 2024.

Methods

Survey Locations

Five survey locations were chosen within Solent Maritime SAC (SM-SAC) through discussions with Natural England and other stakeholders. The survey locations were based on existing knowledge of seagrass meadow locations in the Solent and shared understanding of likely recreational activity.

The chosen survey sites also lay within a number of additional conservation designations including; The Solent and Dorset Coast Special Protection Area (SPA) (SDC-SPA), The Solent and Southampton Water SPA (SSW-SPA) and Ramsar (SSW-R), The Chichester and Langstone Harbours SPA (CL-SPA), The Chichester and Langstone Harbours Ramsar (CL-R) and The Yarmouth to Cowes Marine Conservation Zone (MCZ) (YC-MCZ)

- Yarmouth – Conservation Designations: SM-SAC, SDC-SPA, SSW-SPA, SSW-R
- Bouldnor – Conservation Designations: SM-SAC, YC-MCZ, SDC-SPA
- Osborne Bay – Conservation Designations: SM-SAC, SDC-SPA
- Kings Quay – Conservation Designations: SM-SAC, SDC-SPA, SSW-SPA, SSW-R
- Langstone Harbour – Conservation Designations: SM-SAC, CL-SPA, CL-R

Survey plan

All surveys were planned by Dr Tim Ferrero (Senior Specialist - Marine Conservation Lead) and carried out by Dr Ferrero and a group of volunteer recorders.

The aim was to undertake two surveys per week, one on a weekend day (Saturday or Sunday) and one on a midweek day (Wednesday) through the months of August and September 2022. This provided a potential maximum of 90 surveys. At the end of the survey window, a total of 70 surveys were completed. Eight of the surveys undertaken were carried out outside the allocated days, seven of which were confined to one site. Owing to volunteer availability, seven midweek surveys were carried out either on a Tuesday or on a Thursday.

Volunteer availability meant that no sites were sampled on every possible survey time over the two-month survey window. However, at Bouldnor and Langstone, only a single date was missed.

The following surveys were carried out (Table 1):

Table 1: Summary details of the recreational activity surveys carried out in August/September 2022. H = HIWWT Staff surveyor, V = Volunteer surveyor, - = Survey not undertaken. Survey dates outside the original survey date windows are shown in parentheses.

	JULY/AUGUST									
	Sat/Sun	Wednesday	Sat	Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun
	30/31-Jul	03-Aug	06-Aug	07-Aug	10-Aug	13/14 -Aug	17-Aug	20/21-Aug	24-Aug	27/28 Aug
Yarmouth	V	V	V	V	V	V	–	V	–	V
Bouldnor	V	V	V	–	V (11/08)	V	V	V	V (23/08)	V
Osborne	V	V	V	V	–	–	H	V	V	–
Kings Quay	H	V	H	–	V	V	–	V	–	V
Langstone	V	V	–	V	V	V	H	V	V	V
	AUGUST/SEPTEMBER									
	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	
	31-Aug	03/04-Sep	07-Sep	10/11-Sep	14-Sep	17/18-Sep	21-Sep	24/25-Sep	28-Sep	
Yarmouth	V	V	–	V	–	–	–	V	V (29.09)	
Bouldnor	V (3-/08)	V	V (08/09)	V	V (13/09)	V	V (20/09)	V	V (27/09)	
Osborne	V	–	–	V	–	–	–	V	V	
Kings Quay	–	–	–	V	–	V	–	V	–	
Langstone	V	V	V	V	V	V	V	V	V	

Methodology

This section will provide a brief overview of survey methodology as full details can be found in the “Volunteer Survey Instruction Manual” included in Appendix 1.

Recreational Activity Surveys were undertaken over a period of one hour per survey, during which time, the surveyor observed a predetermined area of intertidal and shallow subtidal water and recorded the occurrence and frequency of a number of recreational activities such as boat movements, anchoring and mooring, vessel type, beach recreation, bait digging and dog walking. This area was determined by the practical limit of 750m from the observation point of the rangefinders used.

All observations were made with the help of a site chart, compass and rangefinder, to assist the surveyor in deciding whether recreational activities were taking place over charted seagrass meadows.

Survey equipment for Yarmouth was stored between surveys at Yarmouth Harbour Office, for Osborne Bay by English Heritage staff and staff of the Pavilion Beach Café, and for Kings Quay, by the landowner, Mr T. Rogers. Individual volunteers stored the survey equipment for Bouldnor and Langstone Harbour and coordinated exchanges accordingly.

All data was recorded on standard recording sheets which were collected after the survey period was completed.

All surveyors were trained through an online Zoom session, which was attended by 20 people, recorded and available for review, combined with the production of a detailed survey instruction manual which detailed the site information, equipment use, survey methodology and data recording. This was provided as a pack to volunteers at the site of survey.

In response to comments from various volunteers, the manual was revised to clarify information or accommodate unforeseen issues and is currently in its third iteration (See Appendix 1).

Survey results by site

Yarmouth West

Figure 1. Yarmouth West: General view of area taken from the survey point

Site Summary (further details in Appendix 1)

Location: 50°42’20.51” N 1°30’29.44”W

Situated to the West of the harbour entrance, the Yarmouth West site is located close to an area of high recreational and other boat use. The beach is also close to centres of population and visitor access and has a buoyed swimming area, clearly visible in the site photograph (Fig. 1).

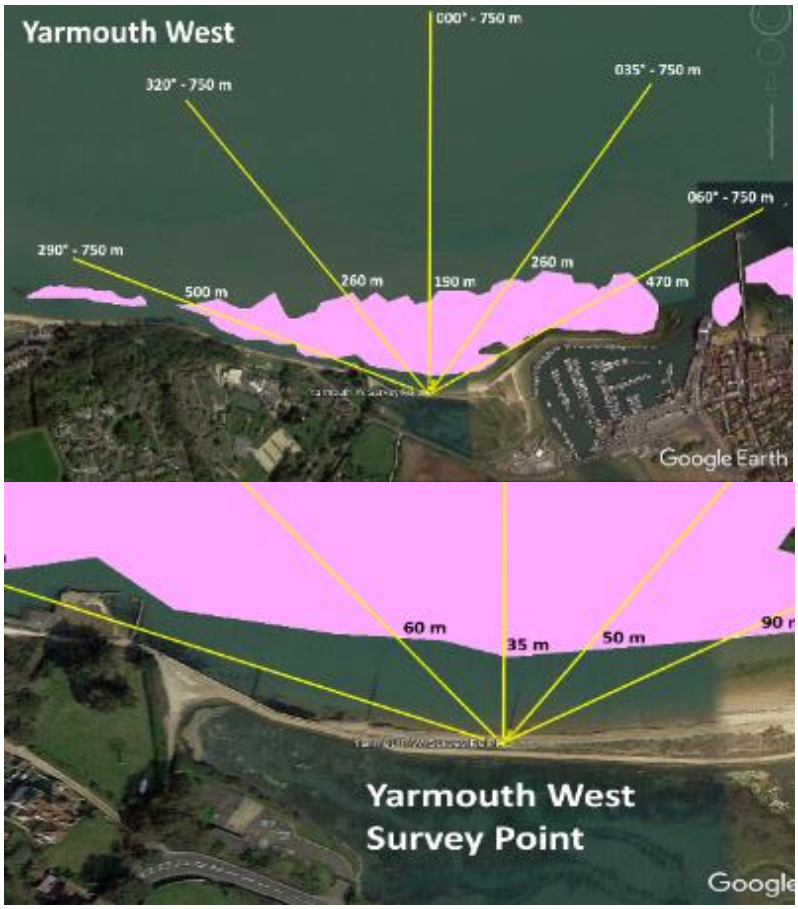


Figure. 2. Yarmouth West Survey Area Charts showing sight lines with relevant distances and seagrass in pink

The seagrass meadow at Yarmouth West extends shorewards into the low intertidal, reaching as close as 35 m from the survey point. The seaward extent line is relatively clearly delineated at 190 m, perpendicular to the survey point and a line of visitor buoys lie just beyond the seaward extent (Fig. 2).

Survey Results

Number of Surveys: 13 (9, weekend, 4 midweek)

Boating Activity:

Summary data is shown in Table 2 and Fig. 3A

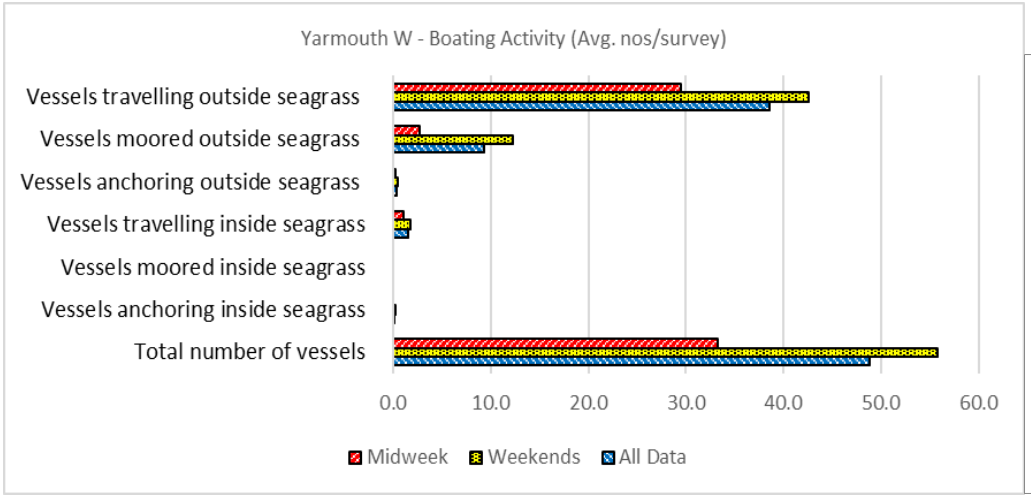
Over the course of 13 surveys, 635 vessels were observed, of which only two were observed to be anchoring within the seagrass meadow.

The data, as in the 2021 survey, revealed that the site is clearly used by vessels visiting the harbour, as 501 of the observations were of vessels travelling outside the seagrass zone, 121 of which used the visitor moorings and 5 anchoring in this area. These results are very similar to those reported from the 2021 surveys.

Table 2. Yarmouth West: Summary data (totals, average (mean per survey), maximum and minimum) for survey time and weather (white), Boating Activity (Purple), Vessel Type (Yellow) and Recreational Activity (Green).

Yarmouth West	ALL SURVEYS n = 13				WEEKEND SURVEYS n = 9				MID-WEEK SURVEYS n = 4			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		11:31	12:55	11:00		11:13	12:30	11:00		12:11	12:55	11:15
End time		12:31	13:55	12:00		12:13	13:30	12:00		13:11	13:55	12:15
Wind speed (km/h)		16.8	27.0	11.0		15.1	24.0	11.0		20.5	27.0	17.0
Temperature (°C)		19.8	25.0	12.0		19.2	25.0	12.0		21.0	23.0	16.0
Cloud cover %		34.3	97.0	2.0		26.6	91.0	2.0		51.8	97.0	2.0
Precipitation		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Sea state		2.3	4.0	1.0		2.1	4.0	1.0		2.8	4.0	2.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	635.0	48.8	70.0	16.0	502	55.8	70.0	31.0	133	33.3	69.0	16.0
No. of vessels anchoring inside the seagrass zone	2.0	0.2	1.0	0.0	2	0.2	1.0	0.0	0	0.0	0.0	0.0
No. of vessels moored inside the seagrass zone	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling inside seagrass zone	20.0	1.5	6.0	0.0	16	1.8	6.0	0.0	4	1.0	2.0	0.0
No. of vessels anchoring outside the seagrass zone	5.0	0.4	2.0	0.0	4	0.4	2.0	0.0	1	0.3	1.0	0.0
No. of vessels moored outside the seagrass zone	121.0	9.3	31.0	0.0	110	12.2	31.0	1.0	11	2.8	6.0	0.0
No. of vessels travelling outside the seagrass zone	501.0	38.5	62.0	15.0	383	42.6	60.0	27.0	118	29.5	62.0	15.0
Yacht large (>24 m)	7.0	0.5	3.0	0.0	7	0.8	3.0	0.0	0	0.0	0.0	0.0
Yacht small (<24 m)	172.0	13.2	36.0	2.0	122	13.6	36.0	3.0	50	12.5	31.0	2.0
Sailing dinghy	12.0	0.9	8.0	0.0	12	1.3	8.0	0.0	0	0.0	0.0	0.0
Motor yacht	135.0	10.4	29.0	2.0	105	11.7	29.0	2.0	30	7.5	13.0	4.0
Day boats with cabin	105.0	8.1	27.0	1.0	93	10.3	27.0	3.0	12	3.0	6.0	1.0
Power boat (open)	59.0	4.5	9.0	0.0	53	5.9	9.0	3.0	6	1.5	4.0	0.0
RIB	112.0	8.6	16.0	1.0	92	10.2	16.0	6.0	20	5.0	9.0	1.0
Open boat/tender/inflatable	15.0	1.2	3.0	0.0	9	1.0	3.0	0.0	6	1.5	2.0	0.0
Windsurfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kite surfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	14.0	1.1	8.0	0.0	12	1.3	8.0	0.0	2	0.5	2.0	0.0
Paddle board	7.0	0.5	6.0	0.0	7	0.8	6.0	0.0	0	0.0	0.0	0.0
Ferry	24.0	1.8	3.0	0.0	17	1.9	3.0	0.0	7	1.8	2.0	1.0
Personal Water Craft (PWC) - jet skis etc.	11.0	0.8	5.0	0.0	10	1.1	5.0	0.0	1	0.3	1.0	0.0
Beach recreation	124.0	9.5	50.0	0.0	84	9.3	50.0	0.0	40	10.0	14.0	0.0
Swimming	51.0	3.9	22.0	0.0	39	4.3	22.0	0.0	12	3.0	5.0	0.0
Angling	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Dog walker	38.0	2.9	10.0	0.0	27	3.0	10.0	0.0	11	2.8	5.0	1.0
Bait digger	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Commercial Fishing	2.0	0.2	2.0	0.0	0	0.0	0.0	0.0	2	0.5	2.0	0.0

Fig. 3A


Yarmouth W - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
10.0
20.0
30.0
40.0
50.0
60.0
Midweek
Weekends
All Data

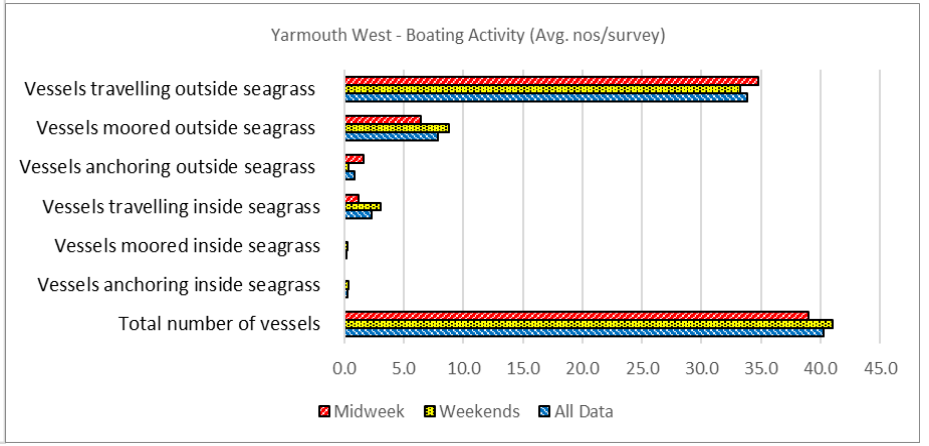
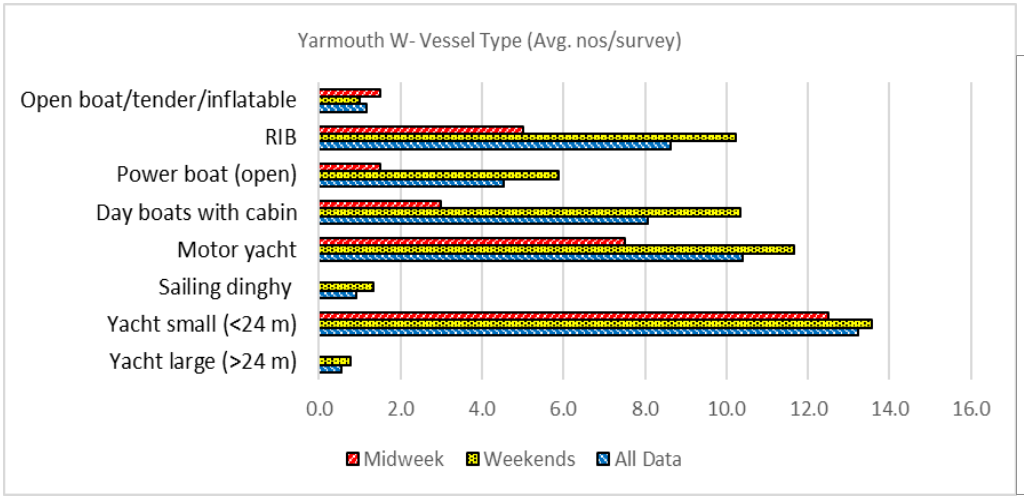

Yarmouth West - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
Midweek
Weekends
All Data

Fig. 3B


Yarmouth W- Vessel Type (Avg. nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
Midweek
Weekends
All Data

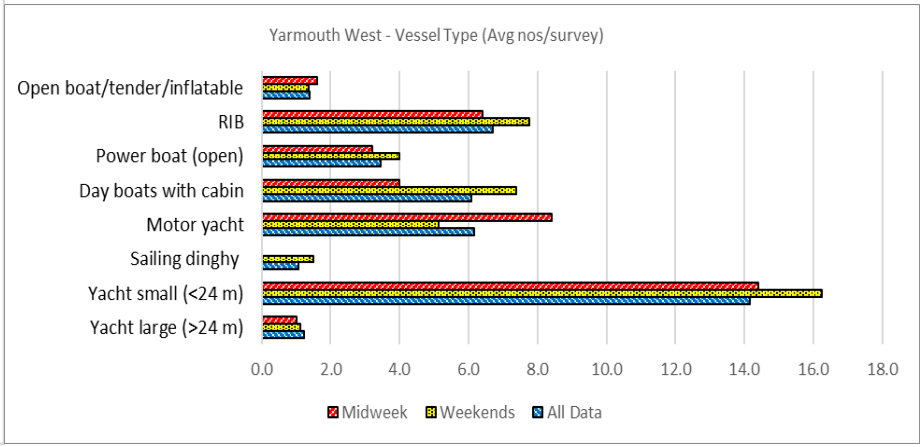

Yarmouth West - Vessel Type (Avg nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Midweek
Weekends
All Data

Fig. 3C

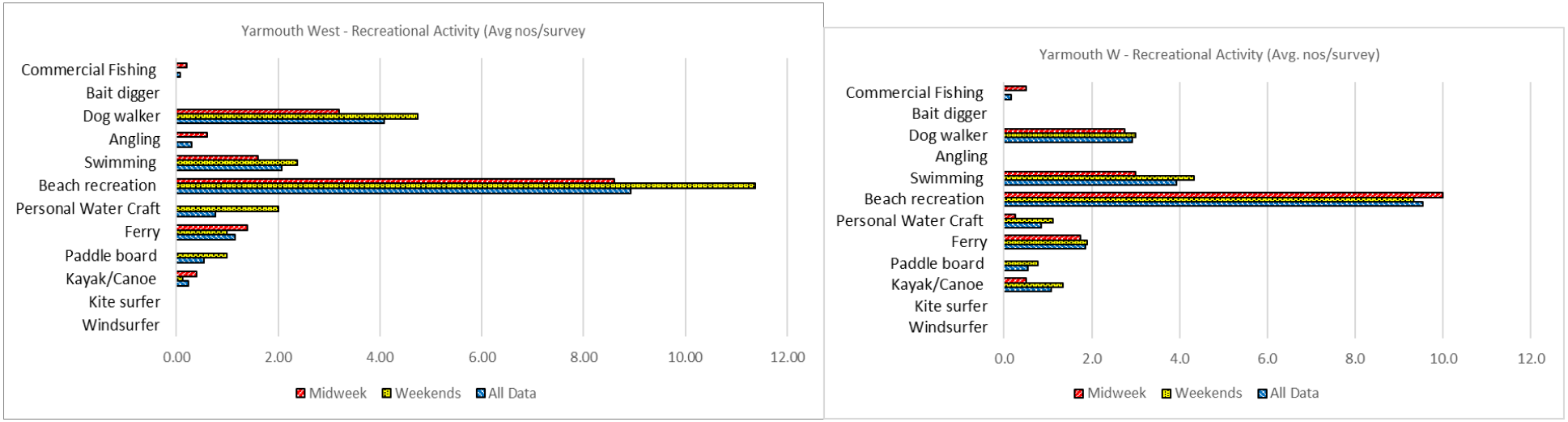


Figure 3. Yarmouth West: Average (mean per survey) data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2021 Graphs inset on the right hand side

The average data shown in fig. 3A, rather than totals, provides the best comparative data, owing to the difference in number of midweek vs weekend surveys. In contrast with the 2021 data, there was a clear indication of higher weekend activity, possibly indicating a return to more typical activity patterns as Covid 19 pandemic restrictions eased and work patterns returned to closer to normal. However, the pattern of activity remained very similar with the majority of vessels travelling or anchoring/mooring outside the seagrass area. There were only two anchoring events observed within the seagrass area, slightly lower than in 2021, when there were five. Again, both anchoring events were observed at the weekend.

Vessel Type

Small yachts (172) remained the most frequently recorded single vessel category, although overall, there were more observations of motorised craft (411 – Motor yachts, Day boats with cabin, Power boats (open) and RIBs) and observations of motorised craft was proportionally higher than in 2021 (Table 2). The overall pattern of higher weekend use was reflected mostly in the increased numbers of motorised vessels observed, there being little difference in small yacht activity between weekends and midweek (Fig. 3B).

Recreational Activity

Overall levels and distribution of activity were generally similar to those observed in 2021. Beach recreation (128 observations) was significantly the most popular recreational activity, as in 2021, but swimming was recorded in higher numbers (54), being the second most recorded activity before dog walking, which remained popular (38 observations - Table 2). The clear trend for increased activity at the weekend in the 2021 surveys was not so strongly recorded in the current survey, with beach recreation and dog walking recorded at similar levels, compared with midweek activity. However, use of personal watercraft, paddle board and kayaks still showed a clear trend towards weekend activity as found in 2021 (Fig. 3C).

Bouldnor

Figure. 4. Bouldnor.: General views of area taken from the survey point. Looking East (right hand photo) and West (left hand photo)

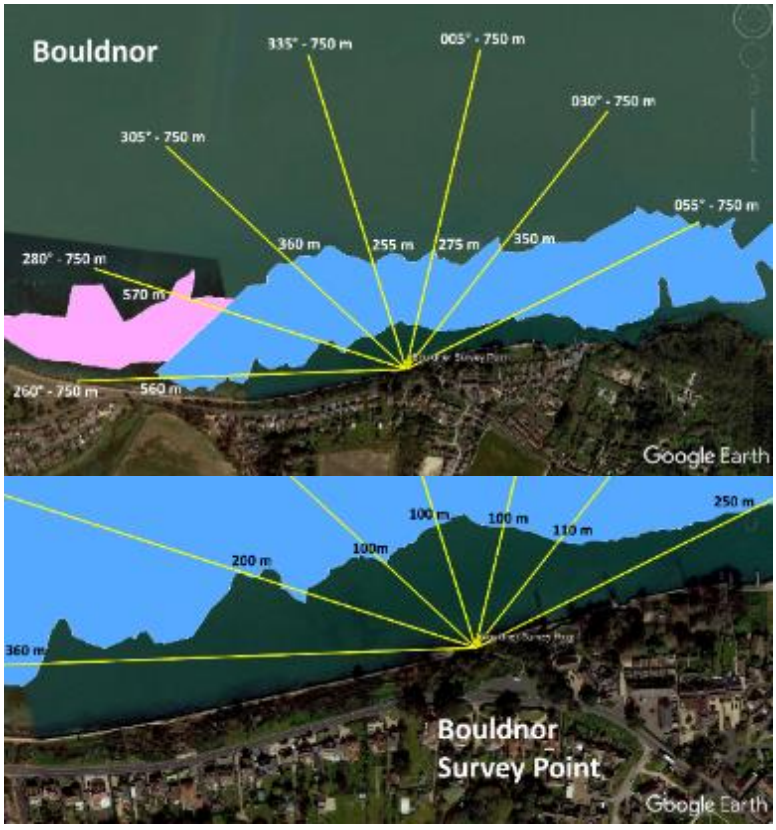


Figure 5. Bouldnor Survey Area Charts showing sight lines with relevant distances and seagrass area in pink and blue

Site Summary (further details in Appendix 1)

Location: 50°42'28.09"N 1°28'54.99"W

Situated to the east of Yarmouth, the Bouldnor survey point lies on the sea wall adjacent to the Bouldnor Viewpoint car park. The site is a public area used for walking, fishing etc.

The foreshore is relatively narrow, only revealed at low water and accessible only from a few nearby access steps (Fig. 4).

The seagrass meadow at Bouldnor extends shorewards into the low intertidal, reaching as close as 100 m from the survey point. The seaward extent line is relatively clearly delineated at 250 m, perpendicular to the survey point (Fig. 5).

Survey Results

Number of Surveys: 18 (9, weekend, 9 midweek)

Boating Activity:

Summary data is shown in Table 3 and Fig. 6A

Thanks mainly to the dedication of one volunteer surveyor, Bouldnor was, once again, surveyed on nearly all possible survey dates (18 surveys) with only one missed. Overall vessel numbers were noticeably lower than in 2021, with 171 vessels recorded compared with 279. This perhaps represents the fact that patterns of activity may have changed after the restrictions imposed by the Covid-19 pandemic, coupled with the fact that Bouldnor does not represent a specific boating destination in itself. Despite the lower overall numbers recorded, a slightly higher total of four vessels anchored and six moored were sighted within the seagrass area. As the presence of moorings cannot be confirmed, these vessels may have been anchoring also and the records are best considered as being direct interactions with the seagrass. The ten direct interactions with the seagrass were recorded from a reduced number of surveys, representing a potential increase in negative interactions in this area.

The average data shown in Fig. 6A provides the best comparative data, although this site was surveyed on all possible occasions during the study period. As was found in 2021, the data indicated that Bouldnor is a site subject mainly to the activity of vessels in transit along the coast, both inside and outside the seagrass area. However, as seen at Yarmouth, the 2022 data showed a strong trend towards weekend activity becoming much more important than midweek activity. Levels of mooring, unlike at Yarmouth, were also low, potentially due to a combination of fewer available moorings and generally lower occupancy.

Vessel Type

As for Yarmouth, the single vessel category recorded in the highest numbers was small yachts (59), although overall, there were more observations of motorised craft (92) (Table 3), the majority being RIBs and motor yachts, with RIB activity showing a proportional increase. The general trend towards increased weekend activity noted at Yarmouth was again seen at Bouldnor, particularly for RIBs, power boats and day boats with cabins. The only category of vessel to be more active on midweek surveys was Sailing Dinghies, possibly reflecting sailing club activity (fig. 6B).

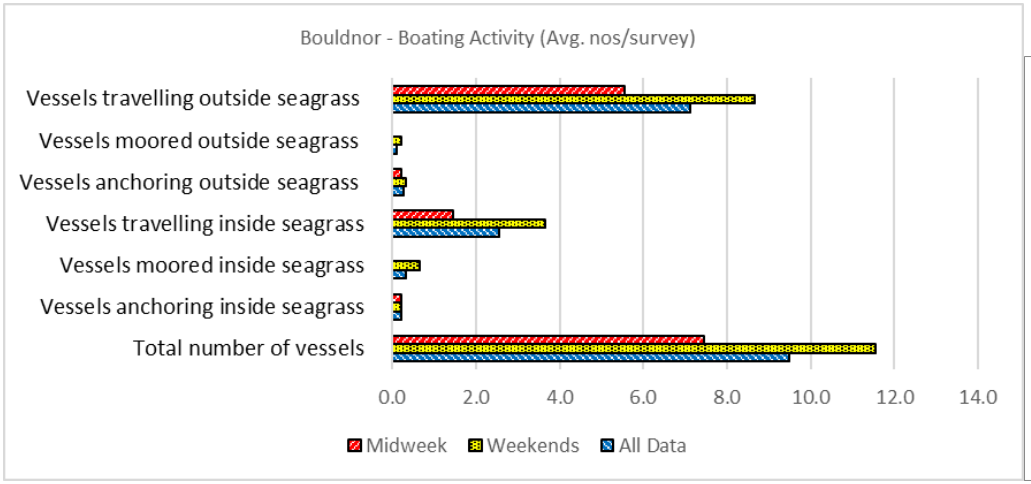
Table 3. Bouldnor: Summary data (totals, average (mean per survey), maximum and minimum) for survey time and weather (white), Boating Activity (Purple), Vessel Type (Yellow) and Recreational Activity (Green).

BOULDNOR	ALL SURVEYS n = 18				WEEKEND SURVEYS n = 9				MID-WEEK SURVEYS n = 9			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		11:50	14:35	10:45		11:48	12:55	10:45		11:53	14:35	10:45
End time		12:50	15:35	11:45		12:48	13:55	11:45		12:53	15:35	11:45
Wind speed (km/h)		19.6	31.0	6.0		17.7	29.0	6.0		21.4	31.0	9.0
Temperature (°C)		19.2	28.0	12.0		18.7	26.0	12.0		19.8	28.0	13.0
Cloud cover %		48.4	97.0	0.0		32.2	90.0	3.0		64.7	97.0	0.0
Precipitation		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Sea state		2.1	3.0	0.0		1.9	3.0	0.0		2.3	4.0	0.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	171.0	9.5	32.0	2.0	104	11.6	32.0	3.0	67	7.4	17.0	2.0
No. of vessels anchoring inside the seagrass zone	4.0	0.2	1.0	0.0	2	0.2	1.0	0.0	2	0.2	1.0	0.0
No. of vessels moored inside the seagrass zone	6.0	0.3	3.0	0.0	6	0.7	3.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling inside seagrass zone	46.0	2.6	9.0	0.0	33	3.7	9.0	0.0	13	1.4	9.0	0.0
No. of vessels anchoring outside the seagrass zone	5.0	0.3	2.0	0.0	3	0.3	2.0	0.0	2	0.2	1.0	0.0
No. of vessels moored outside the seagrass zone	2.0	0.1	2.0	0.0	2	0.2	2.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling outside the seagrass zone	128.0	7.1	19.0	1.0	78	8.7	19.0	1.0	50	5.6	11.0	2.0
Yacht large (>24 m)	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Yacht small (<24 m)	59.0	3.3	5.0	0.0	31	3.4	7.0	0.0	28	3.1	5.0	2.0
Sailing dinghy	4.0	0.2	2.0	0.0	3	0.3	2.0	0.0	8	0.9	7.0	0.0
Motor yacht	22.0	1.2	3.0	0.0	12	1.3	3.0	0.0	10	1.1	2.0	0.0
Day boats with cabin	12.0	0.7	9.0	0.0	11	1.2	9.0	0.0	1	0.1	1.0	0.0
Power boat (open)	14.0	0.8	5.0	0.0	11	1.2	5.0	0.0	3	0.3	3.0	0.0
RIB	44.0	2.4	9.0	0.0	29	3.2	9.0	0.0	15	1.7	8.0	0.0
Open boat/tender/inflatable	8.0	0.4	4.0	0.0	6	0.7	4.0	0.0	2	0.2	2.0	0.0
Windsurfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kite surfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	6.0	0.3	5.0	0.0	6	0.7	5.0	0.0	0	0.0	0.0	0.0
Paddle board	8.0	0.4	6.0	0.0	8	0.9	6.0	0.0	0	0.0	0.0	0.0
Ferry	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Personal Water Craft (PWC) - jet skis etc.	9.0	0.5	6.0	0.0	9	1.0	6.0	0.0	0	0.0	0.0	0.0
Beach recreation	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Swimming	1.0	0.1	1.0	0.0	0	0.0	0.0	0.0	1	0.1	1.0	0.0
Angling	8.0	0.4	4.0	0.0	6	0.7	4.0	0.0	2	0.2	2.0	0.0
Dog walker	16.0	0.9	2.0	0.0	10	1.1	2.0	0.0	6	0.7	2.0	0.0
Bait digger	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Commercial Fishing	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0

Recreational Activity

Overall, recreational activity was very low and slightly lower than in the 2021 survey owing mainly to a reduction in dog walking observations from 33 to 16. The relative inaccessibility of the site and only occasional uncovering of the foreshore may be a contributing factor, coupled with changes in activity following the lifting of Covid-19 restrictions. Dog walking remained the most frequently recorded activity, followed by low-level use of personal watercraft, kayaking and angling (Table 3). In contrast to the pattern of timings seen at Yarmouth, despite the data being rather limited there was a clear indication that the recreational activities observed were common at weekends (fig. 6C) a change from the pattern seen in 2021 when the pattern was more mixed.

Fig. 6A


Bouldnor - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
Midweek
Weekends
All Data

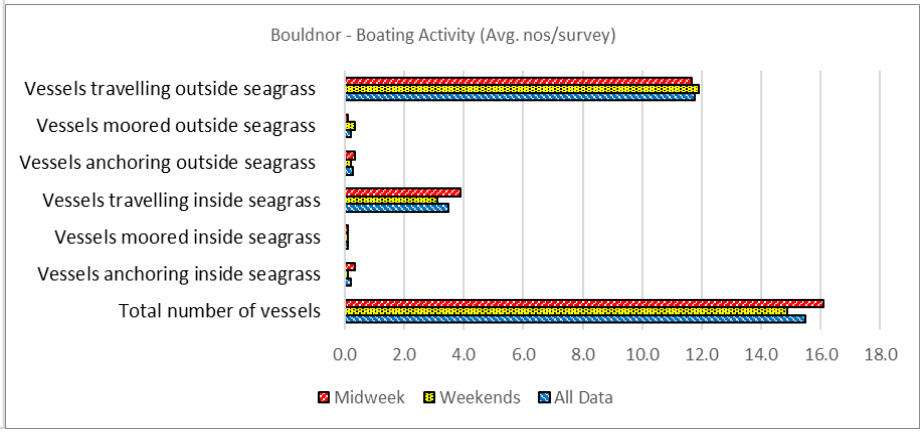
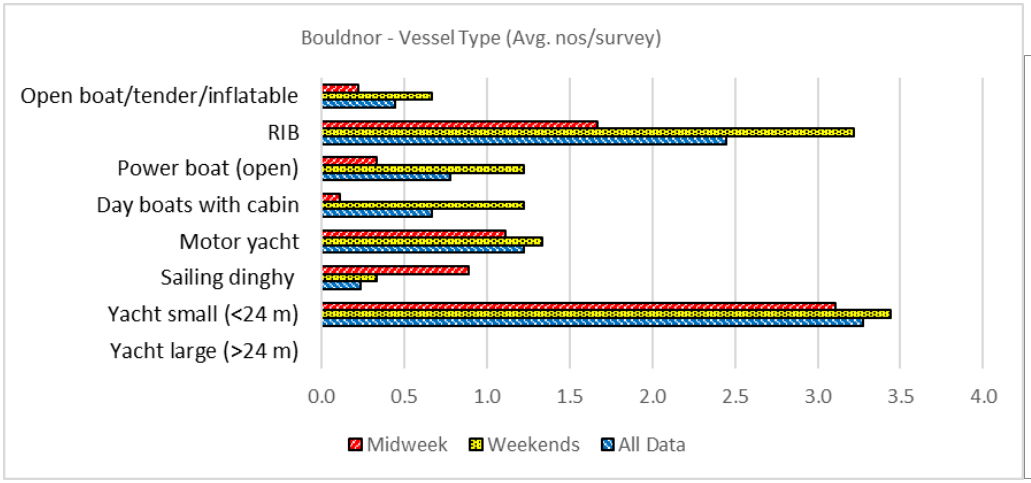

Bouldnor - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Midweek
Weekends
All Data

Fig. 6B


Bouldnor - Vessel Type (Avg. nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Midweek
Weekends
All Data

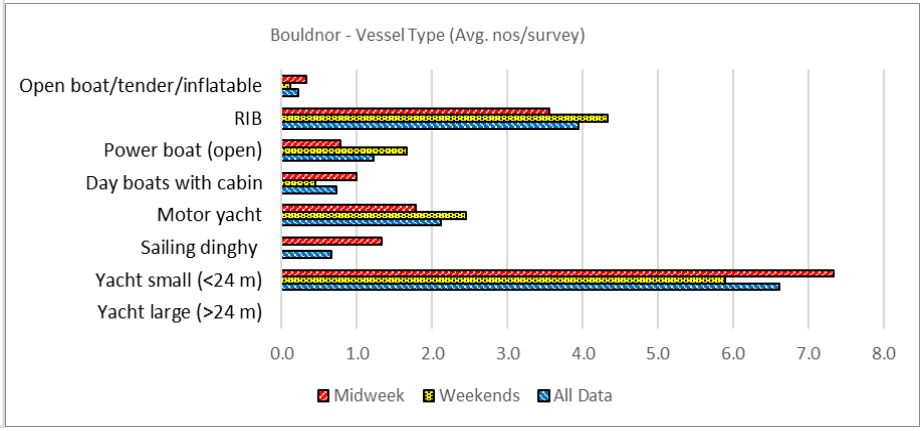

Bouldnor - Vessel Type (Avg. nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Midweek
Weekends
All Data

Fig. 6C

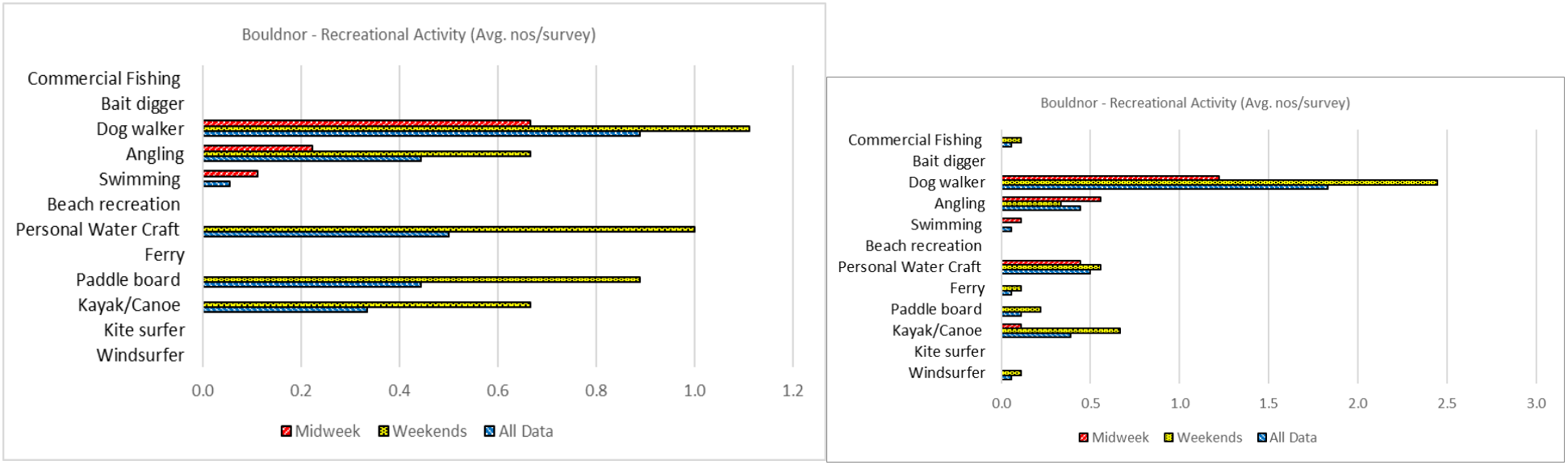


Figure 6. Bouldnor: Average (mean per survey) data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2021 Graphs inset on the right hand side.

Osborne Bay

Figure 7. Osborne Bay.: General view of area taken from the survey point

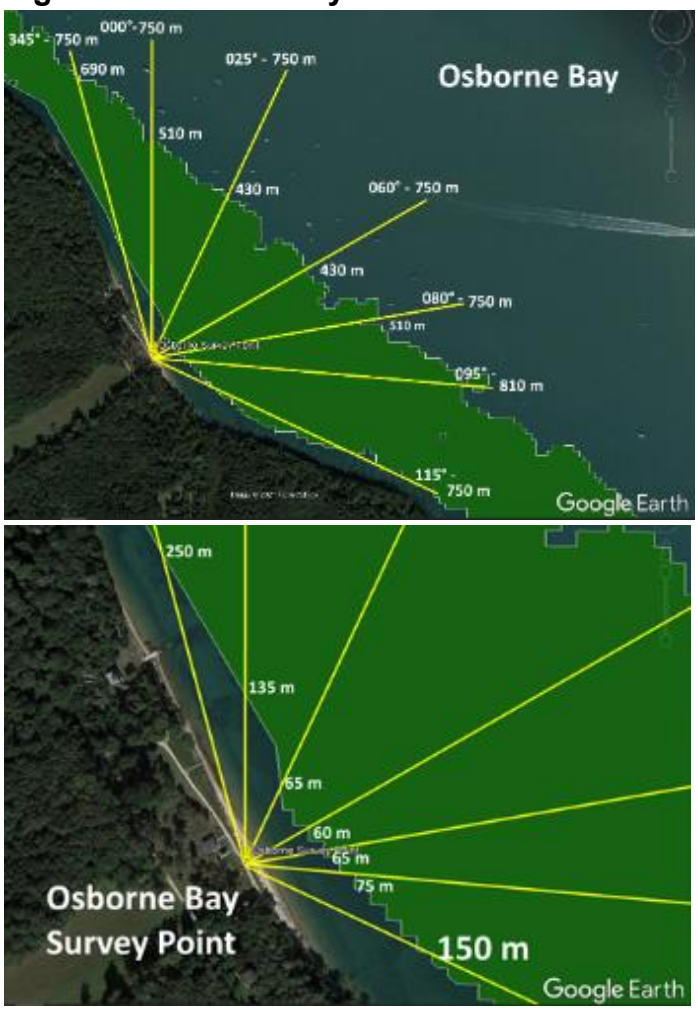


Figure 8. Osborne Bay Survey Area Charts showing sight lines with relevant distances and seagrass area in green

Site Summary (further details in Appendix 1)

Location: 50°45'18.84"N 1°15'25.19"W

This site is within the grounds of Osborne House, a busy location for visitors to the House and to the beach. The survey point is located close to, and just East of the Café and Queen Victoria's Bathing Machine on a pathway above the beach itself (Fig. 7).

The seagrass meadow at Osborne Bay extends shorewards into the low intertidal, reaching as close as 60 m from the survey point. The seaward extent line is relatively clearly delineated at 430 m, perpendicular to the survey point (Fig. 8). The outer limit of the seagrass meadow is marked by a line of yellow buoys, originally deployed to mark out a swimming zone where boats were not permitted. However, only a few of these buoys were in place during the survey period.

Survey Results

Number of Surveys: 11 (6, weekend, 5 midweek)

Boating Activity:

Summary data is shown in Table 4 and Fig. 9A

Owing to the unavailability of the on-site volunteer who helped with surveys in 2021, and sickness of another surveyor, Osborne Bay was only surveyed 11 times during the study period, compared with 15 in 2021. However, Osborne Bay still produced a significant number of vessel records (459, Table 4), representing an average number of 41.7 per survey, which was almost identical to the value for 2021 (41.3). However, in the current survey, despite a maximum of 119 boats being observed in a single survey, average numbers were higher overall at Yarmouth. The maximum numbers were recorded on the weekend of the 6/7th August, corresponding with the end of Cowes Week.

As concluded from the 2021 survey data, Osborne Bay remained very clearly a recreational destination, with harbour and shore landings either unavailable or not permitted. Consequently, a high number of anchoring events was again recorded both outside the seagrass zone (178 anchoring events) and an increased number inside the seagrass meadow (93, compared with 79 anchoring events in 2021) and additional transits across the seagrass (90 compared with 54 observations in 2021) – See Table 4, Fig. 9A.

Thirty-one observations were recorded as moorings inside the seagrass meadow, another notable increase from the 7 recorded in 2021. As the presence of moorings cannot be confirmed, these vessels may have been anchoring, perhaps with buoyed anchors, and these records are best considered as being direct interactions with the seagrass.

Together, these observations confirm that Osborne Bay remains the survey location subject to the most incidences of direct interactions with seagrass owing to recreational boating activity.

The observed boating activity showed a clear pattern of higher activity at the weekend compared with the midweek surveys, confirming the recreational nature of the site and that all vessels were likely to be visitors rather than based at the location (Fig. 9A).

Table 4. Osborne Bay: Summary data (totals, average (mean per survey), maximum and minimum) for survey time and weather (white), Boating Activity (Purple), Vessel Type (Yellow) and Recreational Activity (Green).

OSBORNE BAY	ALL SURVEYS n=11				WEEKEND SURVEYS n = 6				MID-WEEK SURVEYS n = 5			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		13:18	14:15	12:45		13:11	14:05	12:45		13:27	14:15	12:50
End time		14:18	15:15	13:45		14:11	15:05	13:45		14:27	15:15	13:50
Wind speed (km/h)		16.5	30.0	7.0		15.3	30.0	7.0		17.8	25.0	13.0
Temperature (°C)		18.5	23.0	0.0		19.2	22.0	14.0		17.8	23.0	0.0
Cloud cover %		38.4	90.0	7.0		40.7	90.0	7.0		35.6	76.0	10.0
Precipitation		8.5	80.0	0.0		13.4	80.0	0.0		2.6	13.0	0.0
Sea state		2.1	4.0	1.0		1.7	3.0	1.0		2.6	4.0	1.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	459.0	41.7	119.0	9.0	366	61.0	119.0	15.0	180	25.7	48.0	11.0
No. of vessels anchoring inside the seagrass zone	93.0	8.5	39.0	0.0	80	13.3	39.0	0.0	29	4.1	8.0	0.0
No. of vessels moored inside the seagrass zone	31.0	2.8	11.0	0.0	29	4.8	11.0	0.0	6	0.9	2.0	0.0
No. of vessels travelling inside seagrass zone	90.0	8.2	20.0	1.0	71	11.8	20.0	9.0	22	3.1	6.0	1.0
No. of vessels anchoring outside the seagrass zone	178.0	16.2	73.0	1.0	148	24.7	73.0	1.0	49	7.0	19.0	2.0
No. of vessels moored outside the seagrass zone	21.0	1.9	5.0	0.0	11	1.8	4.0	0.0	3	0.4	2.0	0.0
No. of vessels travelling outside the seagrass zone	97.0	8.8	20.0	0.0	67	11.2	20.0	5.0	57	8.1	18.0	0.0
Yacht large (>24 m)	20.0	1.8	12.0	0.0	3	0.5	2.0	0.0	36	5.1	10.0	0.0
Yacht small (<24 m)	206.0	18.7	51.0	2.0	165	27.5	51.0	6.0	68	9.7	18.0	4.0
Sailing dinghy	9.0	0.8	4.0	0.0	7	1.2	4.0	0.0	1	0.1	1.0	0.0
Motor yacht	78.0	7.1	30.0	0.0	72	12.0	30.0	1.0	21	3.0	12.0	0.0
Day boats with cabin	30.0	2.7	11.0	0.0	27	4.5	11.0	0.0	10	1.4	5.0	0.0
Power boat (open)	38.0	3.5	14.0	0.0	30	5.0	14.0	0.0	13	1.9	5.0	0.0
RIB	51.0	4.6	23.0	0.0	44	7.3	23.0	0.0	20	2.9	10.0	0.0
Open boat/tender/inflatable	14.0	1.3	4.0	0.0	11	1.8	4.0	0.0	4	0.6	2.0	0.0
Windsurfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kite surfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	3.0	0.3	2.0	0.0	3	0.5	2.0	0.0	2	0.3	2.0	0.0
Paddle board	6.0	0.5	3.0	0.0	6	1.0	3.0	0.0	0	0.0	0.0	0.0
Ferry	8.0	0.7	4.0	0.0	5	0.8	4.0	0.0	1	0.1	1.0	0.0
Personal Water Craft (PWC) - jet skis etc.	3.0	0.3	1.0	0.0	1	0.2	1.0	0.0	1	0.1	1.0	0.0
Beach recreation	322.0	29.3	52.0	0.0	191	31.8	52.0	19.0	170	24.3	73.0	0.0
Swimming	98.0	8.9	34.0	0.0	42	7.0	16.0	0.0	19	2.7	10.0	0.0
Angling	3.0	0.3	3.0	0.0	3	0.5	3.0	0.0	0	0.0	0.0	0.0
Dog walker	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Bait digger	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Commercial Fishing	1.0	0.1	1.0	0.0	1	0.2	1.0	0.0	2	0.3	1.0	0.0

Vessel Type

As found in 2021 and at other sites, the single vessel category recorded in the highest numbers was small yachts (208, Table 4). Numbers of motorised vessels were relatively evenly divided between power boats, dayboats and RIBs, but a relative increase in the number of motor yachts was observed (Table 4, Fig. 9B), particularly over the weekend of the 6/7th August, which corresponded with the end of Cowes week. Osborne Bay was the only site where a significant number of larger yachts were recorded, with 20 records, accounting for less than 5% of the total, a lower figure than in 2021 when over 10% were large yachts. However, it must be remembered that vessel size is difficult to assess by observers, so there may be operator differences.

A small number of observations noted as being ferries were made during the surveys. As there are no recognised ferry routes close to the Bay, further information revealed that these records were for larger vessels which the surveyor felt were taking a significantly more nearshore route than that typically taken by similar vessels.

As was found in the 2021 surveys, there was a clear pattern of increased vessel traffic for all vessels at weekends rather than on the midweek surveys, with the notable exception of large yachts, perhaps indicating longer periods of time spent at anchor or usage patterns outside of normal weekend-focused recreation (Fig. 9B). This observation was also made in 2021, adding weight to the conclusion.

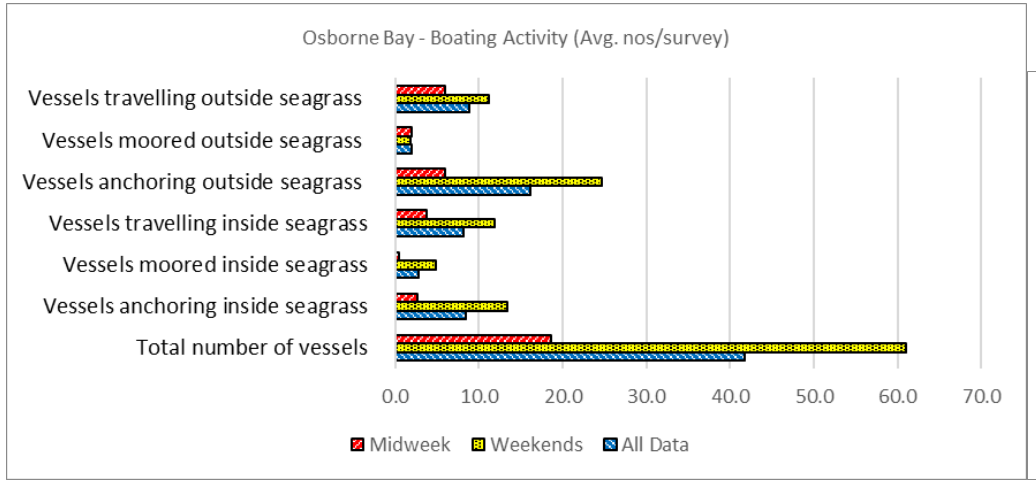
Recreational Activity

As reported in 2021 the pattern of recreational activity on the beach itself distinguished Osborne Bay from the other survey sites. The beach is situated on private property and access is restricted to those visiting Osborne House: landing by craft on the beach is not permitted and actively policed by staff. This does not appear to limit beach recreation itself but appears to restrict the diversity of recreational activities.

Recreation was almost completely restricted to general beach recreation and swimming - 322 and 98 observations respectively (Table 4) - although the prevalence of weekend activity found in 2021 was reduced for beach recreation and reversed for swimming, which was seen more often on midweek surveys (Fig 9C). However, the maximum number of swimmers reported from a single survey (34) was also on a midweek survey, and as the number of surveys was relatively small, the average figure will have been affected.

These were the highest recorded numbers for beach recreation and swimming across the study period, and although beach activity was generally restricted to the upper shore, swimmers regularly walked out considerable distances and would have been walking over the seagrass meadow.

Fig. 9A


Osborne Bay - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Midweek
Weekends
All Data

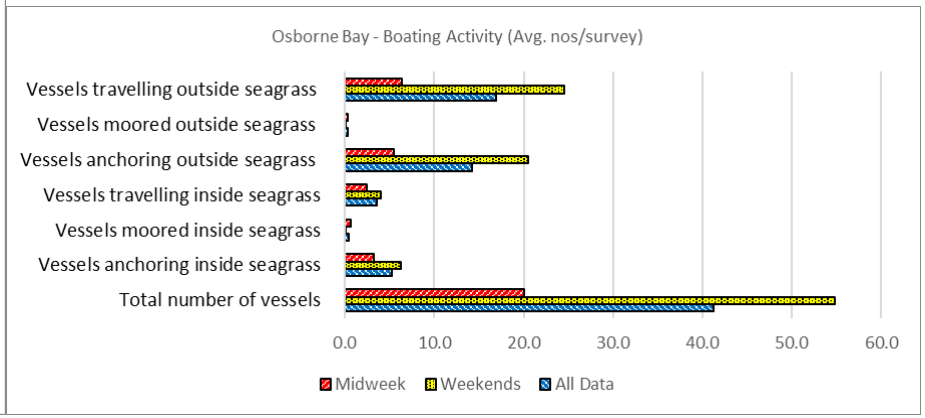
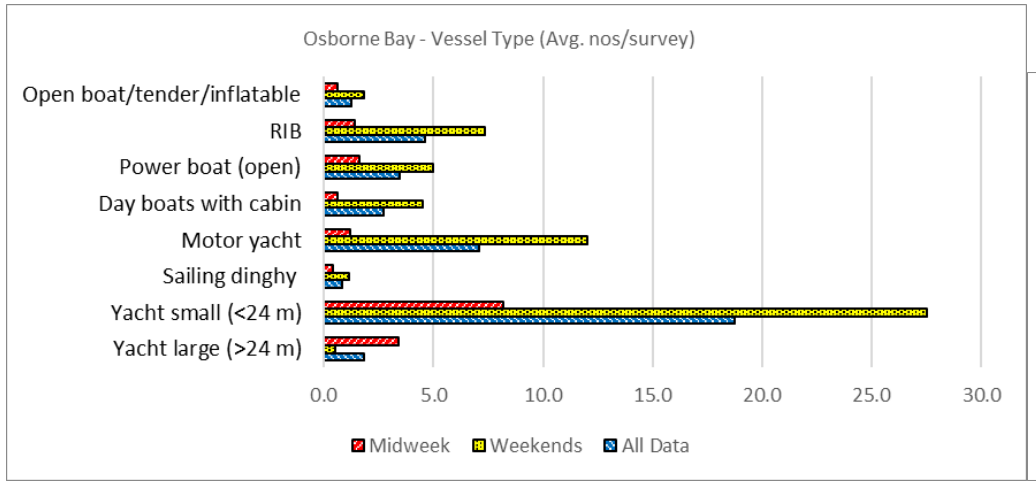

Osborne Bay - Boating Activity (Avg. nos/survey)
Vessels travelling outside seagrass
Vessels moored outside seagrass
Vessels anchoring outside seagrass
Vessels travelling inside seagrass
Vessels moored inside seagrass
Vessels anchoring inside seagrass
Total number of vessels
0.0
10.0
20.0
30.0
40.0
50.0
60.0
Midweek
Weekends
All Data

Fig. 9B


Osborne Bay - Vessel Type (Avg. nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Midweek
Weekends
All Data

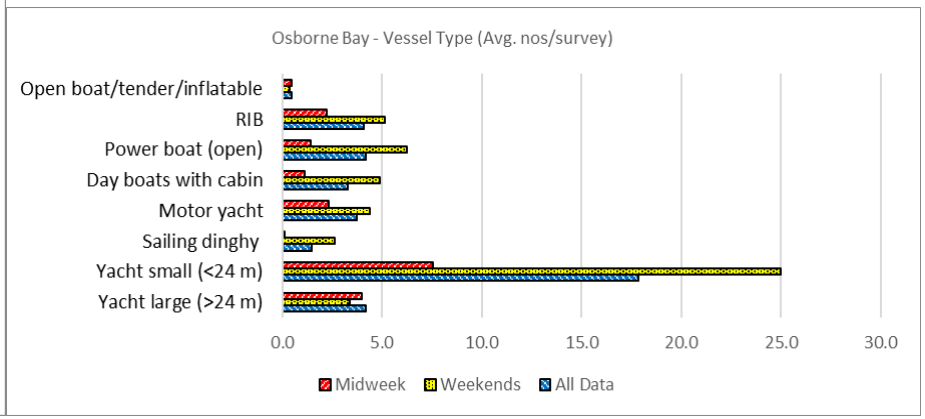

Osborne Bay - Vessel Type (Avg. nos/survey)
Open boat/tender/inflatable
RIB
Power boat (open)
Day boats with cabin
Motor yacht
Sailing dinghy
Yacht small (<24 m)
Yacht large (>24 m)
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Midweek
Weekends
All Data

Fig. 9C

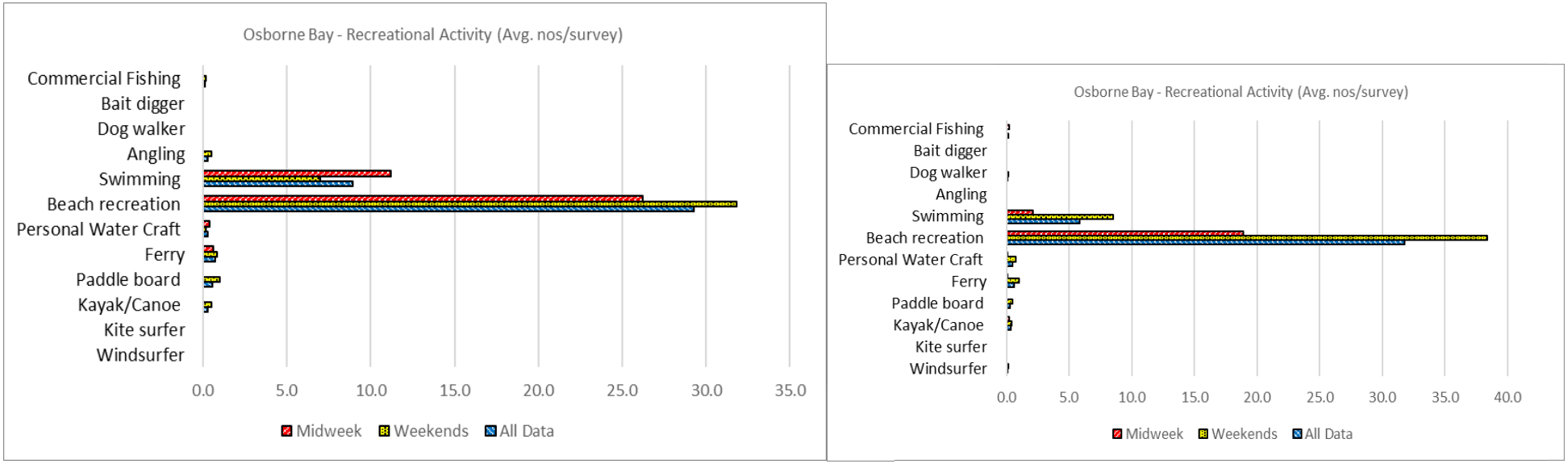


Figure 9. Osborne Bay: Average (mean per survey) data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2021 Graphs inset on the right hand side.

Kings Quay

Fig. 10. Kings Quay.: General view of area (tide out) taken from the survey point

Site Summary (further details in Appendix 1)

Location: 50°44'33.80"N 1°14'16.29"W

This site lies on Palmers Farm, which is private land (owner permission secured), including the foreshore. The survey point is located on the foreshore, above the high-water mark on a shingle bank located on the Eastern side of the entrance to the creek (Fig. 10).

At low water, there is a significant intertidal in front of the survey point, and although the inshore and seaward limits of the seagrass meadow is fairly smoothly delineated, the closest inshore point is at 280 m from the survey point and much of the seaward extent lies beyond the reliable detection distance of the rangefinders used, requiring surveyors to estimate some distances (Fig. 11). The site is known as a secluded location for recreational boaters, but access to the creek and shore landings are actively discouraged by the landowner.

Figure 11. Kings Quay Survey Area Charts showing sight line with relevant distances and seagrass area in green

Table 5. Kings Quay: Summary data (totals, average (mean per survey), maximum and minimum) for survey time and weather (white), Boating Activity (Purple), Vessel Type (Yellow) and Recreational Activity (Green).

KINGS QUAY	ALL SURVEYS n=10				WEEKEND SURVEYS n = 6				MID-WEEK SURVEYS n = 4			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		12:08	13:00	11:00		12:06	12:45	11:00		12:17	13:00	11:35
End time		13:06	14:00	12:00		13:03	13:45	12:00		13:17	14:00	12:35
Wind speed (km/h)		17.0	29.0	6.0		16.3	29.0	6.0		20.0	25.0	15.0
Temperature (°C)		20.8	28.0	14.0		19.6	28.0	14.0		25.5	28.0	23.0
Cloud cover %		34.6	95.0	0.0		33.4	95.0	10.0		39.5	79.0	0.0
Precipitation		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Sea state		1.3	2.0	1.0		1.4	2.0	1.0		1.0	1.0	1.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	111.0	11.1	44.0	0.0	104	13.0	44.0	0.0	7	3.5	6.0	1.0
No. of vessels anchoring inside the seagrass zone	34.0	3.4	21.0	0.0	32	4.0	21.0	0.0	2	1.0	2.0	0.0
No. of vessels moored inside the seagrass zone	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling inside seagrass zone	60.0	6.0	24.0	0.0	55	6.9	24.0	0.0	5	2.5	4.0	1.0
No. of vessels anchoring outside the seagrass zone	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
No. of vessels moored outside the seagrass zone	7.0	0.7	7.0	0.0	7	0.9	7.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling outside the seagrass zone	47.0	4.7	37.0	0.0	46	5.8	37.0	0.0	1	0.5	1.0	0.0
Yacht large (>24 m)	1.0	0.1	1.0	0.0	0	0.0	0.0	0.0	1	0.5	1.0	0.0
Yacht small (<24 m)	41.0	4.1	28.0	0.0	41	5.1	28.0	0.0	0	0.0	0.0	0.0
Sailing dinghy	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Motor yacht	1.0	0.1	1.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Day boats with cabin	15.0	1.5	7.0	0.0	13	1.6	7.0	0.0	2	1.0	2.0	0.0
Power boat (open)	20.0	2.0	8.0	0.0	19	2.4	8.0	0.0	1	0.5	1.0	0.0
RIB	35.0	3.5	15.0	0.0	32	4.0	15.0	0.0	3	1.5	3.0	0.0
Open boat/tender/inflatable	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Windsurfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kite surfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Paddle board	3.0	0.3	3.0	0.0	3	0.4	3.0	0.0	0	0.0	0.0	0.0
Ferry	1.0	0.1	1.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Personal Water Craft (PWC) - jet skis etc.	5.0	0.5	2.0	0.0	5	0.6	2.0	0.0	0	0.0	0.0	0.0
Beach recreation	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Swimming	10.0	1.0	6.0	0.0	10	1.3	6.0	0.0	0	0.0	0.0	0.0
Angling	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Dog walker	1.0	0.1	1.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Bait digger	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Commercial Fishing	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0

Survey Results

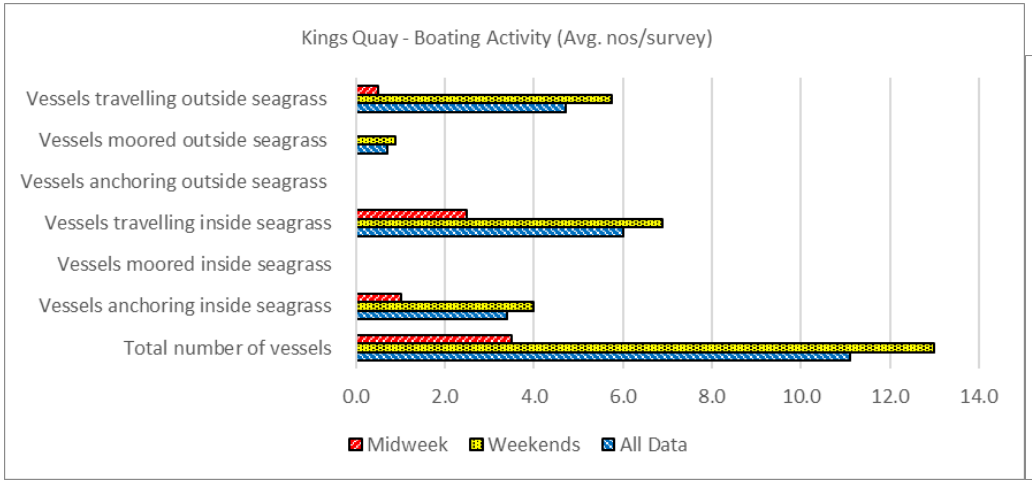
Number of Surveys: 10 (8, weekend, 2 midweek)

Boating Activity:

Summary data is shown in Table 5 and Fig. 12A

This site was only surveyed 10 times during the study period, owing to volunteer availability and the rather difficult access to the site compared with the other sites. There was a relatively low number of 111 boating observations over the survey period, but this figure was higher than the 36 observations in the 2021 surveys. One obvious contributor was the maximum number of 44 observations on the 6th August, corresponding with the end of Cowes week and a sailing club special event. On this one survey, 21 of the 34 observations of vessels anchoring within the seagrass and 24 of the 60 observations of travelling over the seagrass were made.

Fig. 12A



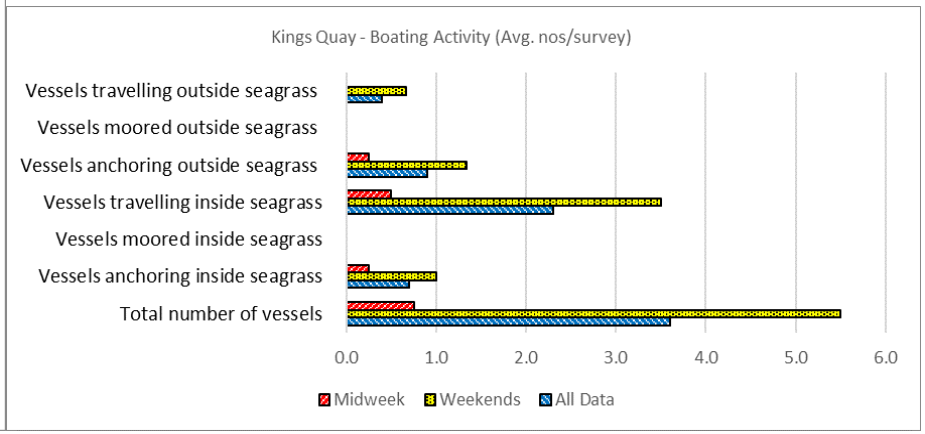
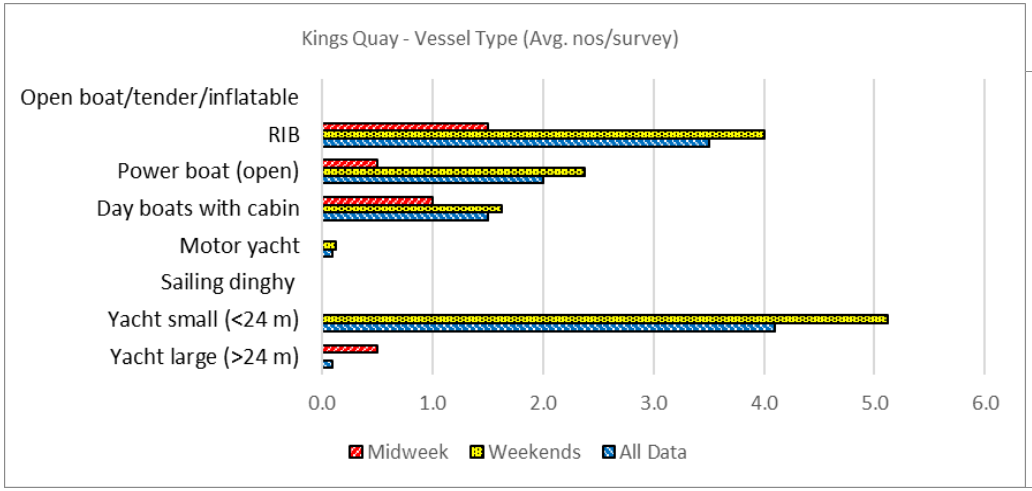


Fig. 12B



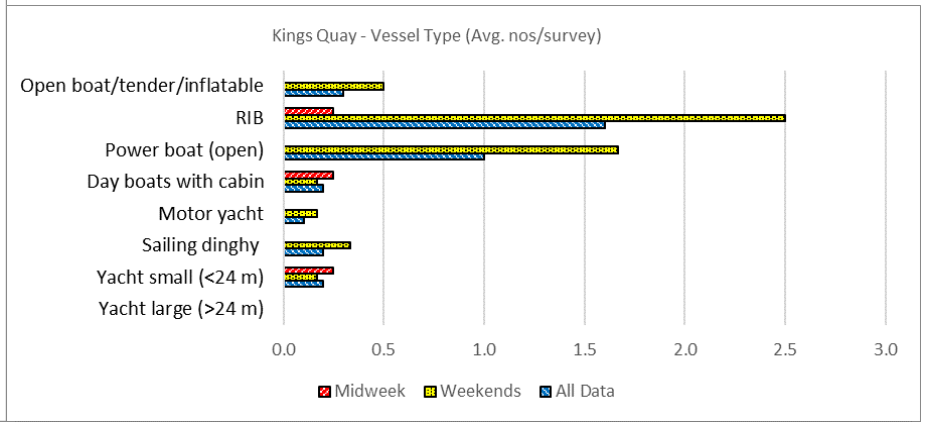


Fig. 12C

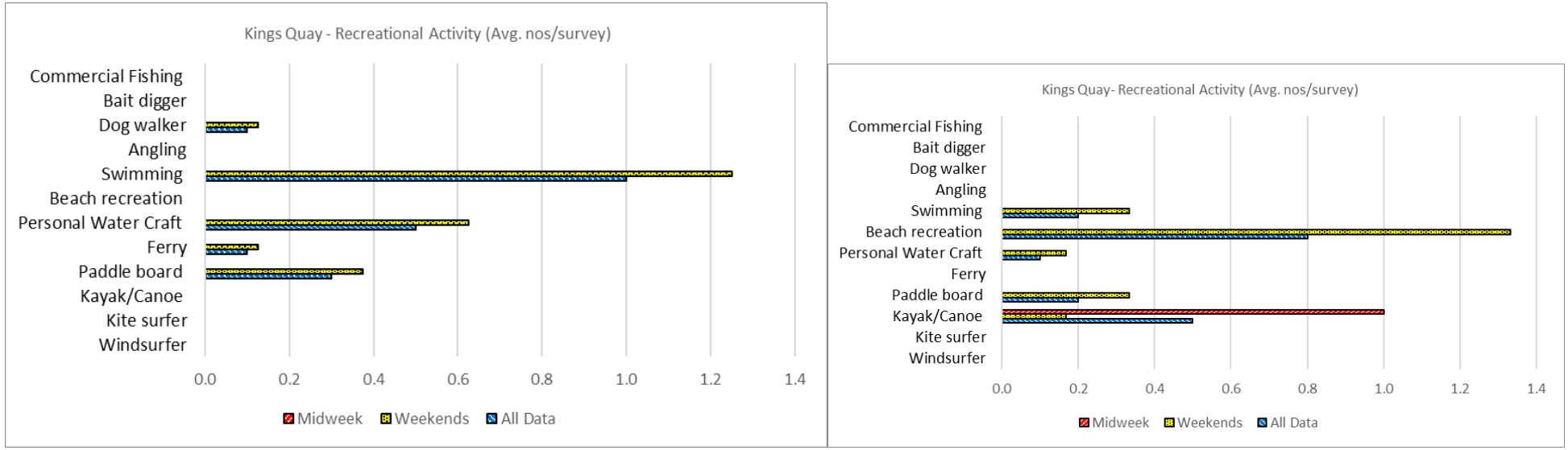


Figure 12. Kings Quay: Average (mean per survey) data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2021 Graphs inset on the right hand side.

These levels of observations within seagrass indicate the importance of peak recreational events and survey timings, and the risk of missing these impacts when surveys cannot be specifically targeted (Table 5, Fig. 12A). As found in 2021, the instances of anchoring within the seagrass, showed a higher average anchoring rate than at Yarmouth West or Bouldnor and one relatively closer to that seen at Osborne Bay.

There was a strong trend showing that the site was visited more frequently at the weekends than during midweek surveys, indicating that the site was primarily of recreational interest (Fig. 12A)

Vessel Type

In contrast to all the other sites surveyed, the clear majority of all vessels visiting Kings Quay were motor vessels (71 of 111 vessels recorded). Of these, the vast majority (55 of 71) were high speed motor vessels, RIBs and powerboats. Some of these high-speed vessels were towing water-skiers and made multiple passes, the implication of which will be discussed later (Table 6).

The pattern of vessel traffic was mostly skewed towards the weekend surveys, with only seven vessels recorded on midweek surveys, although it is important to remember that only two surveys were undertaken midweek. (Table 5, Fig. 12B).

Recreational Activity

Recreational activity on the beach itself at Kings Quay was mostly restricted to individuals that had visited the site from the sea. The beach is situated on private property and access to the beach is strongly discouraged by the landowner.

Recreational activity was also exclusively limited to the weekends and mostly to swimming, use of personal watercraft and paddleboarding, activities which were carried out as secondary activities by people who had visited the location in boats. Beach recreation was not observed in 2022, but this depends on a vessel landing on the shore and not being deterred by the signage and intervention by the land owner (Table 5. Fig. 12C).

Langstone Harbour

Figure 13. Langstone Harbour.: General view of area (tide out) taken from the survey point

Site Summary (further details in Appendix 1)

Location: 50°47'59.53"N 0°59'35.94"W

This site lies on the western side of Hayling Island, looking out eastwards on to the harbour (Fig. 13).

Unlike all the other sites surveyed, where the seagrass meadows were only routinely revealed by spring low tides, the seagrass meadows at Langstone Harbour are primarily intertidal and revealed to some extent on all tidal cycles.

The seagrass meadow at Langstone comprises a rather complex shape, the shoreward edge being 100 – 120 m perpendicular from the survey point, but with a highly irregular seaward extent boundary, requiring detailed use of the rangefinder to determine the location of boating activity relative to the seagrass (Fig. 14)

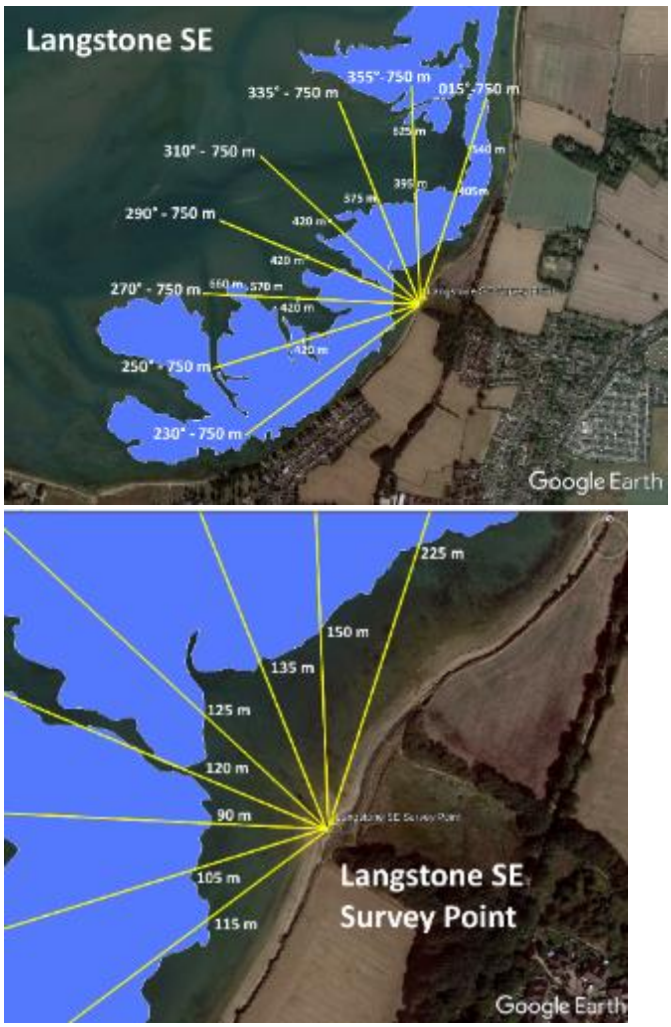


Figure 14. Langstone Harbour Survey Area Charts showing sight lines with relevant distances and seagrass area in blue

Survey Results

Number of Surveys: 18 (9, weekend, 9 midweek)

Boating Activity:

Summary data is shown in Table 6 and Fig. 15A

The most surprising results obtained from the 2022 surveys showed that, over 18 surveys, Langstone Harbour produced only 22 boat records representing an average number of 1.2 per survey (Table 6). These figures are lower than the 273 records and average of 17.1 per survey recorded in 2021.

These results are difficult to explain, although of the 16 surveys conducted in 2021, four surveys accounted for 169 records, so it is possible that particularly busy days associated with special events were not surveyed in 2022. The impact of the relaxation of Covid-19 regulations may also be a factor, leading to more activity close to moorings or local launching points.

One always has to consider surveyor bias for data such as these, but the surveys were carried out by a suite of individuals including some who carried out the 2021 surveys. However, some of the higher numbers reported were recorded by individuals that did not undertake surveys in 2022. Ultimately, it will depend on the results of the next two planned surveys to determine whether the 2021 or 2022 data is anomalous.

Unlike the results for 2021, only mooring was observed inside the seagrass meadow area, a result which is inconsistent with the 2021 results, accounting for lower total numbers, although mooring was recorded more frequently than anchoring in both years (Table 6, Fig 15A). Again, as the presence of moorings cannot be confirmed, these vessels may have been anchoring also and the records are best considered as being direct interactions with the seagrass. However, Langstone harbour is known for a number of drying moorings which may not be permanently placed or occupied, so this result may reflect that, and also different patterns of usage in a location with such large areas of drying intertidal.

The majority of vessel recordings were made during the midweek surveys, although this result was not consistent as more vessels were observed travelling inside the seagrass meadow at weekends. The influence of low numbers may be significant, however.

Vessel Type

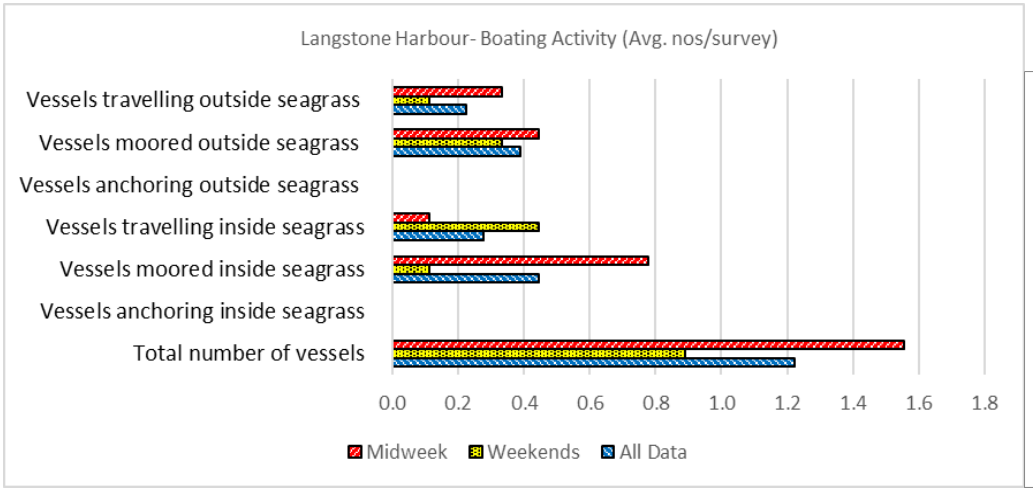
Despite the significant difference in numbers recorded, the single vessel category recorded in the highest numbers was small yachts (13), which surpassed the numbers for all other vessels combined (Table 6). Perhaps an artefact of low overall numbers, it was still notable that the diversity of vessels recorded was lower than in 2021, particularly for motorised vessels with only RIBs being recorded. There were 2 records of large yachts, close to the 10% of the total as recorded in 2021 (Table 6, Fig 15B).

Unlike the results for 2021, the pattern of activity for the most abundant small yachts showed a strong skew towards midweek activity (Fig. 15B). Results for the other vessel classes are likely to be unreliable owing to small sample numbers.

Table 6. Langstone Harbour: Summary data (totals, average (mean per survey), maximum and minimum) for survey time and weather (white), Boating Activity (Purple), Vessel Type (Yellow) and Recreational Activity (Green).

LANGSTONE	ALL SURVEYS n=18				WEEKEND SURVEYS n = 9				MID-WEEK SURVEYS n = 9			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		11:19	12:05	11:00		11:24	13:00	11:00		11:15	12:00	11:00
End time		00:59	00:00	12:00		12:24	14:00	12:00		13:35	00:00	12:00
Wind speed (km/h)		18.9	32.0	7.0		18.9	32.0	7.0		19.0	30.0	7.0
Temperature (°C)		19.2	28.0	11.0		19.6	28.0	12.0		18.9	24.0	11.0
Cloud cover %		47.0	100.0	0.0		42.6	100.0	0.0		51.4	100.0	0.0
Precipitation		3.2	50.0	0.0		0.1	0.6	0.0		7.1	50.0	0.0
Sea state		1.5	3.0	0.0		1.5	2.0	1.0		1.4	3.0	0.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	22.0	1.2	3.0	0.0	8	0.9	4.0	0.0	14	1.6	3.0	0.0
No. of vessels anchoring inside the seagrass zone	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
No. of vessels moored inside the seagrass zone	8.0	0.4	2.0	0.0	1	0.1	1.0	0.0	7	0.8	2.0	0.0
No. of vessels travelling inside seagrass zone	5.0	0.3	1.0	0.0	4	0.4	3.0	0.0	1	0.1	1.0	0.0
No. of vessels anchoring outside the seagrass zone	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
No. of vessels moored outside the seagrass zone	7.0	0.4	3.0	0.0	3	0.3	3.0	0.0	4	0.4	2.0	0.0
No. of vessels travelling outside the seagrass zone	4.0	0.2	1.0	0.0	1	0.1	1.0	0.0	3	0.3	1.0	0.0
Yacht large (>24 m)	2.0	0.1	2.0	0.0	2	0.2	2.0	0.0	0	0.0	0.0	0.0
Yacht small (<24 m)	13.0	0.7	3.0	0.0	2	0.2	2.0	0.0	11	1.2	3.0	0.0
Sailing dinghy	1.0	0.1	0.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Motor yacht	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Day boats with cabin	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Power boat (open)	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
RIB	2.0	0.1	1.0	0.0	1	0.1	1.0	0.0	1	0.1	1.0	0.0
Open boat/tender/inflatable	3.0	0.2	1.0	0.0	1	0.1	1.0	0.0	2	0.2	1.0	0.0
Windsurfer	1.0	0.1	1.0	0.0	0	0.0	0.0	0.0	1	0.1	1.0	0.0
Kite surfer	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	8.0	0.4	6.0	0.0	2	0.2	1.0	0.0	6	0.7	6.0	0.0
Paddle board	5.0	0.3	2.0	0.0	2	0.2	1.0	0.0	3	0.3	2.0	0.0
Ferry	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Personal Water Craft (PWC) - jet skis etc.	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Beach recreation	49.0	2.7	19.0	0.0	46	5.1	19.0	0.0	3	0.3	2.0	0.0
Swimming	2.0	0.1	2.0	0.0	0	0.0	0.0	0.0	2	0.2	2.0	0.0
Angling	4.0	0.2	1.0	0.0	2	0.2	1.0	0.0	2	0.2	2.0	0.0
Dog walker	67.0	3.7	14.0	0.0	49	5.4	14.0	0.0	18	2.0	6.0	0.0
Bait digger	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Commercial Fishing	4.0	0.2	2.0	0.0	2	0.2	2.0	0.0	2	0.2	1.0	0.0

Fig. 15A



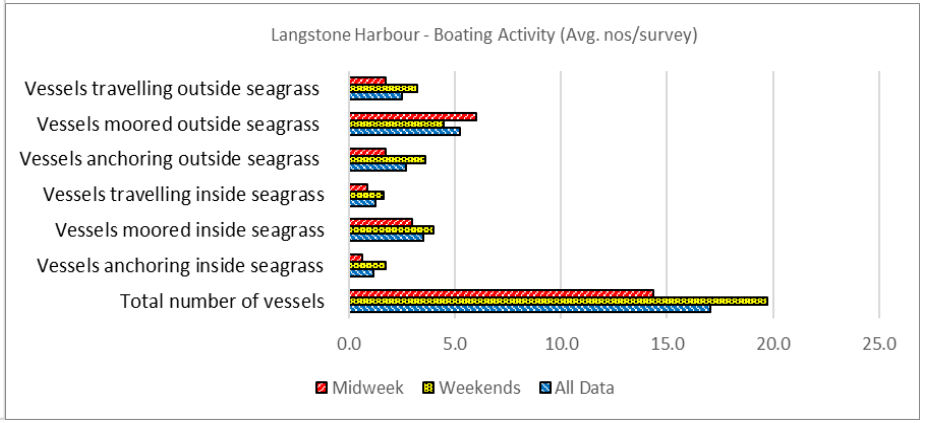
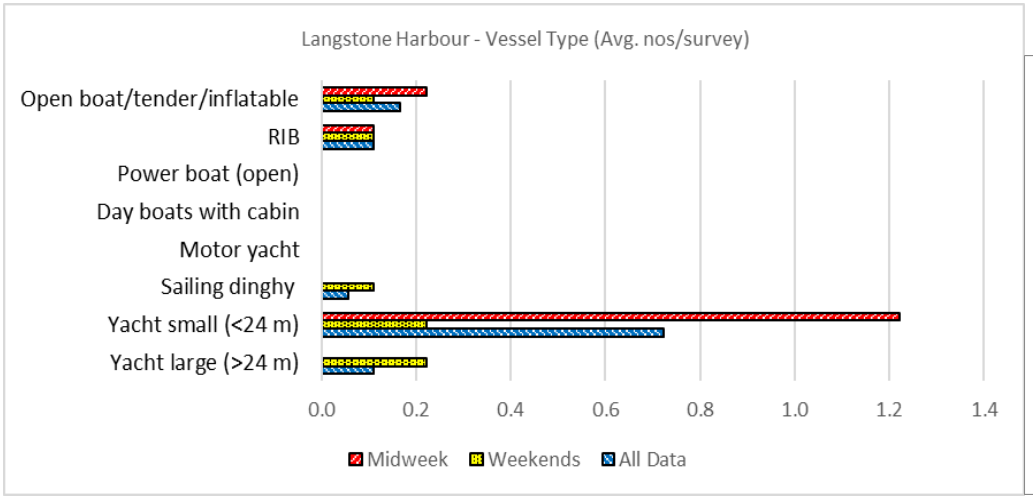


Fig. 15B



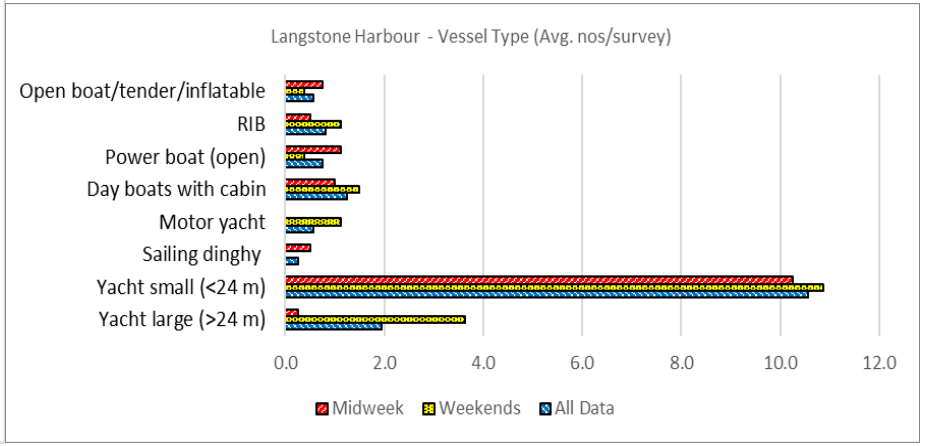


Fig. 15C

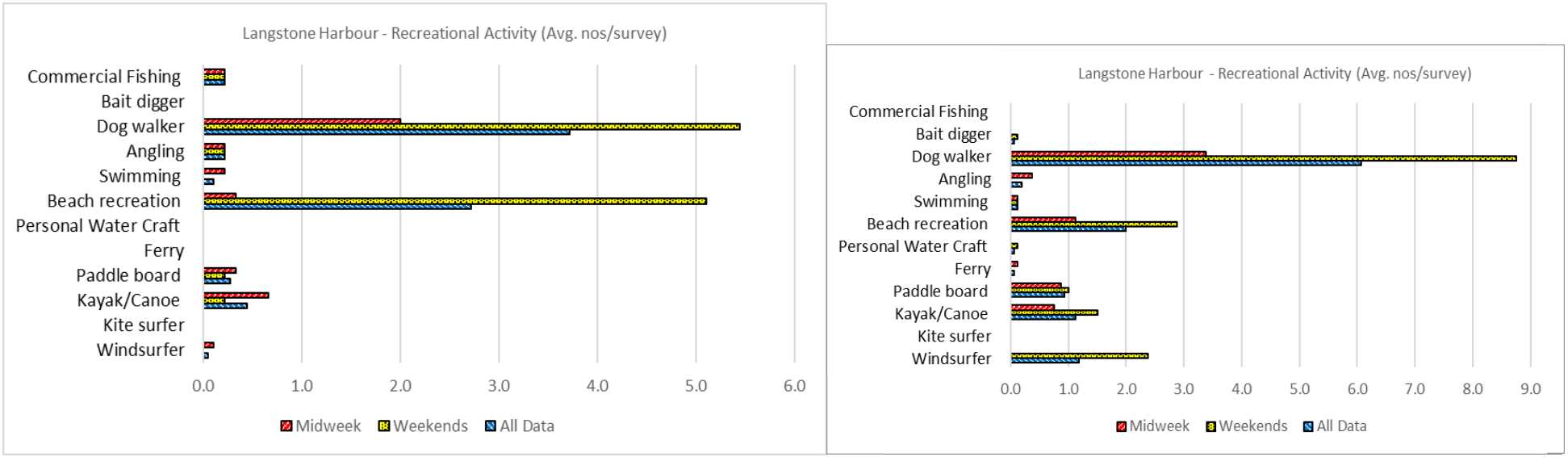


Figure 15. Langstone Harbour: Average (mean per survey) data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2022 data on the left hand side, 2021 data on the right hand side for comparison.

Recreational Activity

Recreational activity at the Langstone Harbour site continued to reflect the difference between this site and many of the sites on the Isle of Wight. Dog walking was by far the most popular activity, followed by beach recreation, which was recorded slightly more often than in 2021. Swimming was, not a very popular activity, perhaps owing to the nature of the pebbly and stony foreshore and muddy intertidal area. The presence of a nearby drainage culvert, relatively high levels of strandline litter and anthropogenic materials on the shore, may also be discouraging for swimmers. There was an appreciable level of paddleboarding and kayak/canoe use across the site, perhaps reflecting the popularity of the harbour for water sports, but windsurfing was not recorded as frequently, as it had been in 2021, with only a single record. With the exception of paddleboarding, all other recreational activity showed a skew towards weekend surveys rather than midweek ones (Table 6, Fig. 15C).

Perhaps the most interesting aspect of the results for recreational activities, given the difference in the records for boating activity, was that they were remarkably similar to the levels and types recorded in the 2021 surveys.

Finally, four instances of commercial fishing were recorded on the mudflats and seagrass, all of which were noted as hand gathering, probably for bivalves. This activity was not recorded in 2021 and represents a potential breach of local fisheries byelaws prohibiting hand gathering in seagrass areas. There are potential public heath issues as well, given the “Category B” status of local shellfish areas.

Regional patterns of activity

Boating Activity

Boating activity across the regional study area can be compared by plotting average numbers per survey (Fig. 16).

As was seen in the results of the 2021 survey, two sites, Osborne Bay and Yarmouth West clearly attracted the most boating activity, with more than twice as many boats visiting as for the next most visited sites. However, the extreme reduction in boating activity recorded from Langstone Harbour, reported above, coupled with increased activity recorded at Kings Quay, has resulted in that site and Bouldnor being the next most visited sites.

The previously reported difference remained between Yarmouth West, located adjacent to a harbour, and Osborne Bay, being primarily a recreational destination. This was reflected in the differences in boat movements and mode of “parking”. Yarmouth West recorded higher numbers of vessels traveling outside the seagrass zones, presumably in transit, and vessels using the adjacent visitor moorings. In contrast, Osborne Bay recorded the highest incidence of boats travelling over and anchoring, both outside and inside the seagrass meadows. The increased activity at Kings Quay was also reflected in increased records of vessels travelling over the seagrass area and Kings Quay recorded an increased level of anchoring activity within the seagrass meadow, second only to Osborne Bay (Fig. 16).

Vessel Type

Vessel type across the regional study area can be compared by plotting average numbers per survey (Fig. 17).

Across the region, small yachts (< 24 m) were the most frequently observed vessel type, particularly at Osborne Bay and at Yarmouth West. However, motor vessels were more finely defined into four categories, rather than two (small and large yachts) and, if the numbers are combined, as was seen in the 2021 surveys, were the most frequently observed vessel type at three sites, Yarmouth West, Bouldnor and Kings Quay and were recorded in approximately the same numbers at Osborne Bay.

Large yachts were recorded from four sites, Bouldnor being the exception, but in very low numbers, which may reflect a combination of different usage patterns and issues of accessibility to inshore waters for vessels with a deeper draft (Fig. 17).

Similarly Sailing dinghies and small open boats/tenders were recorded in relatively low numbers across the surveys. For open boats and tenders, this may simply reflect the level of usage in the Solent, but for dinghies, where numbers are high, it more likely reflects the location of the five survey sites, being distant from or unsuitable for sailing club dinghy use.

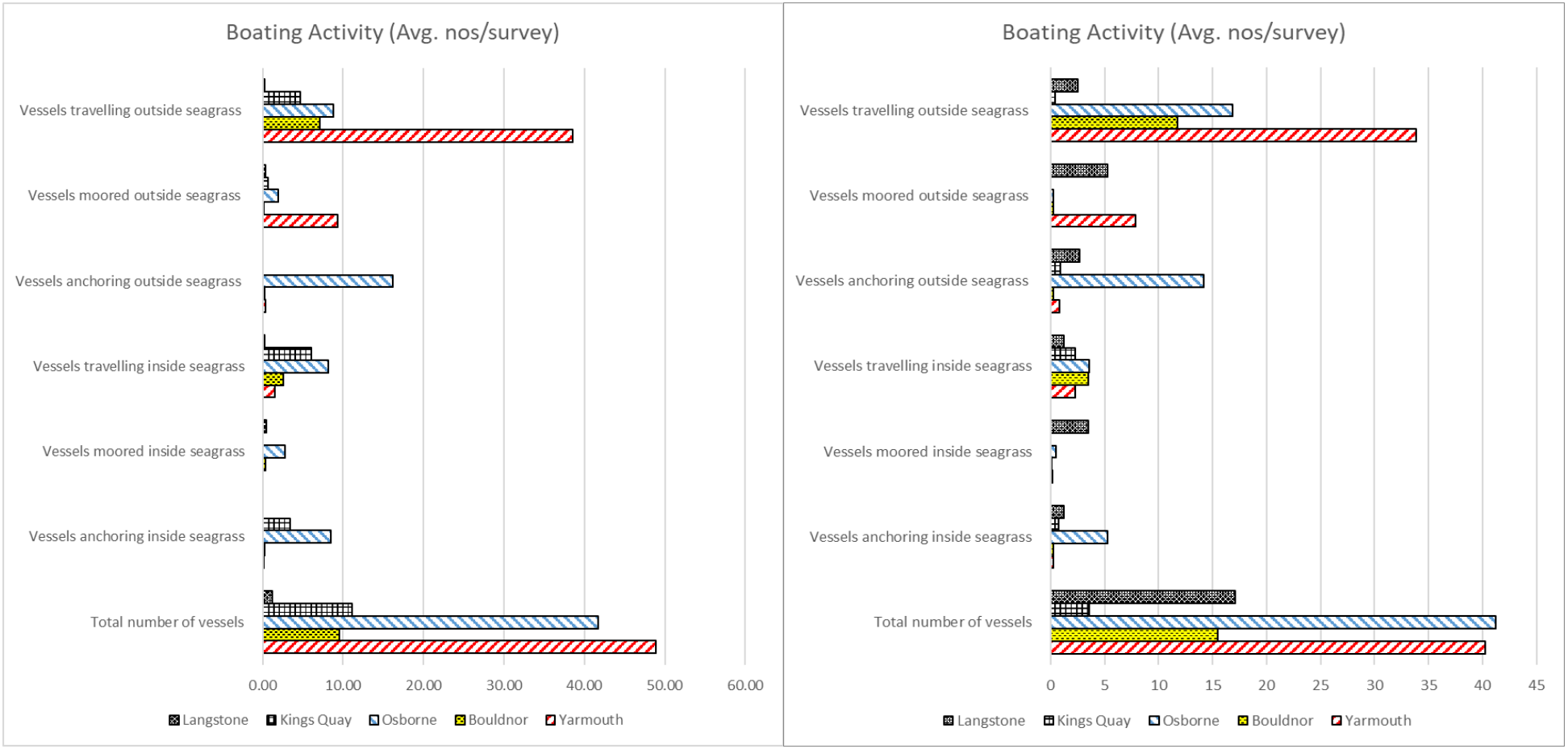


Figure 16. Boating activity across the study region (Average number per survey). 2022 data on the left hand side, 2021 data for comparison on the right hand side.

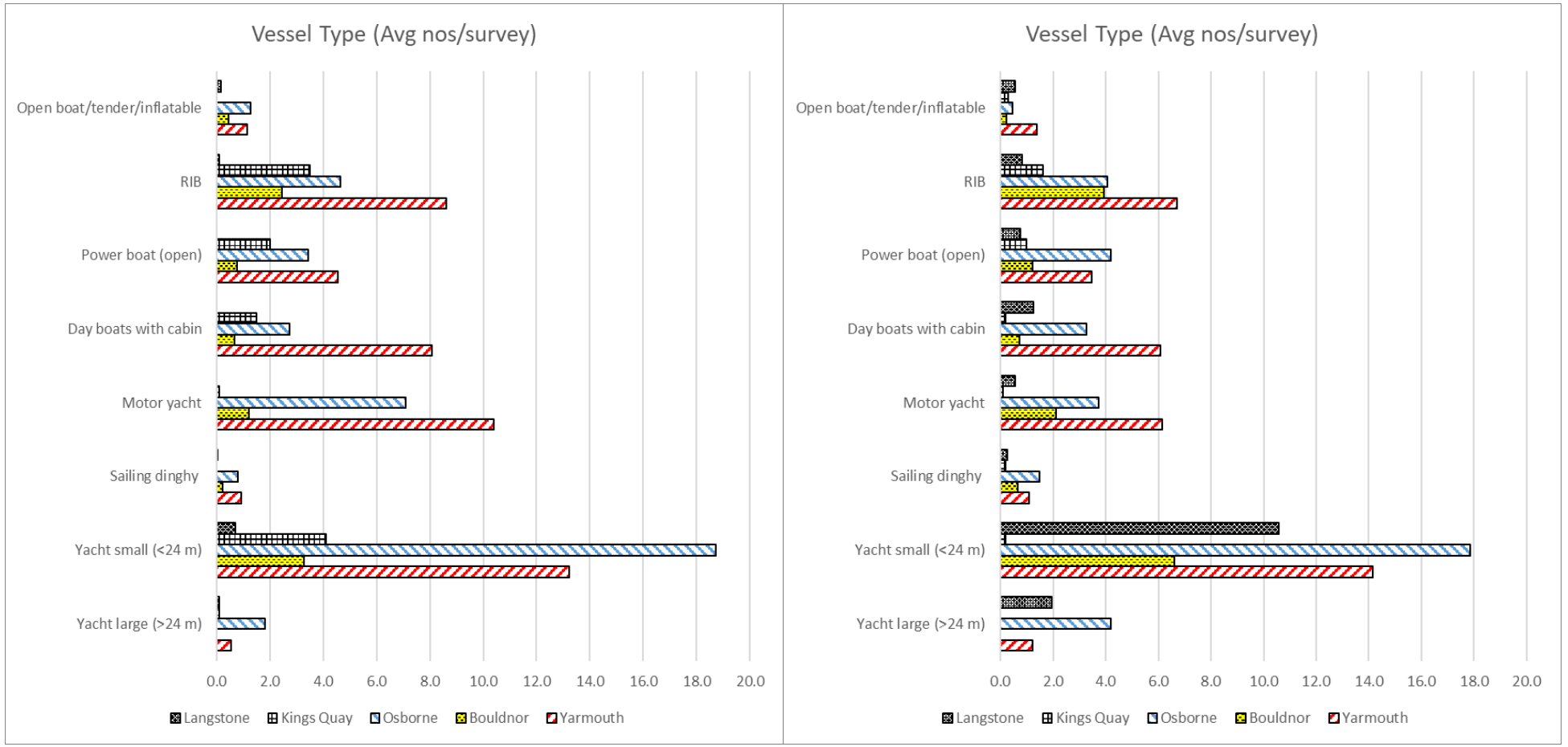


Figure 17. Vessel type recorded across the study region (Average number per survey). 2022 data on the left hand side, 2021 data for comparison on the right hand side.

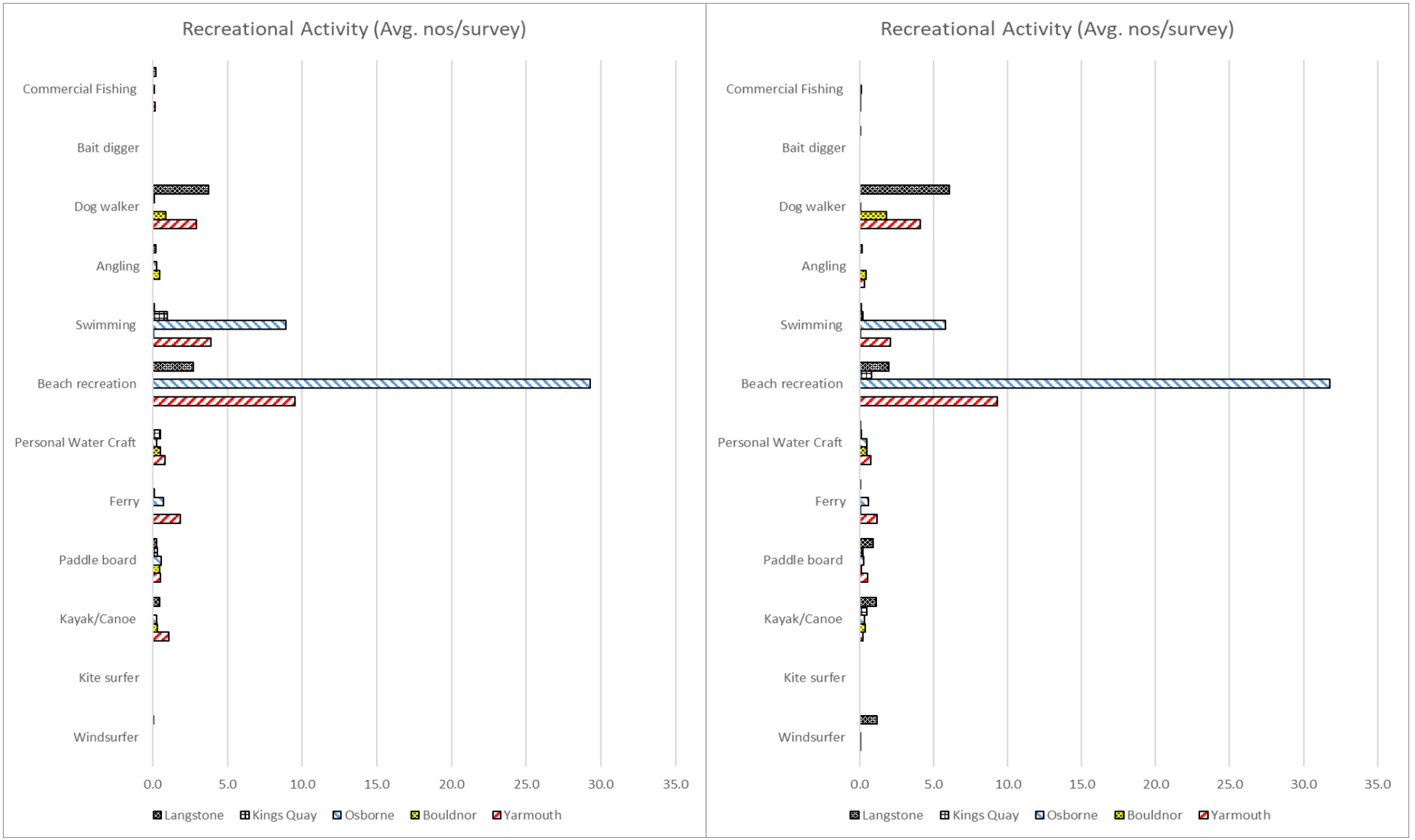


Figure 18. Recreational activity recorded across the study region (Average number per survey). 2022 data on the left hand side, 2021 data for comparison on the right hand side.

Recreational Activity

Recreational activity across the regional study area can be compared by plotting average numbers per survey (Fig. 18).

Patterns of shoreline recreational activity showed the greatest variation across the five survey sites, reflecting differences in the nature of the foreshore and type of access.

General beach recreation was the most frequently observed activity, particularly at Osborne Bay and Yarmouth West, followed by swimming, at the same two locations, and dog walking at Langstone Harbour, Yarmouth West and Bouldnor.

Other recreational activities, such as angling and water sports activities, were recorded across a number of sites, but in relatively low numbers indicating that the type of site, or their location, mostly on the more sheltered North coast of the Isle of Wight, may not be favoured. Bait digging and commercial fishing were recorded only at very low numbers, and kite surfing not at all.

Perhaps the most striking observation on the pattern of recreational activity was the similarity of the results to those obtained in the 2021 surveys. Certainly for the more frequently recorded activities, the pattern of recreational activity has remained very similar, even if boating activity has shown some differences between the two surveys to date, particularly at Langstone Harbour.

General observations

Environmental and other data

During the study, surveyors were asked to record a number of environmental and other data:

- Start time
- End time
- Wind speed (km/h)
- Temperature (°C)
- Wind direction
- Cloud cover %
- Precipitation
- Sea state
- Nearest High Tide (HT) time

These data have not been reported on in detail here, but summary data have been tabulated above.

In general, these data have not been particularly informative as there were no major weather events during the study period which could be used to predict anomalous results. The period August – September 2022, was relatively settled, following a more extreme heat wave in late July, with low rainfall, perhaps rather typical mid to late summer weather. Also, as the sites are all relatively close to each other, extreme differences between sites are relatively unlikely (freak, localised thunderstorms, squalls etc.) and none were observed.

It is more likely that these data will become useful after surveys in subsequent years, in the event that significant differences between weather patterns between years could explain differences in overall results.

Parameters recorded

In general, all the designated parameters have yielded useful data. Despite some producing little or no data in this survey, there may be annual differences and trends which could be detected in the future. For example, very little commercial fishing activity was recorded, but different fisheries are always changing in level of exploitation and new fisheries may develop. For example, a relatively new scallop fishery is developing in the Solent and hand gathering of scallops has been observed on the Isle of Wight. This is a dredge fishery, potentially putting seagrass meadows at risk.

There continues to be some uncertainty about records of mooring and anchoring, particularly as it has not been possibly to verify the presence and location of all moorings. It is also possible that some boat owners are using buoyed anchors which may add uncertainty to observations. However, as both anchoring and mooring are known to have negative impacts on seagrass, this uncertainty is perhaps less important as all records may be treated as direct interactions with the seagrass.

However, it may be useful to consider some parameters which were not recorded fully, or at all.

Once again, water-skiing was observed during surveys, at Osborne Bay and particularly at Kings Quay. On these occasions, a typical observation would record a single vessel (the towing vessel) and single activity records e.g. travelling outside or inside the seagrass. However, the current recording scheme does not allow for the multiple-event nature of activities like water-skiing. In one instance at Kings Quay, the observer noted a single vessel complete nine high speed towing passes across the seagrass meadow during a single hour-long observation. This compares to a similar observation of eleven passes at the same site in 2021.

Water-ski boats are, necessarily, high powered vessels and unlike the passage of other motor vessels, which may be slowing down to find anchoring, mooring or landing opportunities, tend to travel across seagrass meadows at full speed. Depending on tidal

state, this quite possibly means that a significant amount of energy is transferred to the seabed in the engine wake.

Wildlife observations were not strictly part of this survey, but surveyors have noted several sightings, including the repeated presence of a seal at the Kings Quay site. Specific instances of disturbance were not recorded in this survey, as had been the case in 2021, but it is clear that interactions between human activity and wildlife does occur.

A number of ad hoc bird sightings were noted including egret, buzzard, curlew, heron, cormorant and oystercatchers. An Asian hornet was also noted at Kings Quay.

Discussion and conclusions

These surveys have provided a useful insight into patterns of recreational activity across the Solent, and interactions with seagrass meadow habitats. The data will be valuable in

assessing future changes in usage patterns, as a result of engagement activities being undertaken as part of the LIFE Recreation ReMEDIES project and also if management measures are introduced into any areas.

The five survey sites have continued to support different types and levels of recreational activity, which validates the site-based approach, and suggests that any management measures should also be introduced guided by site-specific considerations.

The results from the 2022 surveys strongly support the conclusions of the 2021 survey, that, based on observations of direct interactions between boating activity (anchoring) and seagrass meadows, one site, Osborne Bay continues to stand out as a cause for concern where further engagement with the boating community, coupled with the introduction of effective management measures could result in a reduction in impacts.

This observation was further supported by the fact that although similarly high levels of recreational boating activity were again recorded at Yarmouth West, lower numbers of potentially damaging anchoring events were recorded, lower even than in the 2021 surveys. At this location, the presence of a series of visitor buoys situated outside the seagrass meadow, acts as an effective management measure.

The current surveys have strengthened evidence that anchoring impact may be occurring at Kings Quay, perhaps concentrated around periods of peak activity (Cowes Week) or special events. Along with the potential impact of multiple high-speed water-skiing passes, it is possible that the level of anchoring recorded in 2021 could represent an underestimate of total annual disturbance, indicating that there may be significant impacts in an otherwise relatively undisturbed site.

In 2021, the surveys indicated potential interactions with the seagrass meadows at Langstone Harbour, and that the role of mooring should be investigated further, as it appeared to be more significant than anchoring impacts. Although instances of mooring were recorded in the 2022 survey, the reduction in overall activity suggests that further surveys are required before meaningful conclusions can be drawn.

Further surveys will be carried out in 2023 and 2024, which will provide information both on inter-annual variability, and on the effectiveness of any management measures introduced through the ReMEDIES project.

Before this survey is repeated in 2023, consideration will be given to revising survey methods for Langstone and briefing surveyors on the differences in results obtained so far. The potential confusion which may have arisen in the recording of anchoring vs mooring events may be resolved, at least substantially so, by a more accurate survey and confirmation of existing moorings prior to the surveys being undertaken. Full and refresher training will be provided for all new and established surveyors.

Some volunteers were keen to record information on wildlife observations. The value of these observations is essentially anecdotal, but surveyors will not be dissuaded from

recording observations as long as the core survey is not impacted. The different levels of experience and ability to recognise and record wildlife within the volunteer base conducting the surveys would require additional training in order to reliably introduce wildlife observations.

Those volunteers that took part in the surveys were generally positive and keen to continue to be involved with this aspect of the ReMEDIES project. It is hoped that additional volunteers will be recruited in 2023, in order to increase the number of surveys completed.

It is hoped that the expanded volunteer base developed through the HIWWT Solent Seagrass Restoration Project and Solent Seascape project, will provide a larger pool of potential surveyors.

Key conclusions

- Overall, the results of the 2022 surveys, strongly support the key conclusions of the 2021 surveys.
- Patterns of recreational intensity and usage vary considerably between the five survey sites.
- Some changes in activity patterns may be linked to the removal of Covid-19 restrictions and the return to more normal activity patterns.
- Recreational Boating activity was highest at Osborne Bay and Yarmouth West - a result which may become clearer in the light of subsequent surveys.
- Anchoring/mooring pressure was observed at all sites.
- The highest levels of anchoring pressure compared to other sites was observed at Osborne Bay, suggesting a clear case for further engagement and/or management.
- The importance of capturing additional recreational activity generated through special events (e.g. Cowes Week) was demonstrated.
- Kings Quay is highlighted as an area of potential impacts on seagrass, not completely identified in the 2021 surveys and consideration of this will be taken in future surveys.
- The presence of visitor moorings at Yarmouth west appears to reduce anchoring within the adjacent seagrass.
- Levels of anchoring/mooring at Langstone Harbour will require further consideration for engagement and/or management.
- Small sailing yachts were the most recorded single vessel class, although combined motor vessel class activity was higher at some sites.
- Beach recreation, dog walking and swimming were the most frequently observed shoreline recreational activities, although there were significant differences between sites.

Appendices

Appendix 1

VOLUNTEER SURVEY INSTRUCTION MANUAL

LIFE Recreation ReMEDIES

Solent Recreational Activity Survey 2021

VOLUNTEER SURVEY

INSTRUCTION MANUAL

August 2021

Dr Tim Ferrero

Senior Specialist – Marine Conservation

Tim.Ferrero@hiwwt.org.uk

07825 201443

Hampshire & Isle of Wight Wildlife Trust

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Introduction:

This guide describes the methodology for completing observational surveys of recreational activity for the **EU LIFE Recreation ReMEDIES** Project.

You can find more information about the project here: https://saveourseabed.co.uk/the-project/

Aims:

The aims of this survey are to establish a baseline of recreational activity in the Solent Region, with particular focus on the Solent's Special Areas of Conservation and the habitats and species they support, and on potential impacts on seagrass meadows.

Brief Description:

Surveyors will spend one hour observing a predetermined area of intertidal and shallow subtidal waters and note down the occurrence and frequency of a number of recreational activities such as boat movements, anchoring and mooring, and activities like bait digging and dog walking.

Working close to the Shore.

These surveys are designed to be undertaken either from above the high-water mark, or

Surveys, in most instances, may be undertaken by a single person, but it is important to follow lone working procedures and have a "buddy" who know where you are and will be expecting you to check in. However, the survey tasks would be easier for two people to undertake together, and we encourage people to work in pairs. If any volunteer is uncomfortable about working alone, there is no pressure to do so, and we will try to find a suitable working partner.

IMPORTANT: It is essential that all volunteers read the "Lone Working Policy" and the "Activity" and "Site" Risk assessments before undertaking any survey work and confirm that they have done so, by e-mail to tim.ferrero@hiwwt.org.uk

SURVEY KIT:

- Zip Wallet containing blank survey forms.
- Zip Wallet for completed survey forms
- 1 x Laminated sheet with project and contact information
- 1 x clipboard folder containing:
  - 1 x Laminated site chart
  - 1 x Laminated Sea state guide
- Pencil case case containing:
  - 2 x Plastic propelling pencils with erasers
  - 1 x Compass + supplied instructions
  - 1 x lens cleaning cloth for rangefinder
  - Instruction manual for Rangefinder
  - 1 x Charging cable for Rangefinder
- 1 x Rangefinder and case
- 1 x bottle of Hand Sanitizer
- 1 x pack of anti-viral wet wipes
- 1 x plastic "B&M" carrier bag with bulldog clip

Methods:

Visual surveys of **one hour duration** between the hours of 11:00 – 14:00 will be carried out between **31st July and 31st August** at a series of five predetermined locations: four on the Isle of Wight and one in Hampshire.

At least **two surveys per week** should be undertaken at each site, one at the weekend and one midweek on Wednesday.

Additional surveys may be carried out if possible.

Survey Area:

The area that is visible/observation area is charted on a map. Field trials have shown that the Rangefinders supplied are relatively good for obtaining fixes from up to 750 m distance, but beyond that, it becomes increasing difficult to obtain a fix. Therefore, the practical limit on the charts is set at 750 m.

Data recording:

Please take a photograph of the site at the beginning and end of the Survey

Data will be recorded on the record sheets found in the equipment bags. A copy of the form is included below:

Data to Record:

Surveyor: Lead volunteer on the day (i.e. the person to contact)

Date: The date of the Survey

Times: The Start Time and End Time of the observation period

Weather:

Values for **Wind Speed**, **Temperature**, **Wind Direction**, **Cloud Cover** and **Precipitation** should be taken from https://www.accuweather.com

- For Yarmouth and Bouldnor (Yarmouth): https://www.accuweather.com/en/gb/yarmouth/po41-0/weather-forecast/328840
- For Osborne Bay and Kings Quay (Cowes): https://www.accuweather.com/en/gb/yarmouth/po41-0/weather-forecast/323626
- For Langstone (South Hayling): https://www.accuweather.com/en/gb/south-hayling/po11-9/weather-forecast/328405

You will need to click on the "More Details" link to access all the current data.

Sea state: is assessed from the WDCS Shorewatch Sea State Guide included in the survey kit – also included at the end of this Guide.

Nearest HT Time: This information can be found on the following BBC sites:

- Yarmouth W. and Bouldnor: https://www.bbc.co.uk/weather/coast-and-sea/tide-tables/8/45
- Osborne Bay and Kings Quay: https://www.bbc.co.uk/weather/coast-and-sea/tide-tables/8/60
- Langstone SE: https://www.bbc.co.uk/weather/coast-and-sea/tide-tables/8/66

***** NOTE: The Colour Highlights relate to the data entry areas on the example form below *****

Total Number of Vessels: This includes any recreational vessel **that has the ability to anchor** – so, for example, would exclude kayaks, paddle boards etc. Recreational vessels used for commercial recreational purposes e.g. dive boats, tour boats, angling charters should also be included.

Number of vessels travelling/transiting through the survey area: inside and outside the seagrass zone. Note, that a single vessel may transit the seagrass and then anchor close to shore but outside the seagrass. This would have to be recorded as two separate "events" on the data sheet. If a vessel anchors inside the seagrass, the fact it has transited the seagrass is already recorded.

Number of vessels anchoring inside and outside seagrass zone: An anchored vessel will be stationary, and you should be able to see an anchor rope/chain coming from the bows (occasionally bows and stern) of the vessel. You may also observe the vessel deploying/retrieving the anchor on arrival/departure to confirm.

Number of vessels moored inside and outside the seagrass zone: Moored vessels are distinguished from anchored vessels by the presence of a mooring buoy at the surface. You may also be able to see the vessel pick up or leave a mooring on arrival/departure to confirm.

Type of Recreational Craft

As well as the "Vessels" data, volunteers should record the type of craft and also other types of recreational activity.

Craft included in "Vessels" Data:

- Yachts
- Motor Yachts
- Day Boats with Cabin
- Power Boats
- RIBs
- Open boats/Tenders/Inflatables
- Dinghies.

Craft Recorded but not included in the "Vessels" Data:

- Windsurfers
- Kite Surfers
- Kayak/Canoe
- Paddle Board
- Personal Water Craft (PWC) – jets skis etc.

Ferry movements may also be recorded (Yarmouth) but are also recorded by Yarmouth Harbour, so not essential.

Other Recreational Activities

- Beach Recreation
- Swimming

- Angling
- Dog Walkers
- Bait Diggers

There is also a box for recording any commercial fishing activity

Other observations can be made in the “Notes” section of the form e.g. sailing or special local events that would impact numbers of boaters and visitors, holiday days, where boats are coming from (e.g. local or travelled further…if known) etc.

Examples:

1) A SMALL YACHT ANCHORS OUTSIDE THE SEAGRASS AREA

This is a **Vessel** so mark one tally mark in **Total Number of Vessels**, one tally mark in **Number of vessels anchoring outside seagrass zone** and one tally mark in Yacht Small (< 24 m).

2) A MOTOR YACHT ANCHORS INSIDE THE SEAGRASS AREA

This is a **Vessel** so mark one tally mark in **Total Number of Vessels**, one tally mark in **Number of vessels anchoring inside seagrass zone** and one tally mark in Motor Yacht.

[*Note: In examples 1 and 2, the fact that the vessels have also travelled outside and inside the seagrass is implied and not recorded*]

3) A RIB TRAVELS ACROSS THE SEAGRASS AND ANCHORS CLOSE TO SHORE, BUT OUTSIDE THE SEAGRASS

This is a **Vessel** so mark one tally mark in **Total Number of Vessels**, one tally mark in **Number of vessels anchoring outside seagrass zone** **and** one tally mark in **Number of vessels travelling inside seagrass zone**, finally, add one tally mark in RIB.

4) A SAILING DINGHY SAILS ACROSS THE SEAGRASS BUT DOES NOT STOP AND DEPARTS

This is a **Vessel** so mark one tally mark in **Total Number of Vessels**, one tally mark in **Number of vessels travelling inside side seagrass zone** and one tally mark in SAILING DINGHY.

5) A PADDLE BOARDER TRAVELS ACROSS THE SEAGRASS ZONE

This is **not a Vessel** so simply mark one tally mark in Paddle boards.

Example RECORDING FORM

LIFE Recreation ReMEDIES

Hampshire & Isle of Wight Wildlife Trust

Solent Marine Recreational Activity Survey 2021: Recording Sheet

Surveyor:	Date (dd/mm/yyyy) ___ / ___ / ___	Location:	Start Time: ___ : ___	End Time: ___ : ___
Wind Speed: (km/h)	Temperature: (°C)	Wind Direction	Cloud cover %	
Precipitation	Sea State	Nearest HT Time:		

Total Number of Vessels			
No. of vessels **anchoring** inside the seagrass Zone		No. of vessels **anchoring** outside the Seagrass zone	
Np. of Vessels **Moored** inside the seagrass zone		No. of vessels **Moored** outside the seagrass zone	
No. of vessels **travelling** inside seagrass zone		No. of Vessels **travelling** outside seagrass zone	

Yacht Large (> 24 m)		Motor yachts	
Yacht small (< 24 m)		Day boat with Cabin	
Sailing Dinghy		Power boats (open)	
Windsurfers		RIB	
Kite Surfer		Open boat/ tender/inflatable	
Kayak/canoe		PWC-jet ski etc	
Paddle boards		Ferry	

Beach Recreation		Dog Walkers	
Swimming		Bait Diggers	
Angling			

NOTES:

Using the rangefinder and compass to determine vessel position

A key aspect of the survey is to record whether recreational vessels are operating inside or outside of seagrass bed areas.

To do this from a single observation point, volunteers will use a golf rangefinder to determine **distance** and a compass to determine **bearing** of a vessel.

The volunteer can then refer to the individual **Site Survey Charts** in order to assess the likely position of a vessel

Using the Rangefinder to determine distance:

The supplied rangefinders have been configured to record in metres and the correct mode has been selected (MODE 1).

Therefore, **volunteers do not need to adjust any "MODE" settings and the rangefinder can be operated using just the power button.**

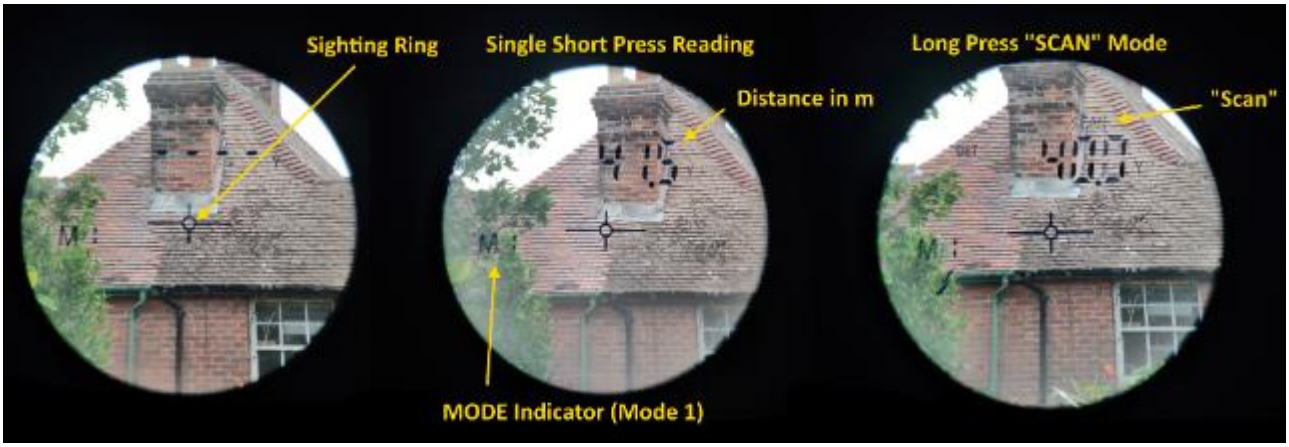
- Look through the eyepiece and short press the POWER BUTTON to switch the unit on. NOTE – The Rangefinder switches off after 10 seconds.
- Use the eyepiece focusing ring to bring the rangefinder sighting ring and display in to focus
- With the Rangefinder switched on, sight the object whose distance you want to measure accurately within the sighting ring – Steady hands required for distant objects!
- Short press the POWER BUTTON again to take a reading
- You may need several attempts to get a reading
- You can also long press the POWER BUTTON which can help with getting a reading as this mode causes the unit to give a continuous, dynamic reading.
- It can be fiddly, particularly for distant or small targets, but good results are fairly easy up to a range of 750 m
- If you simply cannot get a reading, try something bigger/closer and make a visual estimate

IMPORTANT:

Make sure your hands, or anything else, are not obscuring the two lenses at the front of the rangefinder.

Do not look into the rangefinder as it uses a laser to measure distance

Rangefinder Details



Viewfinder Information during measurement

Using the Compass to determine distance:

NOTE: If your mobile phone has a magnetometer fitted, you can download a simple compass app, which you may find easier to use

The supplied orienteering/map reading compass may be used to determine the bearing of a vessel.

Please refer to the diagram below:

To determine the bearing of a vessel:

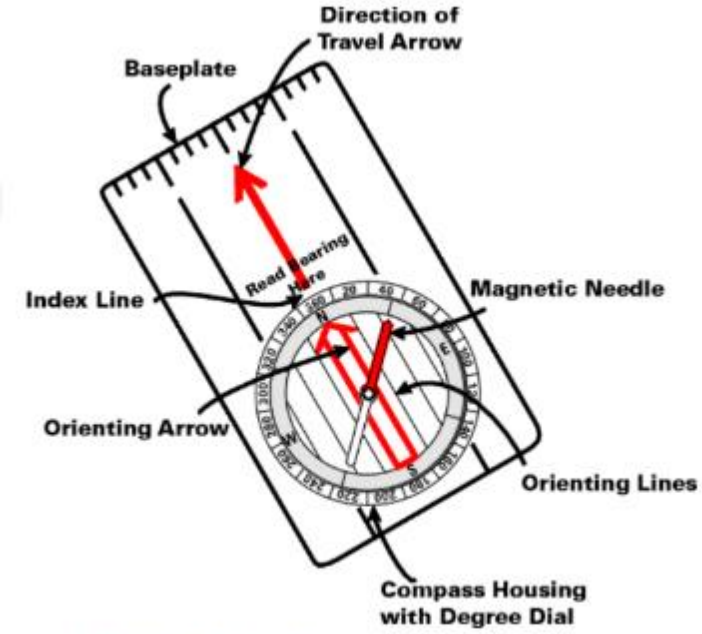
- Point the Direction of Travel Arrow at the vessel
- Rotate the Compass Housing so that the Orienting arrow aligns with the North (red) end of the Magnetic Needle

- Read the Bearing from the Degree Dial at the Index Line

The Site Survey Charts have specific bearings marked on them which you may want to sight along. In this case…

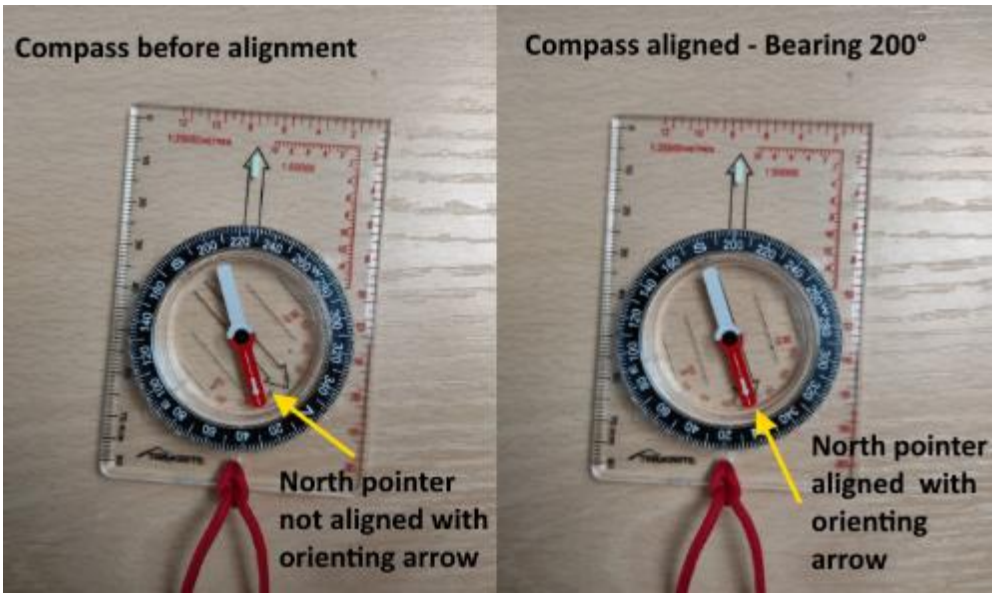
To look along a specific bearing:

- Rotate the Compass Housing to set the desired Bearing on the Degree Dial at the Index Line
- Rotate your body until the Orienting Arrow aligns with the North (red) end of the Magnetic Needle
- Look along the Direction of Travel Arrow



1. Orienteering compass (left) and thumb variant (right) (sources: www.princeton.edu/~oa/manual/images/compass.gif; http://www.williams.edu/Biology/Faculty_Staff/hwilliams/Orienteering/images/igthumb.gif)

The parts of an orienteering/map reading compass



Example of a correctly aligned compass bearing

When you finish the survey

Please:

- Make sure all form details have been filled in correctly.
- Take a photograph of your recording sheet and send it to: tim.ferrero@hiwwt.org.uk along with the two survey site photographs.
- Put your completed recording sheet in the labelled zip wallet
- Use one of the antiseptic wipes to wipe down any equipment you have used and pack everything back in to the “B&M Bag
- Return the bag to the storage location
- Remember to use hand sanitizer to reduce risk of any virus transmission.

Important:

If you have any issues during a survey,

You can call Tim Ferrero on 07825 201443

Individual survey site details

Yarmouth West

This site is in a public location and equipment will be picked up from Yarmouth Harbour Masters (https://www.yarmouth-harbour.co.uk/).

If working alone, use the “buddy” system. Let someone know where you going, and when you are expecting to be back. If on site for prolonged periods, make contact no longer than every hour. The buddy must reply to acknowledge receipt. Make sure buddy has appropriate phone numbers should an incident occur. Take a charged mobile phone. Call 999 or 112 if accident/incident should occur (no signal needed).

Access:

The Yarmouth Survey Point lies on the shore adjacent to an extension of the coastal path. The site is a public area used for walking, fishing etc. Part of the beach is buoyed off for swimming.

Parking: the best place to park is the Yarmouth Car park, situated on River Road/A3054 to the East of the Yar Bridge.

Google Maps: https://goo.gl/maps/zayF2f6qCv9o85DM9

What 3 Words: ///operation.villager.riding

There is a short walk from the car park to the survey point. Care should be taken to walk on the left-hand side of the road approaching the survey point as there is no pavement on the right, and *vice versa* on return. Care should be taken when crossing the road as it can be busy.

Survey point:

The Yarmouth W. survey point lies on the upper shore, above high water. The coastal path lies alongside the shore but there is a low wall retaining the beach shingle which could be hazardous to climb. Safe entry to the shore lies at the eastern end of the beach and surveyors should use this point and walk back to the survey point.

The Survey point lies next to a wooden post, close to two signs and just to the West of the third groyne from the West end of the beach. Green posts with triangular markers indicate the seaward extent of the groynes and are useful for location.

Survey Point Details

50°42'20.51"N 1°30'29.44"W

https://goo.gl/maps/zB96V9efKTqETtjSA

///organist.adapt.daring]

Yarmouth W General view from Survey Point

Yarmouth Survey Point. Note wooden post and two signs.

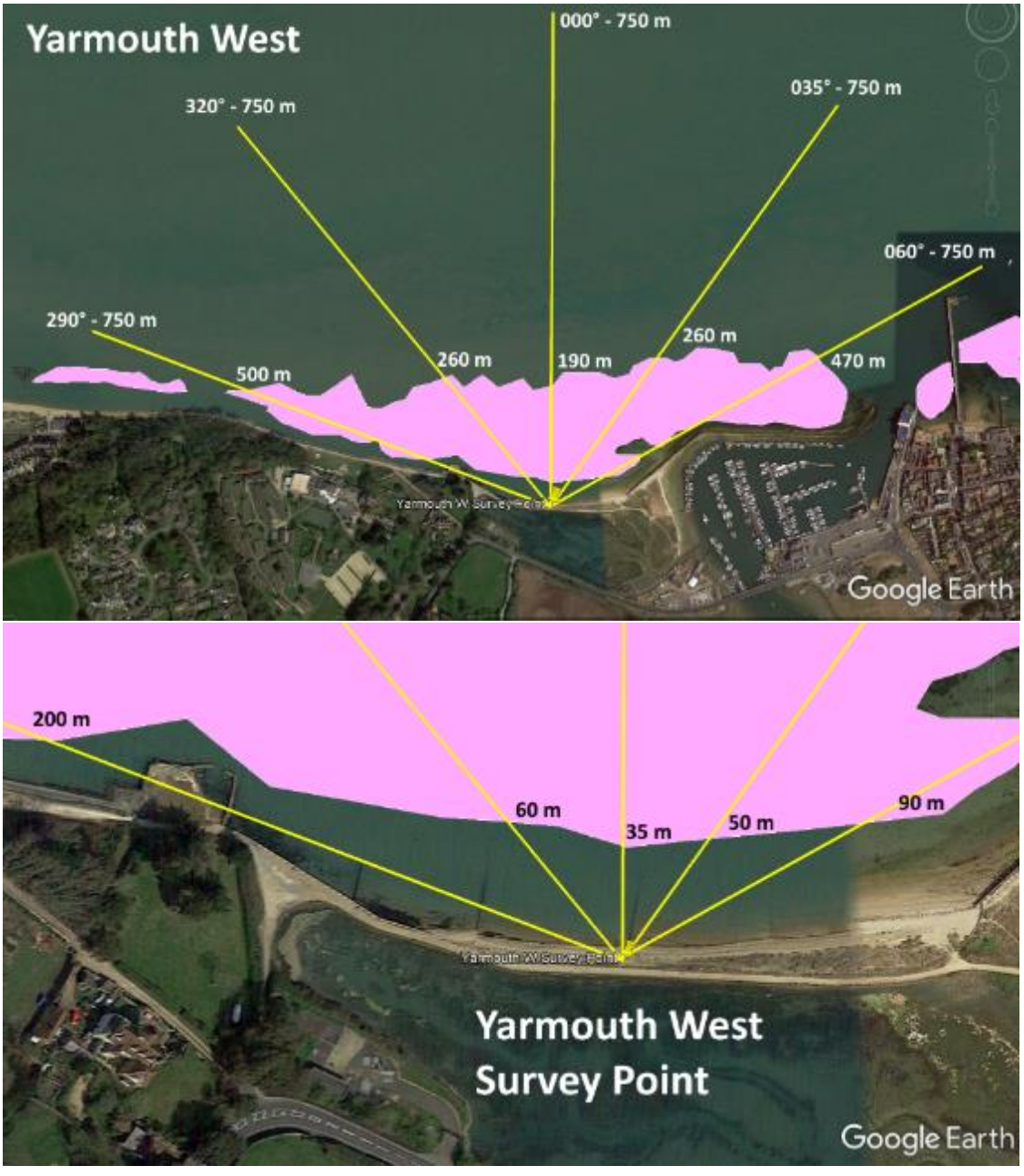
View from Yarmouth W Survey Point. Note the three green groyne markers.

Observing notes:

The seagrass bed at Yarmouth W. forms a continuous band along the coast and extends relatively close to shore such that any vessel lying close inshore will have had to transit the seagrass.

There is a line of mooring buoys for visitors which lies outside the mapped seagrass area, which is a useful visual clue.

IMPORTANT A high number of vessels and ferries will be seen transiting in and out of Yarmouth Harbour, which lies within 750 m to the East of the observation point. It is not necessary to record these movements (Yarmouth Harbour keeps records) unless a vessel has approached the harbour transiting through the area to the East of the harbour or has exited through the same area. However, a vessel which approaches from the East and crosses the harbour mouth before transiting the main observation area should be recorded.



Yarmouth West Survey Area Charts showing sight lines and relevant distances

Bouldnor

This site is in a public location and equipment will be picked up from Yarmouth Harbour Masters (https://www.yarmouth-harbour.co.uk/).

If working alone, use the “buddy” system. Let someone know where you going, and when you are expecting to be back. If on site for prolonged periods, make contact no longer than every hour. The buddy must reply to acknowledge receipt. Make sure buddy has appropriate phone numbers should an incident occur. Take a charged mobile phone. Call 999 or 112 if accident/incident should occur (no signal needed).

Access:

The Bouldnor Survey Point lies on the sea wall adjacent to the Bouldnor Viewpoint car park. The site is a public area used for walking, fishing etc.

Parking: the best place to park is the Bouldnor Viewpoint car park, situated on Bouldnor Road/A3054

Google Maps: https://goo.gl/maps/qR7UXFbpaawRMF5h9

What 3 Words: ///triathlon.lottery.photos

There are two paths leading from the car park to the sea wall. Take the eastern-most path, which isis not signed, is easier than the western path (signed “Sea Wall”) and emerges closer to the survey point. Take care as although the path is made firm with concrete and chippings, it could be slippery in wet or muddy conditions.

Survey point:

The path reaches the sea wall at a joint in the concrete structure. The survey point lies at the next joint to the West, approximately 6 metres away. The sea wall is wide, and used as a footpath and for angling, but care should be taken not to go too close to the edge.

Survey Point Details

50°42'28.09"N 1°28'54.99"W

https://goo.gl/maps/6PgP8j3wLB8xugvR6

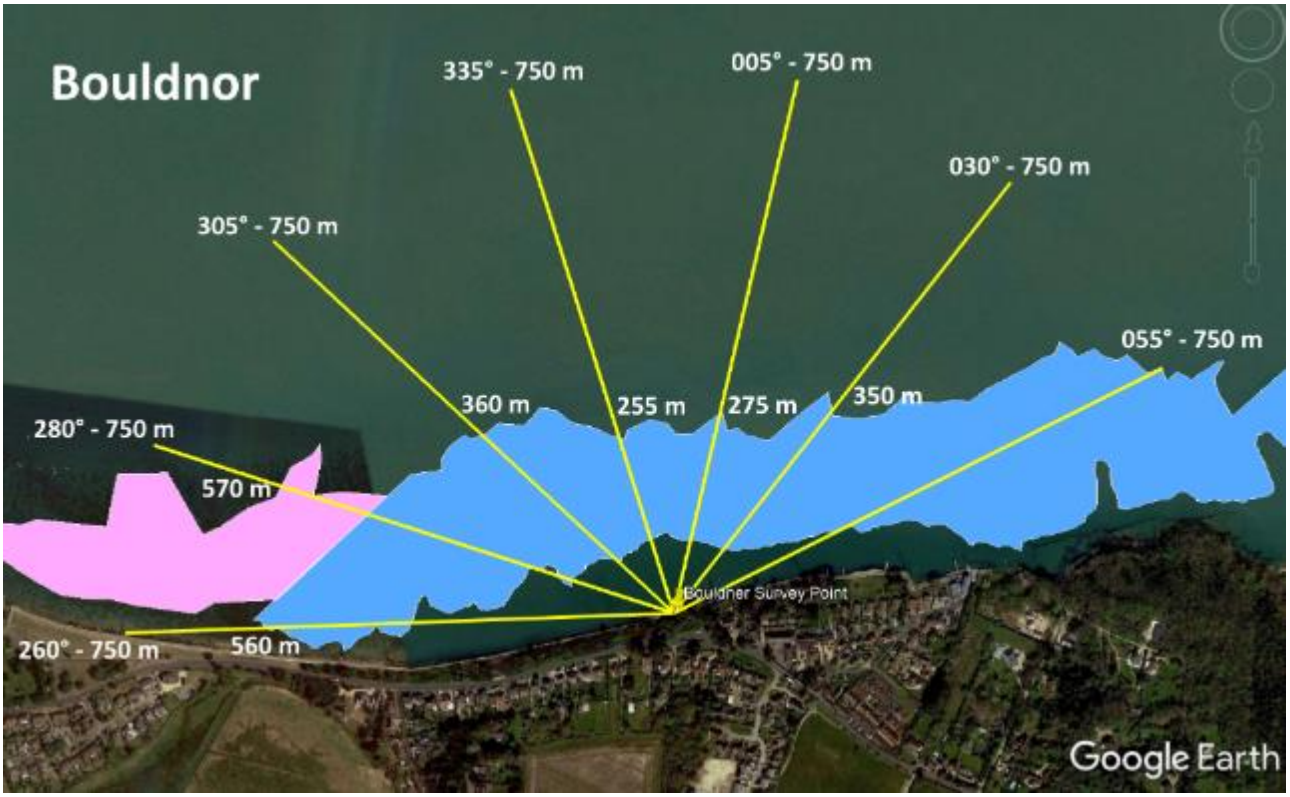
///angers.buying.sisters

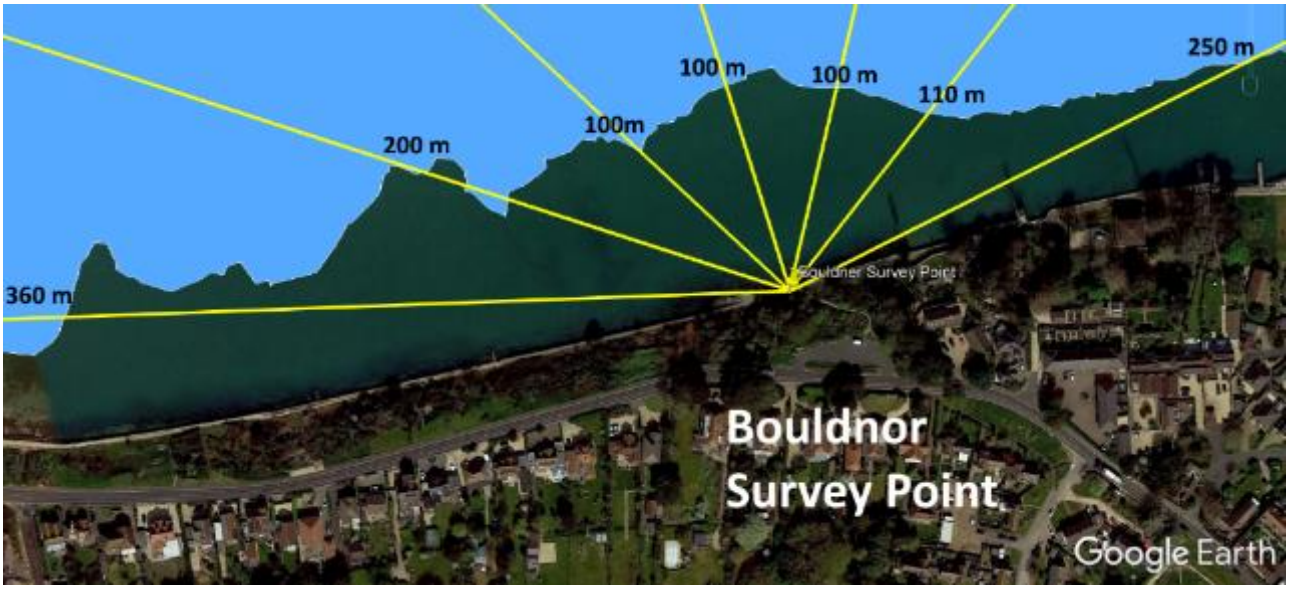
Boudnor Survey Point detail (left) and views East (upper right) and West (lower right)

Observing notes:

The seagrass bed at Bouldnor forms a continuous band along the coast and extends relatively close to shore such that any vessel lying close inshore will have had to transit the seagrass.

There are several buoys within the survey area which can be sighted with the rangefinder. We are not sure if they are all permanent so have not surveyed, but an observer could take sightings with the rangefinder to provide some easy reference points. The line of fixed moorings visible to the East towards the end of Yarmouth Pier starts approximately 850 m from the survey point and outside mapped seagrass.





Bouldnor Survey Area Charts showing sight lines and relevant distances

Osborne Bay

This site is in within the grounds of Osborne House, but is a busy location for visitors to the House and also has a security camera. The surveying equipment can be picked up from the café franchise situated on the shoreline. **Please ask the café staff for assistance and be mindful of people queuing to be served if the café is busy**. The equipment is hung up in a storeroom and there is a plug on the wall opposite the storeroom door for charging the rangefinder.

The Head Gardener, Assistant Head Gardener and staff at the café all know about the surveys.

If working alone, use the "buddy" system. Let someone know where you going, and when you are expecting to be back. If on site for prolonged periods, make contact no longer than every hour. The buddy must reply to acknowledge receipt. Make sure buddy has appropriate phone numbers should an incident occur. Take a charged mobile phone. Call 999 or 112 if accident/incident should occur (no signal needed).

Access: (Key numbers […] refer to those on the accompanying pictures below)

By car: (This route can be followed clearly on Google Maps) Enter the Grounds via the Prince of Wales Entrance **[1]**

Approaching the Visitors' Car Park, take the left-hand fork towards a barrier **[2]**

At the barrier press the button and inform the Security personnel who you are and that you are there to do a "Beach Survey".

Continue along the road until you reach a crossroads and turn right on to The Avenue/Barton Road **[3]**

After about 150 m, and just past the second group of buildings, turn right through a gate into a parking area for all visitors (this is new and doesn't show up on Google Maps) **[4]**

Retrace your steps to the crossroads **[3]** and turn right, following signs for Swiss Cottage (Swiss Cottage Road)

You can fork left down a pathway to join a pathway down into the valley, to join Valley Walk (quickest) **[6]** or continue along Swiss Cottage Road, which eventually takes you down to the beach as well **[7]**

You arrive at the beach where the café is located just next to Queen Victoria's Bathing Machine **[8]**

Parking:

https://goo.gl/maps/G43peZnmuQvR3QcA8

///barn.inventors.archives

Survey point:

The survey point is located close to, and just East of the Café and Queen Victoria's Bathing Machine. The precise location is just to the left of a green English Heritage sign warning people not to cross the barrier rope. This is best seen in the photographs below.

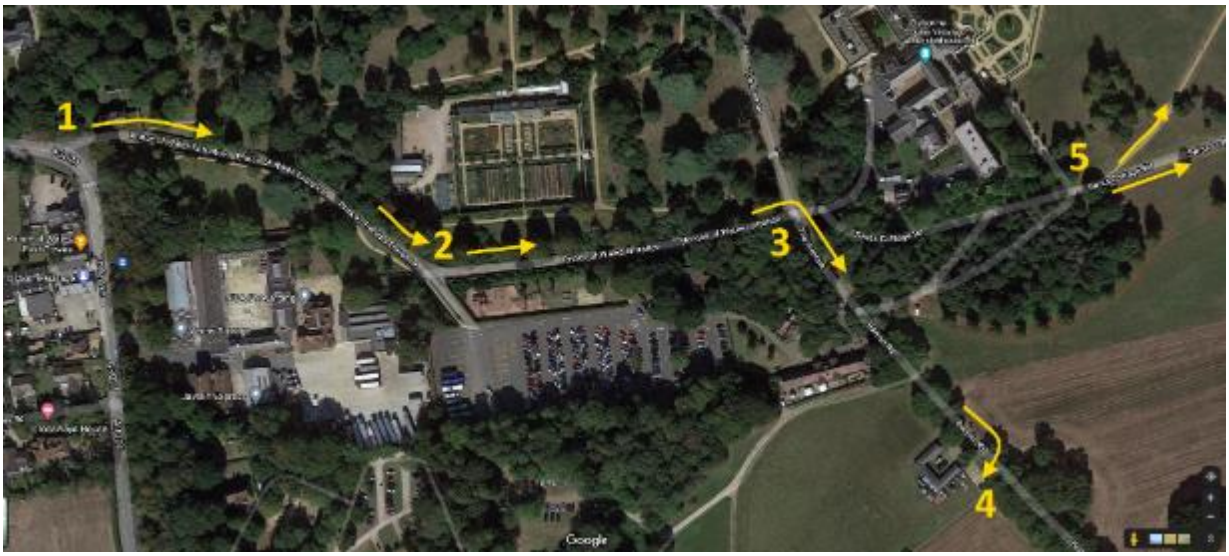
Survey Point Details

50°45'18.84"N 1°15'25.19"W

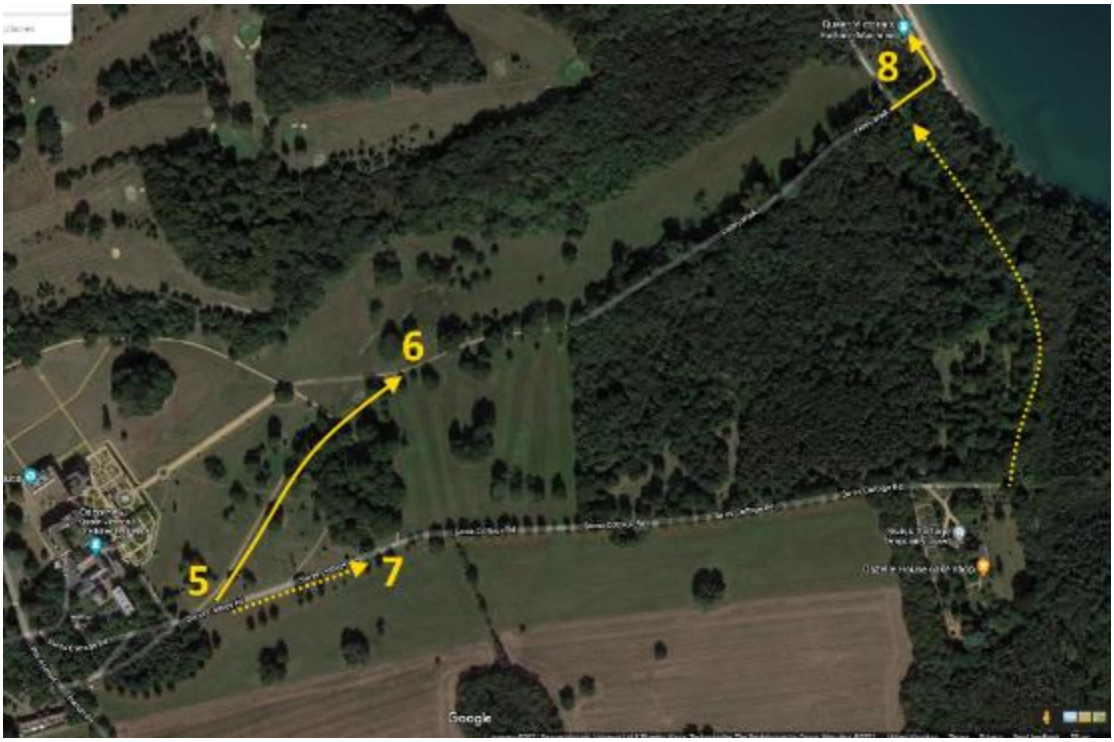
https://goo.gl/maps/9sUeq3T4JKzgdazz8

///repeating.soulful.chugging

Access and Route



Route To OSBORNE BAY Survey Point: 1 of 2 – See text above.



Route To OSBORNE BAY Survey Point: 2 of 2 – See text above.

Location of Osborne Bay Survey Point:


General View from Survey Point

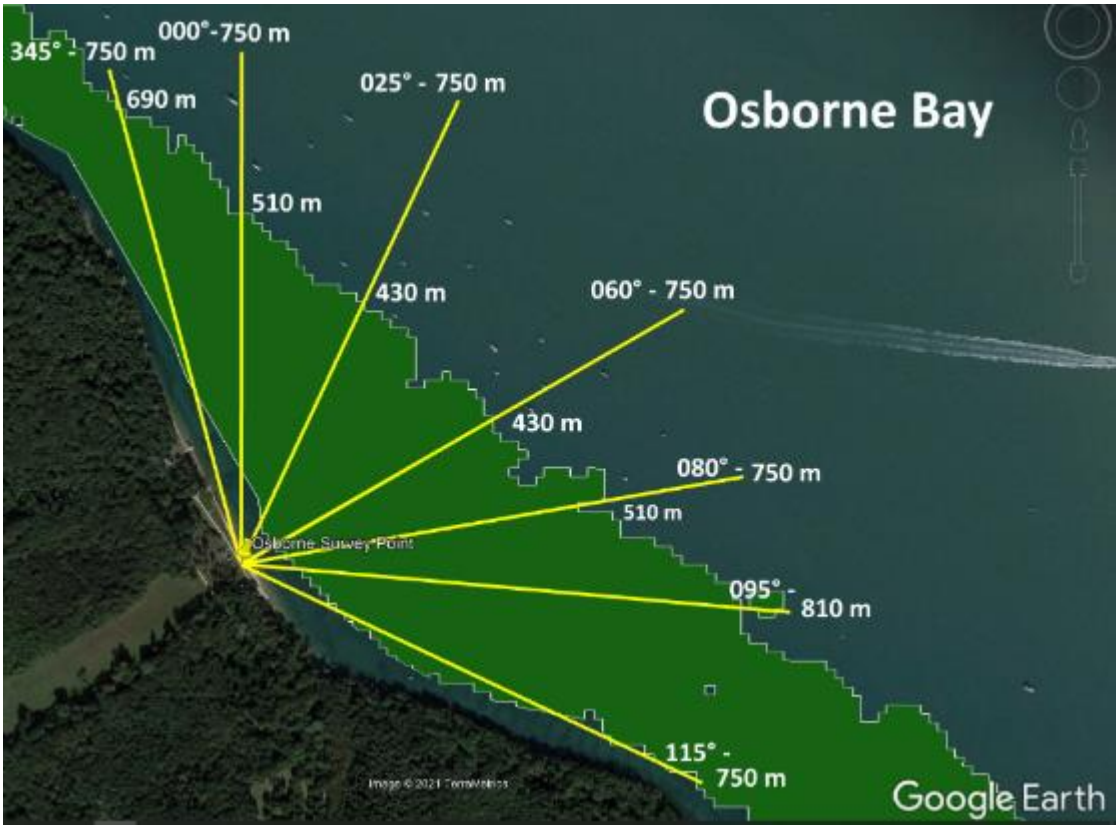
View of Survey Point


View of Queen Victoria's Bathing Hut and the Café from the Survey Point

Observing notes:

The seagrass bed at Osborne Bay. forms a continuous band along the coast and extends relatively close to shore such that any vessel lying close inshore will have had to transit the seagrass.

There are a few remaining marker buoys, which once marked an approximate edge of the seagrass. They may be helpful as a visual clue, but the distances should be checked with the rangefinder. Osborne Bay can be very busy, particularly at weekends.



Osborne Bay Survey Area Charts showing sight lines and relevant distances

Kings Quay

This site lies on Palmers Farm, which is private land, including the foreshore, The Survey Point is quite secluded, and it may be better that volunteers work in pairs. However, the landowner is confident that the site is safe, and has been particularly helpful in granting us access and mobile phone support on site. Volunteers are asked to please make every effort to respect the landowners wishes.

The surveying equipment is being looked after by the landowner and can be picked up from the farmhouse. When a volunteer has confirmed they will be surveying this site, Dr Ferrero will provide a mobile phone number for the volunteer to contact the landowner. Access is controlled and it is essential that the landowner knows who is on his farm and when they arrive and depart.

If working alone, use the “buddy” system. Let someone know where you going, and when you are expecting to be back. If on site for prolonged periods, make contact no longer than every hour. The buddy must reply to acknowledge receipt. Make sure buddy has appropriate phone numbers should an incident occur. Take a charged mobile phone. Call 999 or 112 if accident/incident should occur (no signal needed).

Access: (Key numbers […] refer to those on the accompanying pictures below)

By car:

The Survey Point is reached by going to Palmers Farm on Brocks Copse Road, Whippingham, PO33 4NP

Go through the farm entrance gate (see accompanying pictures below) and you will find the driveway to the farmhouse on the right. There is a small parking area at the end of the drive which you can use.

The landowner will give you the survey kit and is willing to show first time volunteers the route to the survey site as it is a little complicated at the end and you will need the combination number for a padlock.

The route is shown in the pictures below for reference.

It is possible to drive at least part of the way to the site, but the track is very rutted and an average car is likely to bottom out in places with risk of damage. Therefore, we recommend walking down to the site if the landowner is not able to drive you down.

Location of the Farm entrance:

https://goo.gl/maps/M7XFEoUx6vR36VJm9

///crate.caged.latitudes

Survey point:

The survey point is located on the foreshore, above the high-water mark on a shingle bank located on the Eastern side of the entrance to the creek. The ground between the end of the footpath and the shingle bank may be a bit wet and muddy, so take care and wear appropriate footwear. You will see a red sign as you go on to the shore.

Once on the shingle bank, walk along the high-water mark, past two more signs, until you reach a fourth sigh next to two old posts and two lines of old and eroded pilings. The survey point is in line with the left hand, more complete line of pilings – see photo below.

Survey Point Details

50°44'33.80"N 1°14'16.29"W

https://goo.gl/maps/9egZCyhKtPx492eL8

///retailing.turns.moguls]

Access and Route

Entrance to Palmers Farm from Brocks Copse Road

Route to Survey Point from Palmers Farm

Location of Osborne Bay Survey Point:

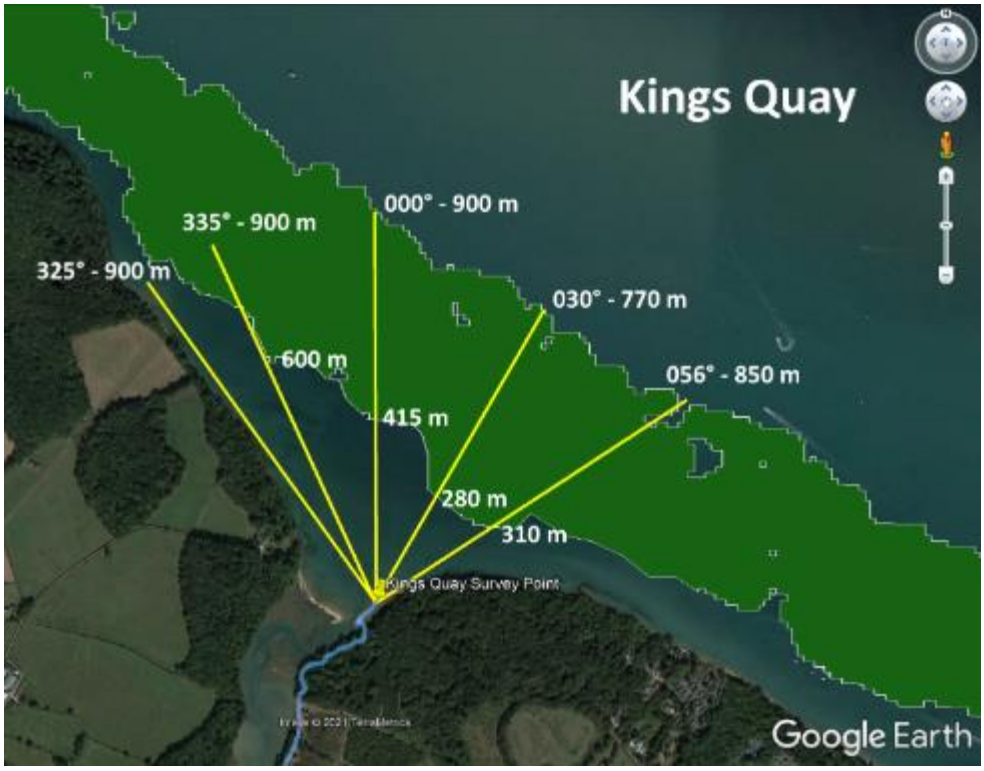
The three signs to walk past to the survey point at the fourth sign

View from the Survey Point

View of Survey area (tide out)

Observing notes:

At King's Quay, the seagrass lies further offshore than at any other site and you may need to use some judgement if a fix cannot be obtained. In all directions, the edge of the seagrass lies beyond 75O m, so vessels within that distance will be inside the seagrass area. However, there is a much larger area in front of the seagrass which vessels may anchor in, so these distances need to be checked. This characteristic means that a single vessel may need to be logged once in "Total vessels" but twice as a vessel travelling inside the seagrass zone, but anchoring outside the seagrass zone. Note: Vessels anchoring inside the seagrass zone are assumed to have travelled across seagrass to get there.



Kings Quay Survey Area Charts showing sight lines and relevant distances

Langstone S.E.

This site is in a public location and equipment will be picked up from [TBC]

If working alone, use the “buddy” system. Let someone know where you going, and when you are expecting to be back. If on site for prolonged periods, make contact no longer than every hour. The buddy must reply to acknowledge receipt. Make sure buddy has appropriate phone numbers should an incident occur. Take a charged mobile phone. Call 999 or 112 if accident/incident should occur (no signal needed).

Access:

The Langstone Survey Point lies on the sea wall pathway which runs alongside and shoreward of the Hayling Billy Trail. It is located on a platform area over a discharge pipe and is surrounded by a steel fence to prevent falls. It is used by the public for walking, fishing etc.

Parking: Parking is on street on Denhill Close, a quiet residential street. Care should be taken to take note of manoeuvring vehicles and to please park sympathetically taking account of the residents’ need for access (see pictures below). The Survey Point can also be reached on foot or on bicycle from the Hayling Billy Trail.

Google Maps: https://goo.gl/maps/ppEtsNKqKgdx8by26

What3Words: ///soothing.panel.otherwise

There is a short walk from Denhill Close to the Survey Point. A footpath leads from the end of the Close towards the shore, crossing the Hayling Billy Trail. When you reach the seawall, the path forks on to the wall path. Take the slightly longer right-hand fork as it is far less steep and slippery. On the sea wall, walk South and you will see the concrete platform and steel rail fence just to the right of the path (See picture below).

Survey point:

The Langstone Survey Point lies on the sea wall pathway which runs alongside the Hayling Billy Trail. It is located on a platform area over a discharge pipe and is surrounded by a steel rail fence to prevent falls. It is used by the public for walking, fishing etc.

There is a drop from the sea wall path and the platform area to the shore/water (depending on tidal state). Care should be taken on the path and avoid standing too close to the edge or place equipment near the edge. The fence provides additional safety at this location.

***** IMPORTANT *** Don’t stand too close to the fence when taking compass bearings as the steel will affect your readings!**

Survey Point Details

50°47'59.53"N 0°59'35.94"W

https://goo.gl/maps/TfgyhGB1pKJUEPnv7

///best.early.disbanded

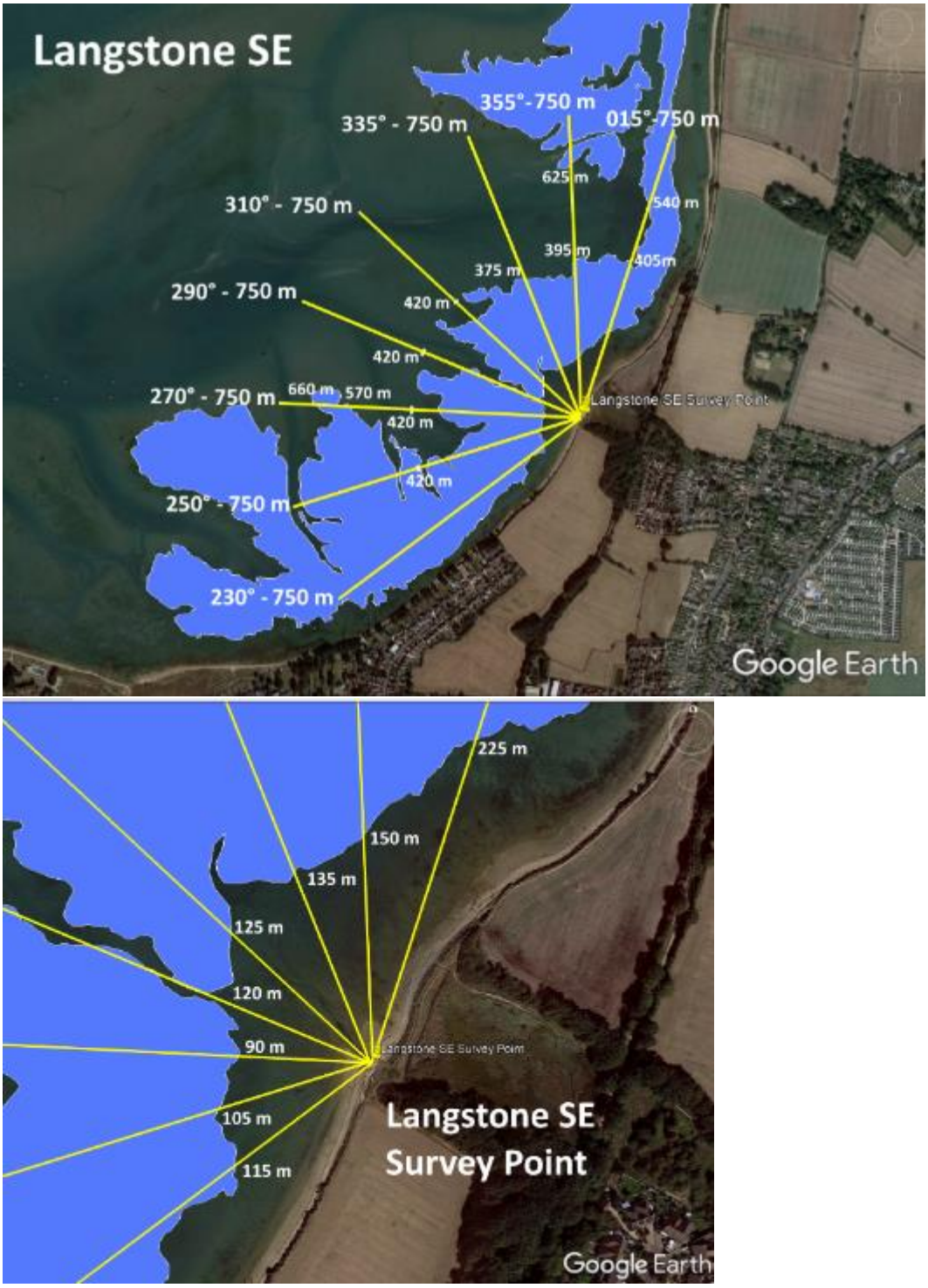
Access and Route

Route from Denhill Close

General view from the Survey Point

Observing notes:

Langstone SE offers a very good viewing platform, but also, the most complicated seagrass bed shape. Volunteers will need to study the site Charts closely to the distance an bearing measurements when allocating vessel activity to recording categories. Note that in the centra part of the survey area, a nominal distance of 420 m has been indicated to define areas which need particular attention. On days when the tide is out, the whole site may be exposed and the survey is restricted to beach activities and any craft which may be moored or anchored and aground. As for Kings Quay, the area inside the shoreward limit of the seagrass needs to be assessed carefully and vessel activity recorded appropriately (See Kings Quay notes).



Langstone SE Survey Area Charts showing sight lines and relevant distances

Compass instruction manual

GENERAL KNOWLEDGE FOR USING A COMPASS

Geographical North (Map North), Magnetic North and Variation (Declination)

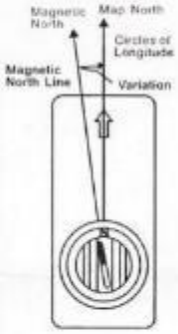
Ordinarily we use the words "North", "South", etc. unconcernedly, however, we must realize there are two kinds of North, i.e. Geographical North and Magnetic North.

Geographical North is established geographically and it is common to all over the world. The circles of longitude of a map are drawn in correlation to the geographical poles and the lines show the direction of the Geographical North. The direction of these lines is different from the direction that the magnetic needle points to. On an ordinary map upside is the direction of the Geographical North and downside is the Geographical South. Accordingly, right side and left side are East and West respectively. The magnetic poles are close to the geographical poles, but are not coincidental. The angle between the straight lines pointing from the place of observation to the geographical and magnetic North poles is called Variation or Declination of the places, Figure 1.

The variation differs from place to place in the world. The lines of equal variation are very irregular, however, topographical maps of each place give the local variation.

When you say a direction of such and such degrees, you must either subtract or add the local variation depending on which side of zero declination line you are on for getting the geographically correct degree of the direction. For obtaining the true map bearing read the bearing on your compass and if the local variation is Western, subtract the variation from the reading; if it is Eastern, add it to the reading. However, it is more practical for you to use the bearing you get when you set the Magnetic North as 0°.

Figure 1

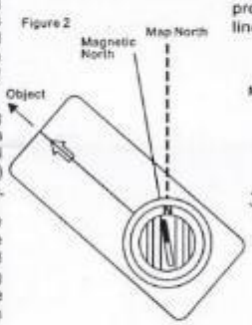


How to Maintain the Direction of an Object

Suppose you can see an object, say, a lake. If you can see the lake all the way while you are walking, there is no problem. However, on the way to the lake you may have to go through such a place as woods, hollows, etc. from where you cannot see the lake. In such case you may lose the direction of the lake and your compass becomes very useful.

1. Before you start walking hold your compass as level as possible and point the arrow on the scale to the direction of the lake.
2. Turn the rotating ring and put the N (0°) in the direction of the N end (the luminous end) of the magnetic needle.
3. Read the bearing at the index line. This is the bearing of the lake and simply keep this bearing until you reach a place from where you can clearly see the lake again.

Figure 2



For instance, in Figure 2 the direction of the object is 320° (for expressing it exactly you must adjust the local variation as explained formerly.

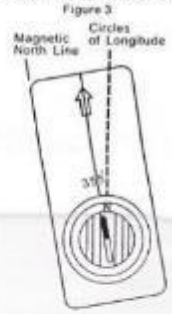
However, as long as you understand the meaning of variation you can say the direction of the object is 320° from the magnetic North).

How to reach the Destination shown on Map

For going to the destination shown on a map merely find the present place, direction of the destination and the magnetic north.

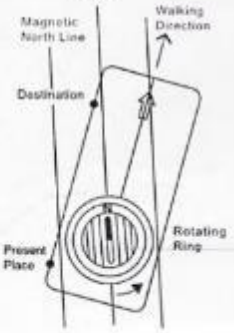
1. First of all spread the map and draw directional lines of magnetic north according to the variation given on the map. For drawing lines use the sides of the compass. For instance, if the variation of the place is 5° Western, subtract 5° from 360° and set the bearing graduation 355° to the index line. Then make **the arrows in the compass capsule** parallel to the North-South line of the map (longitude line or up-down frame lines of the map) without moving the rotating ring and draw a line as shown in Figure 3. It is quite advisable for you to draw several lines parallel to the first magnetic North line you just drew by using the co-ordinates lines.
2. Find the present place and the destination on your map and draw a straight line between these two places on the map. Place your compass on the line so as to point the index line (arrow mark) to the destination.

Figure 3



Then turn the rotating ring and make the arrows in the compass capsule parallel to the magnetic North lines you drew in step 1. (At this stage you do not have to mind the position of the magnetic needle.) Next, hold your compass and turn yourself slowly until the North end (the luminous end) of the magnetic needle becomes parallel to the arrows in the compass capsule, Figure 4. Now proceed toward the direction the arrow of the travel line points to by keeping the magnetic needle parallel to the arrows of the compass capsule. Simply keep going to this direction until you reach your destination. When you arrive at the first destination repeat the same procedure for going to your final destination. While you are proceeding toward the destination you have to make sure of the direction by looking at your compass and go as straight as possible. If the deviation to right or left from the correct course is large, the error at your goal becomes large.

Figure 4



Finding your Location on the Map

Locate yourself on a high point from where any of two distinctive features of the landscape are visible. The two distinctive features must be shown on the map. Suppose you can see a mountain A on the left and a lake B on the right side. Point the index line (arrow) toward the mountain A. Then rotate the rotating ring and set "N" of the dial to the North end of the compass needle. Place compass on the map and adjust the map so that the magnetic north line on the map becomes parallel to the magnetic needle and the N-S lines in the compass capsule. By keeping the state slide the compass on the map until one side of the scale points to the mountain A on the map and draw a line, Figure 5. Then, turn yourself to the lake B and repeat the same procedure and draw a line. The point of intersection of these two straight lines is your present location on the map, Figure 6.

Figure 5

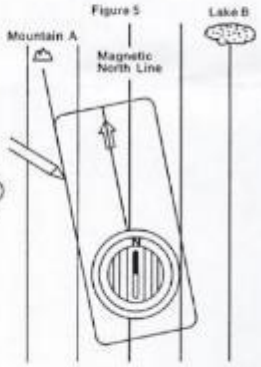
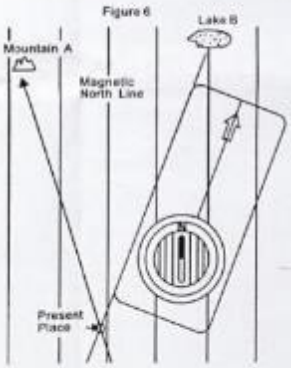


Figure 6



Many books on compass reading and orienteering are in print. We recommend reading them and/or taking a course to refine your compass and map reading skills.

Please find 'General Knowledge for Using a Compass' here: https://coghlans-wholesale.com/content/files/Coghlans/Instructions/9685-Instructions.pdf

WDCS Shorewatch – Beaufort Sea States

Beaufort Sea States

The Beaufort Sea State Code is a simple scale that can be used to give an approximate but concise description of sea conditions. During Shorewatches, WDCS cetacean researchers use the Beaufort Sea State Code as part of their shore watch protocol. The sea state must be recorded during shore watch because it affects the probability of a sighting. Each increase in sea state results in a decreased chance of sighting animals when present. In high sea states cetacean detection becomes very unlikely and this limits the value of the data collected. **For this reason shore watch is not carried out in conditions above sea state 4.**

In order to determine sea state:

- ✓ **Use the sea state photo guide and descriptions.**
- ✓ **Use binoculars to make an accurate assessment.**
- ✓ **Look into the wind to record the greatest sea state observed within the observation area.**
- ✓ **Discount coastal surf.**
- ✓ **Record your final assessment one minute before shore watch start time.**
- ✓ **Make a discrete decision on the sea state, i.e. 0, 1, 2, 3 or 4, and avoid using a range of sea states i.e. 2 to 3.**

Sea states 0-6 are described below:

Sea State 0

Conditions: Sea like a mirror.
Wind Speed: Under 1 knot (smoke rises vertically)
Wave Height: 0 feet

Sea State 1

Conditions: Ripples.
Wind Speed: 1 - 3 knots (wind motion visible in smoke)
Wave Height: 0.33 feet/10cm

Sea State 2

Conditions: Small wavelets all over. No whitecaps.
Wind Speed: 4 - 6 knots (wind felt on exposed skin and leaves rustle)
Wave Height: 0.66 feet/20cm

Sea State 3

Conditions: Large wavelets. Few white caps here and there.
Wind Speed: 7 - 10 knots (leaves and smaller twigs in constant motion)
Wave Height: 2 feet/60cm

Sea State 4

Conditions: Small waves. Fairly frequent white caps.
Wind Speed: 11 - 16 knots (dust and loose paper raised. Small branches begin to move)
Wave Height: 3.3 feet/1m

Sea State 5

Conditions: Moderate waves. Many white caps. Spray possible.
Wind Speed: 17 - 21 knots (branches of a moderate size move. Small trees begin to sway)
Wave Height: 6.6 feet/2m

Sea State 6

Conditions: Large waves with white foam crests. Spray probable.
Wind Speed: 22 - 27 knots (large branches in motion. Whistling heard in overhead wires)
Wave Height: 9.9 feet/3m

References:

Gunnlaugsson, T., Siggurjosson, J. and Donovan, G.P. 1988. Aerial survey of cetaceans in the coastal waters off Iceland. *Rep. int. Whal. Commn: 38: 489-500.*

Teilmann, J. 2003. Influence of sea states on density estimates of Harbour Porpoises (*Phocoena phocoena*). *J. Cetacean Res. Manage.* 5(1): 85-92.

Please find the Beaufort Sea States document here:
https://www.academia.edu/29669316/Beaufort_Sea_States

The ***LIFE Recreation ReMEDIES: Reducing and Mitigating Erosion and Disturbance Impacts affecting the Seabed*** project (LIFE18 NAT/UK000039) runs from July 2019 – October 2023 and will improve the condition of five SACs between Essex and Isles of Scilly. This will be

www.gov.uk/natural-england