

EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2023 - Report

Project Summary Report

March 2026

Natural England Commissioned Report NECR587

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Catalogue code: NECR587

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Keywords

LIFE Recreation ReMEDIES, seagrass, marine Special Areas of Conservation (SACs), Solent, Recreational Activity, anchoring, mooring

Acknowledgements

The author would like to gratefully acknowledge the assistance received in facilitating and completing these surveys from: Yarmouth Harbour Office, English Heritage staff and staff of the Pavilion Beach Café at Osborne House, and Mr T. Rogers, and the many individual volunteers who gave up their time to complete the surveys.

Citation

Ferrero T.J. (2025) **EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2023**. Hampshire and Isle of Wight Wildlife Trust, Report No. HIWWT-LS 20240311 70 pp.

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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 2023, surveys were undertaken from 29th July to 30th September with the aim for each site to be surveyed once midweek and once on the weekend each week.

Overall, the 2023 conclusions strongly reflect those of both the 2022 and 2021 surveys. Some variation between these years may be linked to the removal of Covid-19 restrictions and a return to more normal activity patterns. Anchoring and mooring was observed at all sites, however Osborne Bay again showed higher levels of anchoring pressure. Outside of boating pressure, beach recreation, dog walking and swimming were the most frequently observed recreational activities.

Key conclusions (cumulative)

- Overall, the results of the 2023 surveys, strongly support the key conclusions of the 2021 and 2022 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.
- Higher levels of anchoring pressure than at 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 high activity with the potential to impact seagrass which may have been underestimated in the 2021 surveys and consideration of this will be taken in future surveys.
- Levels of anchoring/mooring at Langstone Harbour may 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.

LIFE Recreation ReMEDIES

EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2023 - Report

13/03/2024

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 2023 - Report

March 2024

Report No. HIWWT-LS 20240313

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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 two series of surveys were undertaken in August-September 2021 and 2022 reported in Ferrero, 2022 & 2023.

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 2023, 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 a one-hour observation period.

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 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 HIWWT, Natural England staff 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 2023. This provided a potential maximum of 85 surveys. At the end of the survey window, a total of 69 surveys were completed. Owing to volunteer availability, seven of the midweek surveys undertaken were carried out outside the allocated days, all of which were confined to two sites Yarmouth and Bouldnor. Five midweek surveys were carried out either on a Thursday and two on a Tuesday.

Volunteer availability meant that no sites were sampled on every possible survey time over the two-month survey window. However, at Bouldnor, 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, I = incomplete survey not included in data, – = 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	Wednesday
	29/30-Jul	02-Aug	05/06-Aug	09-Aug	12/13-Aug	16-Aug	19/20-Aug	23-Aug	26/27-Aug	30-Aug
Yarmouth	V	V	–	–	V	V (17 th)	V	V (24 th)	V	–
Bouldnor	V	–	V	V	V	V	V	V	V	V (29 th)
Osborne	V	–	V	V	V	–	H	V	V	–
Kings Quay	–	–	V	–	V	–	V	V	V	V
Langstone	V	V	V	V	V	V	V	V	V	V
	SEPTEMBER/OCTOBER									
	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday	Sat/Sun	Wednesday
	02/03-Sep	06-Sep	09/10-Sep	13-Sep	16/17-Sep	20-Sep	23/24-Sep	27-Sep	30/01-Oct	Wednesday
Yarmouth	V	V	V	V (14 th)	–	V (21 st)	V	V	–	–
Bouldnor	V	V (5 th)	V	V	V	V	V	V (28 th)	V	–
Osborne	–	–	–	V	–	V	V	V	V	–
Kings Quay	–	H	–	–	–	–	V	V	–	–
Langstone	–	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 14 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).

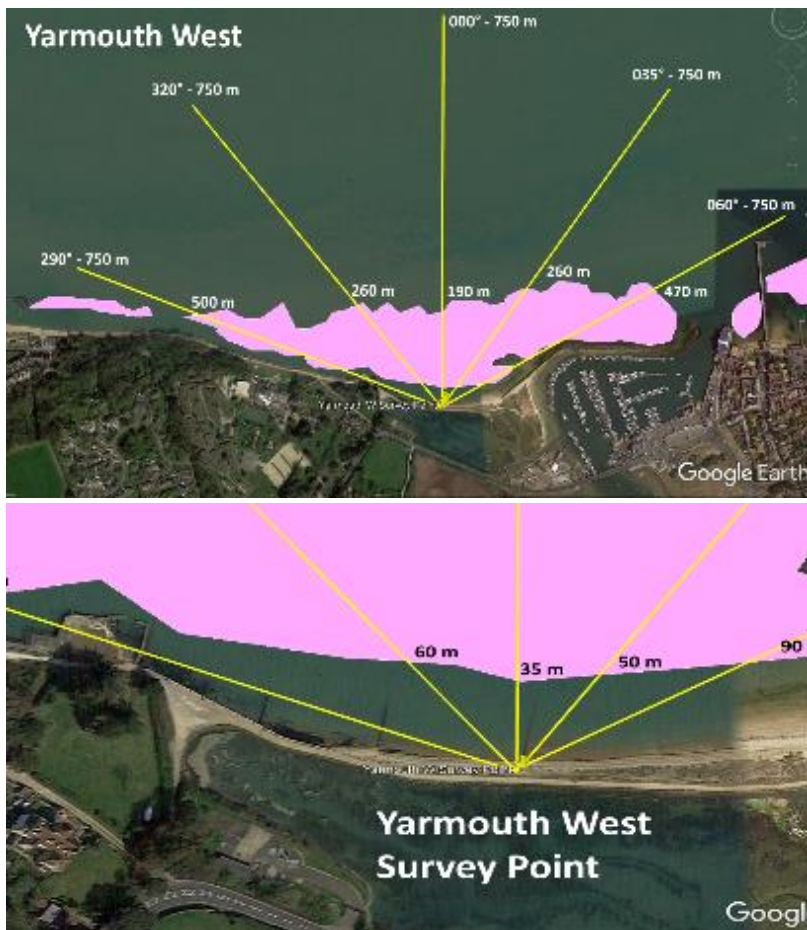


Figure 2. Yarmouth West Survey Area Charts showing sight lines with relevant distances and seagrass in pink

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: 14 (6, weekend, 8 midweek)

Boating Activity:

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

Over the course of 14 surveys, 417 vessels were observed, of which, 9 were observed to be anchoring within the seagrass meadow.

The data, as in previous surveys, confirmed that the site is clearly used by vessels visiting the harbour as 298 of the observations were of vessels travelling outside the seagrass zone, 81 of which used the visitor moorings and 4 anchoring in this area. These results are very similar to those reported from the previous surveys, although the number of vessels recorded was lower, despite which, the number of observed anchoring events within the seagrass area rose from just two to nine.

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 = 14				WEEKEND SURVEYS n = 6				MID-WEEK SURVEYS n = 8			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		12:08	13:43	11:00		11:42	13:43	11:00		12:28	13:40	11:05
End time		13:08	14:43	12:00		12:42	14:43	12:00		13:28	14:40	12:05
Wind speed (km/h)		19.2	48.0	3.0		19.0	33.0	8.0		19.4	48.0	3.0
Temperature (°C)		19.4	28.0	14.0		19.0	26.0	14.0		19.8	28.0	16.0
Cloud cover %		44.6	100.0	0.0		20.2	80.0	0.0		62.9	100.0	0.0
Precipitation		0.2	1.3	0.0		0.0	0.0	0.0		0.3	1.3	0.0
Sea state		2.6	4.0	1.0		2.3	3.0	1.0		2.8	4.0	1.5
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	417.0	29.8	69.0	0.0	227	37.8	69.0	23.0	190	23.8	54.0	0.0
No. of vessels anchoring inside the seagrass zone	9.0	0.6	3.0	0.0	4	0.7	2.0	0.0	5	0.6	3.0	0.0
No. of vessels moored inside the seagrass zone	1.0	0.1	1.0	0.0	1	0.2	1.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling inside seagrass zone	24.0	1.7	7.0	0.0	8	1.3	4.0	0.0	16	2.0	7.0	0.0
No. of vessels anchoring outside the seagrass zone	4.0	0.3	1.0	0.0	4	0.7	1.0	0.0	0	0.0	0.0	0.0
No. of vessels moored outside the seagrass zone	81.0	5.8	19.0	0.0	40	6.7	19.0	2.0	41	5.1	15.0	0.0
No. of vessels travelling outside the seagrass zone	298.0	21.3	50.0	0.0	170	28.3	50.0	16.0	128	16.0	32.0	0.0
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)	136.0	9.7	28.0	0.0	81	13.5	28.0	6.0	55	6.9	15.0	0.0
Sailing dinghy	17.0	1.2	5.0	0.0	1	0.2	1.0	0.0	16	2.0	8.0	0.0
Motor yacht	58.0	4.1	12.0	0.0	35	5.8	12.0	2.0	23	2.9	7.0	0.0
Day boats with cabin	70.0	5.0	14.0	0.0	39	6.5	13.0	2.0	31	3.9	14.0	0.0
Power boat (open)	54.0	3.9	11.0	0.0	29	4.8	10.0	1.0	25	3.1	11.0	0.0
RIB	61.0	4.4	12.0	0.0	31	5.2	10.0	3.0	30	3.8	12.0	0.0
Open boat/tender/inflatable	19.0	1.4	7.0	0.0	9	1.5	3.0	0.0	10	1.3	7.0	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	8.0	0.6	0.0	0.0	0	0.0	0.0	0.0	8	1.0	8.0	0.0
Paddle board	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Ferry	25.0	1.8	3.0	0.0	11	1.8	2.0	1.0	14	1.8	3.0	0.0
Personal Water Craft (PWC) - jet skis etc.	8.0	0.6	5.0	0.0	1	0.2	1.0	0.0	7	0.9	5.0	0.0
Beach recreation	70.0	5.0	16.0	0.0	48	8.0	16.0	0.0	22	2.8	6.0	0.0
Swimming	17.0	1.2	4.0	0.0	9	1.5	4.0	0.0	8	1.0	3.0	0.0
Angling	2.0	0.1	2.0	0.0	0	0.0	0.0	0.0	2	0.3	2.0	0.0
Dog walker	29.0	2.1	5.0	0.0	18	3.0	5.0	2.0	11	1.4	3.0	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	0	0.0	0.0	0.0	1	0.1	1.0	0.0

Fig. 3A

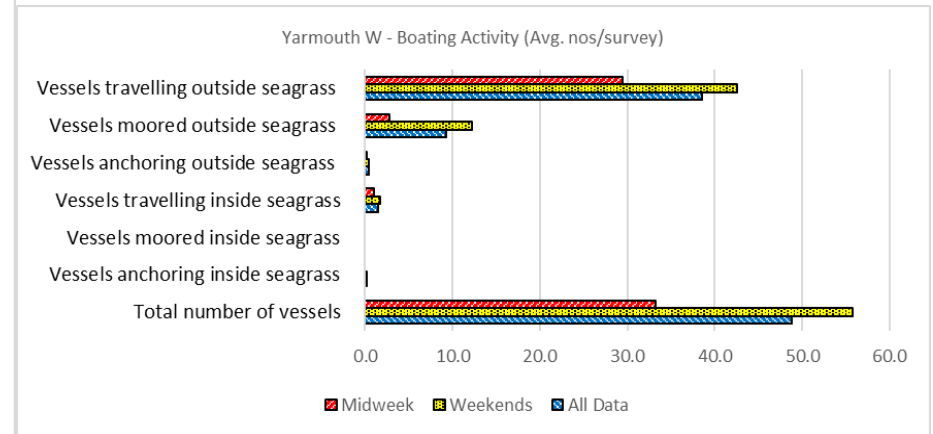
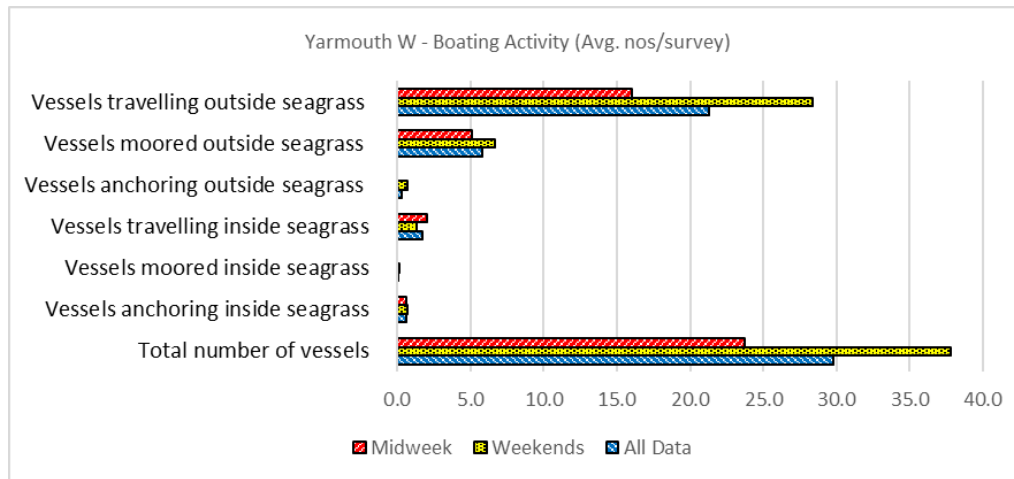


Fig. 3B

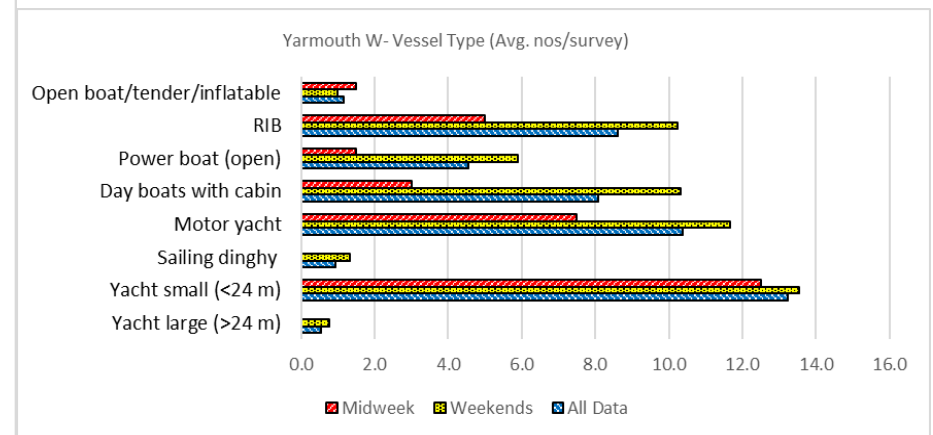
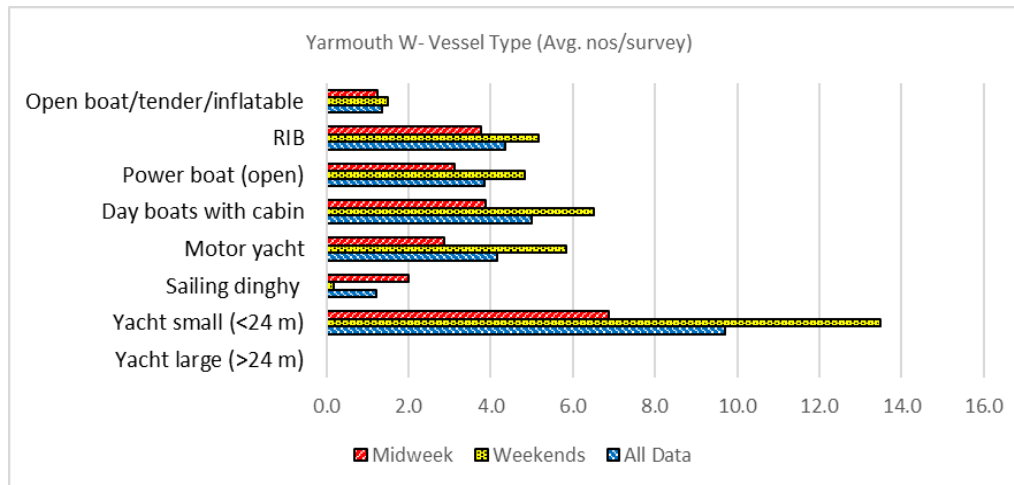


Fig. 3C

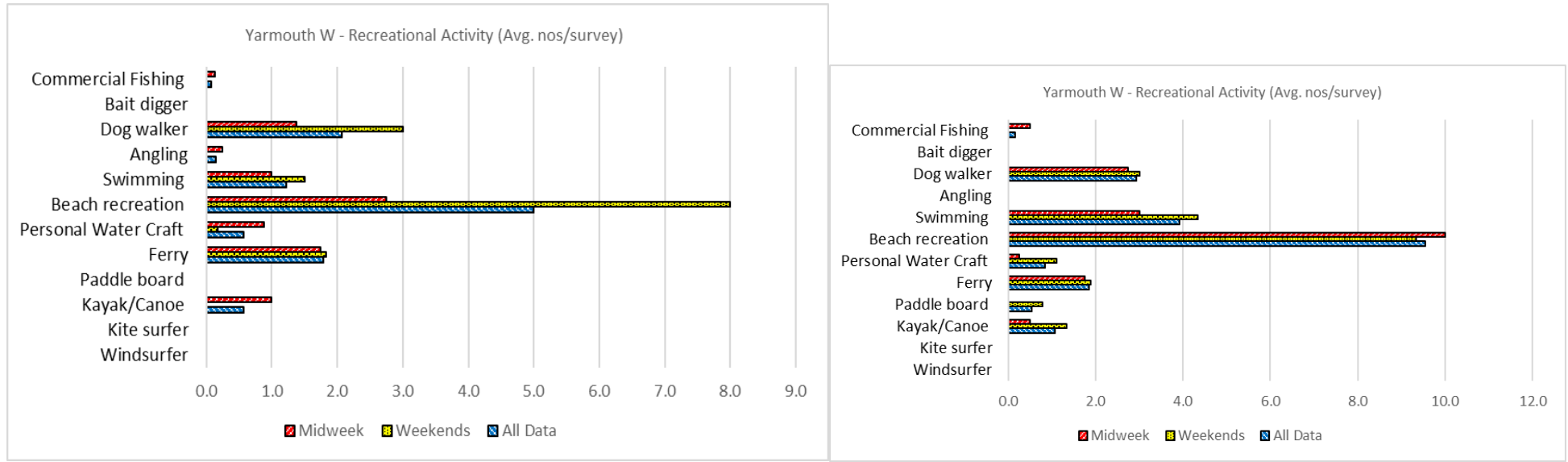


Figure 3. Yarmouth West: Average (mean per survey) 2023 data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2022 Graphs inset on the right hand side

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. As observed in 2022, and in contrast with the 2021 data, there was a clear indication of higher weekend activity. The pattern of activity remained very similar, with the majority of vessels travelling or anchoring/mooring outside the seagrass area. There were nine anchoring events observed within the seagrass area, higher than in both 2022 and 2021 (2 and 5 respectively), occurring both at the weekend and midweek.

Vessel Type

Small yachts (136) remained the most frequently recorded single vessel category, although overall, there were more observations of motorised craft (243 – Motor yachts, Day boats with cabin, Power boats (open) and RIBs) although observations of motorised craft were proportionally lower than in 2022 (Table 2). All vessel types showed increased use at weekend in contrast to the 2022 data when there was little difference in small yacht activity between weekends and midweek (Fig. 3B).

Recreational Activity

Overall levels of recreational activity were a little lower than in 2022, but distribution of activity was generally similar. Beach recreation (70 observations) was the most popular recreational activity, as in 2022 and 2021, but swimming was recorded in lower numbers (17 observations) than dog walking (29 observations), which replaced it as the second most popular activity (Table 2). In contrast to the 2022 surveys, beach activity and dog walking were clearly more frequently observed at the weekend, as they had been in the 2021 surveys. However, use of personal water craft and kayaks appeared more popular midweek, in contrast to the 2022 and 2021 data (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)

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).

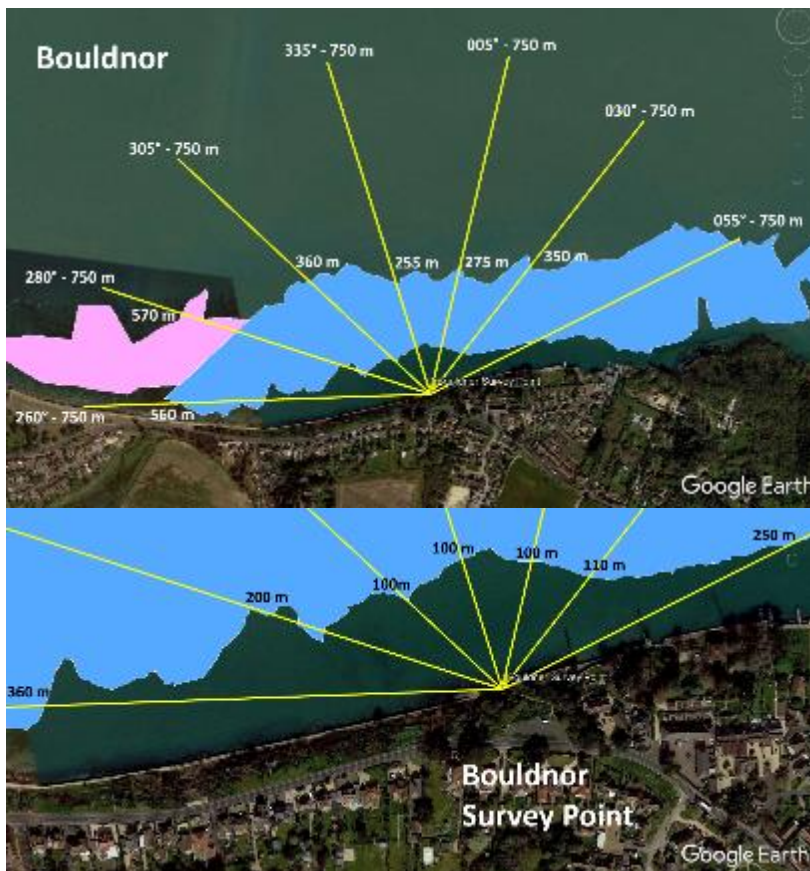


Figure 5. Bouldnor Survey Area Charts showing sight lines with relevant distances and seagrass in pink and blue

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 (10, weekend, 8 midweek)

Boating Activity:

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

Thanks to the continued 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 closer to those recorded in 2021 with 248 recorded compared with 171 vessels in 2022 and 279 in 2021. It is not immediately clear why this variation was observed, and it may simply represent inter-annual variation. However, it should be noted that 43 of the 52 sailing dinghies recorded were observed on just two surveys, which coincided with racing/training events.

Perhaps reflecting the higher number of vessels recorded, a slightly higher total of five vessels were observed anchored within the seagrass area (compared to 4 in 2022). However, no vessels were recorded as being moored within the seagrass area. As the presence of moorings has not been confirmed, this observation is difficult to account for as existing mooring may have been moved, mooring habits changed, or recorder observations have become more discerning. The total of five direct interactions with the seagrass recorded does however indicate a continued albeit relatively low level of negative interactions in this area.

The average data shown in Fig. 6A provides the best comparative data, although this site was surveyed on almost all possible occasions during the study period. As was found in 2022 and 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. Vessels travelling outside the seagrass area showed a strong trend towards weekend activity, as has been seen previously, but vessels travelling within the seagrass was more frequently observed on midweek, a result heavily skewed by the observation of 32 sailing dinghies on one midweek racing event. No mooring was observed on any of the surveys, but levels of observed mooring, unlike at Yarmouth, have always been recorded as very low, a combination of fewer available moorings and generally lower occupancy.

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 = 10				MID-WEEK SURVEYS n = 8			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		12:11	15:30	11:00		12:37	15:30	11:00		11:38	12:30	11:00
End time		13:11	16:30	12:00		13:37	16:30	12:00		12:38	13:30	12:00
Wind speed (km/h)		19.9	43.0	7.0		21.8	43.0	7.0		17.5	48.0	7.0
Temperature (°C)		19.5	28.0	14.0		19.4	28.0	14.0		19.6	23.0	17.0
Cloud cover %		48.8	100.0	0.0		48.7	100.0	0.0		49.0	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		2.3	4.0	1.0		2.5	4.0	1.0		2.0	3.0	1.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	248.0	13.8	48.0	0.0	153	15.3	32.0	3.0	95	11.9	48.0	0.0
No. of vessels anchoring inside the seagrass zone	5.0	0.3	3.0	0.0	4	0.4	3.0	0.0	1	0.1	1.0	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	56.0	3.1	35.0	0.0	19	1.9	6.0	0.0	37	4.6	35.0	0.0
No. of vessels anchoring outside the seagrass zone	10.0	0.6	3.0	0.0	5	0.5	4.0	0.0	5	0.6	3.0	0.0
No. of vessels moored 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 travelling outside the seagrass zone	177.0	9.8	30.0	0.0	125	12.5	30.0	3.0	52	6.5	12.0	0.0
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)	86.0	4.8	15.0	0.0	66	6.6	15.0	1.0	20	2.5	5.0	0.0
Sailing dinghy	52.0	2.9	32.0	0.0	20	2.0	11.0	0.0	32	4.0	32.0	0.0
Motor yacht	38.0	2.1	5.0	0.0	20	2.0	4.0	0.0	18	2.3	5.0	0.0
Day boats with cabin	16.0	0.9	3.0	0.0	9	0.9	2.0	0.0	7	0.9	3.0	0.0
Power boat (open)	14.0	0.8	5.0	0.0	8	0.8	5.0	0.0	6	0.8	4.0	0.0
RIB	36.0	2.0	5.0	0.0	30	3.0	6.0	0.0	6	0.8	2.0	0.0
Open boat/tender/inflatable	6.0	0.3	3.0	0.0	0	0.0	0.0	0.0	6	0.8	3.0	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	1.0	0.1	0.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Kayak/Canoe	5.0	0.3	3.0	0.0	3	0.3	3.0	0.0	2	0.3	2.0	0.0
Paddle board	0.0	0.0	0.0	0.0	0	0.0	0.0	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.	7.0	0.4	3.0	0.0	6	0.6	3.0	0.0	1	0.1	1.0	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	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Angling	4.0	0.2	1.0	0.0	3	0.3	1.0	0.0	1	0.1	1.0	0.0
Dog walker	8.0	0.4	3.0	0.0	6	0.6	3.0	0.0	2	0.3	1.0	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

Vessel Type

As for Yarmouth, the single vessel category recorded in the highest numbers was small yachts (86), although overall, there were more observations of motorised craft (110) (Table 3), the majority being RIBs and motor yachts, with slightly reduced RIB activity and slightly more motor yachts than in 2022. The general trend towards increased weekend activity noted at Yarmouth was again seen at Bouldnor, for RIBs and small yachts, but for other motorised craft, the pattern of usage was more balanced and sailing dinghies showed a marked tendency to be more active on midweek surveys, owing to a single midweek racing event noted above (fig. 6B).

Recreational Activity

As has been observed previously, overall, recreational activity was very low. These data tend to confirm that the relative inaccessibility of the site and only occasional uncovering of the foreshore may be a contributing factor. Dog walking remained the most frequently recorded activity, followed by low-level use of personal water craft, kayaking and angling (Table 3). As was observed in 2022, despite the data being rather limited, there was a clear indication that the recreational activities observed were more common at weekends (fig. 6C) a change from the pattern seen in 2021 when the pattern was more mixed.

Fig. 6A

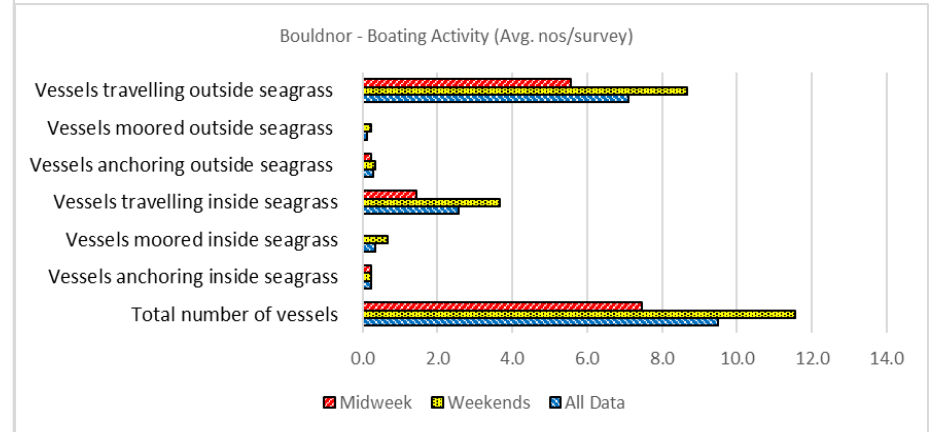
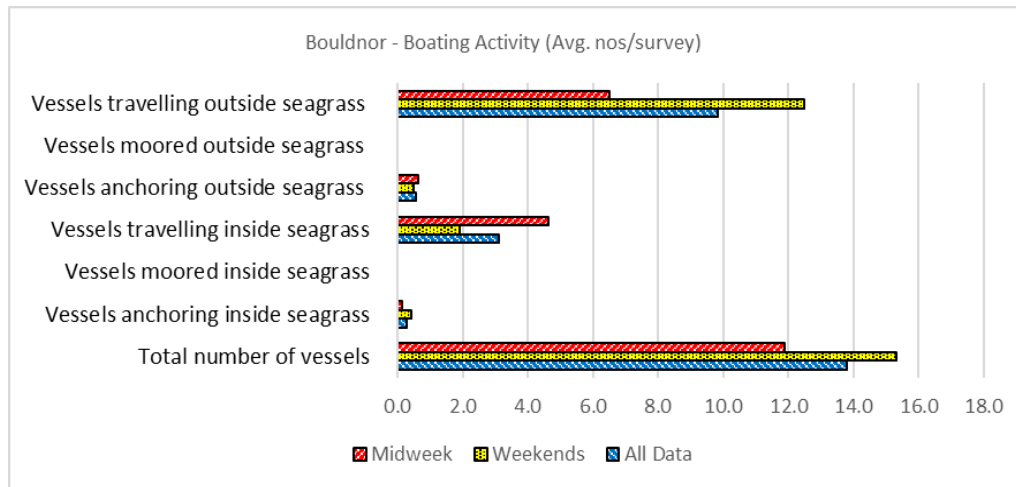


Fig. 6B

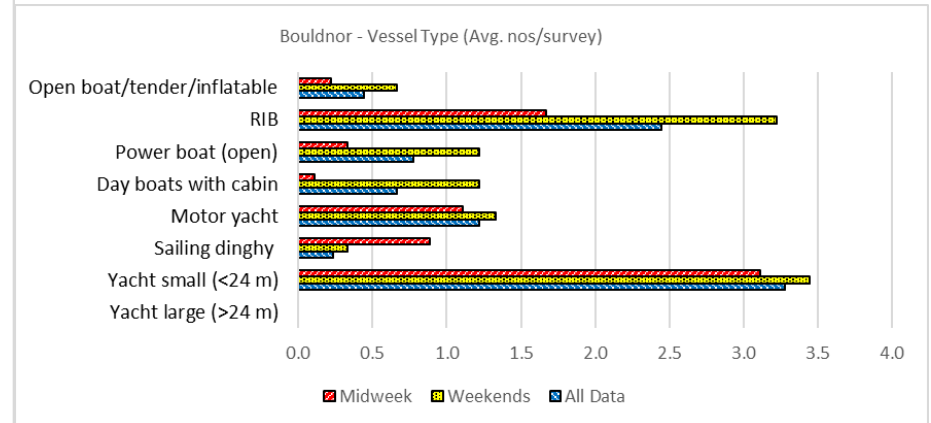
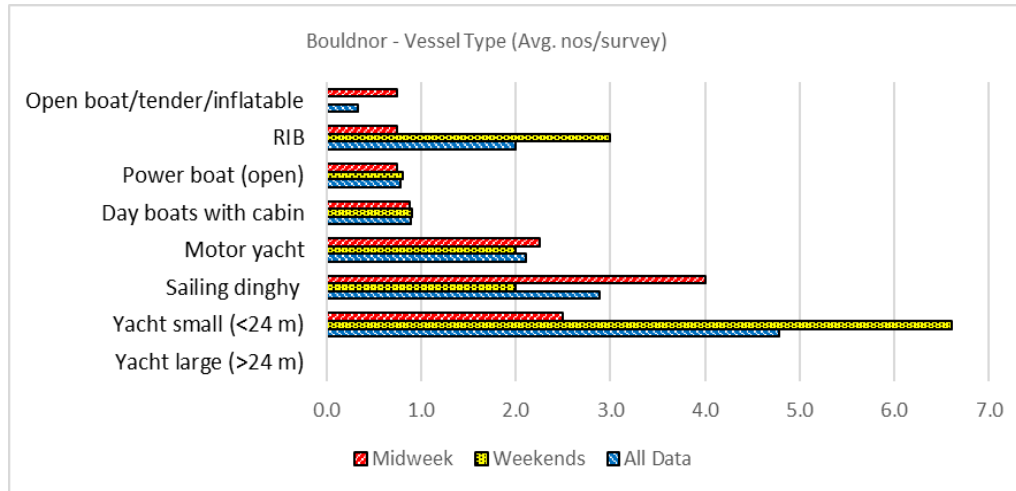


Fig. 6C

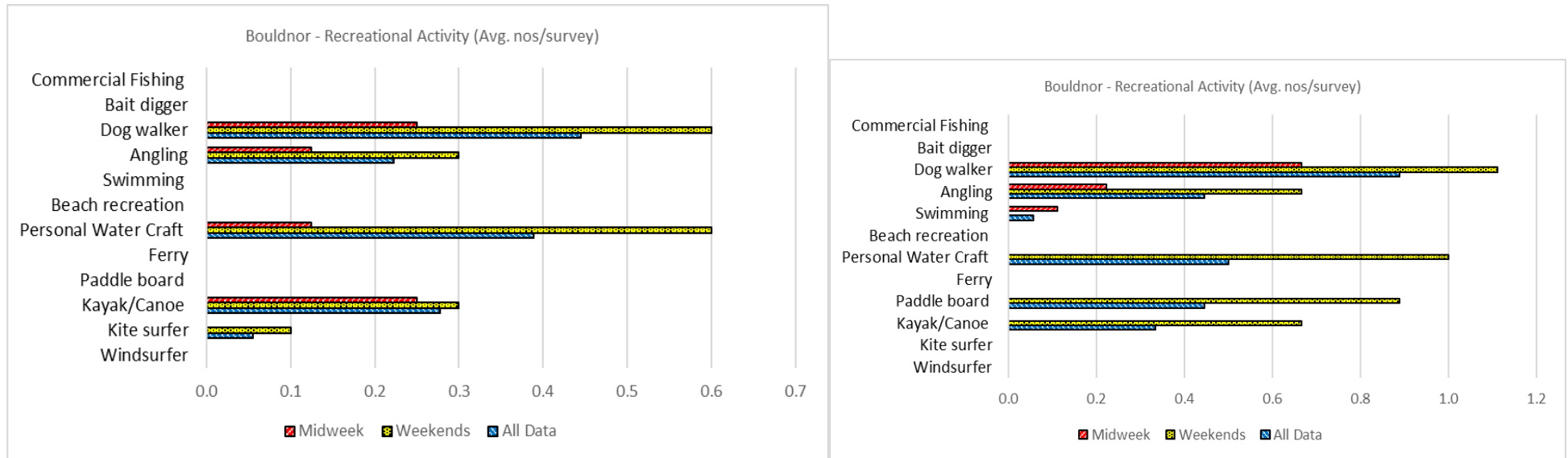


Figure 6. Bouldnor: Average (mean per survey) 2023 data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2022 Graphs inset on the right-hand side.

Osborne Bay



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

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).

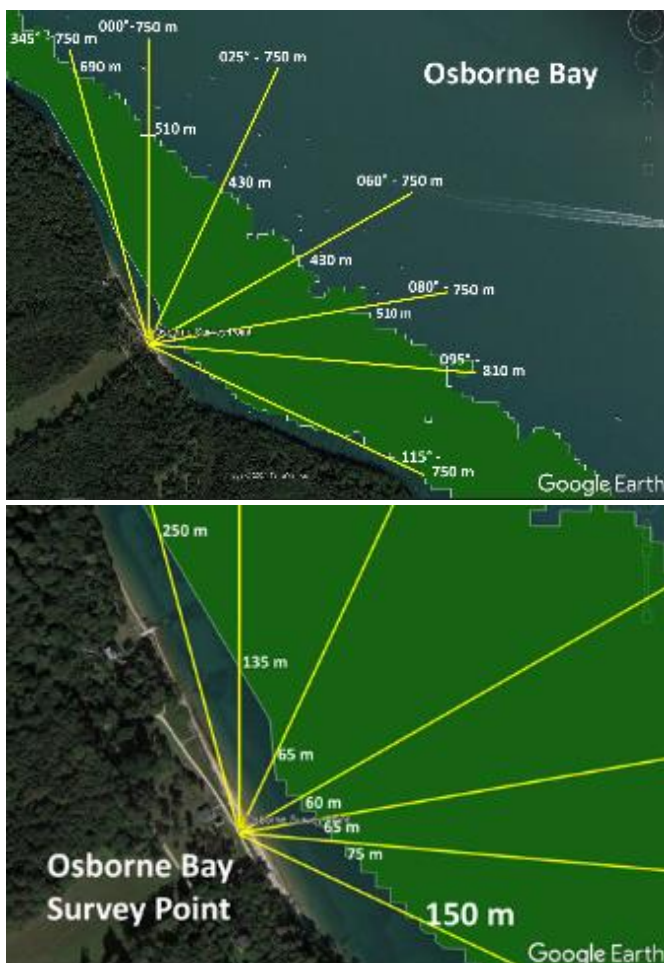


Figure 8. Osborne Bay Survey Area Charts showing sight lines with relevant distances and seagrass in green

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: 13 (7, weekend, 6 midweek)

Boating Activity:

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

Owing to the continued unavailability of the on-site volunteer who helped with surveys in 2021, and sickness of another surveyor, Osborne Bay was only surveyed 13 times during the study period, but this was an increase on the 11 surveys conducted in 2022. An additional survey was attempted by one volunteer who arrived to find that the survey equipment bag had gone missing from its storage location in the beach café. As a result, the surveyor could only survey for 30 minutes and could not record all details. This data has not been incorporated in the analysis but will be referred to as some important observations were made.

Once again, Osborne Bay produced a significant number of vessel records (544, Table 4), representing an average number of 41.8 per survey, which is almost identical to the values for 2021 and 2022 (41.3 and 41.7 respectively). A maximum of 98 boats being observed in a single survey, but in contrast to 2022, these numbers were in mid-August and not associated with Cowes week. Also contrasting with the values for 2022, overall numbers recorded were higher than at Yarmouth.

These data confirm previous observations that, Osborne Bay is very clearly a recreational destination, with harbour and shore landings are either unavailable or not permitted. Consequently, a high number of anchoring events was again recorded both outside the seagrass zone (153 anchoring events) and an increased number inside the seagrass meadow (117, compared with 93 in 2022 and 79 in 2021) and additional transits across the seagrass (61 compared with 90 in 2022 and 54 in 2021) – See Table 4, Fig. 9A. However, some of the anchoring events may have previously been recorded as mooring events, which have been recorded in previous years, but none in the 2023 surveys. This observation may represent a better understanding of the difference between anchoring and mooring in the volunteer who conducted the surveys.

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=13				WEEKEND SURVEYS n = 7				MID-WEEK SURVEYS n = 6			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		12:44	13:50	11:38		12:37	13:40	12:00		12:52	13:50	11:38
End time		13:44	14:50	12:38		13:37	14:40	13:00		13:53	14:50	12:38
Wind speed (km/h)		21.4	49.0	7.0		23.6	31.0	17.0		18.8	49.0	7.0
Temperature (°C)		19.8	22.0	18.0		19.7	22.0	18.0		20.0	22.0	18.0
Cloud cover %		60.4	100.0	1.0		55.0	96.0	3.0		66.7	100.0	1.0
Precipitation		0.4	2.4	0.0		0.6	2.4	0.0		0.1	0.3	0.0
Sea state		1.7	4.0	1.0		1.4	2.0	1.0		2.0	4.0	1.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	544.0	41.8	98.0	4.0	306	43.7	98.0	9.0	238	39.7	79.0	4.0
No. of vessels anchoring inside the seagrass zone	117.0	9.0	35.0	0.0	58	8.3	35.0	0.0	59	9.8	26.0	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	61.0	4.7	17.0	0.0	36	5.1	17.0	0.0	25	4.2	8.0	0.0
No. of vessels anchoring outside the seagrass zone	153.0	11.8	35.0	0.0	68	9.7	27.0	2.0	85	14.2	35.0	0.0
No. of vessels moored 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 travelling outside the seagrass zone	222.0	17.1	35.0	4.0	141	20.1	35.0	6.0	81	13.5	28.0	4.0
Yacht large (>24 m)	4.0	0.3	3.0	0.0	3	0.4	3.0	0.0	1	0.2	1.0	0.0
Yacht small (<24 m)	296.0	22.8	44.0	3.0	179	25.6	44.0	3.0	117	19.5	36.0	4.0
Sailing dinghy	29.0	2.2	8.0	0.0	17	2.4	8.0	0.0	12	2.0	5.0	0.0
Motor yacht	46.0	3.5	10.0	0.0	27	3.9	7.0	1.0	19	3.2	10.0	0.0
Day boats with cabin	40.0	3.1	10.0	0.0	27	3.9	10.0	0.0	13	2.2	4.0	0.0
Power boat (open)	66.0	5.1	16.0	0.0	26	3.7	13.0	0.0	40	6.7	16.0	0.0
RIB	38.0	2.9	11.0	0.0	19	2.7	11.0	0.0	19	3.2	8.0	0.0
Open boat/tender/inflatable	25.0	1.9	10.0	0.0	8	1.1	5.0	0.0	17	2.8	10.0	0.0
Windsurfer	1.0	0.1	1.0	0.0	1	0.1	1.0	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	0.2	1.0	0.0	2	0.3	1.0	0.0	1	0.2	1.0	0.0
Paddle board	10.0	0.8	4.0	0.0	2	0.3	2.0	0.0	8	1.3	4.0	0.0
Ferry	2.0	0.2	1.0	0.0	1	0.1	1.0	0.0	1	0.2	1.0	0.0
Personal Water Craft (PWC) - jet skis etc.	8.0	0.6	2.0	0.0	4	0.6	2.0	0.0	4	0.7	2.0	0.0
Beach recreation	612.0	47.1	118.0	17.0	264	37.7	50.0	27.0	348	58.0	118.0	17.0
Swimming	109.0	8.4	32.0	0.0	32	4.6	9.0	0.0	77	12.8	32.0	0.0
Angling	1.0	0.1	1.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
Dog walker	9.0	0.7	5.0	0.0	4	0.6	3.0	0.0	5	0.8	5.0	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	0.1	1.0	0.0	0	0.0	0.0	0.0

On the incomplete survey conducted on the 6th September 2023, the surveyor noted an additional 67 vessels, with 16 incidences of anchoring within the seagrass and 7 of travelling across the seagrass.

These observations confirm that Osborne Bay remains the survey location subject to be most significant incidence of direct interactions with seagrass owing to recreational boating activity.

In contrast to previous observations, the observed boating activity showed a much more balanced pattern of activity across both weekends and midweek surveys, possibly indicating increased holiday activity as vessels are exclusively visitors with none based at the location (Fig. 9A).

Vessel Type

As found in both previous surveys, and at other sites, the single vessel category recorded in the highest numbers was small yachts (296, Table 4). Numbers of motorised vessels were relatively evenly divided between power boats, dayboats and RIBs, but the trend for increased activity at weekend found in the 2022 survey was not seen, with activity more balanced across midweek and weekends. Interestingly, powerboat activity was seen more often midweek. Fewer large yachts were recorded than in 2022, only 4 compared with 20 records in 2022 and 63 in 2021. It is difficult to conclude whether this truly reflects a reduction in activity or increasing discernment from our surveyors as they have gained experience as vessel size is difficult to assess by observers and there may have been historical 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 noted above for motor vessels, although small yachts still showed relatively elevated activity at weekends, the pattern of activity observed in this survey was much more balanced between the weekend and midweek surveys. This represents a difference to the pattern observed in the previous two surveys, although small yacht activity has always been more common at weekends (Fig. 9B).

Recreational Activity

As reported in 2022 and 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 (612 observations) and swimming (109 observations), and levels of beach recreation activity

were somewhat higher than in 2022 and 2021 - average for beach recreation in 2023 was 47.1 compared with 31.8 (2021) and 29.3 (2022) although swimming remained at comparable levels (Table 4). The prevalence of weekend activity found in 2021 was again reduced, with both beach recreation and swimming more frequently recorded on midweek surveys (Fig 9C). However, it should be noted that the relatively high number of swimmers were recorded from just three of the six midweek surveys, which will have affected the average figure.

Once again, 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, when the tide was low, swimmers regularly walked out considerable distances and would have been walking over the seagrass meadow.

Fig. 9A

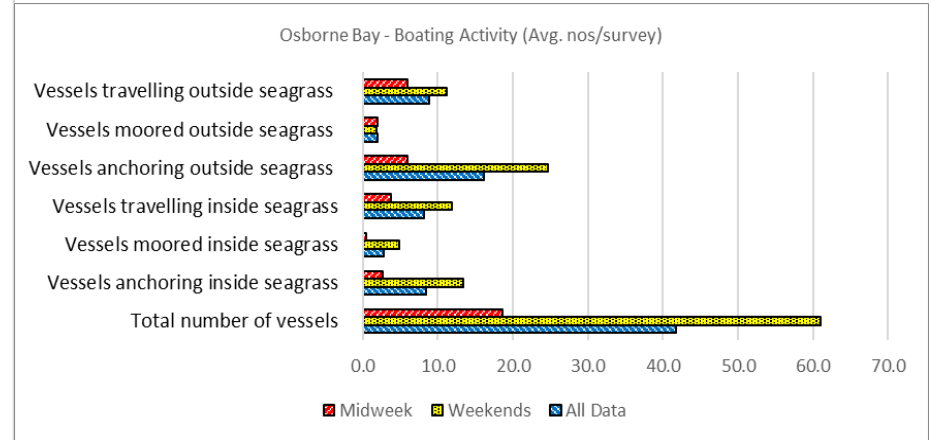
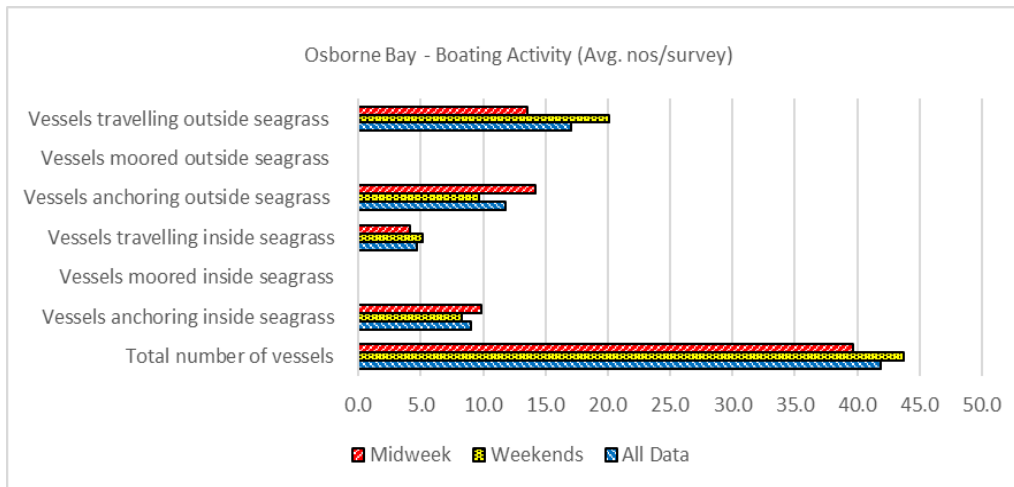


Fig. 9B

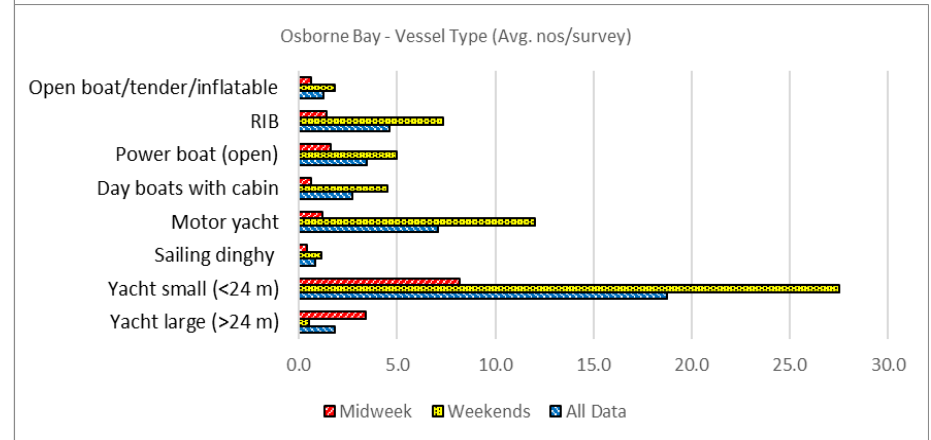
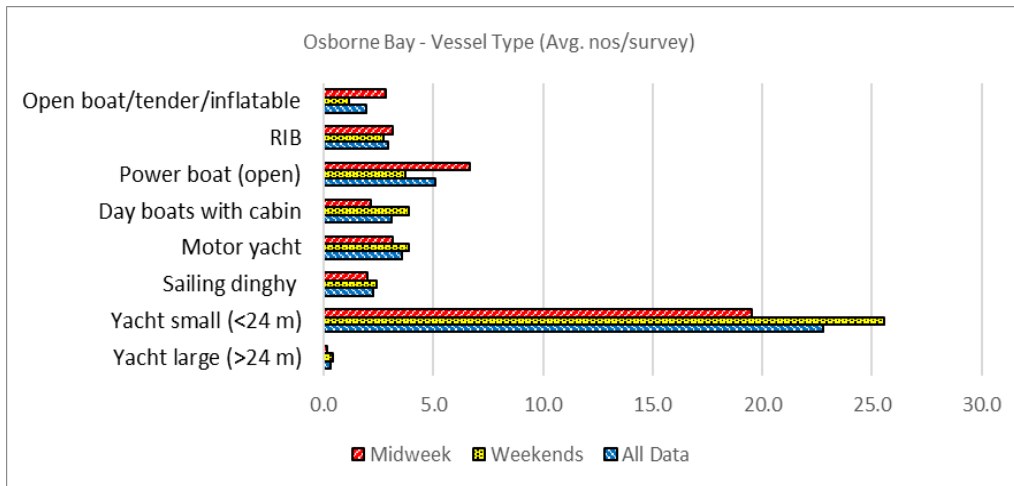


Fig. 9C

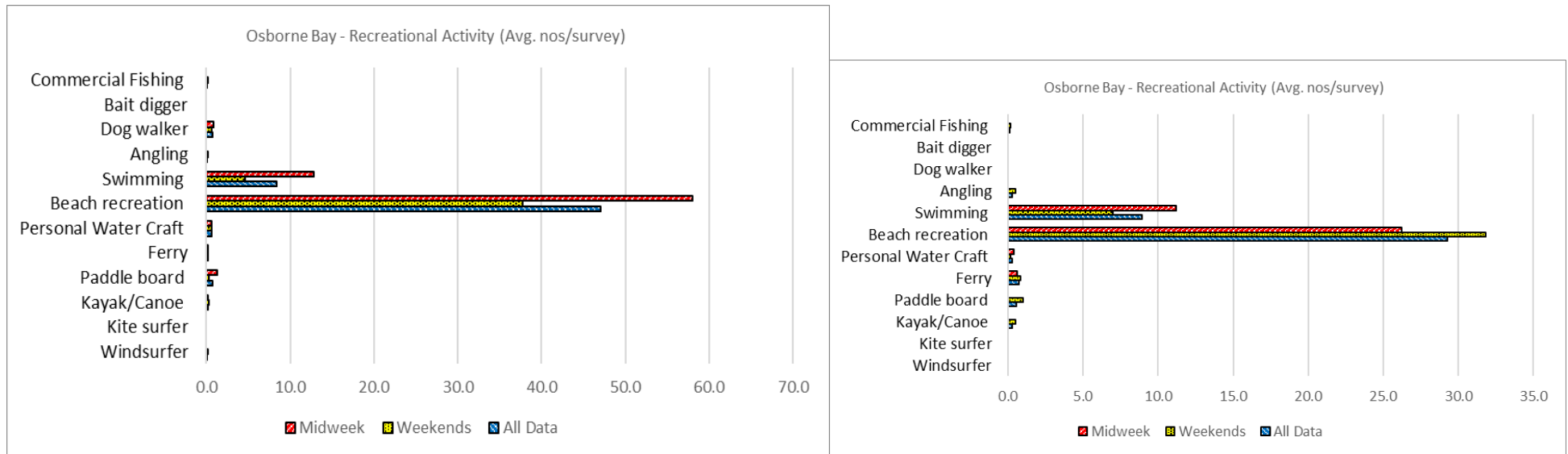


Figure 9. Osborne Bay: Average (mean per survey) 2023 data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2022 Graphs inset on the right-hand side.

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 lines with relevant distances and seagrass 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=9				WEEKEND SURVEYS n = 5				MID-WEEK SURVEYS n = 4			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		12:20	14:50	11:00		11:50	13:30	11:00		12:57	14:50	11:00
End time		13:21	15:50	12:00		12:51	14:30	12:00		13:58	15:50	12:00
Wind speed (km/h)		14.0	21.0	5.0		17.6	21.0	12.0		9.5	13.0	5.0
Temperature (°C)		20.0	24.0	17.0		18.8	21.0	17.0		21.5	24.0	18.0
Cloud cover %		58.4	100.0	5.0		64.6	100.0	13.0		50.8	100.0	5.0
Precipitation		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Sea state		2.0	3.0	0.0		2.4	3.0	2.0		1.5	3.0	0.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	143.0	15.9	37.0	1.0	102	20.4	37.0	1.0	41	10.3	23.0	2.0
No. of vessels anchoring inside the seagrass zone	16.0	1.8	8.0	0.0	5	1.0	3.0	0.0	11	2.8	8.0	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	15.0	1.7	6.0	0.0	10	2.0	6.0	0.0	5	1.3	3.0	0.0
No. of vessels anchoring outside the seagrass zone	11.0	1.2	4.0	0.0	8	1.6	4.0	0.0	3	0.8	2.0	0.0
No. of vessels moored outside the seagrass zone	1.0	0.1	1.0	0.0	1	0.2	1.0	0.0	0	0.0	0.0	0.0
No. of vessels travelling outside the seagrass zone	100.0	11.1	26.0	0.0	78	15.6	26.0	0.0	22	5.5	10.0	0.0
Yacht large (>24 m)	23.0	2.6	7.0	0.0	10	2.0	4.0	0.0	13	3.3	7.0	0.0
Yacht small (<24 m)	72.0	8.0	27.0	0.0	62	12.4	27.0	0.0	10	2.5	5.0	1.0
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	20.0	2.2	7.0	0.0	11	2.2	6.0	0.0	9	2.3	7.0	0.0
Day boats with cabin	6.0	0.7	3.0	0.0	5	1.0	3.0	0.0	1	0.3	1.0	0.0
Power boat (open)	5.0	0.6	2.0	0.0	3	0.6	2.0	0.0	2	0.5	2.0	0.0
RIB	19.0	2.1	6.0	0.0	12	2.4	6.0	0.0	7	1.8	5.0	0.0
Open boat/tender/inflatable	1.0	0.1	1.0	0.0	0	0.0	0.0	0.0	1	0.3	1.0	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	4.0	0.4	4.0	0.0	0	0.0	0.0	0.0	4	1.0	4.0	0.0
Paddle board	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Ferry	1.0	0.1	1.0	0.0	1	0.2	1.0	0.0	0	0.0	0.0	0.0
Personal Water Craft (PWC) - jet skis etc.	6.0	0.7	2.0	0.0	6	1.2	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	0.0	0.0	0.0	0.0	0	0.0	0.0	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	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	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: 9 (5, weekend, 4 midweek)

Boating Activity:

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

As in previous years, Kings Quay proved the most challenging site for surveys. This site was only surveyed 9 times, one less than in 2022, during the study period, owing to volunteer availability and the rather difficult access to the site compared with the other sites. However, the balance between weekend and midweek surveys was rather better: 5 and 4 versus 8 and 2 respectively.

There was a relatively low number of 145 boating observations over the survey period, similar to the 111 recorded in 2022, but this figure was higher than the 36 observations in the 2021 surveys.

Fig. 12A

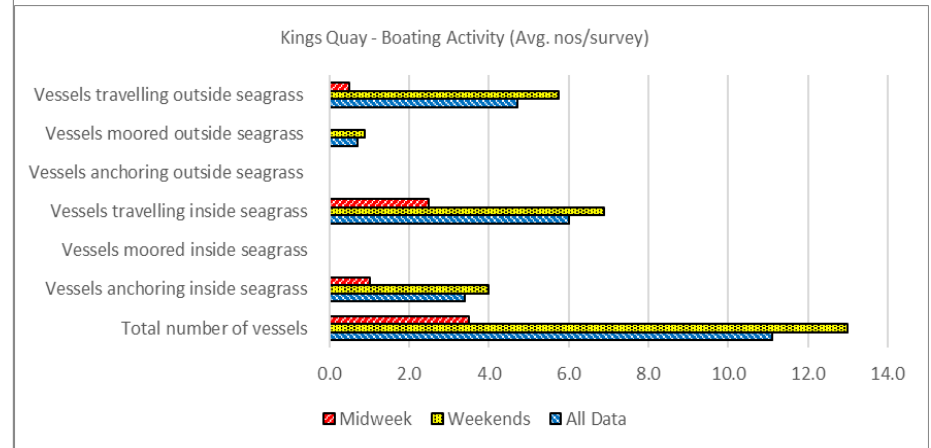
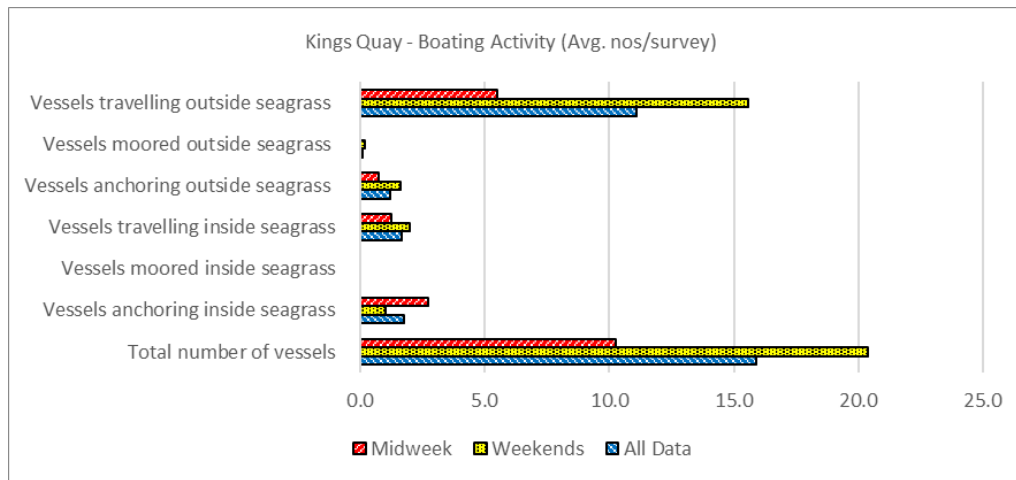


Fig. 12B

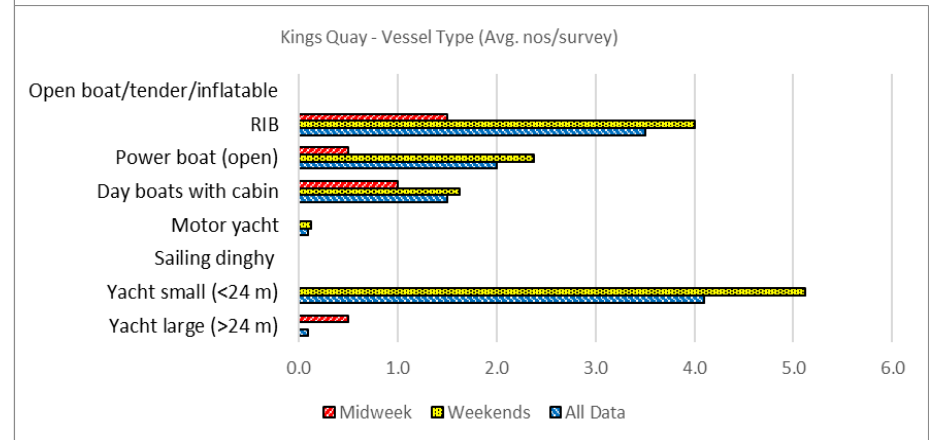
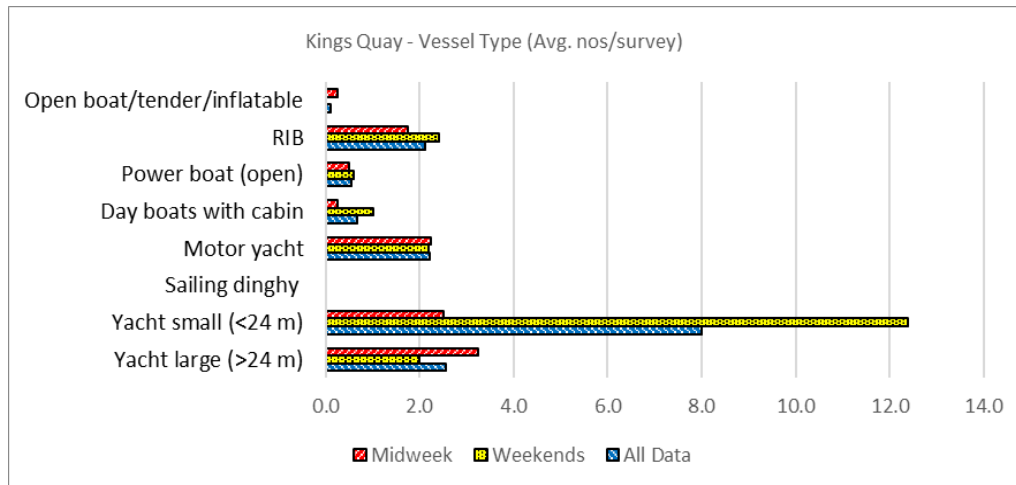


Fig. 12C

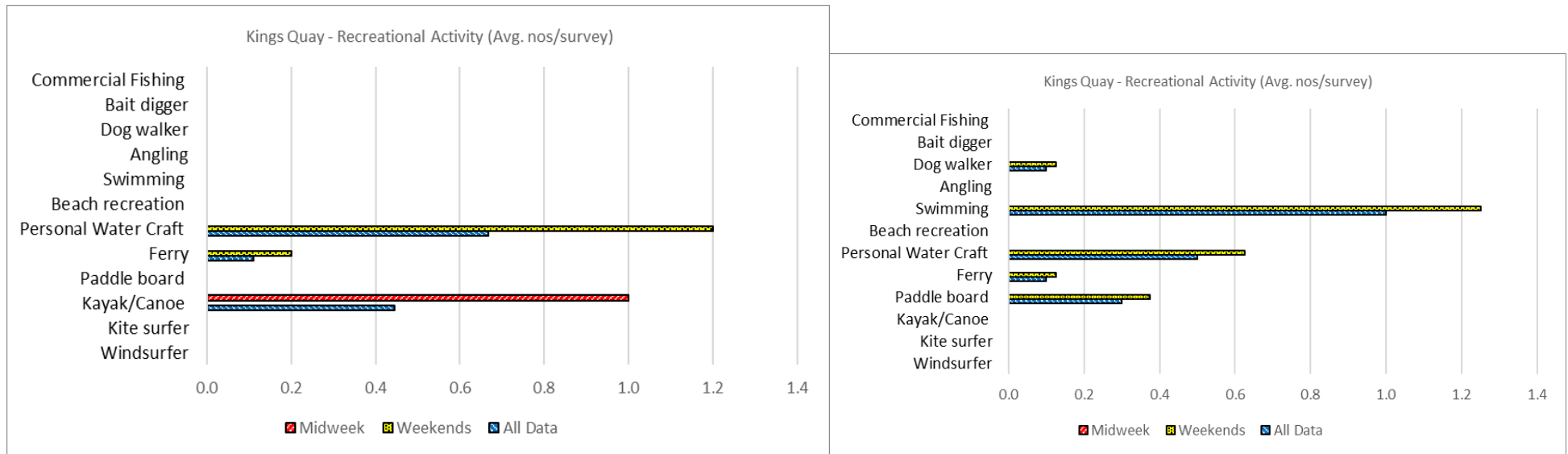


Figure 12. Kings Quay: Average (mean per survey) 2023 data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2022 Graphs inset on the right hand side.

There was no obvious peak of activity coinciding with the end of Cowes week, but numbers were generally higher at weekends. 16 instances of anchoring within the seagrass meadows were recorded, lower than the 34 recorded in 2022, but in that season, a single survey accounted for 21 of the 34 observations of vessels anchoring within the seagrass.

As has been observed for both 2021 and 2022, the instances of anchoring within the seagrass, at Kings Quay showed a higher average anchoring rate than at Yarmouth West or Bouldnor and the site remains the second most impacted site in these surveys.

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). However, anchoring within the seagrass was more prevalent during the midweek surveys.

Vessel Type

In previous years, the clear majority of all vessels visiting Kings Quay were motor vessels, but in the 2023 surveys, this situation was reversed, and the majority of vessels observed were small yachts. (72 of 143 vessels recorded) with an unusually high number of large yachts recorded (23), which may represent an artefact owing to some relatively inexperienced surveyors being present and the difficulty of assessing scale at the long viewing distances which can be encountered at Kings Quay, particularly at low water. Motor yachts and RIBs comprised the majority of the motor vessels observed, and in these surveys, waterskiing activity was not observed (Table 6).

The pattern of the most frequently recorded small yacht traffic was strongly skewed towards the weekend surveys, but the pattern of activity for other vessels was more balanced (Table 5, Fig. 12B).

Recreational Activity

Recreational activity on the beach itself at Kings Quay remained at very low intensity and very 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. Use of personal watercraft was restricted to weekends, whilst kayaking/canoeing was only observed midweek. Swimming, beach recreation and dog walking were not observed in 2023 but the last two of these activities depends on a vessel landing on the shore and not being deterred by the signage and intervention by the landowner (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)

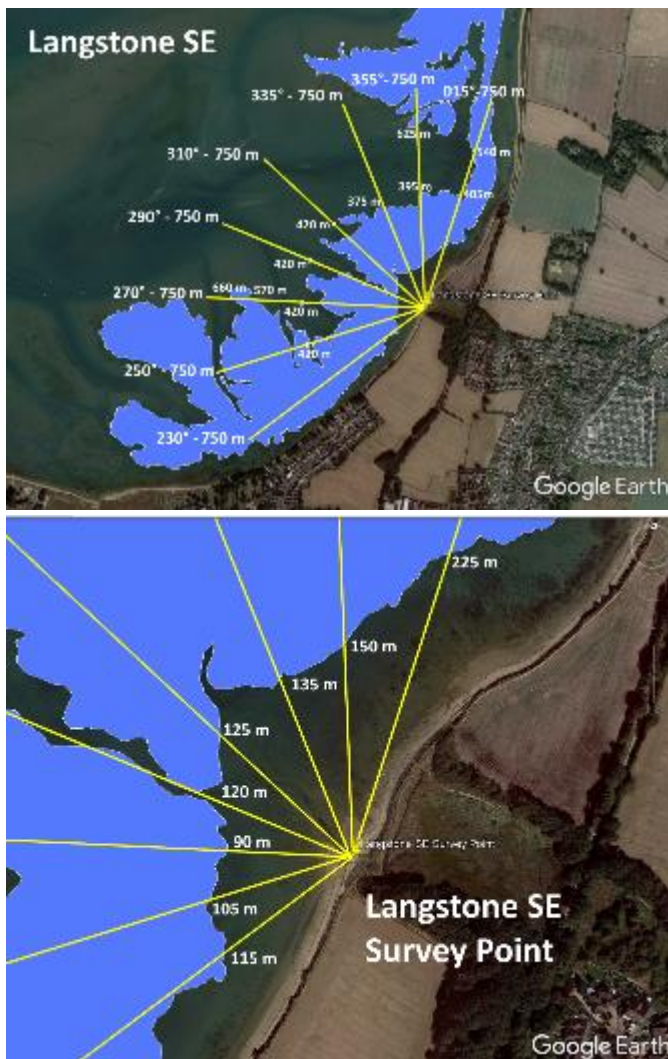


Figure 14. Langstone Harbour Survey Area Charts showing sight lines with relevant distances and seagrass in blue

Survey Results

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

Boating Activity:

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

In 2022 very low numbers of boat records (22 observations) were recorded, compared with the values from 2021 (273 observations). In the current survey, numbers of observations were intermediate, with 107 observations made over a slightly lower number of surveys (15 surveys, 7 weekend and 8 midweek). Average numbers of 7.1 vessels per survey were also intermediate, between the 2021 value of 17.1 and the 2022 value of 1.2, indicating that there was little impact of the slightly smaller sample size.

However, as was found in 2021, the total number of vessels was highly influenced by a relatively small number of days when high numbers were reported, and in the current surveys, it was notable that 58 of the total number of observations were made on a single

midweek survey. Excluding these data would make the levels of activity much closer to those recorded in 2022.

These results remain somewhat difficult to explain. As for 2021, it is possible that particularly busy days associated with special events were not surveyed in 2022.

Surveyor bias also has to be considered, but the surveyor who reported the high value of 58 observations conducted two other surveys and reported figures in line with other surveyors, so there does not appear to be any systematic bias.

A single incidence of anchoring inside the seagrass meadow was recorded in these surveys, but otherwise, the pattern was similar for 2022 and 2021 in that a number of observations of mooring (18 in total) were made (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, some observers have noted that their observations of mooring were close to the mapped outer limits of the seagrass which indicates a level of uncertainty. 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. Ultimately, it may require a survey on foot or by boat to determine if there are definitely mooring interactions with seagrass in this area.

The majority of vessel recordings were made during the midweek surveys, as has been observed in 2022 and in contrast with 2021 when a slight indication of more weekend activity was found. This result was relatively consistent, although more vessels were observed travelling inside and mooring outside the seagrass meadow at weekends. However, both these activities occurred at very low levels so the influence of low numbers may be significant.

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=15				WEEKEND SURVEYS n = 7				MID-WEEK SURVEYS n = 8			
		Avg.	Max	Min		Avg.	Max	Min		Avg.	Max	Min
Start time		11:47	13:55	11:00		12:18	13:55	11:00		11:20	12:00	11:00
End time		12:47	14:55	12:00		13:18	14:55	12:00		12:20	13:00	12:00
Wind speed (km/h)		20.5	39.0	4.0		21.4	28.0	11.0		19.6	46.0	4.0
Temperature (°C)		20.0	27.0	17.0		19.7	25.0	17.0		20.3	27.0	17.0
Cloud cover %		64.1	100.0	10.0		72.4	100.0	40.0		56.9	100.0	10.0
Precipitation		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0
Sea state		2.4	5.0	0.0		2.7	4.5	1.0		2.1	5.0	0.0
	Total	Avg.	Max	Min	Total	Avg.	Max	Min	Total	Avg.	Max	Min
Total number of vessels	107.0	7.1	58.0	0.0	19	2.7	8.0	0.0	88	11.0	58.0	3.0
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	18.0	1.2	3.0	0.0	6	0.9	3.0	0.0	12	1.5	3.0	0.0
No. of vessels travelling inside seagrass zone	2.0	0.1	1.0	0.0	2	0.3	1.0	0.0	0	0.0	0.0	0.0
No. of vessels anchoring outside the seagrass zone	1.0	0.1	1.0	0.0	1	0.1	1.0	0.0	0	0.0	0.0	0.0
No. of vessels moored outside the seagrass zone	24.0	1.6	9.0	0.0	2	0.3	2.0	0.0	22	2.8	9.0	0.0
No. of vessels travelling outside the seagrass zone	62.0	4.1	46.0	0.0	8	1.1	5.0	0.0	54	6.8	46.0	0.0
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)	54.0	3.6	25.0	0.0	9	1.3	4.0	0.0	45	5.6	25.0	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	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	1.0	0.1	1.0	0.0	0	0.0	0.0	0.0	1	0.1	1.0	0.0
Power boat (open)	35.0	2.3	29.0	0.0	5	0.7	2.0	0.0	30	3.8	29.0	0.0
RIB	5.0	0.3	2.0	0.0	4	0.6	2.0	0.0	1	0.1	1.0	0.0
Open boat/tender/inflatable	4.0	0.3	2.0	0.0	1	0.1	1.0	0.0	3	0.4	2.0	0.0
Windsurfer	2.0	0.1	1.0	0.0	1	0.1	1.0	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	16.0	1.1	4.0	0.0	3	0.4	2.0	0.0	13	1.6	4.0	0.0
Paddle board	5.0	0.3	3.0	0.0	1	0.1	1.0	0.0	4	0.5	3.0	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.	2.0	0.1	1.0	0.0	1	0.1	1.0	0.0	1	0.1	1.0	0.0
Beach recreation	33.0	2.2	18.0	0.0	6	0.9	3.0	0.0	27	3.4	18.0	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	2.0	0.1	1.0	0.0	1	0.1	1.0	0.0	1	0.1	1.0	0.0
Dog walker	53.0	3.5	10.0	0.0	15	2.1	5.0	0.0	38	4.8	10.0	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

Fig. 15A

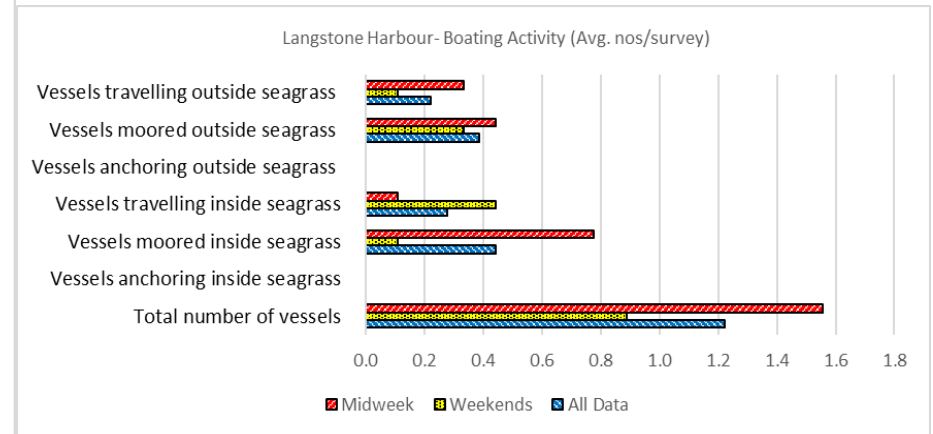
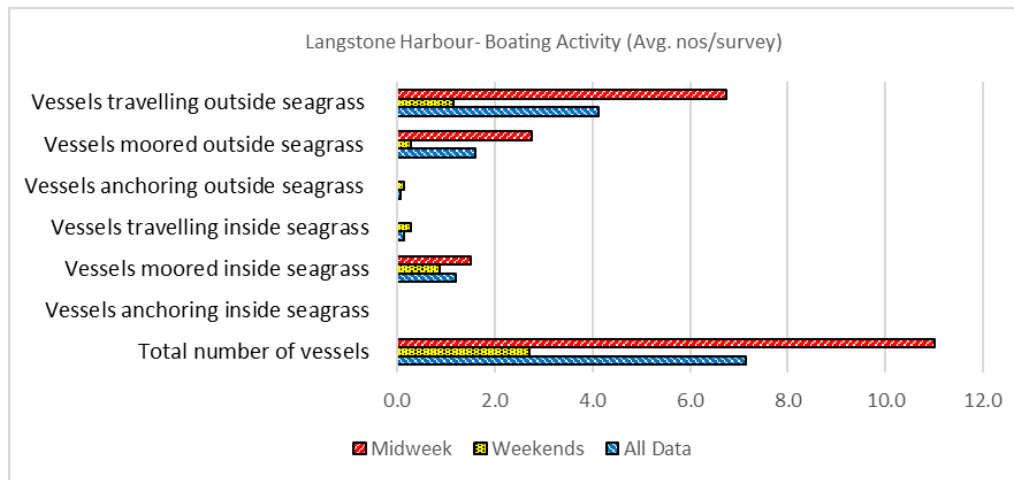


Fig. 15B

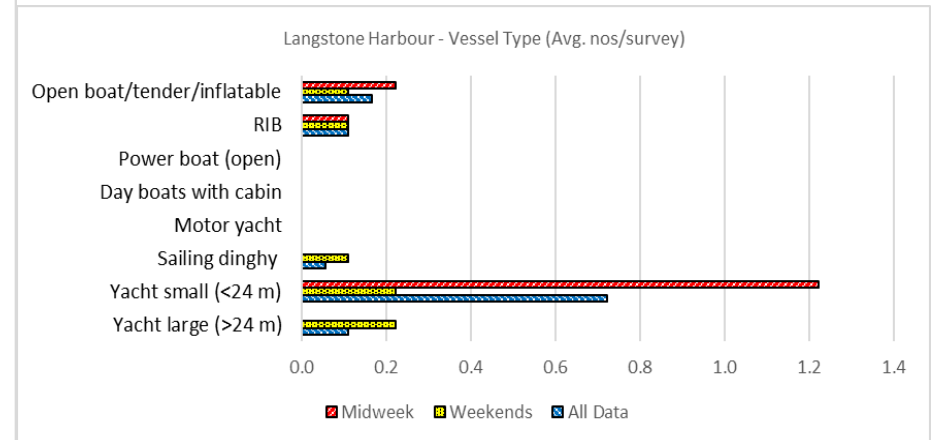
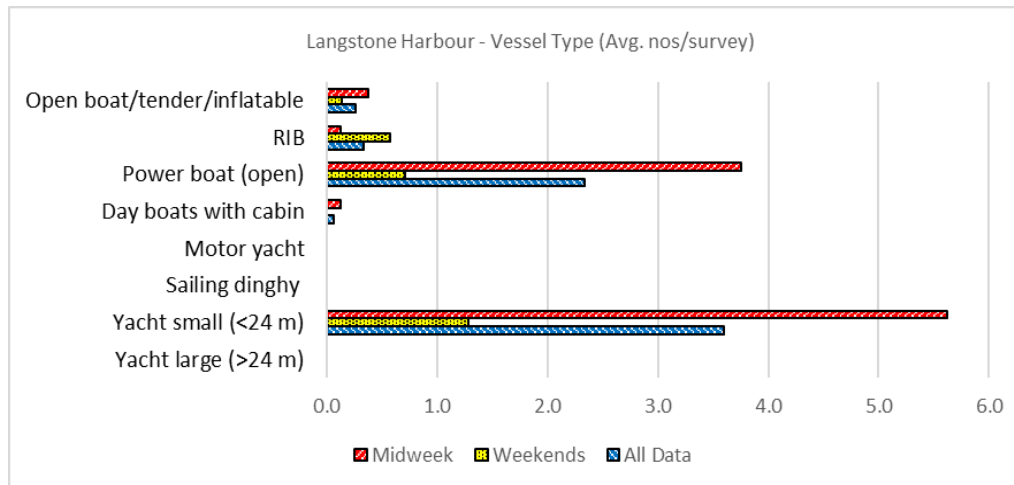


Fig. 15C

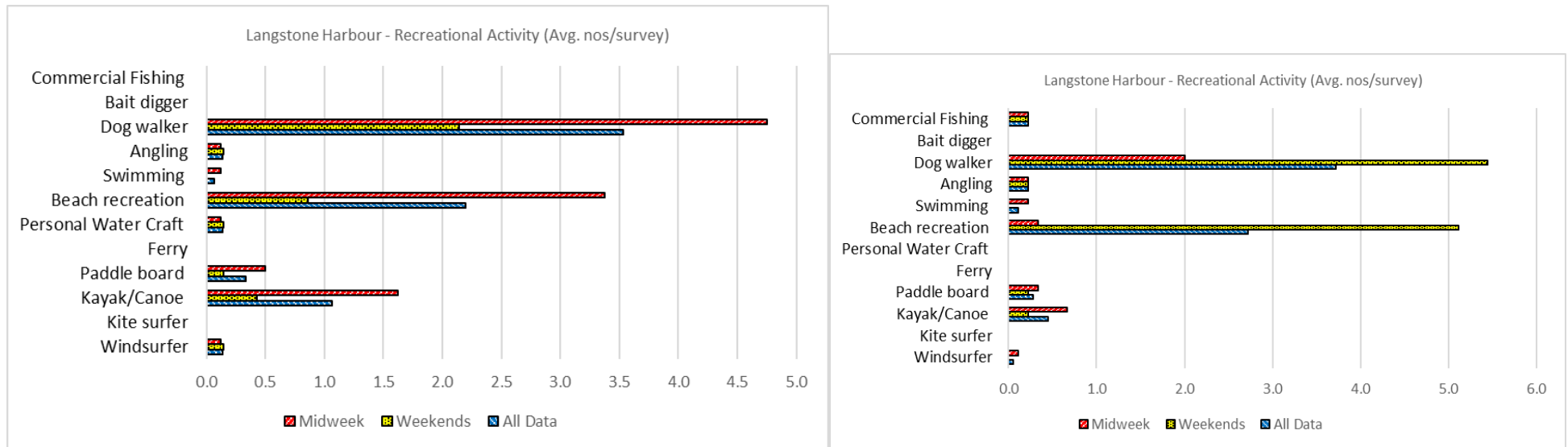


Figure 15. Langstone Harbour: Average (mean per survey) 2023 data for (A) Boating Activity, (B) Vessel type and (C) Recreational Activity recorded across the survey period, shown for midweek, weekend and combined data. 2021 data on the left hand side, 2021 data on the right-hand side for comparison.

Vessel Type

As observed in previous years, the single vessel category recorded in the highest numbers was small yachts (54), although power boats were a greater presence (35) compared with previous years (Table 6). The diversity of vessels remained relatively low, compared with the 2021 survey, with no large yachts recorded, a change from 2022 and 2021, but possibly an artefact of low numbers (Table 6, Fig 15B).

As for 2022, the pattern of small yacht activity remained strongly skewed towards midweek activity, contrasting with the 2021 result (Fig. 15B). This pattern was repeated for the power boat category. Results for the other vessel classes are likely to be unreliable owing to small sample numbers.

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, although slightly less frequently recorded, was by far the most popular activity, followed by beach recreation. 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. Paddleboarding and kayak/canoe activity continued to be recorded at similar level, perhaps reflecting the popularity of the harbour for water sports, but windsurfing was again not recorded as frequently, as it had been in 2021. The pattern of recreational activity showed a complete reversal, compared with previous years, and was recorded more often on the midweek surveys, a result which is difficult to explain, but as observed above, these results were strongly influenced by particularly high midweek observations of dog walking (10 observations) and beach recreation (18 observations) made on two separate midweek surveys (Table 6, Fig. 15C).

After four instances of commercial fishing were recorded on the mudflats and seagrass in 2022, it was encouraging to note that no such similar activities were observed in the current surveys.

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 2022 and 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, in this survey there was more boating traffic at Osborne Bay than at Yarmouth. Kings Quay and then Bouldnor were the next most visited sites with Langstone Harbour as in 2022, but not 2021, recording the lowest boating activity.

The previously reported difference remained between Yarmouth West, located adjacent to a harbour and Osborne Bay being primarily a recreational destination, reflected in the differences of 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 the seagrass and anchoring, both outside and inside the seagrass meadows.

The relatively high activity at Kings Quay was also reflected in increased records of vessels travelling over the seagrass area and Kings Quay recorded a 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). The pattern of usage remained broadly similar to that observed in previous surveys, although the somewhat lower overall boating activity at Yarmouth was reflected in the data. Across the region, small yachts (< 24 m) were the most frequently observed vessel type, particularly at Osborne Bay, Yarmouth and at a slightly higher level at Kings Quay than previously reported. 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 two sites, Yarmouth West and Bouldnor. At Langstone Harbour and Kings Quay they were recorded in approximately the same numbers, but Osborne Bay showed a clear majority of small yachts. Average numbers revealed that Motor yachts were most abundant at only Yarmouth, and small yachts at Osborne Bay, with relatively balanced numbers at the three remaining locations.

Large yachts were recorded from only two, instead of four sites in 2022, Kings Quay and Osborne Bay, but in rather low numbers, which may reflect a combination of different usage patterns and issues of accessibility to inshore waters for vessels with 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. Where sailing dinghies were observed, Yarmouth, Osborne and Kings Quay, possibly reflects their being the most suitable sites for such activity.

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, although less so at Yarmouth than in 2022, and dog walking at Langstone Harbour and Yarmouth West.

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. Commercial fishing was recorded only once, and bait digging not at all.

Once again, the most striking observation on the pattern of recreational activity was the similarity of the results to those obtained in the 2022 and 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 three surveys to date, particularly the relative levels of activity at Yarmouth West and Osborne Bay and at Langstone Harbour.

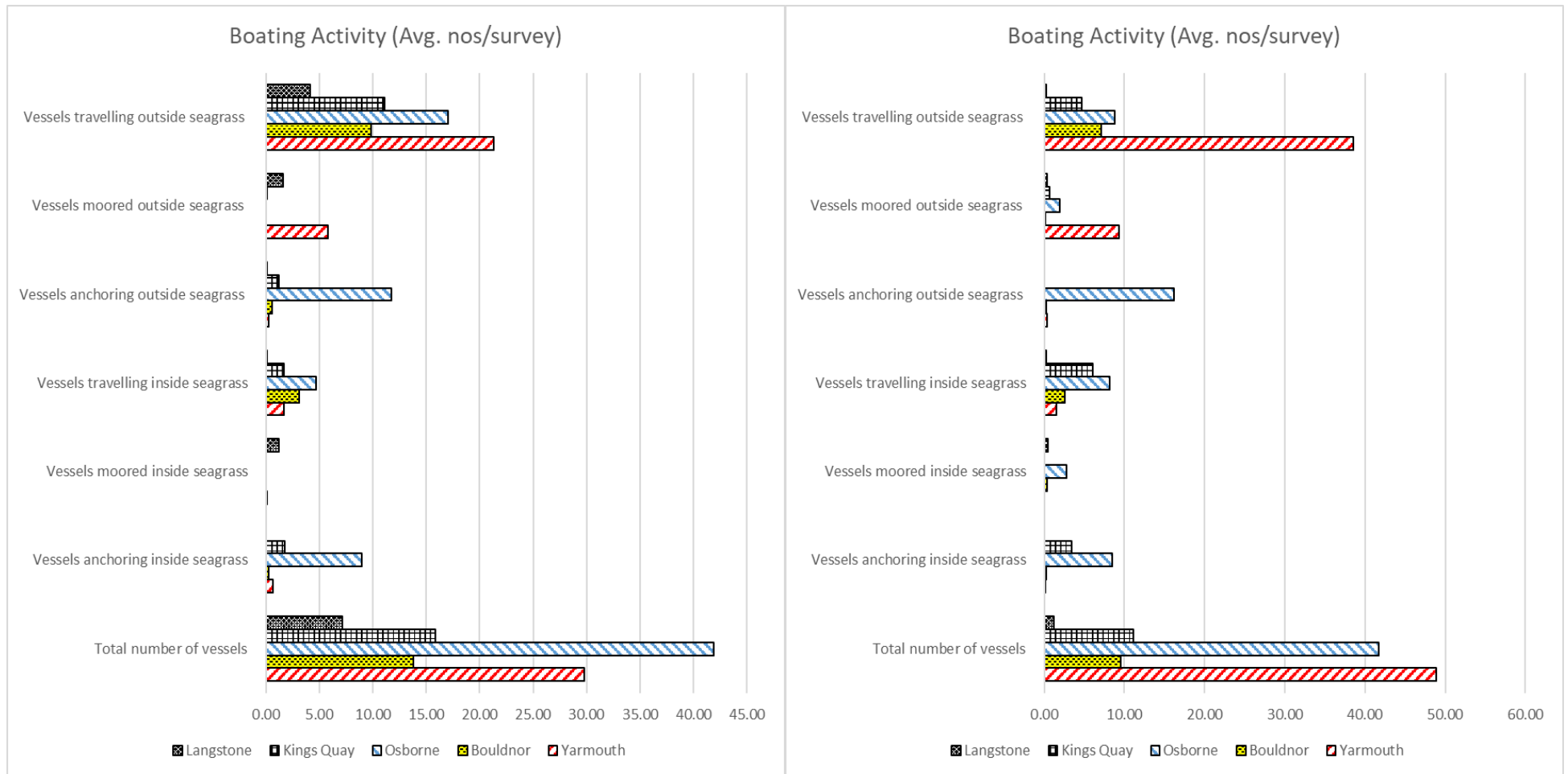


Figure 16. Boating activity across the study region (Average number per survey). 2023 data on the left hand side, 2022 data for comparison on the right-hand side.

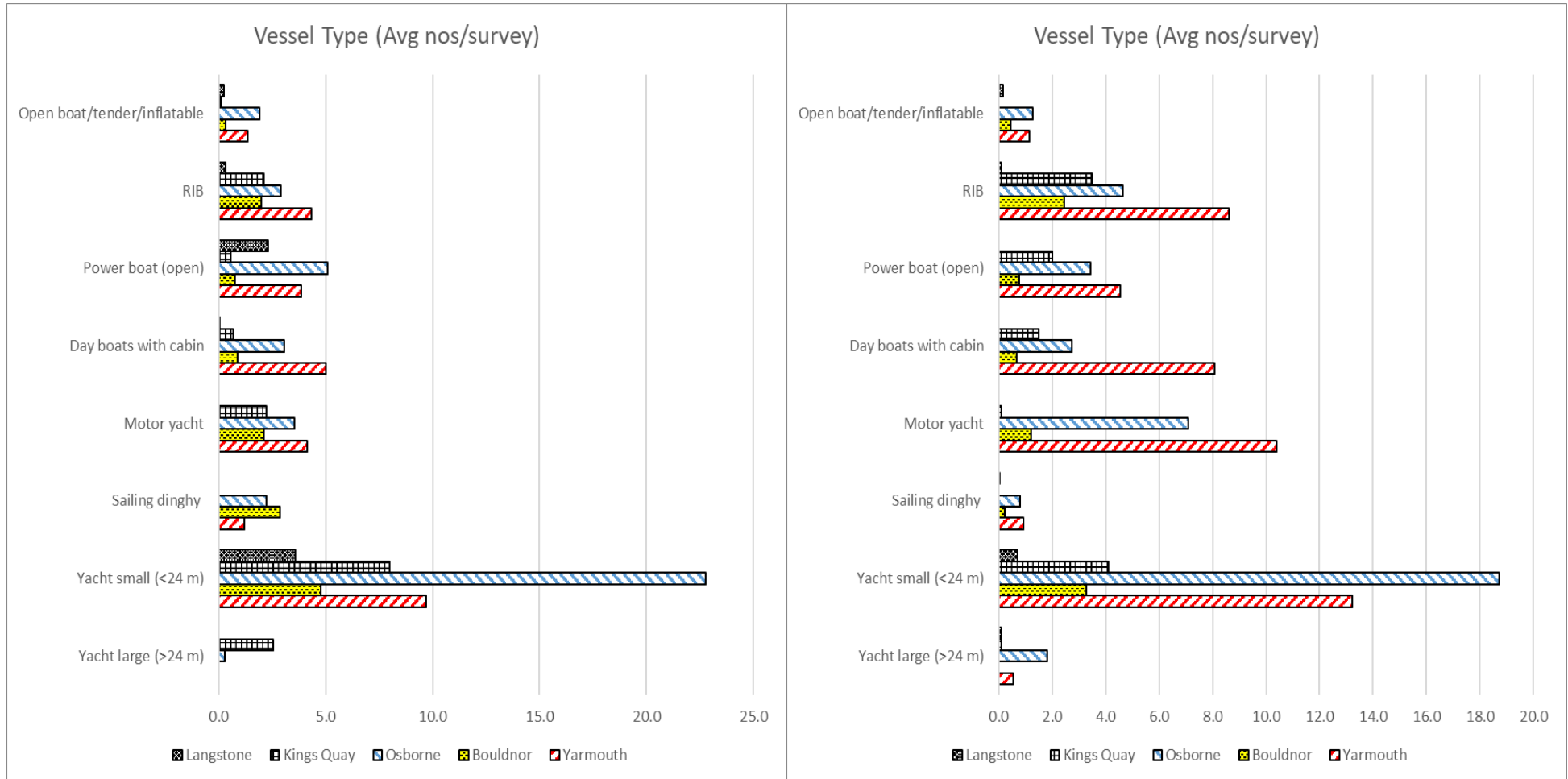


Figure 17. Vessel type recorded across the study region (Average number per survey). 2023 data on the left hand side, 2022 data for comparison on the right-hand side.

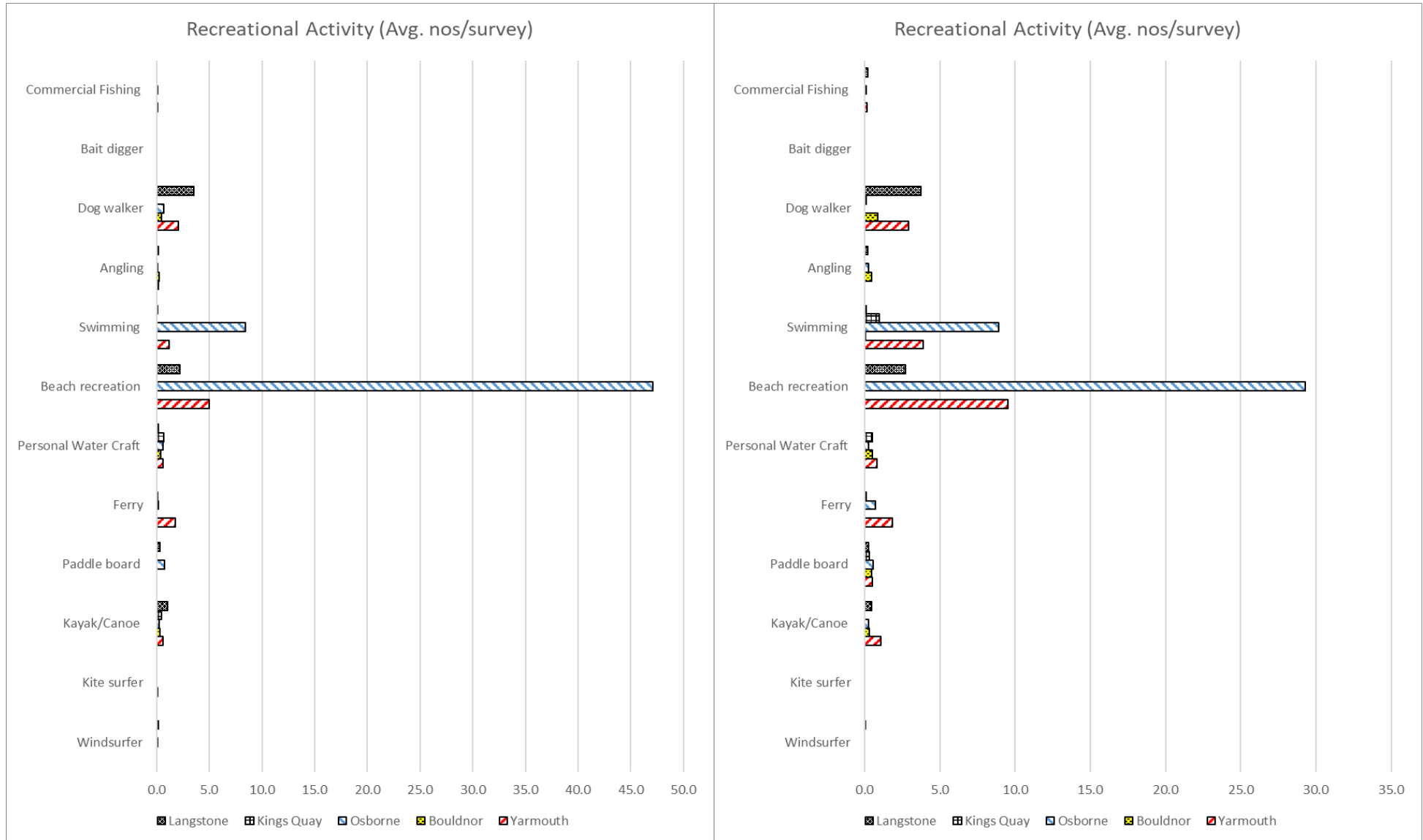


Figure 18. Recreational activity recorded across the study region (Average number per survey). 2022 data on the left hand side, 2021 data for comparison on the right-hand side.

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. There were two relatively poor weather days during the surveys (August 2nd, the weekend of the 16/17th September and the 20th September) where the few surveyors that undertook surveys reported reduced activity at some sites, but these events were insufficient to affect the overall results. The period August – September 2023, was relatively settled, with a warm period at the beginning of September but not the more extreme heatwave conditions seen in previous summers, with relatively 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.

These data may 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 possible 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. It was also noted that at some sites – e.g. Osborne Bay, confusion over mooring has largely been eliminated as no incidences were recorded, which is in line with known moorings over the study area.

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, but not at Kings Quay, where it has been in previous years. A concern regarding this activity is that the current recording scheme does not allow for the multiple-event nature of activities like water-skiing. In previous surveys, surveyors have noted single vessels completing eleven and nine high speed towing passes across the seagrass meadow during single hour-long observations. The nature of the activity may not allow for it to be regularly recorded in these surveys, but the potential impact would appear to be proportionally greater than that posed by vessels traversing relatively slowly as they look to anchor or moor.

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 over the course of the surveys. A number of ad hoc bird sightings were noted including sandwich tern, oyster catcher, black headed gull and egret.

One specific instance of wildlife disturbance was recorded in this survey, a flock of gulls disturbed at Langstone Harbour by a dog, and it is clear that interactions between human activity and wildlife does occur.

The presence of a seal at the Kings Quay site was, however, not noted this year.

A unique observation for the surveys to date was that of a seaplane at Bouldnor, which landed and subsequently took off again over the seagrass area.

Discussion and conclusions

These surveys have again 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 2023 surveys further support the conclusions of the 2022 and 2021 surveys, 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, although slightly higher than in the in the 2021 and 2022 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 the level of anchoring impact at Kings Quay, may be of concern, 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. Anchoring levels remained higher than in 2021 in this survey, though lower than in 2022.

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. The reduction in activity in the 2022 survey, made conclusions difficult, but as mooring has again been recorded in 2023, further surveys of the potential mooring locations may be required, if possible before the 2024 survey.

Further surveys will be carried out in 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 2024, 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 2024, in order to increase the number of surveys completed.

It is hoped that 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 (cumulative)

- Overall, the results of the 2023 surveys, strongly support the key conclusions of the 2021 and 2022 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.
- Significantly higher levels of anchoring pressure than at 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 which may have been underestimated 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 may 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.

References

Ferrero T.J. (2022) **EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2021**. *Hampshire and Isle of Wight Wildlife Trust, Report No. HIWWT-LS 20220214* 68 pp.

Ferrero T.J. (2023) **EU Life Recreation ReMEDIES Solent Recreational Activities Surveys 2022**. *Hampshire and Isle of Wight Wildlife Trust, Report No. HIWWT-LS 20230313* 68 pp.

Appendices

Appendix 1

Volunteer Survey Instruction Manual

LIFE Recreation ReMEDIES

Solent Recreational Activity Survey 2021

VOLUNTEER SURVEY INSTRUCTION MANUAL

V 3.0 202100805

August 2021

Dr Tim Ferrero

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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 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 increasingly 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



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).

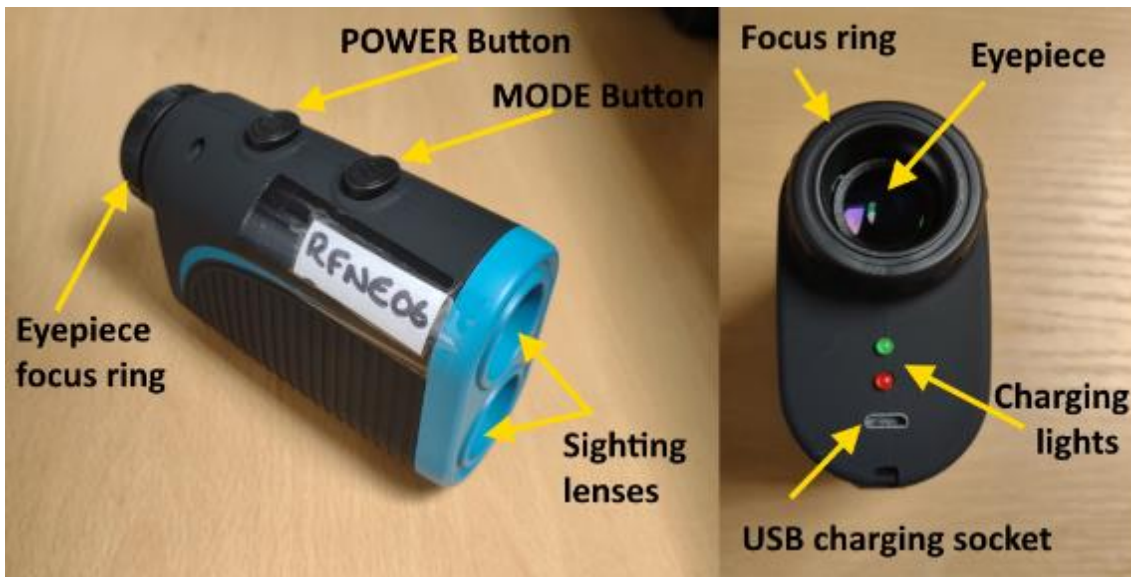
Therefore, **volunteers do not need to adjust any “MODE” settings and the rangefinder can be operated using just the power button.**

- 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:

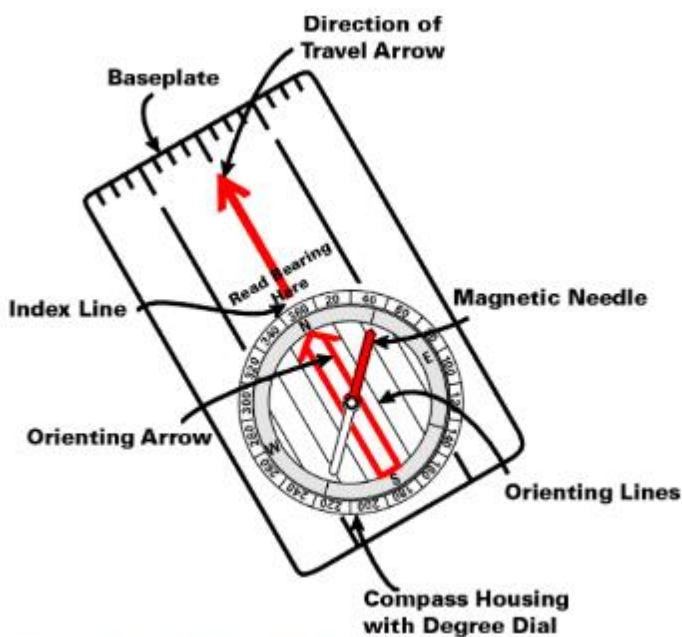
- Point the Direction of Travel Arrow at the vessel

- 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...

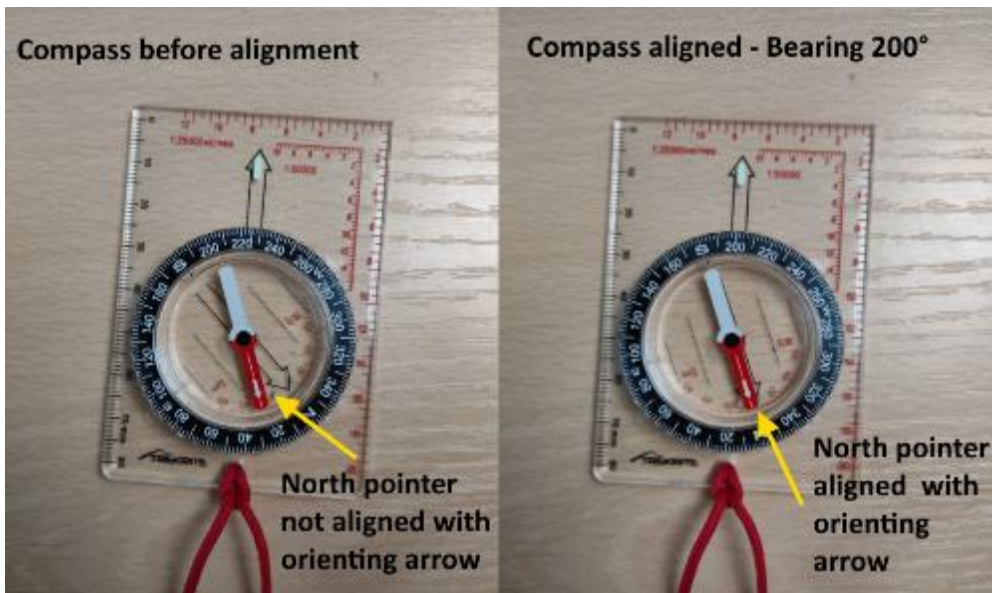
To look along a specific bearing:

- 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



3. Orienteering compass (left) and thumb variant (right) (sources: www.princeton.edu/~ca/manus1/images/compass.gif; <http://www.williams.edu/Biology/Faculty/Staff/hwilliams/Orienteering/images/gthumb.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.



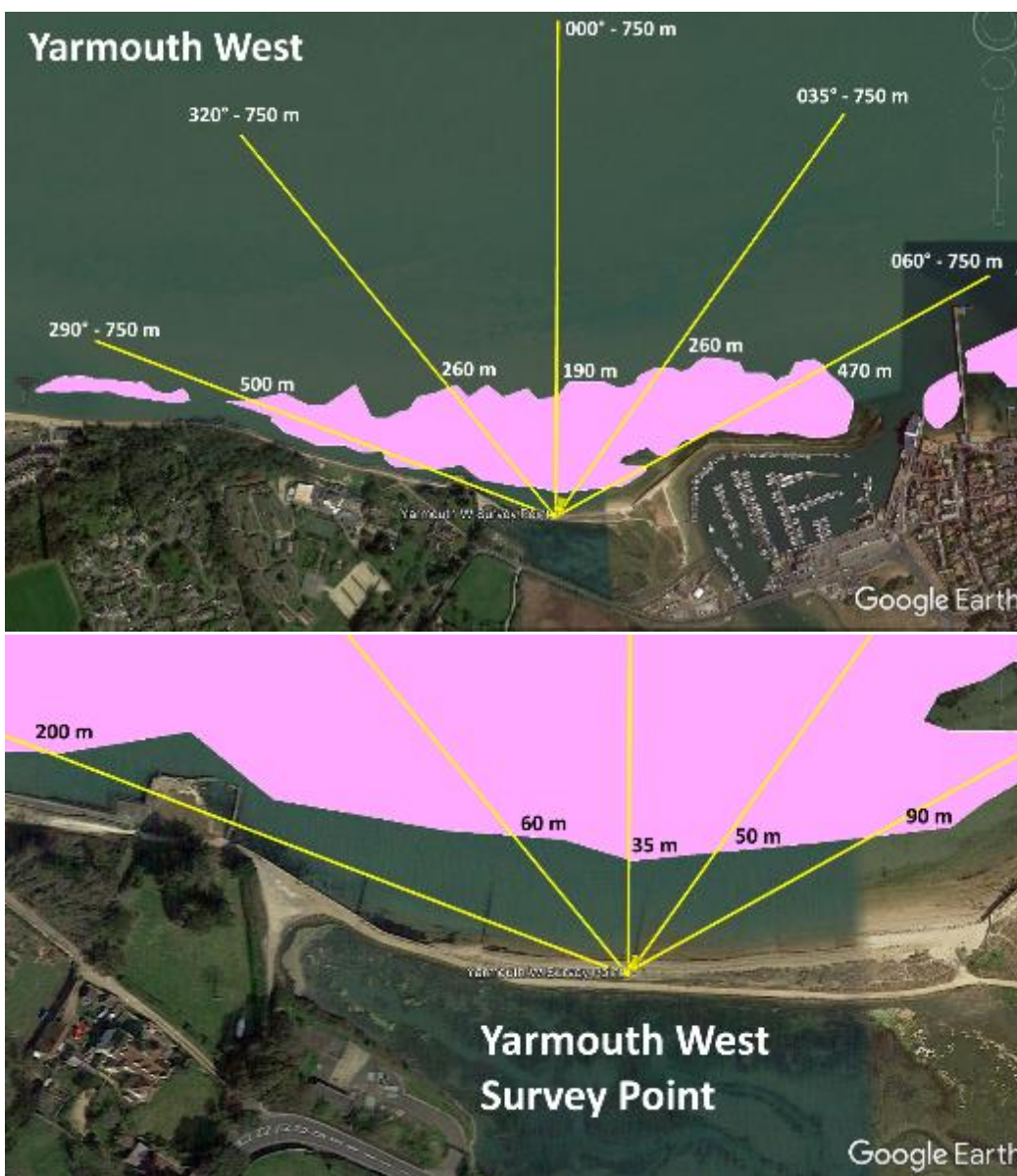
View from Yarmouth W Survey Point. Note the three green groyne markers.

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](https://www.what3words.com/#!/en/@@@triathlon.lottery.photos)

There are two paths leading from the car park to the sea wall. Take the eastern-most path, which is 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/6PgP8j3wLB8xuqvR6>

[///angers.buying.sisters](https://www.what3words.com/#!/en/@@@angers.buying.sisters)

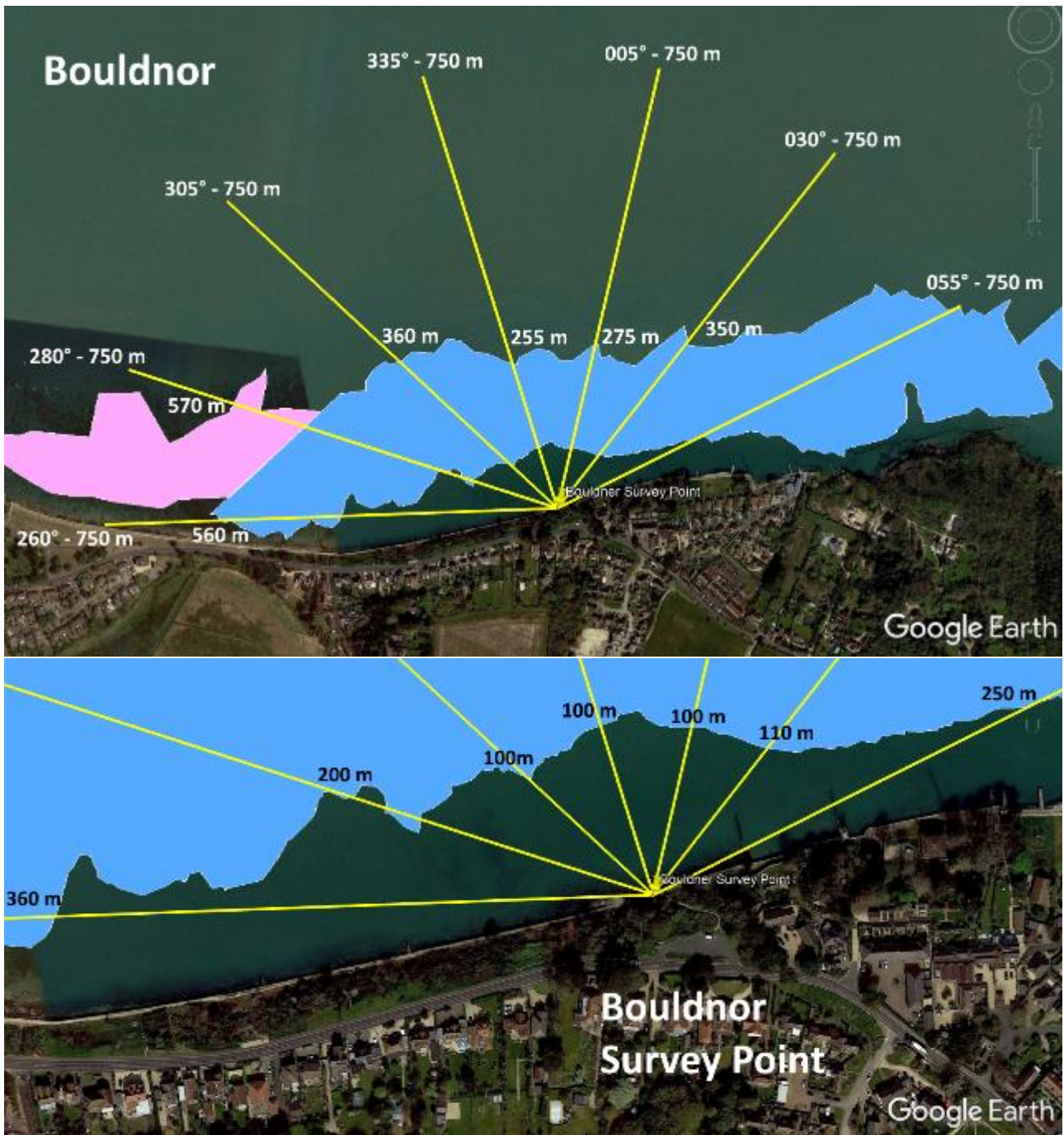


Boudnor Survey Point detail (left) and views East (upper right) and West (lower right)

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)

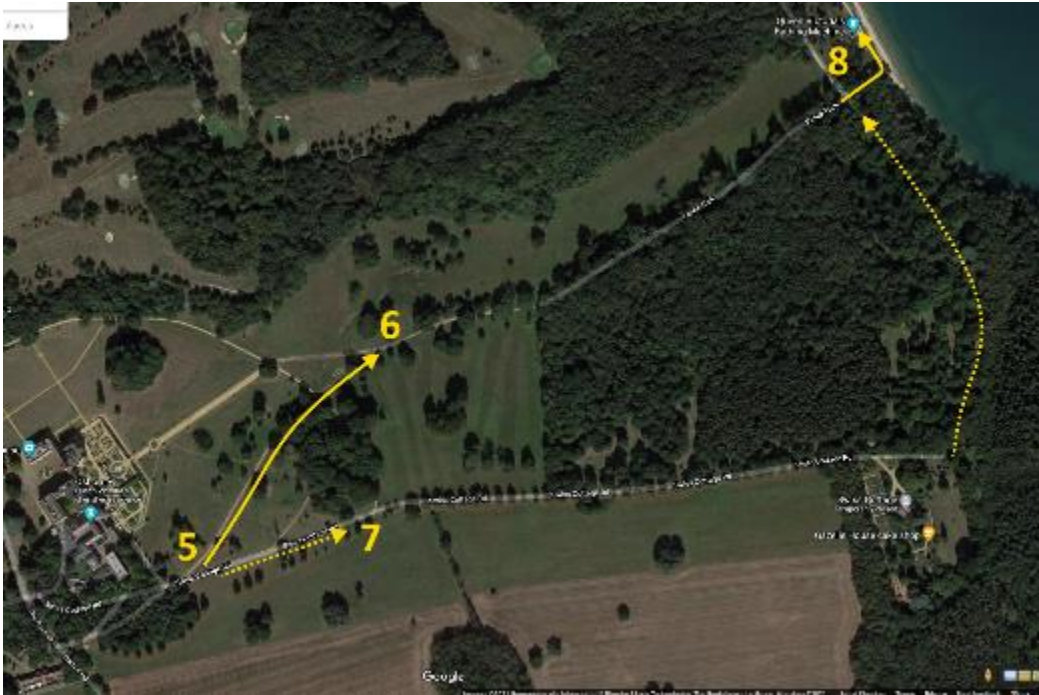
You can fork left down a pathway to join a pathway down into the valley, to join Valley Walk (quickest) **[6]** or continue along Swiss Cottage Road, which eventually takes you down to the beach as well **[7]**

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



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

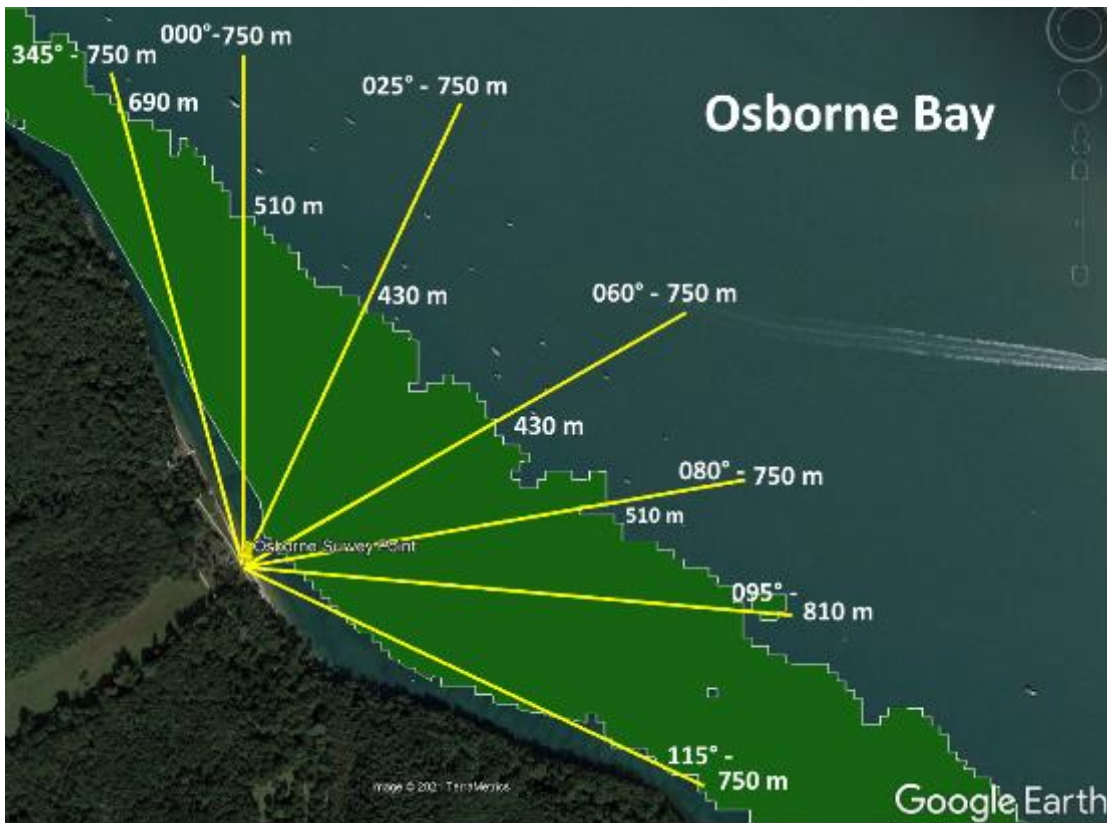


View of Queen Victoria's Bathing Hut and the Café from the Survey Point

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 sign 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

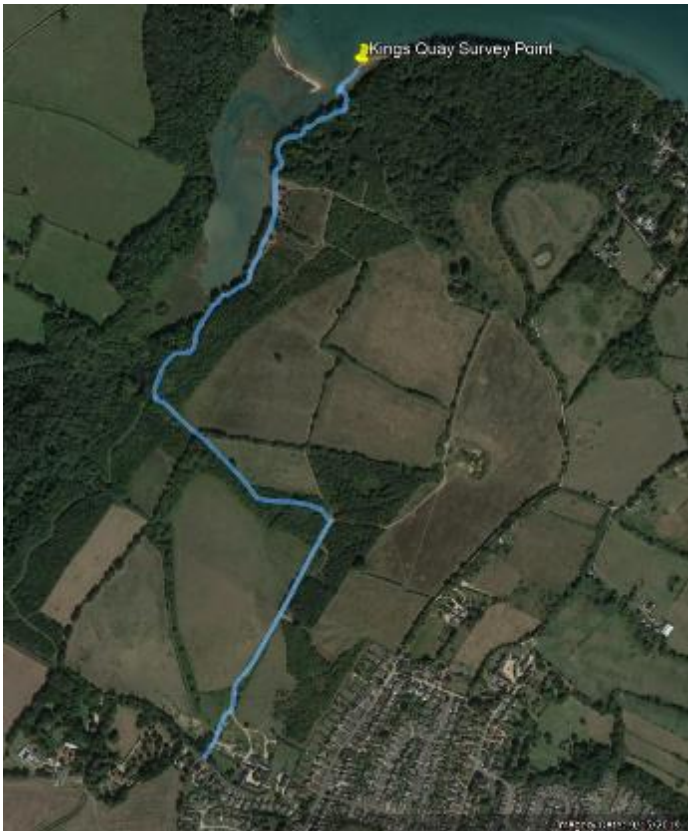
<https://goo.gl/maps/9egZCyhKtPx492eL8>

///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 750 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/TfqyhGB1pKJUEPnv7>

///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 distance

COMPASS INSTRUCTION MANUAL

GENERAL KNOWLEDGE FOR USING A COMPASS

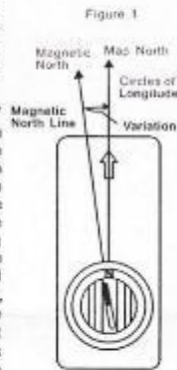
Geographical North (Map North), Magnetic North and Variation (Declination)

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.

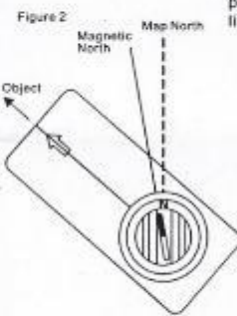
When you say a direction of such and such degrees, you must either subtract or add the local variation depending on which side of zero declination line you are on for getting the geographically correct degree of the direction. For obtaining the true map bearing read the bearing on your compass and if 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° .



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.



For instance, in Figure 2 the direction of the object is 320° (forexpressing 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).

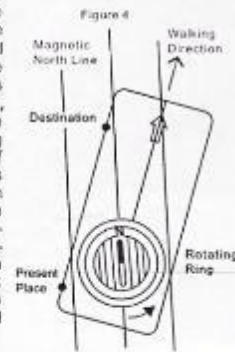
How to reach the Destination shown on Map

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.

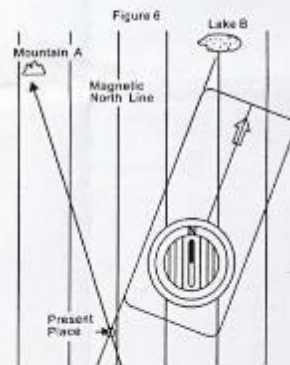
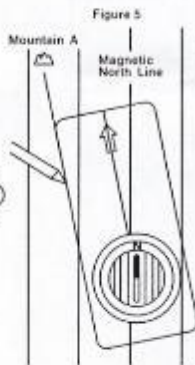


Then turn the rotating ring and make the arrows in the compass capsule parallel to the magnetic North lines you drew in step 1. (At this stage you do not have to mind the position of the magnetic needle.) Next, hold your compass and turn yourself slowly until the North end (the luminous end) of the magnetic 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.



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 scale side 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.



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://coghlands-wholesale.com/content/files/Coghlands/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

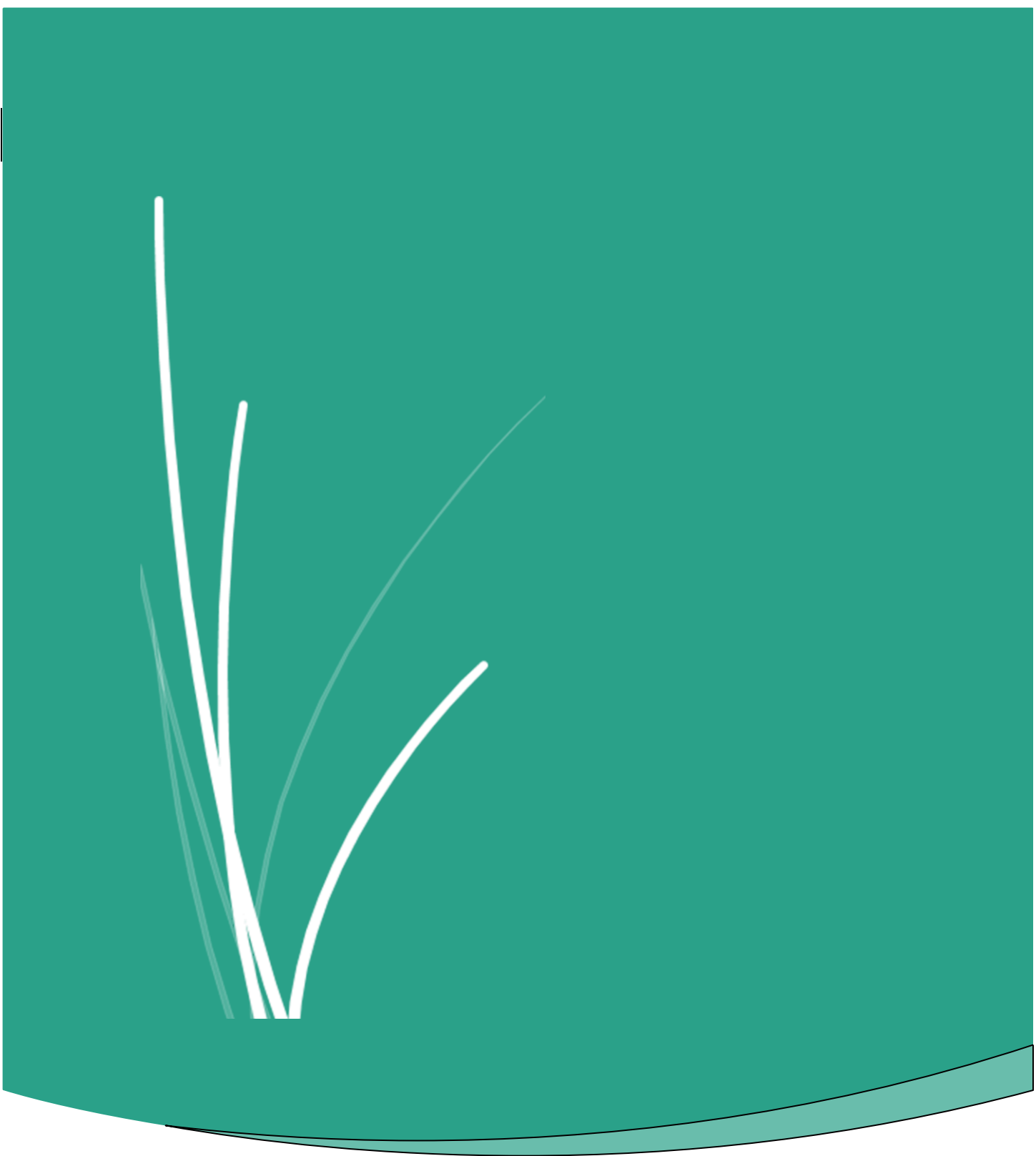
References:

Gunnlaugsson, T., Siggurjossn, 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



