Southern Inshore Fisheries and Conservation Authority

Pia Bateman – Chief Executive Officer

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28th January 2025

Dear Member,

MEETING
OF THE TECHNICAL ADVISORY COMMITTEE – 6th February 2025

The Meeting of the Technical Advisory Committee (TAC) will be held in the meeting room at Unit 3 on **Thursday 6th February at 14:00** to discuss the business on the under mentioned Agenda. Parking is limited, please consider other forms of transport, or share lifts.

Parking is available at the Premier Inn, Holes Bay Hotel. In order to pay for the parking, you are now required to download the Horizon Parking App, once on the App it will select Premier Inn Poole, then follow the instructions for parking. Poole railway station is approximately a 15-minute walk from the office.

Members of the public can request a guest telephone dial-in code from enquiries@southern-ifca.gov.uk.

Yours sincerely,

Maria Chaplin
Office Manager

AGENDA

1. **Welcome**

2. Apologies
To receive apologies for absence.

3. Declaration of Interest
All Members are to declare any interests in line with paragraphs (16) and (17) of the Southern IFCA Code of Conduct for Non-Council Members.

4. Minutes – 7th November 2024
To confirm the Minutes of the Technical Advisory Committee meeting held on 7th November 2024 (Marked A).

PROGRESS REPORTS
5. To consider the following:

a) **Emergent Updates** – to receive an update on any matters of relevance which have emerged since the publication of this agenda.
b) **Black Seabream: Progress Update** – to receive an update report from DCO Birchenough (Marked B).
c) **The Poole Harbour Fishery Order 2015: Tranche 3 Leases 2025-2030 –** to receive an update report from PO Meredith-Davies (Marked C)

d) **Solent Dredge Permit Fishery 2024/2025** – to receive a verbal update from IFCO Churchouse & PDCO Dell

ITEMS FOR DECISION

6. Net Fishing Byelaw: Year 1 Review – to consider a report from Senior IFCO Condie (Marked D)

7. Poole Harbour Dredge Permit Fishery: Review of Permit Conditions – to consider a report from IFCO Mullen (Marked E)

ITEMS FOR INFORMATION

8. Fisheries Management Plans – to receive an update report from PO Wright (Marked F)

9. Solent Bivalve Survey Report 2024 – to receive a report from IFCO Churchouse (Marked G)

10. Juvenile Fish Survey Report 2024 – to receive a report from PO Perrins (Marked H)

11. Live Wrasse Fishery Report 2024 – to receive a report from Senior IFC Condie (Marked I)

12. Date of Next Meeting

To confirm the date of the next meeting of the Technical Advisory Committee on the 8th May 2025 at Southern IFCA, Unit 3 Holes Bay Park, Sterte Avenue West, Poole Dorset BH15 2AA.

MARKED A

SOUTHERN INSHORE FISHERIES & CONSERVATION AUTHORITY
TECHNICAL ADVISORY COMMITTEE – 7th November 2024

Minutes of the Technical Advisory Committee (TAC), held in the meeting room at the Southern IFCA office in Poole at **14:00 on 7th November 2024.**

Present

Dr Antony Jensen	Chairman, MMO Appointee
Mr Richard Stride	Vice Chairman, MMO Appointee
Ms Elisabeth Bussey-Jones	MMO Appointee
Mr Gary Wordsworth	MMO Appointee
Ms Louise MacCallum	MMO Appointee
Mr Charlie Brock	MMO Appointee
Mr Colin Francis	MMO Appointee
Mr Neil Hornby	MMO Appointee
Dr Simon Cripps	MMO Appointee
Mr Stuart Kingston-Turner	Environment Agency
Dr Richard Morgan	Natural England
Ms Pia Bateman	Chief Executive Officer (CEO)

Principal Deputy Chief Officer (PDCO) Sam Dell, Deputy Chief Officer (DCO) Dr Sarah Birchenough, Senior Inshore Fisheries and Conservation Officer (SIFCO) Ms Emily Condie, IFCO's Ms Celie Mullen and Ms Hester Churchouse, Project Officers Ms Imogen Wright, Mr William Meredith-Davies, Ms Chelsea Perrins and Office Manager Ms Maria Chaplin were also present. Cllr Paul Fuller, Chairman of the Authority and Cllr Rob Hughes also attended.

Mr T Ferrero (Hampshire and Isle of Wight Wildlife Trust) and Ms Stephanie Shillitoe (Natural England) joined the meeting from the virtual public gallery.

Election of Chairman for 2024-2025

1. That Dr A Jensen be elected as Chairman for the year 2024-2025. This motion was proposed by Mr R Stride and seconded by Mr S Kingston-Turner. All Members were in favour.

Election of Vice Chairman for 2024-2025

2. That Mr R Stride be elected as Vice-Chairman for the year 2024-2025. This motion was proposed by Ms E Bussey-Jones and seconded by Mr G Wordsworth. All Members were in favour.

Apologies

3. Apologies for absence were received from Mr James Morgan (MMO).

Declarations of interest

4. The following non-pecuniary interests were declared: Mr R Morgan (Agenda Item 6).

Minutes

5. Members considered the Minutes of the meeting held on the 22nd August 2024 (Marked A) and consideration of the following matters outstanding.

a. **Recommendation 90:** That Southern IFCA communicates with Permit Holders in the PHDP fishery on the catch data for the 2024/2025 season to date, as presented to the TAC, and the intended course of action by the IFCA on how the fishery will be monitored and managed going forward.

SOUTHERN INSHORE FISHERIES & CONSERVATION AUTHORITY
TECHNICAL ADVISORY COMMITTEE – 7th November 2024

PROGRESS REPORTS

6a.Chief Executive Officer Updates

Following a recent debate in Parliament, the CEO discussed with Members that the Defra Minister acknowledged forthcoming challenges associated with the potential renegotiation of the Trade & Cooperation Agreement in 2025/26. The CEO outlined that the Minister emphasised the opportunities to look at reframing fisheries management through a social, economic and environmental lens, and the long-term sustainability to be achieved through FMPs. The Minister also referenced reforms to discards, remote electric monitoring, quota allocation, opening of new fisheries, how best to support the <10m sector, additional quota and quota trials. The CEO also discussed that reference had been made to the use of Regional Fisheries Groups (RFGs) to encourage dialogue, referencing participating organisations and encouraging consistency across the coast.

The CEO outlined the relevance of the Ministers messaging this to the meeting, particularly considering the Government looking at different opportunities to manage fisheries via a social, economic and environmental lens and the benefit of this being raised at a national level. The CEO stated that there remained work to do in having the work that IFCAs recognised in this regard, however noting how positive it was that the work being achieved on the coast in the District was being reinforced and supported, with Officers actively aiming to balance those three pillars in all aspects of Southern IFCA's work, particularly engagement.

The CEO referenced District wide and fishery specific engagement exercises that had been championed in recent weeks and how there had been a drive for such engagement across the team. The CEO provided specific examples including pre-season meetings for the Solent Dredge Permit Byelaw, which were attended by both the Chairman and the Chairman of the TAC as well as other Members, the ongoing engagement for the black seabream workstream and the Poole Harbour Dredge Permit Fishery, all of which had been fruitful. The CEO thanked PDCO Dell, SIFCO Condie, IFCO Churchouse and IFCO Mullen for their input to recent engagement events and informed Members that positive recognition has been received from industry.

The CEO informed Members that the first community forum is being held in Lyme Regis next week with the Authority Chairman Cllr P Fuller, TAC Chairman Dr A Jensen and PDCO Dell will be in attendance. The CEO emphasised the importance of the IFCA being visible to and ingrained within the community and that these opportunities would be sought on a frequent basis to maintain that presence on the coast.

6b.Emergent Updates

DCO Birchenough informed Members that there is one emergent update related to the FMP Program which would be covered under the relevant agenda item.

6c.Solent Dredge Permit Fishery 2024/2025

DCO Birchenough presented a progress update on the Solent scallop fishery under the Solent Dredge Permit Byelaw for the 24/25 season that commenced on the 1st November 2024.

DCO Birchenough informed Members that at the September Authority Meeting, an update was provided that data from the Autumn Solent Scallop Survey was in the process of being analysed and the closing date for applications for the 24/25 season for a Category A Permit was approaching.

DCO Birchenough reminded Members that in 2023, new effort controls were introduced to manage fishing for scallop as a result of survey data, consideration of representations by fishers and other relevant best available evidence. DCO Birchenough emphasised that in reviewing the scallop fishery this year, it is important to recognise the wide range of effort

controls in place through management to support a sustainable fishery. DCO Birchenough outlined that following the implementation of the additional effort controls in 2023, the survey data from 2024 indicates that there has been a general improvement in stock levels which is positive to see, and the stock has supported the fishery during the 23/24 season with increased catch levels not leading to a decline in stock.

DCO Birchenough outlined the points covered in the report which formed the key considerations in the decision-making process for the 24/25 season, referencing Catch Per Unit Effort (CPUE) from the surveys, understanding the caveats which exist within this data collection program, controls on the fishery under Category A Permit Conditions, other management measures such as a conservative MCRS and management under the Scallop Fishing Byelaw 2019 and catch rates in the fishery for 23/24 which were higher than all previous years. DCO Birchenough informed Members that considering all best available evidence the conclusion was reached that there did not need to be any further changes to Category A Permit Conditions for the 24/25 season. DCO Birchenough informed Members that this conclusion had been discussed with and supported by the Chair of the TAC.

DCO Birchenough outlined that, to date, 47 permits had been issued to applicants who met the eligibility criteria and have the ability to fish for scallops. There were 54 applicants in total, 2 were deemed to be ineligible, 1 applicant is unable to fish for scallop. There has been an indication from 2 applicants that they no longer intend to take out a permit.

DCO Birchenough outlined that it takes time to understand the impact of any newly introduced management, such as that introduced for the 23/24 season, and all the factors which may influence trends in stock levels, environmental as well as fishery related. DCO Birchenough informed Members that actions being taken forward in monitoring the fishery for the coming season will continue to help build that evidence base, including the continuation of the mid-season survey and higher spatial resolution for catch reporting within the Bivalve Management Area (BMA) which sees the highest levels of scallop fishing, developed in conjunction with the Permit Holders, to better relate landings data to survey data. DCO Birchenough outlined that an updated survey methodology would also be introduced from January 2025, developed with the fishing industry to ensure survey areas align with fishing areas and with Cefas to ensure that the methodology aligns with national data collection practices so the survey outputs can be fed into national datasets. A new dredge has been procured for the survey to provide additional data on the smaller size fraction of the King scallop population in the Solent.

DCO Birchenough informed Members that work would be ongoing over the coming months on looking at dredge fishing in the Solent in general, exploring the appropriateness of current measures and understanding any further work that may be required on the management of this fishery. DCO Birchenough outlined that it is intended that permits will move to an online platform in the future.

Ms E Bussey-Jones stated that the management employed in 2023 appears to have been useful in managing the fishery. Ms E Bussey-Jones queried, on the basis of the increased catch for the 23/24 season how much confidence was held in the survey outputs to demonstrate the correlation between an increased catch rate and sustainability in the fishery.

DCO Birchenough responded that consistency in the survey methodology to date allows for confidence in comparisons of data between years. DCO Birchenough also outlined that there were generally high levels of compliance with catch reporting in the fishery and an understanding in the industry of why the catch data is useful and that it is in the interest of the industry to report accurately. DCO Birchenough added that the IFCA has the ability to cross-check catch data with other sources such as the MMO landings data. The CEO added that there is also confidence in the additional controls that the fishery is subject to and through

Compliance and Enforcement and more regular catch data monitoring there is information on the fishery feeding into decision making on a regular basis.

Mr R Stride queried whether a change in survey methodology would impact the ability to compare data with previous surveys. DCO Birchenough responded that there is an identified need to update the methodology based on input from the industry and an improved understanding of the fishery over the last three years and therefore there does need to be a point where there is a move from one methodology to another. DCO Birchenough outlined that whilst the same spatial data comparisons may not be possible initially, the same data will be collected allowing for comparisons over time and then as the new methodology is used, an updated time series dataset will be developed to allow for more direct spatial comparisons between years again.

6d.Black Seabream management development

Senior IFCO Condie presented members with an update on the black seabream workstream. Senior IFCO Condie outlined that following agreement at a Members Working Group in August, Officers held a Bream Co-Management design workshop with industry at the RNLI College at the end of October. Senior IFCO Condie informed Members that the meeting was well attended and well received, with over 20 representatives from different sectors, including charter vessels, recreational anglers and commercial plotting and netting fishers. Skippers that attended worked out of ports from Mudeford down to Weymouth and Portland. The Chair and Vice Chair of the TAC also attended.

The workshop gave the opportunity for industry to have a facilitated discussion on management measures that they felt could be appropriate for the management of black seabream across the three relevant Dorset MCZ's. Topics covered include bag limits, commercial limits, charter vessel logbook, changes to MCRS, gear types, fish handling and spatial areas. Feedback from attendees on the workshop and the opportunity provided for them to participate was really positive and officers are now looking to explore draft measures from the outcomes of these discussions with a view to providing an update at the February TAC meeting.

Dr S Cripps queried whether there had been any general agreement on potential measures between different sectors. Senior IFCO Condie outlined that there was broad agreement in relation to certain types of measures.

Dr A Jensen explained to Members that there were three facilitated tables at the workshop and there had been a large degree of agreement between each which had been positive to see.

Dr S Cripps questioned whether there was anything contributing to the general level of agreement. Senior IFCO Condie and PDCO Dell responded that there is a broad understanding across sectors of the need to explore management for black seabream in relation to the IFCA's legal duties for MCZ management. PDCO Dell emphasised the importance of the industry across all sectors having taken the opportunity to feed into this process and be involved in the identification of potential measures.

Dr S Cripps stated that the effort that had been put into providing context to what was being discussed, outlining what the issues are and the challenges the IFCA and the fishery has to operate under has led to a very positive outcome. PDCO Dell emphasised the importance of engagement and that Officers had faced any challenges in this regard to deliver a successful outcome.

Mr G Wordsworth informed Members that he had received really good feedback on the

workshop including from stakeholders who are potentially more critical of the IFCA at times.

Ms E Bussey-Jones queried whether there was any more detail that could be provided on proposed measures. PDCO Dell outlined that Officers are working to review the outcomes of the workshop and further engagement with representatives who could not attend the workshop was ongoing with input from this also feeding into this process.

Dr R Morgan queried what the timeline would be for this workstream going forward. DCO Birchenough outlined that an update would be provided at the February TAC which would include more clarity on the next stages. PDCO Dell responded that there may also be a requirement for further engagement with the community dependent on agreed next steps. The CEO clarified that the Authority has not yet determined whether the workstream would proceed down a statutory or non-statutory route at this stage, part of making this determination is dependent on the information that Officers are currently reviewing to ensure that Members have the most informed position to make those decisions going forward.

The CEO outlined that in regard to Defra timelines, Defra are aware of the complexity with regards to managing this species, not least because of the engagement required to make a fully informed decision, and on that basis, there is flexibility in the timeline for resolving this workstream, understanding that the timeline should be reasonable and the IFCA wants to take this forward in a timely manner. The CEO emphasised that it is important to maintain industry interest in engaging in this workstream and at the same time ensure that there is a robust evidence package to inform any decisions.

6e.REM/AI Project
PDCO Dell spoke to Members about the report which had been presented to the Authority meeting in September and requested to be brought to a TAC meeting for further discussion.

PDCO Dell reminded Members that funding had been approved for a small-scale trial of REM and AI across a number of vessels in the Southern IFCA District. PDCO Dell shared, with permission from the relevant fisher, a live stream on the screen of REM that has been deployed in partnership with Devon and Severn IFCA on an under 12m fishing vessel operating a single trawl in Lyme Bay.

PDCO Dell outlined that the report also includes a short Literature Review on the use of REM and AI in fisheries management, credit goes to IFCO Payton in the Compliance and Enforcement Team who has been assisting with this area of work.

PDCO Dell informed Members that in terms of progress with priority fishery 2 and the project in general, the Research and Policy Team had been engaging with Net Fishing Byelaw Permit Holders to ascertain levels of activity in harbour and estuarine areas, specifically those subject to the monitoring and control plan. It has been determined that the fishing activity is significantly minimal at present and discussions are ongoing with relevant operators.

PDCO Dell informed Members that there is currently an ongoing assessment to determine how the project moves forward in in line with planned outputs, with an intention of another set of equipment being deployed within this financial year. The challenge remains getting industry volunteers within the priority fisheries, further discussions have taken place this week and will remain ongoing.

PDCO Dell informed Members that since Southern IFCA embarked on this project several other REM and AI projects have been established. PDCO Dell outlined that the MMO and Cefas have publicised a project which focusses on large scale pelagic offshore fisheries, and informed Members that the Southern IFCA report has been sent to the Remote Electronic

Monitoring Policy Team at Defra.

Dr S Cripps queried the purpose of the use of REM on fishing vessels and what information it provides

PDCO Dell explained that on the live feed being shown, there are two cameras focusing on trawl doors which are also fitted with sensors, recording deployment and recovery. The system also provides a position for the vessel, the combination of the equipment enables identification of the vessel location and any activity being undertaken at that time.

Dr S Cripps queried whether species or size of individuals could be determined.

PDCO Dell responded that is not possible with the current cameras, but moving forward in line with the project plan, the intention is to look at the AI element related to the catch being brought inboard. Further deployments of equipment could be used to identify bycatch within net fisheries.

Mr C Brock queried what benefit the fisher is seeing from volunteering to have the equipment onboard. PDCO Dell responded that one benefit to the BTFG fleet would be to be able to keep fishing gear on the surface of the water rather than having to haul it inboard. PDCO Dell also outlined that fishers are supportive of the ability to demonstrate compliance with regulations, particularly concerning BTFG and in relation to MPAs. PDCO Dell informed Members that volunteer fishers are looking at having further cameras installed for additional benefits, for example in the engine room and to observe crew operations from within the wheelhouse.

DR R Morgan asked how the technology works alongside IVMS. PDCO Dell explained that IVMS currently sits separately to REM. Work related to positional data associated with REM is looking at potential links and exploring the technical and procurement processes that would be required to align both systems.

Mr C Brock queried the vessel set up to support REM including the power required and the smallest size of boat where REM would be able to be used.

PDCO Dell responded that this determination is one output of the current project. Currently there is concern from industry that the equipment is not robust enough for use on under 12m vessels, a determination of whether the technology is viable for the smaller vessels will form one output of the report.

Mr N Hornby raised that there may be learning opportunities from the different projects which are looking at REM and AI but that at present the projects do not appear to be joined up to facilitate this. Mr N Hornby referenced work through the AIFCA and how this may provide such opportunities for joined up working. Mr N Hornby also queried whether the information being collected through REM is related to building data on fisheries or whether it is related to compliance and enforcement and how the project is addressing this conundrum.

PDCO Dell responded that the project aims to be all encompassing. PDCO Dell stated that there is an element of compliance and enforcement but there is also an identified appetite for improved data collection, the more information that can be provided that more positive outcomes there are for industry and regulators. PDCO Dell outlined that the project is still exploring how data would be processed and how data from REM would be used in relation to compliance and enforcement.

Mr N Hornby queried who owned the data. PDCO Dell responded that the fisher would own the data for their particular vessel and that this is emphasised when engaging with potential

volunteers in a collaborative approach to delivering the project.

The CEO informed Members that there are a number of IFCAs that are piloting REM and AI initiatives and many other organisations which are further advanced in exploring REM/AI but that this is mostly focused offshore. The CEO outlined that this project is the only one looking at inshore solutions, recognising that the output may be that inshore the technology is not viable. The CEO outlined that there is discussion ongoing with IFCA CEOs on whether the AIFCA can collate relevant projects together or whether a national working group can be established to draw together initiatives and pilot projects from different fisheries that are all inshore to avoid duplication and share lessons learned across all fisheries.

The CEO informed members that the project remains in its early stages and that there have already been some challenges from discussions on engaging industry to participate, noting that without participating volunteers it will be difficult to move the project forward.

The CEO emphasised that the IFCA remains keen to progress this work, looking at the application in the inshore sector to ensure progress is made in developing the understanding of the application of this technology to this sector which has historically been lacking. The CEO referenced the intention to work with the net fishery utilising AI to determine if industry can demonstrate visually a lack of interactions with salmonids which would provide a benefit to those operating in informing future management.

Mr C Brock stated that the outputs need to be about both data and compliance and enforcement, emphasising that if fishers can see a benefit there they are more likely to work with regulators.

Ms L MacCallum queried whether there were inshore fisheries in other parts of the world that were more advanced with studying this technology that could be reviewed. PDCO Dell outlined that the literature review contains some examples from other countries but there would be challenges tying in with projects outside the UK.

Mr R Stride outlined some concerns about the technology as a fisher and whether industry would view it as intrusive with cameras observing fishers at work. PDCO Dell outlined that the aim is that sensors on the gear being deployed trigger the camera and that, otherwise, the camera would not be running. PDCO Dell emphasised that the project is exploring ways of protecting privacy and identifying where the technology would be beneficial which may not be across the entirety of the fleet.

Mr R Stride queried whether in using AI to recognise species, fishers would need to present the catch to the camera. PDCO Dell responded that the aim is not to disrupt fishing operations or for fishers to have to change their normal practice. PDCO Dell outlined that the project will be looking at suitability of camera placement and how the best visuals can be achieved.

Mr R Stride stated that fishers should not be expected to pay for these systems and likened it to the situation with IVMS and concerns from industry related to the regulatory implementation of that system.

Dr S Cripps stated that AI will be required in order to use REM systems efficiently in identifying species and size of individuals and that the set up will need to be specific to the fishery to capture the appropriate information which would involve a large expense in specialised equipment.

Dr S Cripps outlined that where REM is being used in offshore fleets there is a lot of positive feedback as it is being used to assist in issues around labour laws and inappropriate behaviour. Mr S Kingston-Turner agreed emphasising the health and safety application and

associated benefit to operators.

Mr S Kingston-Turner queried whether there was any funding that could be accessed from Defra to support the project budget. The CEO outlined that joint working would aid in this regard to provide joint outcomes to Defra from pilot projects that could then potentially support taking the application of REM/AI further.

Mr G Wordsworth outlined that camera technology has been used in aquaculture operations for many years as a health & safety tool. Mr G Wordsworth outlined that Seafish is also a potential source of further funding.

ITEMS FOR DECISION

7. Shore Gathering Byelaw and Fishing for Cockles (Amendment) byelaw

Senior IFCO Condie presented to Members that following the decision at the Authority meeting on 19th September 2024 to 'make' both the Shore Gathering Byelaw and the Fishing for Cockles (Amendment) Byelaw, a period of Formal Consultation had commenced in line with Defra IFCA Byelaw Guidance. Senior IFCO Condie outlined the advertising of the Byelaws and that the end date for the Formal Consultation is the 14th November 2024, allowing the required 28-day period for responding, necessitated by an error on the part of one of the advertisers which meant the second advert ran a week later than anticipated.

Senior IFCO Condie informed Members that as part of the Formal Consultation, Southern IFCA had engaged with stakeholders to provide assistance where requested, for example through the provision of coordinates for management areas in a different format and more detailed maps of management areas.

Senior IFCO Condie outlined how Standing Orders state that the Technical Advisory Sub-Committee will consider outcomes of the Formal Consultation following the making of any statutory interventions, however due to the unanticipated extension to the end date of the Formal Consultation, the Formal Consultation would end after this meeting of the TAC had taken place and therefore Members were provided with an indicative position from Southern IFCA on the basis of any objections received to date.

Senior IFCO Condie outlined that 2 objections had been received, one to the Shore Gathering Byelaw only and one to both Byelaws, and summarised the main points contained within these as well as the intended response points to be included in response letters from Southern IFCA. Senior IFCO Condie informed Members that work was ongoing to ensure impacts raised through one of the objections could be captured in the Impact Assessment for the Byelaws. Senior IFCO Condie stated that based on the 2 objections received the indicative position of Southern IFCA was that no changes were required to either Byelaw, and that an update would be made to the Impact Assessment on receipt of further information from one objector.

Senior IFCO Condie outlined that if any further objections are received during the Formal Consultation that indicate a change is required to either Byelaw then a Members Working Group will be convened for Members of the TAC to consider the objections and the proposed scope of the Southern IFCA response to help inform the decision of the Executive Sub-Committee when considering the outcomes of the Formal Consultation.

Dr R Morgan queried who would make the decision to hold a Members Working Group. DCO Birchenough outlined that it would be Officers based on consideration of any objections received between the meeting today and the end of the Formal Consultation.

Ms E Bussey-Jones suggested that the recommendation be updated to refer to any 'substantial' amendments.

Mr S Kingston-Turner queried whether the inclusion of information on impacts to push-netting activity in The Fleet in the Impact Assessment would lead to any changes to the Byelaws. DCO Birchenough outlined that the point in relation to this activity had been made in the objection which had been received and that Southern IFCA's indicative position on this was that no change was required based on this point. DCO Birchenough outlined that in order to fully capture impacts from the proposed measures there was a need to include this information in the Impact Assessment but that the consideration of this activity in this site being incompatible with the Southern IFCA's ability to meet legal duties under conservation legislation indicated that there would be no change to management.

Mr R Stride queried the reference to considering potential impacts of activities with reference to The Fleet. DCO Birchenough outlined that the best available evidence had been used to inform the assessment of potential impacts from different activities on designated features of relevant sites and that, whilst evidence is not always available for specific activities in a specific site, the wider literature and evidence base informed those assessments to indicate where management is required to address any potential adverse impacts on those designated features. DCO Birchenough outlined that for The Fleet specifically evidence indicated that seagrass habitat and certain bird features were at risk from all shore gathering activities and therefore the proposed management was to mitigate those risks identified through that assessment process in order for Southern IFCA to meet legal duties under relevant conservation legislation whilst being proportionate to the level of risk posed by those activities.

Dr S Cripps asked for clarification over the process of reviewing Formal Consultation outcomes and the different roles of the TAC, Executive Sub-Committee (ESC) and the full Authority. The CEO responded that the Standing Orders had been updated 2 years ago, based on a request by Dr S Cripps, to include that the TAC reviewed the outcomes of a Formal Consultation prior to consideration by the ESC. It was outlined that the ESC includes the Chair and Vice Chair of the TAC to represent the views of the TAC. Dr S Cripps queried why the ESC stage of the process is required and DCO Birchenough outlined that there needs to be oversight of the full content of any objections and the Southern IFCA responses to those which contains confidential information on respondents which cannot be shared publicly. DCO Birchenough outlined that the ESC makes a recommendation on submission of any byelaws to the MMO for confirmation by the Secretary of State and the Authority makes the final decision in that regard having reviewed a non-confidential summary of Formal Consultation outputs.

The recommendations were proposed by Dr S Cripps and were seconded by Ms E Bussey-Jones. All members voted in favour.

Resolved

8. On reviewing feedback to date from the formal consultation, that Members agree the indicated scope of Southern IFCA responses in relation to the Shore Gathering Byelaw and the Fishing for Cockles (Amendment) Byelaw.

9. That a summary of the TAC discussion is provided to the Executive Sub-Committee to inform their subsequent decision to make recommendations to the Authority regarding the submission of the Byelaws to the MMO for confirmation by the Secretary of State.

10. That Members agree to hold a Working Group prior to the Executive Sub-Committee in December in the event that any substantial amendments are identified as being required to either Byelaw as a result of further submissions to the formal consultation.

ITEMS FOR INFORMATION

11. Poole Harbour Dredge Permit Fishery

IFCO Mullen outlined that at the August TAC Members had been informed of reports to Southern IFCA by fishers in the Poole Harbour Dredge Permit Fishery on declines in the catch of Manila clam at the start of the 2024/25 fishing season. At the August meeting Members were presented with an analysis of monthly catch return data from May, June and July 2024 which showed catch rates were lower than the period 2020-2023 for the same months but were consistent with catch rates from the 2016-2019 period. It was communicated to Members at this meeting that the reason for the decline in catch rates was unknown but there had been a suggestion, not confirmed by evidence, that a spring mortality may have occurred after the 2024 Southern IFCA Poole Harbour Bivalve survey had taken place.

IFCO Mullen outlined that Southern IFCA had communicated the information presented at the August TAC with Permit Holders in the fishery via a letter and that feedback in response had been mixed but there was a general input that whilst it was recognised catch levels were lower it was not to a level that had not been seen before and there may be a cyclical pattern in stock levels being seen or a response to environmental conditions.

IFCO Mullen provided Members with an update on analysed catch data for August and September 2024 as presented in the report. IFCO Mullen outlined that, as with previous data analysis, the landed weight was converted into a catch per unit effort value to remove the influence of changes in the number of actives fishers and hours fished. IFCO Mullen outlined that data for both months also showed a consistency with catch values from 2016-2019, only September showed CPUE values lower than all previous years however this was by a small margin of only 0.02-0.1 kg/hour. IFCO Mullen informed Members that to date there has been consistency in the change in catch level between 2022-2024 for each month rather than a progressively worsening decline.

IFCO Mullen outlined that the average CPUE serves as a general efficiency model for Poole Harbour, reflecting the activity of all fishers for each month. It is noted however that there can be a significant variation in the fishing effort by individual fishers and there is need to report the data in both a format which reduces influencing variables, as has been done to date, and in a format which is more relevant to fishers' assessments of their catches, using a kg/hour figure. A kg/hour value has been calculated for the analysis of all months to date which will be communicated to fishers going forward as part of ongoing communications, the analysis shows the same pattern to the data for kg/hour/fisher.

IFCO Mullen informed Members that Southern IFCA has received concerns from a small number of Permit Holders that the decline in catch levels is related to the oil spill incident which occurred in Poole Harbour in 2023. An update on the work undertaken in relation to the oil spill incident was provided at the October meeting of the Poole Harbour Study Group, with conclusions from sampling indicating that no residual contaminants had been detected in the water or the sediment. IFCO Mullen informed Members studies would continue to take place to monitor habitats, bird species and protected areas of the Harbour.

IFCO Mullen outlined that high level monitoring and analysis of catch data would continue on a monthly basis and that communications would be maintained with Permit Holders to report updated information. IFCO Mullen informed Members that the information contained in the report would be sent to Permit Holders following this meeting along with information on the intended review under the Poole Harbour Dredge Permit Byelaw focusing on the development of a Monitoring and Control Plan for the fishery and a review of potential changes to permit

conditions which could be implemented in the event that best available evidence indicates further management is required to support a sustainable fishery.

Mr N Hornby queried the period when the fishery is active and whether there is time between the end of the current season and start of the next season to implement any actions that may be required. IFCO Mullen outlined that the evidence gathering as part of the review was already underway and that there was sufficient time to incorporate all necessary elements of a review before the start of the 2025/26 season in May 2025. DCO Birchenough outlined that the outcome of the review would be brough to the February TAC for Members consideration. DCO Birchenough also outlined the intention to move the annual survey to later in April to aim to capture any indication of spring mortality in the event that one were to occur.

Mr S Kingston-Turner asked whether the survey includes any work on the sediment of the sites sampled.

DCO Birchenough informed Mr Kingston-Turner that sediment analysis was outside of the ability of the IFCA to resource but that other organisations had undertaken sediment analysis in the Harbour historically.

Mr S Kingston-Turner asked whether there was any evidence to indicate a change in the composition of the sediment as a result of the dredging activity. Dr A Jensen outlined that the University of Southampton had previously analysed sediment changes based on the hand scoop methodology and that no statistical difference had been observed over several months. Dr A Jensen stated that there was a loss of the very fine fraction of the sediment, but the analysis was not significant. DCO Birchenough informed Members that the most recent work was through a PhD looking at the benthic composition of the sediment which indicated that although there were some changes to individual species on a small scale, the overall biotope did not change significantly between areas fished and not fished.

Dr A Jensen queried the bird population data. Dr R Morgan stated that the shelduck population had decreased based on wetland bird survey data with a suggestion that this decline is linked to local factors but currently there is no evidence to link this to the fishery. Dr R Morgan informed Members that there was an ongoing aspiration to undertake further survey work to understand benthic impacts, but funding has not been available.

12.Solent Scallop Survey Report 2024

IFCO Churchouse provided Members with an overview of the Solent scallop surveys carried out in 2024 in January, April and September to capture data from the mid-season, post-season and pre-season points. IFCO Churchouse presented the data from these surveys to Members outlining that the data is presented as a CPUE value, representing kg of scallop/meter of dredge/hour, for total scallop, scallop above the MCRS and scallop under MCRS. IFCO Churchouse outlined that data comparisons had been made for during the fishing season and during the closed season and between years.

IFCO Churchouse informed Members that the pattern in King scallop stock from the 2024 surveys was as would be expected based on fishing activity, a significant decrease in CPUE during the 23/24 fishing season and an increase in CPUE when the fishery was closed. CPUE data from the period when the fishery was closed in 2024 (Spring 24 to Autumn 24) showed an improvement compared to this period in 2023 for Total CPUE, CPUE over MCRS and CPUE under MCRS. IFCO Churchouse outlined that there was a mixed picture when looking at individual sites, not all sites showing an increase in CPUE during the closed season, however the number of sites where an increase was seen is greater than in 2023. CPUE data also showed an increase in the Autumn 2024 survey compared to the Autumn 2023 survey with a non-significant increase in Total CPUE and a significant increase in under MCRS

CPUE, over MCRS CPUE remained consistent between years. IFCO Churchouse outlined that analysis found a statistically significant effect of survey of width, with mean width of the Autumn survey lower than the winter and spring surveys in 2024. For all three surveys, the majority of sampling sites had peaks in the size distribution for a class above MCRS.

IFCO Churchouse outlined the next steps in the survey program to maintain the mid-season survey and implement an updated methodology developed in consideration of key areas for the King scallop fishery in the Solent, engagement with industry and with Cefas on national data collection. IFCO Churchouse also outlined that monitoring of catch data would take place through the monthly provision of data by permit holders with sub-areas defined for one Bivalve Management Area to improve understandings of catch rates in relation to survey data.

Mr N Hornby queried whether the survey data had been collected before new measures agreed in 2023 for the Solent scallop fishery had been put in place. DCO Birchenough responded that the surveys in 2024 had taken place following those measures being brought in.

Mr N Hornby asked whether the survey data indicates success of those new measures recognising there is only one year of data collection post-implementation. DCO Birchenough responded that it would take time to understand the implication of new measures but that there has been an improvement in survey data, further data collection over time will help understanding of how that pattern may be related to management or other factors. DCO Birchenough emphasised that a key point is that a further decline in stock levels has not been observed following the implementation of additional management measures in 2023.

Mr N Hornby asked when a second year of data would be available. DCO Birchenough responded that the Solent scallop survey program would continue to run with three surveys per year and that although the methodology would be updated there remained comparisons that can be made between survey years and that a timeseries dataset would be built with the new methodology. DCO Birchenough outlined that generally 5+ years of data is a starting point for looking at influencing factors with confidence in analysis increasing with the increasing length of the dataset.

Mr G Wordsworth stated that the data is looking positive and that the early indication is that implementing additional management measures in 2023 appears to have been beneficial to the fishery and the work between the Authority and the industry in determining these measures has achieved a good outcome.

Mr C Brock outlined that the fishery is a good news story and that there is good buy in from the industry who want the fishery to be a success and are supportive of the actions taken by the Authority. Mr C Brock suggested going forward whether the more environmentally friendly dredge types could be looked at in relation to stipulating use through permit conditions given that the majority of fishers are already operating this dredge type.

DCO Birchenough informed Members that during 2024 there had been a lot of positive engagement with fishers engaged in the Solent fisheries, with two meetings held pre the 24/25 season covering multiple locations to maximise attendance. DCO Birchenough outlined that the Chairman and the Chair of the TAC had attended these meetings and Mr C Brock had attended the Portsmouth meeting with 24 industry attendees participating across the two meetings which made for productive and informative discussion. DCO Birchenough thanked PDCO Dell and IFCO Churchouse for their work in this regard.

Mrs E Bussey-Jones informed Members that there had been a recent publication in the Environmental Law Review by Emma Bean, Mike Williams and Jason Lowther related to the

complexities of s153 duties under the Marine and Coastal Access Act, which referenced a study that suggested IFCAs were the most trusted out of the regulators and that the participatory nature of decision making and public accessibility is likely to be increasing those levels of trust in comparison to other agencies. The CEO informed Members that the paper would be included on the Authority agenda for Members to read.

13. Whelk CPUE Pilot Project

IFCO Mullen presented to Members on the Whelk CPUE Pilot Project which forms part of the Southern IFCAs whelk monitoring program in conjunction with the Whelk Population Survey. IFCO Mullen outlined that the aim of the project was to collect further data on whelk populations throughout the Southern IFCA District which would contribute to the evidence base on whelk fisheries and aid the understanding of the effectiveness of management, including the proposed Southern IFCA Pot Fishing Byelaw. IFCO Mullen outlined that the data could also contribute to the identified objectives of the Whelk FMP providing input to national data collection on whelk CPUE and contributing to the national evidence base.

PO Wright informed Members that the intention is to run the project as a pilot from December 2024 to December 2025 with data collected on a monthly basis from volunteer fishers. The information sought will include specifics of fishing trips, location, type of gear, operation of the gear and the quantity of whelk landed.

PO Wright outlined that the information annexed to the report had been provided to all fishers who indicated they undertake pot fishing with the District to seek volunteers for the pilot project. To date there are three fishers who have indicated they would wish to participate.

IFCO Mullen outlined that a report will be produced from the first year of the project which will be presented to the Authority and made publicly available. The outcomes of the pilot project will inform any improvements that could be made to data collection and help identify how data can best bet used to inform the sustainable management of whelk fisheries with this information used to consider the development of a longer-term monitoring program for the District.

Mr C Brock stated that there is a difference between CPUE and LPUE the latter being proposed to be looked at through this project but that it is important to be able to look at both and the difference between what is retained in a pot (CPUE) and what can be landed (LPUE) as this will indicate the health of the stock. Mr C Brock highlighted that this varies a lot between areas and within wider areas as whelk do not move far therefore it is important to seek data a very local level.

Mr R Stride queried whether CPUE could be obtained alongside LPUE.

DCO Birchenough explained that the pilot project is looking at LPUE but that the Whelk Population Survey which will run annually alongside the pilot project looks at CPUE, collecting data from four locations across the District with fishers provided the total contents from 15 pots under a dispensation which gives a CPUE value. DCO Birchenough outlined that data from both sampling programs can be analysed together to build the understanding of the District's whelk populations.

14. Whelk Population Survey Report

IFCO Mullen presented the outputs of the 2024 Whelk Population Survey Report to Members as the second year of data collection under this survey. IFCO Mullen outlined that data was collected from March to June 2024 using local fishers in Weymouth, Poole Bay and the Solent.

IFCO Mullen presented the key findings of the analysis to Members, identifying that total CPUE and CPUE over MCRS from Weymouth Bay were greater than in the Solent and that total CPUE and CPUE over MCRS was significantly higher in Weymouth Bay in 2024 compared to 2023. Poole Bay was statistically similar between both years and the Solent displayed significantly lower total CPUE, CPUE over MCRS and CPUE under MCRS in 2024 compared to 2023.

IFCO Mullen outlined that the longest and widest whelks were found in Weymouth Bay with a significant increase compared to 2023. IFCO Mullen informed Members that analysis revealed variations in work populations across the district, indicating that there is potential for populations with differing characteristics. For example, Weymouth Bay showed larger whelks and higher catch levels than those in Poole Bay and in turn Poole Bay showed larger whelks and higher catch rates than in the Solent. IFCO Mullen informed Members that this supports observations of varying whelk sizes across the UK, even over small spatial areas.

IFCO Mullen outlined that variations in CPUE and size frequency may be attributed to several factors, including fishing pressure, genetic variation, ecological and environmental conditions such as depth, predation pressure, and food availability. Variations in the population can be monitored throughout the annual time series dataset from this survey and, as the time series is developed further throughout the years, analysis then can be made into possible influencing factors.

15. Fishery Management Plans

PO Wright presented a Fisheries Management Plans (FMP) update to Members outlining that following the pause in this workstream resulting from the General Election, the FMP program had recommenced on the 25th September with the development and implementation of FMPs continuing under the new Government.

On 10th September Defra published a package of FMP materials across multiple tranches. The package included a consultation on proposed amendments to Annex A of the Joint Fisheries Statement relating to, of relevant to the Southern IFCA District, the publication dates for T3 and T4 FMPs, a proposed change to the name of Black Seabream FMP to 'Seabream FMP' and the inclusion of gilthead bream, and the inclusion of cuckoo wrasse in the Wrasses Complex FMP. DCO Birchenough provided Members with the emergent update referenced in this meeting, stating that following a review of the consultation the proposals were logistical rather than technical and that the intention is that the Southern IFCA would be supportive of the proposals. DCO Birchenough outlined that the rationale for the amendments is to make sure that there is an appropriate timeframe over which to make the FMPs as robust as possible, incorporating evidence gathering and appropriate stakeholder engagement and opportunities to feed into the development process before the FMPs are finalised. DCO Birchenough outlined that, in relation to the proposed Seabream FMP, gilthead bream are being increasingly seen in the District therefore it is proposed that Southern IFCA are supportive of the inclusion of this species in the FMP. In addition, cuckoo wrasse are also found in the District, and therefore the inclusion of this species in the Wrasses Complex FMP would also be welcomed alongside the ability for Southern IFCA to share experience of management practices for wrasses through the FMP development process. DCO Birchenough outlined that it is proposed that Southern IFCA respond to the consultation on this basis.

Dr A Jensen stated that in particular with the Black Seabream and Wrasses Complex FMPs it is known that there are large evidence gaps therefore the opportunity to try and identify or address these and pull together all relevant information is a positive.

PO Wright informed Members that the final FMP from T1&2 had been published, The Southern North Sea and Eastern Channel Mixed Flatfish, and that the content of the FMP was currently

being reviewed to determine proposed measures and relevance to the District. In addition, the first piece of legislation stemming from the FMP process has been laid in Parliament on 16th October. The measures within this legislation included MCRS for fish species which align with MCRS which Southern IFCA has for those species within the District MCRS Byelaw, restrictions on power and gear for fly seining vessels and to allow commercial catch limits for bass to updated promptly through fishing licences following international negotiations. PO Wright outlined that Defra have stated that any changes to fishing gear or practice required to comply with these measures need to be made by 16th December.

PO Wright informed Members that the consultation documents for the T3 FMPs have been published, there are four out of five which are relevant to waters within the Southern IFCA District. PO Wright outlined that Southern IFCA is currently reviewing the consultation documents and will be formulating a process for engaging with Members on the consultations and any proposed responses. PO Wright provided Members with details of consultation events in the District taking place in December.

PO Wright updated Members that for T4 FMPs, all four of which are relevant to waters within the Southern IFCA District, engagement has been taking place with the MMO on the Black Seabream and Wrasses Complex FMPs to discuss any relevant work carried out by Southern IFCA and that working groups have been formed for these FMPs which DCO Birchenough and PO Wright will sit on, the first meeting took place on 22nd October. PO Wright provided Members with details of two surveys being run by the MMO on T4 FMPs.

Dr A Jensen informed Members that he also sat on the Black Seabream and Wrasses Complex FMP Working Groups outlining that the main focus for both was geared towards the south coast. Mr R Stride informed Members that he also sat on these Working Groups.

Mr R Stride asked about the relationship between the Black Seabream FMP and the IFCA work on black seabream. DCO Birchenough outlined that the FMP process is separate and likely to be more protracted than the IFCA process, stating that once the IFCA has reached the appropriate stage in the development of management for black seabream then this will be shared through the FMP process. DCO Birchenough outlined that information from annual wrasse fishery monitoring and the Juvenile Fish Survey Program is already being provided through the FMP to support evidence gathering along with the quantification of impact report provided to the TAC in May 2024.

Mr R Stride referenced the legislation laid in Parliament and that proposed MCRS are in line with that currently used rather than exploring if larger sizes may be required. DCO Birchenough responded that the species profiles previously developed by the IFCA on relevant species size data was provided through the FMP development process. DCO Birchenough informed Members that MCRS for the proposed species was only in place for a few IFCAs therefore there is likely to be an improvement by introducing these sizes at a national level. DCO Birchenough stated that the FMP process has impacted the Southern IFCA MCRS review and that it remained important to understand how MCRS measures may be delivered at a national level through the FMP program in order to inform any future direction for District specific work.

The CEO stated that there needs to be careful consideration when developing management as to how it aligns or may contradict measures coming from the FMP program as this may impact the ability to take such management forward.

Mr S Kingston-Turner asked whether the FMPs would therefore dictate what we can be done at a local level with regard to MCRS.

DCO Birchenough explained that there needs to be an understanding of proposals being put forward nationally as if Southern IFCA were to progress with a District review and make changes to legislation that were then not aligned with national measures, that legislation would need to be amended again to align with any national measures. DCO Birchenough outlined that the IFCA can be more restrictive but not less restrictive than any national measures.

Mr R Stride queried whether there is a mechanism to update MCRS in line with national measures that would allow for a more responsive approach. DCO Birchenough responded that national MCRS had not changed in an extended period of time, the previous revision of MCRS in the Southern IFCA District and the introduction of the MCRS Byelaw had been in response to a change to national technical conservation regulations and a need to reinstate certain powers in this regard and, at the time, MCRS was then brought into a single byelaw from several standalone Southern IFCA byelaws, however national sizes had not changed during that period. DCO Birchenough outlined that the FMP process potentially bringing in more national sizes and/or changing existing national sizes was quite novel compared to the process over the last 10-15 years.

16. Poole Harbour Aquatic Management Plan

DCO Birchenough informed Members that a new version of the Poole Harbour Aquatic Management Plan had been published by the Poole Harbour Steering Group, on which DCO Birchenough is the representative for Southern IFCA.

DCO Birchenough gave Members an overview of the history of the Plan and the aim of the Plan being to provide a management framework to promote safe and sustainable operations within Poole Harbour across all activities. DCO Birchenough informed Members that the document is non-statutory and seeks to provide guidance to relevant regulators with all Members of the Steering Group having the ability to feed into the drafting of the Plan. DCO Birchenough stated that she had provided the information to inform the fisheries chapter and that the management objectives related to fisheries cover existing work and duties of Southern IFCA.

17. Date of Next Meeting

To confirm the date of the next meeting of the Technical Advisory Committee on the 6th February 2025 at Southern IFCA, Unit 3 Holes Bay Park, Sterte Avenue West, Poole Dorset BH15 2AA.

There being no further business the meeting closed at 16:37.

Chairman: **Date:**

EXECUTIVE SUMMARY

Marked B

Black Seabream: Progress Update

Report by DCO Birchenough

A. Purpose

To provide Members with an update following both a Member Working Group and an Industry Workshop on the progression of developing shared management principles to supplement the existing (and pending) statutory spatial protections already in place within three Dorset MCZs, where black seabream (BSB) is a designated species due to its ecological significance.

1.0 Background

- At the TAC meeting in May 2024, Members agreed that draft management measures for BSB in Dorset's MCZs will be developed with consideration of social, economic and environmental impact.
- A Member's Working Group was held in August 2024 to progress the TAC decision by considering the scope and objectives for developing measures and potential intervention options presented through a Management Matrix.

2.0 Outcomes of Member Working Group, August 2024

The Working Group agreed the following **Drivers** to underpin the exploration of a Shared Principles Model to supplement the spatial protections already in existence across the 3 x MCZs, recognising a need for consideration of additional management to:

- improve understandings of BSB behaviours, fisheries (socioeconomic) and ecosystem management, recognising that these are currently data poor.
- be precautionary, as despite evidence suggesting that current effort is not having an impact, this remains data poor. Additionally, potential future impact also remains unknown.
- be proportionate in the application of precaution, complementing existing statutory measures for lower impact fisheries (adaptive management approach).

Subsequently Members drafted the following **Headline Objectives** which provide the rationale for the exploration of additional management solutions:

- to ensure current and future sustainability of BSB populations for the benefit of the marine environment and all sectors
- to improve understandings via data collection
- to monitor and review measures (adaptive management)
- to include users in policy development and ongoing management interventions

Members discussed **management options** that they would like to be taken forward to the stakeholder community for further discussion.

3.0 Outcomes of Stakeholder Workshop, October 2024

- Representatives from both commercial (12) and recreational/charter sectors (10), covering all relevant gear types were in attendance. In total 35 industry representatives have feed into this process to date.
- Attendees were provided a contextual underpinning framed around the Drivers and Headline Objectives developed by Members.
- Attendees were invited to comment on management options and put forward any additional **industry informed management options**.

4.0 Suggested Management Options

	Existing/*Pending*	Members	Industry
Spatial	• **BTFG Byelaw 2016**: prohibits BTFG across 63% of the Purbeck Coast & Poole Rocks MCZ • *BTFG Byelaw 2023: increases BTFG prohibitions to 98% across all 3 MCZs*	No Take Zones in IHA's during breeding season (April – July inclusive)	No take zones during breeding season in IHA's where there is less socio-economic impact (e.g. IHA 4 & 5). *NB: not a preferred option*
Temporal			
Gear		• Use of circle hooks instead of J hooks • Use of barbless hooks	Use of less impactful types of hook
Effort		• Recreational bag limit (5 or 6) • 0% bycatch during breeding season in IHAs (April – July inclusive)	• Recreational bag limit (6) • Commercial effort cap 6.2t pa (rod, line, netting)
Tech Con	• **MCRS Byelaw**: BSB: 23mm	• Increase MCRS to 30cm (to align with L50) • Introduce Max. landing size Apr–Jul (to avoid removal of males)	Increase MCRS to 29cm
Data		• Recreational data collection • Fishery dependent and independent data collection • Supplementary info. for commercial data (where not already provided via Catch App etc.) • Monitoring & Control programme with thresholds	• Recreational data collection • Charter logbooks to include: No. caught, no. retained, no. oversized, no. undersize, no. anglers, areas fished, no. hrs fished in MCZs

5.0 Next Steps – Feasibility & Development of Shared Principles

- The suggested management options proposed to date are currently under review by Officers (plausibility & feasibility checking with all material considerations) to encompass cross checking of proposals with compatibility with the MCZ Conservation Objectives & the Headline Objectives, compliance & enforcement considerations, overarching policy directives, FMP progression etc.
- A Members Working Group will be held in person on the **27th February 2025**, with the intention to draft a final version of 'Shared Principles', as informed by the IFCO feasibility exercise.
- It is the intention that draft Shared Principles will be taken back to the stakeholder community in **March** for consideration, and Formal Advice will be sought from Natural England on any required assessments based on the draft Shared Principles in combination with any existing and pending management, prior to final agreement of a Shared Principles Model to supplement existing/pending management at the May TAC.
- The May TAC agenda report will draw together and demonstrate how both statutory and non-statutory management measures collectively achieve a furthering of the Conservation Objectives, in not simply satisfying, but demonstrating where the proposed measures go above and beyond 154 MaCAA duties to deliver appropriate and adaptive management mechanisms via co-development and co-management means, in a proportionate and precautionary manner.

EXECUTIVE SUMMARY

Marked C

The Poole Harbour Fishery Order 2015: Tranche 3 Leases 2025-2030
Progress Report

Report by PO Meredith-Davies

A. Purpose

For Members to receive a progress report on the delivery of work to implement Tranche 3 of the allocation of leases under The Poole Harbour Fishery Order 2015, for the period 2025-2030.

B. Annex

1. Tranche 3 Application Criteria, Business Plan outline (2025-2030) and End of Tranche 2 Lease Report outline (T2, 2020-2025).

1.0 Legislative Underpinning

- Southern IFCA manage aquaculture activity within a defined area of Poole Harbour (837.8 hectares) under The Poole Harbour Fishery Order 2015 ('the Order').
- In accordance with Section (1) of the Sea Fisheries (Shellfish) Act 1967, the Order confers on Southern IFCA the right of several fishery for the cultivation of shellfish of any kind for a period of twenty years from the 1st July 2015.
- Management of aquaculture activity, which includes lease bed allocation, must have specific regard to Southern IFCAs responsibilities, as defined in the Marine and Coastal Access Act (MaCAA) 2009.
- Under Section (3) of the Order, the Authority must manage the aquaculture in Poole Harbour in line with the Poole Harbour Several Order 2015 Management Plan ('the Management Plan') which is annually reviewed under Section (4).
- In addition, Southern IFCA is a Relevant Authority in the management of National Site Network Sites and has statutory responsibilities under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, for Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) to ensure that fishing activity does not have an adverse impact on designated features. This includes the governance of the conservation interests of the Poole Harbour SPA. The IFCA is also required to consider Sites of Special Scientific Interest (SSSIs) with marine components under the Wildlife and Countryside Act 1981 and sites designated under the Ramsar Convention, both of which apply to Poole Harbour.

2.0 Lease Bed Allocation, Tranches 1 and 2

- Under the terms of a Lease of Right of Several Fishery of Shellfish Laying in Poole Harbour, lease beds were allocated to 9 companies or individuals in 2015 for a period of five years, 2015-2020 (Tranche 1 [T1]);
- For the allocation of lease beds under Tranche 2 (T2), 2020-2025, six lease beds were reallocated under the Lease Bed Reallocation Programme in response to an extension to the Poole Harbour SSSI in 2018 which included any subtidal estuarial waters and lower shore intertidal mudflats. The Lease Bed Reallocation Programme was implemented in order to manage existing overlap between lease beds and the presence of *Sabella pavonina*, a notable community under the SSSI. As part of the Lease Bed Reallocation Programme, specific considerations were given to operations on new lease ground in line with outputs of the Habitats Regulations Assessment for the issuing of leases under T2.

3.0 Lease Bed Allocation, Tranche 3

- Under the terms of the Lease of Right of Several Fishery of Shellfish Laying in Poole Harbour, the T2 leases will terminate on 30th June 2025. Tranche 3 (T3) leases will begin on **1st July 2025 and will expire on 30th June 2030.**

4.0 Lease Bed Expansion Programme

- The Authority previously considered the exploration of a Lease Bed Expansion Programme following T2. Subsequently the Authority further considered that this programme was not in a position to be

progressed, due to non-compatibility of additional lease bed allocations with SPA and SSSI objectives as well as a number of factors specific to Poole Harbour.

- In order to re-confirm this position for T3, an analysis was carried out on any areas within the footprint of the Order where lease ground is not currently located.
- Taking into account the designation of Poole Harbour as an SPA, SSSI and Ramsar Site, associated designated features/supporting habitats and the Southern IFCA's relevant legal duties, the location of wild fisheries, the location of other Harbour activities, navigation, management under other Southern IFCA Byelaws and input from aquaculture operators on the suitability of different seabed areas from discussions under the T2 Lease Bed Reallocation Programme and input on aquaculture practices, it has been determined that there are currently no suitable areas for additional lease ground to that established under T2.
- As a result, Southern IFCA is not pursuing a lease bed expansion programme for T3 and the footprint of lease beds will remain as under T2. The position on the suitability of this programme will be reviewed in line with the Tranche 4 lease bed allocation in 2030.

Current Programme of Work: Tranche 3

- The current programme of work under T3 and associated timelines is presented below.
- In addition, key documents are currently being reviewed and updated as needed, including the Poole Harbour Several Order 2015 Management Plan, the Biosecurity Plan and the HRA for the issuing of leases. Information provided by applicants under T3 will feed into the development of these documents.

- **Expressions of Interest (EOI)** were invited from T2 leaseholders to apply to renew their leases for T3. The EOI process enabled Southern IFCA to understand whether T2 leaseholders intended to apply for lease grounds under T3 and to provide an outline of required information through a subsequent application for lease ground under a **Business Plan (BP)** and **End of T2 Lease Report.**
- Leaseholders who submitted an EOI were subsequently invited to apply for a T3 lease for lease beds which were held under T2, the application requires submission of a BP for 2025-30 and an End of T2 Lease Report for 2020-25. Template documents have been provided to applicants to ensure key information is provided and for consistency across applications. An outline of the information required is given in **Annex 1.**

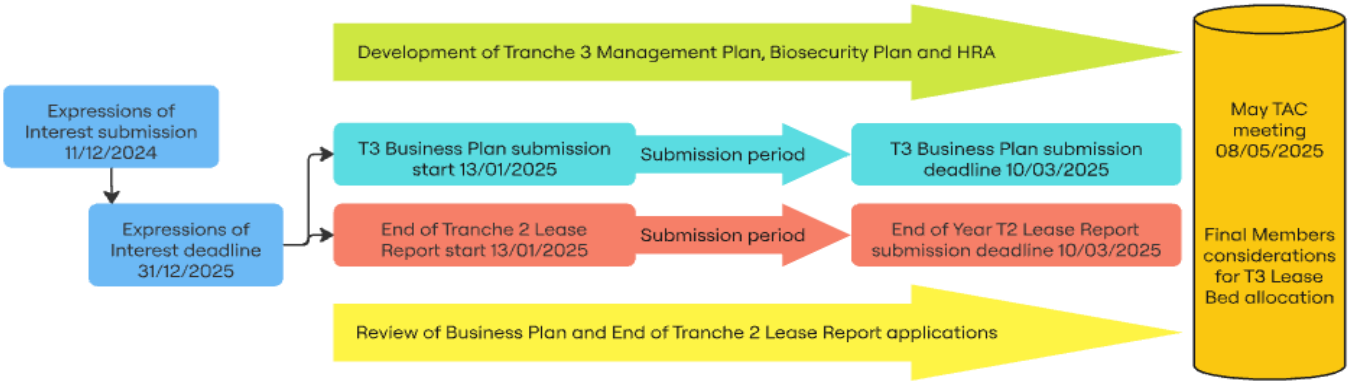


Fig 1. Timeline of the submission of Tranche 3 documents from Leaseholders.

4.0 Next Steps

- Following the closure of the application period in March, Members will be invited to attend a Working Group to review the updated documents for T3 (Management Plan, Biosecurity Plan, HRA) and a summary of proposed operations on lease beds during 2025-2030. Formal Advice will be sought from Natural England on the HRA for T3 and final documents will be considered by Members for adoption at the May TAC meeting.

Annex 1:

Tranche 3 Application Criteria:
The allocation of lease beds under T3 is subject to the production of the documentation outlined in this section. This information has been provided to applicants through the EOI process and through the development of a template BP and End of Tranche 2 Lease Report to ensure key information is provided and there is consistency between applications.

Business Plan 2025-2030

A comprehensive Business Plan for Tranche 3 must be provided that includes the following criteria:

i. **Executive summary** providing an overview of your proposed business and plans.

ii. **Company structure** providing details of the structure of any company related to the application.

ii. **Operational Activities**
   a. Details of leaseholder and any other personnel involved in aquaculture operations including responsibilities and relevant qualifications.
   b. Specification of **vessel(s)**, **platforms** and **fishing gear** to be used including intended activities for each and relevant PHC vessel number(s);

iii. **Methodology** section to include:
   a. The target **species** to be grown and harvested including a rationale of why this species;
   b. Details of **equipment** used in both laying of seeds and harvesting of seeds (please note that the proposed activity **must not** place any structure on the seabed).
   c. Details of any other equipment used in the aquaculture operations for each species.
   d. The **projected quantities** of each species to be broken down into annual forecasts for the next 5 years (2025 to 2030):
      - kg/year seeding and harvesting forecast; and
      - Identification of any variables which may compromise achievement of annual forecasts.

iv. **Financial Forecast**
   a. **Funding** and demonstrable sources of funding including relevant operation **investments**.
   b. Details of **supplier** of seeds for laying;
   c. Details of **buyers/target market** of harvested product;

v. **Safety**
   a. A **Safety Plan** to demonstrate that appropriate safety measures are in place for the proposed activity;
   b. To provide evidence of permissions granted by Poole Harbour Commissioners (PHC) for the use of a commercial vessel within Poole Harbour, under the **Registration of Small Commercial Craft**[1], registration via https://phc.co.uk/webforms/register/

vi. **Biosecurity Plan** detailing the processes by which the lease bed operator will ensure that their activities are consistent with best practice and the legal requirements.
   a. Details of designated **Biosecurity Manager**, other **relevant contacts** and **staff training**.
   b. A **Risk Assessment** to outline measures taken to mitigate biosecurity risks.

[1] '*…For the purpose of promoting or securing conditions conducive to the… safety of navigation…persons and property in the harbour, PHC seek to ensure that all commercial craft operating within Poole Harbour are properly maintained, equipped and manned and used only for the purposes for which they are capable…*' Extract taken from the General Direction – Registration of Small Commercial Craft.

EXECUTIVE SUMMARY

Marked C

END OF TRANCHE 2 LEASE REPORT

A comprehensive End of T2 Lease Report must be provided to reflect on the expectations and progress of a T2 Business Plan by including the following criteria:

i. **Summary of business operations** under the T2 lease.
   a. Leaseholder details and summary of **Business Operations** in Poole Harbour
   b. Summary of T2 **Aquaculture Operations** including any Business Plan changes.

ii. Tranche 2 Results

a. Projected Forecasts
   i. Whether projected seeding and harvesting forecasts were met throughout Tranche 2 and details of annual seeding and harvesting quantities outlining how these related to forecasts
   ii. Whether there were any unexpected changes to forecasts
   iii. Details of any mitigation measures employed in relation to changes in forecasts,
   iv. Whether any changes in seeding or harvesting resulted in changes to aquaculture practices within the lease period
   v. Whether there were any changes which have influenced future aquaculture operations

b. Suppliers and Markets
   i. Which suppliers were used during the lease period
   ii. Whether any changes to suppliers were required
   iii. A summary of all target markets used in the lease period including depuration facilities and companies involved in the supply chain process
   iv. Whether any changes to markets, depuration facilities or other companies involved in the supply chain process were required during the lease period

c. Future Mitigations
   i. Any outcomes from the T2 lease period which have influenced future aquaculture practices

EXECUTIVE SUMMARY
Decision Paper

Marked D

Net Fishing Byelaw: Year 1 Review

Report by Senior IFCO Condie

A. Purpose

For Members to consider the outcomes of the first annual review of flexible Permit Conditions, permit fees and limitations on the number of permits under the Southern IFCA Net Fishing Byelaw.

B. Recommendations

1. That Members agree that no changes are required to be made to flexible Permit Conditions, permit fees or limitations on the number of permits for Year 2.
2. That Members note the required updates to the 'Inshore Netting Review: Process, Tools & Intentions 2024' Policy document relevant to 'Access Criteria' and the 'Net Permit Area Monitoring and Control Plan'.

C. Annexes

- **Annex 1** – Net Permit Area Monitoring and Control Plan, 2025 Update
- **Annex 2** – Updated Section C 2.1 'Access Criteria' from the 'Inshore Netting Review: Process, Tools & Intentions 2024' supporting document

1.0 Background

- The Southern IFCA Net Fishing Byelaw[1] (NFB) defines three Net Permit Areas (NPA) in the District; Christchurch Harbour NPA, Southampton Water NPA and River Hamble NPA. A Net Permit for each NPA has associated Net Permit Conditions which provide flexible management measures for each NPA[2].
- A total of 17 Net Permits were issued under the NFB for the period 1st Dec 23 to 28th Feb 25 (Year 1 Permit Period).
- Under paragraph 26 of the NFB, the Authority (or a sub-committee thereof authorised by the Authority to do so) will review the suitability of flexible Permit conditions, Permit fees and limitations on the number of Permits annually or, if required under paragraph (39), following the temporary closure of a NPA, in accordance with a set procedure.
- As part of the review procedure, the NFB sets out (37), the categories of available evidence which may be included to inform the Authority's determination relating to paragraph (26). The Authority's decision will also take account any consultation responses and have regard to the duties and obligations under the Marine and Coastal Access Act 2009, the Conservation of Habitats and Species Regulations 2017(SI 2017 No 1012) and the Wildlife and Countryside Act 1981 (c.69).
- The current review represents the first annual review under the NFB, considering evidence relating to Year 1 Net Permits.

2.0 Key Considerations: Available Evidence Feeding into the Annual Review

- The Net Permit Area **Monitoring and Control Plan (M&CP)**[3] informs the annual management of the permitted net fisheries to ensure that the Authority are using the best available evidence regarding understandings of interactions between net fishing practices and migratory salmonids within the District's harbours and estuaries.
- The M&CP includes an **On-Site Monitoring Programme** which provides triggers for different control measures based upon the type of data collected and **Indicators of Salmonid Health Over Time** to support understandings of salmonid health based on best available data from partner organisations.
    - **On-Site Monitoring Programme Year 1:** No Trigger Threshold Levels (TTL) have been reached under any of the 5 monitoring components (see S2.1.4 in Annex 1 to this report).
    - **Indicators of Salmonid Health Over Time:** a review of the listed data sources was conducted

[1] Southern-IFCA-Net-Fishing-Byelaw.pdf, confirmed by the Secretary of State on 17th August 2023.
[2] Southampton-Water-Net-Permit-Conditions.pdf, River-Hamble-Net-Permit-Conditions.pdf, Christchurch-Harbour-Net-Permit-Conditions.pdf
[3] Net-Permit-Area-Monitoring-and-Control-Plan.pdf

which identified new salmon run data. Where available, data up to 23/24 was used to inform the annual review (see table under S2.1.6 in Annex 1 to this report).

- During 2024, Southern IFCA explored ongoing evidence collection under a proposed **research project** to improve understanding of potential interactions between drift nets and salmonids in a non-targeted fishery. Southern IFCA engaged with Net Permit Holders on the implementation of this but were unable to commence the project due to unresolvable factors relating to the collection of evidence. Southern IFCA will continue to explore the most appropriate method of approaching any further evidence collection in Year 2.
- **Consultation with Net Permit Holders** occurred between 10th Dec 24 and 22nd Jan 2025. During this period Permit Holders were provided with two opportunities to provide comment or feedback.
  - The feedback received included: 3 requests for a reduction in the cost of an annual permit, 1 request for a reduction in the number of permits for Christchurch Harbour based on competition for space, 1 request to use a drift net in the Southampton Water NPA and 1 comment on Year 2 TTLs being too low as affected by poor run years.

3.0 Review Outcomes

- Following an assessment of best available evidence, it is proposed that **no changes** are made to flexible Permit conditions, Permit fees or the number of Permits for the forthcoming season. The following addresses permit holder consultation feedback:
  - The number of Net Permits available will remain at 17, as compatible with the outcomes of the Conservation Assessments for the NFB.
  - The calculations informing the cost of a Net Permit continue to accurately represent Authority expenditure in managing the NPA.
  - The use of drift nets in Southampton NPA remain incompatible with the Conservation Assessments specific to River Itchen SAC and Functionally Linked Areas in the River Test and Southampton Water (linked to the River Itchen SAC & SSSI and the River Test SSSI).
  - TTLs are updated in accordance with agreed calculation method in the M&CP, analysis on an annual basis allows incorporation of changes in run data.
- Atlantic salmon run data has been updated in the M&CP, **TTL for salmonid interactions** have been updated, as specified in the table below. Further details can be found in Annex 1 to this report.

	Year 1		Year 2	
	S'ton Water (inc. River Hamble)	Christchurch Harbour	S'ton Water (inc. River Hamble)	Christchurch Harbour
TTL: Interactions	10	10	4	8
Best available data	2018-2020	2017-2020	2021-2023	2021-2023

(*) For Christchurch Harbour in Year 1 there was no data available for 2018

- **Inshore Netting Review: Process, Tools & Intentions 2024:** section C2.1 'Access Criteria' requires an update to reflect **access criteria for Year 2**. The updated section of the document is provided in Annex 2 to this report.

4.0 Next Steps

- Permit Holders will be notified in writing following the outcome of the TAC on 6th February 2025 and subsequently be provided with information regarding the Year 2 application process.
- Year 2 Net Permits will be issued from 1st Mar 25 - 31st Mar 26 in line with the proposed updates. For subsequent years it is the intention that the permit validity will align with the financial year.
- Southern IFCA will continue to monitor the NPA in accordance with the M&CP.

Marked D – Annex 1

Net Permit Area Monitoring and Control Plan

for Net Permit Areas, as designated under the Net Fishing Byelaw

Supporting Document as part of the Inshore Netting Review

2025 Update

Document Control

Title	Southern IFCA Net Permit Area Monitoring and Control Plan
Author(s)	Pia Bateman, Deputy Chief Officer Sarah Birchenough, IFCO
Approver	The Southern Inshore Fisheries Authority
Approval date (draft)	Draft document approved on the 4th of November 2021 at the Meeting of the Technical Advisory Committee
Approval date (final)	9th December 2021 at the Meeting of the Authority.
Owner	Southern IFCA

Annual Revision History

Date	Author	Version	Status	Reason	Approver(s)
January 2025	E Condie	2025 Update	DRAFT	Year 1 review of evidence: • Updated Threshold Trigger Values for Year 2 • Year 1 outputs for Monitoring Components • Addition of current best available evidence to Indicators of salmonid health over time	S Birchenough

Introduction

This Monitoring and Control Plan ('M&C Plan') has been produced as part of the Southern IFCA Netting Review to accompany the Southern IFCA Net Fishing Byelaw (NFB) and associated Net Fishing Permits.

This M&C Plan considers sites within the Southern IFC District which have been found to have a low functional linkage to a Special Area of Conservation (SAC), where Atlantic salmon are either a primary or qualifying feature of the SAC, or a Site of Special Scientific Interest (SSSI) where Atlantic salmon and/or sea trout are a notified feature or component of the SSSI. These areas will be subject to a permitted ring net fishery or a bottom set net fishery (in specified areas within the Net Permit Area only) under the provisions of the Net Fishing Byelaw.

The annual management of the permitted net fishery will be informed by this M&C Plan, this will ensure that the Authority are using the best available evidence regarding understandings of interactions between net fishing practices and migratory salmonids within the District's harbours and estuaries.

The M&C Plan will be subject to an annual review in line with the Review Procedure detailed in paragraph (36) of the NFB.

1.1 Areas Subject to a Monitoring and Control Plan

The following Net Permit Areas are defined in Schedule 2 of the NFB.

- **Southampton Water Net Permit Area and River Hamble Net Permit Area**

Following completion of a Functionally Linked Area (FLA) Assessment for Southampton Water and the River Hamble and based on the outcomes of the FLA Risk Model, it has been determined that within these areas there is a low functional linkage to the River Itchen SAC, the River Itchen SSSI and the River Test SSSI (Southampton Water). These areas fall outside principal or known migratory routes, refuge areas or pinch points used by salmonids to access the above-named SAC and SSSIs.

- **Christchurch Harbour Net Permit Area**

Following completion of a Functionally Linked Area (FLA) Assessment for Christchurch Harbour and based on the outcomes of the FLA Risk Model, it has been determined that within this area there is a low functional linkage to the River Avon SAC, River Avon System SSSI and Avon Valley SSSI. This area falls outside principal or known migratory routes, refuge areas or pinch points used by salmonids to access the above-named SAC and SSSIs.

1.0 The Monitoring & Control Plan

The M&C Plan considers an On-Site Monitoring Programme which provides triggers for different control measures based upon the type of data collected. The M&C Plan also considers information sources which can be analysed in order to provide up to date information on factors which can be used to suggest the health of salmonid populations over time.

Both the On-Site Monitoring Programme outcomes and the annual analysis of salmonid health overtime which will be to help inform the annual review of Net Permit Conditions, as set out in paragraph (36) of the NFB.

2.1 On-Site Monitoring Programme

2.1.1 Threshold Trigger Levels

Different Threshold Trigger Levels will be set for salmonids which are found (a) **dead in a permitted net type** or (b) **interacting with a permitted net type**. These trigger levels will activate a 'control mechanism'. Further details on control mechanisms can be found in Section 2.1.2.

The Threshold Trigger Levels have been determined using Atlantic salmon 'run data', as this data is available for these species. Comparable data is not currently available for sea trout.

Following a recommendation from the Net Fishing Working Group on the 10th June 2021, at their meeting in August 2021 the Technical Advisory Committee considered and approved the net fishing management intentions for Southampton Water (to include the River Hamble) and Christchurch Harbour, thus agreeing to recommend that the run data used to establish a Threshold Trigger Level should be set at **the value of more than or equal to 1% of the average of the last three year's Atlantic salmon run**.

2.1.2 Year 1 (1st December 2023 to 28th February 2025)

For Southampton Water (including the River Hamble), average run data for the River Itchen and River Test was calculated using the 'Salmon Stock and Fisheries in England and Wales Annual Report 2019' (all rivers) and 'Solent and South Downs Fish Monitoring Report 2020'. **The average 'run data' for years 2018 – 2020 was 10.**

For Christchurch Harbour, average run data for the River Avon was calculated using the 'Salmon Stock and Fisheries in England and Wales Annual Report 2019' (all rivers) and 'Hampshire Avon Fish Counter at Knapp Mill Report 2020' (River Avon only). **The average 'run data' for years 2018-2020 was 10.**

2.1.3 Year 2 (1st March 2025 to 31st March 2026)

For Year 2 of the M&C Plan, the run data has been established using data from the most recently available 3 years of data 2021-2023.

For Southampton Water (to include the River Hamble), average run data for the River Itchen and River Test has been calculated using the 'Salmon Stock and Fisheries in England and Wales Annual Report 2023 (all rivers)[1]'. **The average 'run data' for years 2021 - 2023 is 431, the Threshold Trigger Level is therefore 4.**

For Christchurch Harbour, average run data for the River Avon has been calculated using the 'Salmon Stock and Fisheries in England and Wales Annual Report 2023 (all rivers)[2]. **The average 'run data' for years 2021-2023 is 824, the Threshold Trigger Level is therefore 8.**

2.1.4 Control Mechanisms

The following text is intended to supplement the Control Mechanism Flow Diagrams found below (figures 1 and 2) in order to provide further clarity regarding how and when control mechanisms will be activated. This section is also to be read in conjunction with reporting requirements specified in the On-Site Monitoring Programme [Section 2.1.3]

To ensure that the Authority are transparent in making management decisions in line with their duties under the Marine and Coastal Access Act, the Control Mechanisms are subject to two stages of intervention at Authority Level, as has been written into the control process. This process is legally binding under the paragraphs (38) to (39) of the NFB.

Stage 1: Southern IFCA Permit Byelaw Sub-Committee

In the event that a trigger point is reached (for either salmonid death or salmonid interaction), Southern IFCA Officers (IFCOs) will consider the circumstances which may have led to the breach in trigger point. This may include (but not be limited to) consideration of scientific data such as run data, water temperature, tidal flow, seasonality, setting of nets, time of day, assessment of salmonid (where feasible). In addition, IFCOs will consult with the Net Permit Holder as well as partner agencies in order to ascertain a full complement of information to inform the investigation.

A Southern IFCA Permit Byelaw Sub-Committee will then be informed of the outcomes of the investigation by proxy in order to consider actions. Actions will be determined within a two-week period of the investigation beginning. Please refer to Southern IFCA Standing Orders for further details on the remit and scope of the Southern IFCA Permit Byelaw Sub-Committee.

[1] The Solent and South Downs: Fish Monitoring Report 2023 has been reviewed and run data aligns with the validated count and run estimates for salmon in these rivers provided in the Salmon Stocks and Fisheries in England and Wales Annual Report 2023. The difference between less than or equal to 1% of the average of the last three year's run for the River Itchen alone (3) and the average run data across the River Itchen and the River Test (4) can be attributed to statistical noise in the data, therefore it is not expected that using the average run data across both rivers to calculate the trigger value for interactions will result in an increased risk to the population.

[2] The Hampshire Avon Fish Counter at Knapp Mill Report 2022 has been reviewed and run data aligns with the validated count and run estimates for salmon in this river provided in the Salmon Stocks and Fisheries in England and Wales Annual Report 2023. Although the River Stour, which also enters Christchurch Harbour, is also listed as a Principal salmon river, there is no published run data for this river which can assist in defining trigger points. The EA have indicated that the 'run up' the River Avon, when looking at the less than or equal to 1% average over the three-year period this would equate to less than 1 salmon and therefore the addition of estimated run data from the River Stour would not alter the interaction trigger value for Christchurch Harbour.

Stage 2: Technical Advisory Committee

If the Southern IFCA Permit Byelaw Sub-Committee deem the circumstances which lead to a trigger point being reached, warrant the fishery to remain closed, then a full review will be presented to the subsequent timetabled meeting of the TAC. As specified in paragraph (34) of the NFB, the Authority, may, for the purposes of managing a sustainable net fishery, attach to a permit, remove from a permit, or vary one or more flexible permit conditions in line with the provisions set out in the NFB.

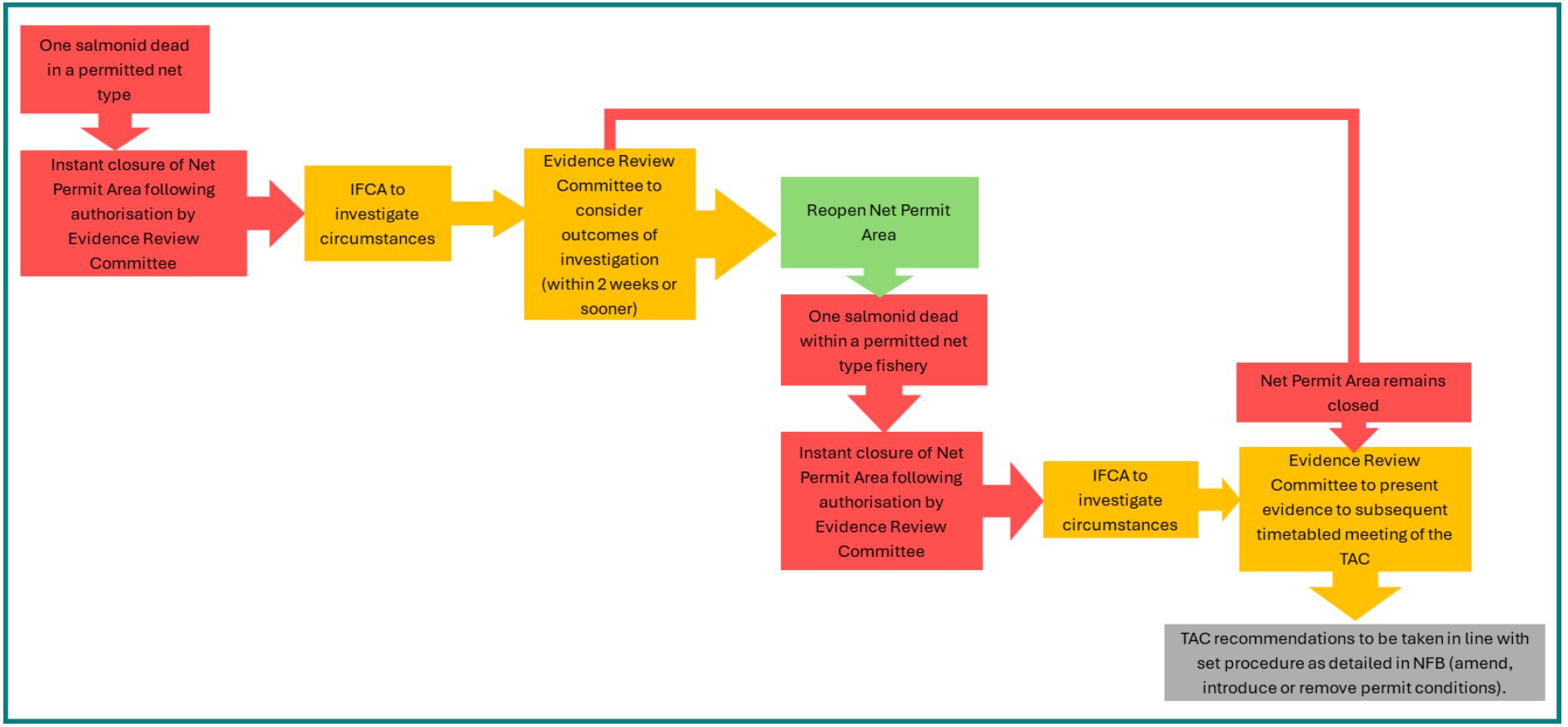


Figure 1: Salmonid mortality control mechanism flow diagram.

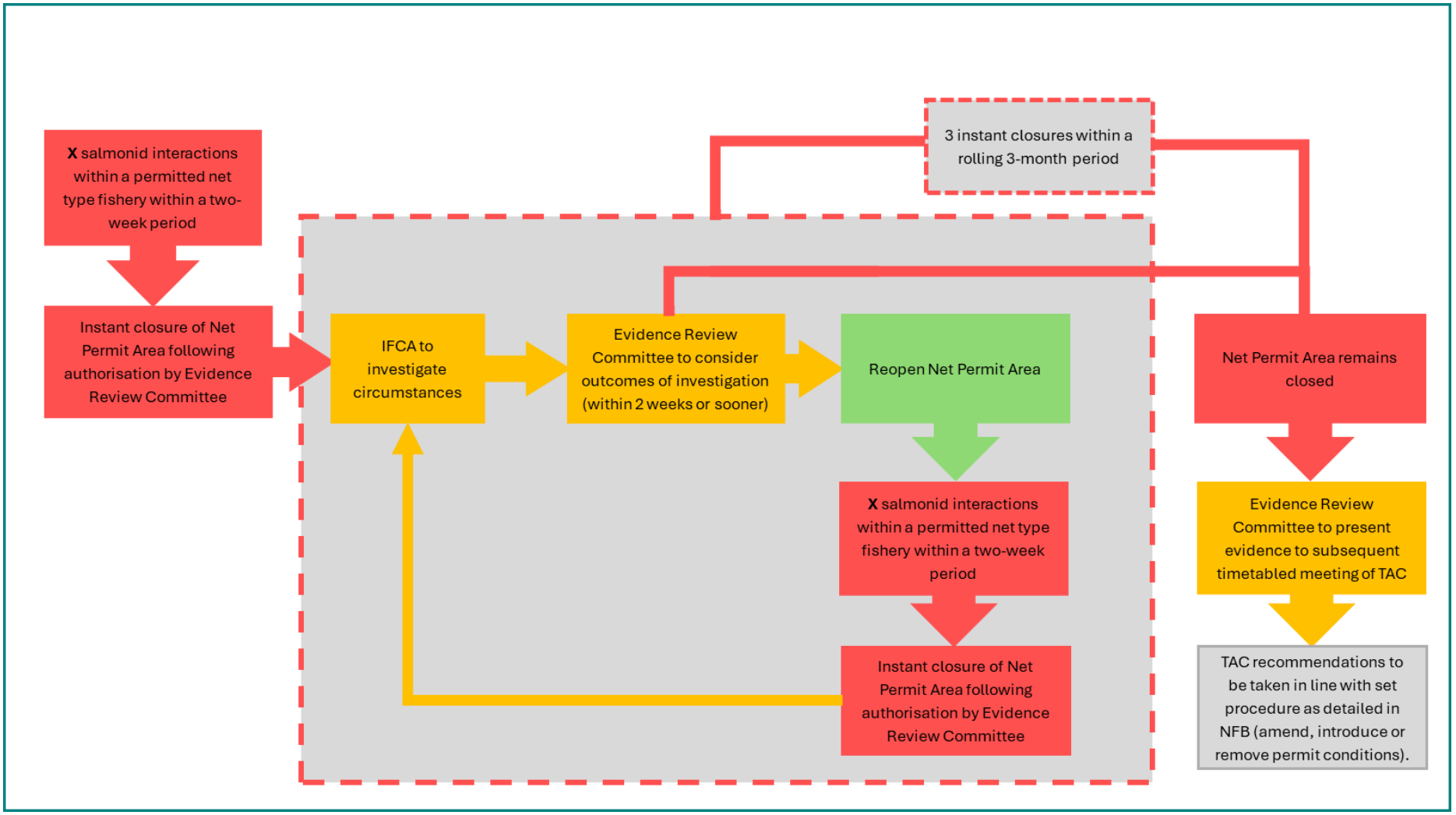


Figure 2: Salmonid interaction control mechanism flow diagram at point of implementation. ***For year 2, X = 4 for Southampton Water and River Hamble Permit Areas. X = 8 for Christchurch Harbour Permit Areas.***

2.1.5 On-Site Monitoring Programme

The On-Site Monitoring Programme captures five components of monitoring which will be conducted in each Net Permit Area. Each of the components will work in parallel, for example, any salmonid interaction will be counted in accumulation across all components. Further details of each Monitoring Component can be found in Annex 1.

MONITORING					CONTROL	YEAR 1 OUTPUTS
Component	**Net Permit Area**	**Data Requirement**	**Responsibility**	**Analysis**		
A: Salmonid Reporting	All Net Permit Areas	**Salmonid mortality**: Permit holders to report instantly upon haul (where safe to do so) by text or phone if any dead or mortality wounded salmonids are detected.	Permit holder, as a requirement of the Net Permit Conditions	Instant action upon receipt of information	See Figure 1	No reported salmonid mortality in the Year 1 permit period
		Salmonid interaction Permit holders to report to the Authority on the day of interaction of any salmonids/net interactions (which do not result in mortality)		Reporting forms collated & analysed within 5 working days by IFCA	See Figure 2	Two reported salmonid interactions in 2024, sea trout, Christchurch Harbour. Both instances fish were in good condition and returned. Interactions did not reach the level of 10 within a 2-week period.
B: Targeted Compliance	**Southampton Water**:4 patrols across two areas **Christchurch Harbour**: 3 patrols	• Patrols for 5% of total estimated net fishing trips during June to September (NB: period of peak migration as directed by best available evidence). • Patrols will aim to provide data during different tidal states, times of day (night/day) and cover different spatial areas.	Southern IFCA to be tasked under TCG process	Instant action upon receipt of information	Mortality: see Figure 1	Ability to undertake targeted patrols and observer trips were based on fishing activity levels within Permit Areas. Throughout Year 1 activity in Permit Areas was very low, engagement with fishers throughout the year confirmed continued low level of activity resulting in limited opportunities for targeted patrols and no opportunities for observer trips. No mortality or interactions were detected through either Monitoring Component.
				Patrol Reports to be analysed within 5 working days.	Interaction trigger reached: see Figure 2	
C: Joint Agency Net Fishing Observer Trips	**Southampton Water:** 3 ring net trips/2 bottom set net trips across two areas **Christchurch Harbour**: 3 trips	• Observer Trips for 5% of total estimated net fishing trips during June to September. • Southern IFCA can commit to achieving 50% of annual target across all Net Permit Areas (4 observer patrols). Assistance from the Environment Agency will help to achieve 100% of the target.	IFCA and the EA (Observer Requirement Condition of NFB)	Instant action upon receipt of information	Mortality: see Figure 1	
				IFCA Patrol Reports to be analysed within 5 working day/EA Patrol IR reports to be shared with IFCA and analysed upon receipt	Interaction trigger reached: see Figure 2	

D: Non-targeted Compliance Patrols	All Net Permit Areas	Partner organisations to monitor compliance as tasked under the Southern IFCA TCG	Southern IFCA at TCG (via IR)	Instant action upon receipt of information	Mortality: see Figure 2	No intelligence has been received relevant to net fishing in permit areas. No non-targeted compliance patrols have identified any issues relating to non-compliance with net fishing in permit areas.
				Southern IFCA Patrol Reports to be analysed within 5 working day/EA Patrol IR reports to be shared with IFCA and analysed upon receipt	Interaction trigger reached: see Figure 2	
E: MMO Catch Recording App	*All Net Permit Areas*	*Monitoring tool still in infancy at time of writing. It is hoped that in the future this tool can be used to complement the M&C Plan*	*Pending*	*Pending*	*Pending*	The MMO catch app has not yet reached a development stage where it can be integrated into the monitoring of the net permit fishery.

2.1.6 Indicators of Salmonid Health over time

These following data sources are to be used to support understandings of salmonid health overtime. The data sources selected are specific to Southampton Water and Christchurch Harbour to provide an indication of salmonid health based on the best available data from partner organisations. This information will be reviewed alongside data from the On-Site Monitoring Programme and collectively inform the Annual Review of the Net Permit Conditions. An explanation of the different data sources and how the data is calculated is provided in Annex 2.

MONITOR			CONTROL	Most Recent Report[3,4]
Relevance to Net Permit Area	**Area**	**Data Source**	**Baseline Data**	
Southampton Water	**River Itchen**	• Salmon Stock and Fisheries in England and Wales (Annual report by EA, Cefas and Natural Resources Wales) **Baseline data: 2019** **Most recent data: 2023**	**Principal Salmon River: Atlantic salmon population status** • **2019:** Compliance Level: 'At risk' • **2024:** Compliance Level predication: 'Probably at risk'	• **2023:** Compliance Level: 'At risk' • **2028:** Compliance Level predication: 'At risk'

[3] https://assets.publishing.service.gov.uk/media/66f6ad7ea31f45a9c765ede8/SalmonReport-2023-summary.pdf
[4] 2020 England Sea Trout Fishery Performance Results -FINAL Version

		• Salmon Stock and Fisheries in England and Wales (Annual Report EA, Cefas and Natural Resources Wales) • SSD Annual Fish Monitoring Report (Annual report by EA) **Baseline data: 2015-2019** **Most recent data: 2019-23**	**Returning stock estimate (Atlantic salmon)**	
			• **2020:** 719 (130% of five-year average) (Attainment of: Conservation Limit <100% and Management Target <100%) • **2019:** 475 **5-year average (2015-2019):** 547	• **2021:** 318 (Attainment of: 44% of Conservation Limit, 80% of 5-year rolling average) • **2022:** 133 (Attainment of: 22% of Conservation Limit, 33% of 5-year rolling average) • **2023:** 287 (Attainment of: 42% of Conservation Limit, 33% of Management Target, 72% of 5-year rolling average) **5-year (2019-23) rolling average:** 386
		• England sea trout fishery performance results (Annual report by EA) **Baseline data: 2020** **Most recent data: as per baseline**	**Principal Sea Trout River: Sea trout population status**	
			• **2020:** Compliance Level: 'Probably at risk'	No updated report since 2020 which remains the best available evidence. • **2020:** Compliance Level: 'Probably at risk'
		• Salmon Counter Update, Test & Itchen, October 2024 **New report for 2024**	• An additional evidence source has been identified for 2024 – "Salmon Counter Update, Test & Itchen, October 2024". This report provides October 2024 count data for 'trout' against an average count for 2015-2023. As no count data is provided for sea trout from other reports this is the current best available evidence.	• River Itchen o **Oct 24** = 938 count (241% of 2015-23 average of 389) *(*) Provisional monthly counts may be adjusted on basis of further review, count includes stocked trout where these can't be identified and removed from the data.*
		• Natural England Designated Sites (View webpage-periodic) **Baseline data: 2015** **Most recent data: as per baseline**	**SSSI Condition Assessment for units which reference Atlantic salmon under the 'Rivers and Streams' reportable feature (NB relates to habitat rather than population status)**	
			• **2015:** 'unfavourable – no change'	• **2015:** 'unfavourable – no change'
	River Test	• Salmon Stock and Fisheries in England and Wales (Annual report by EA, Cefas and Natural Resources Wales) **Baseline data: 2019** **Most recent data: 2023**	**Principal Salmon River: Atlantic salmon population status**	
			• **2019:** Compliance Level: 'Probably at risk' • **2024:** Compliance Level Predication: 'Probably at risk'	• **2023:** Compliance Level: 'At risk' • **2028:** Compliance Level predication: 'At risk'

		• Salmon Stock and Fisheries in England and Wales (Annual Report EA, Cefas and Natural Resources Wales) • SSD Annual Fish Monitoring Report (Annual report by EA) **Baseline data: 2015-2019** **Most recent data: 2019-23**	**Returning stock estimate (Atlantic salmon)** • **2020:** 2947 (211% of five-year average) (Attainment of: Conservation Limit >100% and Management Target >100%) • **2019:** 984 **5-year average (2015-2019):** 1,396	• **2021:** 704 (Attainment of: 60% of Conservation Limit, 60% of 5-year rolling average) • **2022:** 506 (Attainment of: 49% of Conservation Limit, 43% of 5-year rolling average) • **2023:** 635 (Attainment of: 43% of Conservation Limit, 30% of Management Target, 55% % of 5-year rolling average) **5-year (2019-23) rolling average:** 1,155
		• England sea trout fishery performance results (Annual report by EA) **Baseline data: 2020** **Most recent data: as per baseline** • Salmon Counter Update, Test & Itchen, October 2024 **New report for 2024**	**Principal Sea Trout River** • Sea trout population status **2020:** Compliance Level: 'Probably at risk'	No updated report since 2020 which remains the best available evidence. • **2020:** Compliance Level: 'Probably at risk'
			• An additional evidence source has been identified for 2024 – "Salmon Counter Update, Test & Itchen, October 2024". This report provides October 2024 count data for 'trout' against an average count for 2015-2023. As no count data is provided for sea trout from other reports this is the current best available evidence.	• Data is split into 'Great Test' and 'Little River Test' o Great Test ▪ **Oct 24** = 871 count (185% of 2015-23 average of 470) o Little River Test ▪ **Oct 24** = 659 count (104% of 2015-23 average of 632) *(*) Provisional monthly counts may be adjusted on basis of further review, count includes stocked trout where these can't be identified and removed from the data.*
		• Natural England Designated Sites (View webpage – periodic) **Baseline data: 2013** **Most recent data: as per baseline**	**SSSI Condition Assessment for units which reference Atlantic salmon under the 'Rivers and Streams' reportable feature (NB relates to habitat rather than population status)** • **2013:** 'unfavourable – no change'	• **2013:** 'unfavourable – no change'

Christchurch Harbour: **Eastern harbour, excluding Main Channel and River Mude entrance**	**River Avon**	• Salmon Stock and Fisheries in England and Wales (Annual report by EA, Cefas and Natural Resources Wales) **Baseline data: 2019** **Most recent data: 2023**	**Principal Salmon River: Atlantic salmon population status** • **2019:** Compliance Level: 'Probably at risk' • **2024:** Compliance Level Predication: 'Probably at risk'	• **2023:** Compliance Level: 'At risk' • **2028:** Compliance Level predication: 'At risk'
		• Salmon Stock and Fisheries in England and Wales (Annual report by EA, Cefas and Natural Resources Wales) • SSD Annual Fish Monitoring Report (Annual report by EA) **Baseline data: 2015-2019** **Most recent data: 2019-23** • Hampshire Avon Fish Counter at Knapp Mill Report (Environment Agency Report) **Baseline data: 2020** **Most recent data: 2022**	**Returning stock estimate (Atlantic salmon)** • **2020:** 1495 • **2019:** 704 **5-year average (2015-2019):** 998	• **2021:** 1,057 (Attainment of: 88% of Conservation Limit, 109% of 5-year rolling average) • **2022:** 837 (Attainment of: 57% of Conservation Limit, 87% of 5-year rolling average) • **2023:** 578 (Attainment of: 31% of Conservation Limit, 27% of Management Target and 3% of 5-year rolling average) **5-year (2018-22) rolling average:** 934
		• England sea trout fishery performance results (Annual report by EA) **Baseline data: 2020** **Most recent data: as per baseline**	**Principal Sea Trout River: Sea trout population status** • **2020:** Compliance Level: 'Probably at risk'	No updated report since 2020 which remains the best available evidence. • **2020:** Compliance Level: 'Probably at risk'
		• Natural England Designated Sites (View webpage – periodic) **Baseline data: 2010** **Most recent data: for one SSSI, 2021, other SSSI as per baseline**	**SSSI Condition Assessment for units which reference Atlantic salmon under the 'Rivers and Streams' reportable feature (NB relates to habitat rather than population status)** • Avon Valley (Bickton to Christchurch) (1 unit) **2010:** 'unfavourable – recovering' • River Avon System (3 units) **2010:** 'unfavourable – recovering'	SSSI assessments have been updated for 1 site. The units mentioned below refer to Atlantic Salmon in relation to Freshwater Levels. • River Avon System (9 units) **2021:** 'unfavourable – No Changes'[5]

[5] Natural England – Designated Site Feature Conditions – River Avon SSSI

Annex 1: Components of On-Site Monitoring Programme

A: Salmonid Interaction Reporting

The requirements for reporting salmonid death and salmonid interactions will be set under the Net Permit Conditions.

B: Targeted Compliance Patrols

The number of each type of net fishing trip per year within each fishery area has been estimated based on expert opinion, fisher communications and MMO fishing data (table A1). This data has been used to inform the number of trips for both the Targeted Compliance Patrols and the Joint Agency Observer Trips (see section C), where 5% of estimated trips has been used in the first instance to set a target for both monitoring components. Although fishing activity has remained lower than expected in year 1, the proposed patrol numbers will remain for year 2.

Fishery Area	Estimated number of net fishing trips in Year 1		
	Ring Net	Bottom Set Net	Combined Net Trips
Southampton Water	60	20	80
Christchurch Harbour	60	n/a	60

Table A1: Estimated number of net fishing trips on which Monitoring Targets for year one will be based. Estimates are derived from expert opinion, fisher communications and MMO fishing data.

C: Joint Agency Observer Trips

Observer Trips will involve the deployment of a Southern IFCA Officer, or a person delegated by the Southern IFCA to conduct this function (this may include but is not limited to a person from another competent authority such as The Environment Agency) for the duration of a net fishing trip. Observer trips will be targeted towards peak salmonid migration conditions and fishers will be informed that they will be required to carry an observer on their next trip.

During the net fishing trip, the observer will record information related to:

- The type of fishing gear being used.
- The number of net hauls completed.
- Details (species and size) of all catch, both retained and discarded; and
- Details of any interaction with a salmonid.

The observer will be provided with a standardised record sheet which will detail the information required and will ensure that the data from the observer program is consistent, and any analysis of the data can be robust and quantifiable. Prior to the commencement of the observer program, participants will be required to demonstrate that they are competent in the identification of salmonids and other relevant species.

At a meeting of the Byelaw Working Group on 17th December 2020, Members agreed that observer trips should be 5% of total estimated net fishing trips for a particular gear type or a minimum of two trips whichever was higher. For demersal sole nets in Southampton Water, 5% of the total estimated net fishing trips is 1 trip therefore a minimum of two trips is applied here

D: Non targeted Compliance Patrols

Non-targeted Compliance Patrols refer to Compliance Patrols conducted by Southern IFCA and partner agencies in the normal delivery of their duties as opposed to patrols conducted for the purpose of observing net fishing activity. During these patrols Officers will be aware of the need to collect data on net fishing activity and any potential interactions with salmonids. Any intelligence relating to net fishing activity and/or interactions with salmonids will be submitted and analysed through the intelligence reporting system of a particular agency with intelligence reports marked for dissemination to other relevant authorities.

E: MMO Catch Recording

The newly implemented method of catch recording by the MMO for under 10 metre flag vessels fishing in UK waters is designed to provide an accurate picture of what is being taken out of the sea to be able to manage fish stocks and fishing opportunities for the future. Catch recording is a licence requirement which applies to the owners or operators of any licenced fishing vessel under 10m (non-sector only). Catch records can be submitted via the web, the specifically designed app, or the digital assist helpline. Fishers must submit catch records for quota species after landing but before the fish is moved from its place of landing. For non-quota species, fishers have 24 hours to submit the catch record. The catch record includes the date, port of landing, fish species, catch weight, the gear used and the sea area (defined as ICES statistical rectangle and sub-rectangle). For example, Christchurch Harbour is within sub-rectangle 30E82, Southampton Water falls within three sub-rectangles, 30E84 (from Fawley area north), 30E87 (entrance to River Hamble, River Hamble) and 30E88 (south of Fawley).

Annex 2: Components of Indicators of salmonid health over time

A: Principal Salmon River Status to include Population Status for Atlantic salmon

There are 49 rivers in England and 31 rivers in Wales which regularly support Atlantic salmon. Of these, 64 rivers are designated as 'principal salmon rivers' in the 'Salmon Stocks and Fisheries in England and Wales' annual report issued jointly by the Environment Agency, Cefas and Natural Resources Wales. The report used for the baseline data is for 2019. There are 42 principal salmon rivers in England and 22 in Wales, each of which has a Conservation Limit (CL) and a Management Target (MT). The CL and MT are used to give annual advice on stock status and to assess the need for management and conservation measures. The report used for the year 1 review is for 2023.

The CL and MT are based on the number of eggs deposited and annual compliance with the CL is assessed using egg deposition estimates. These estimates are derived from returning stock estimates where this data is available or, for rivers without traps or counters, the estimate is derived from the run size based on rod catch data using estimates of exploitation and an appropriate adjustment for under-reporting[6]. The Management Objective for a principal salmon river is that the river should meet the CL is at least four years out of five (at least 80% of the time). Compliance with this objective, I.e., the probability of a river meeting the Management Objective, classifies a river as 'At risk' (<5% probability), 'Probably at risk' (5-50% probability), 'Probably not at risk' (50-95% probability) and 'Not at risk' (>95% probability).

B: Returning stock estimate (Atlantic salmon)

The Environment Agency monitors stocks and fishery performance in most principal salmon rivers using fish counters, surveys of juvenile fish and collecting fisheries statistics. Based on this data collection, validated count data and a run estimate for salmon smolts and adults is provided for principal salmon rivers. The 'Salmon Stocks and Fisheries in England and Wales' annual report provides this verified data for all principal salmon rivers. The Environment Agency also produces a 'Solent and South Downs Annual Fish Monitoring Report' which provides details and results from all EA fish monitoring conducted in the Solent and South Downs area. This provides results from a variety of surveys including count data from fish counters on rivers in this area. This report has provided the baseline count data for 2020 for the Rivers Test and Itchen, the most recent reports informing the year 1 review is for 2023[6,7].

For 2020 data for the River Avon, the Environment Agency have produced a report on data from the fish counter at Knapp Mill. Part of this report provides a yearly summary of data from the fish counter which gives a combined upstream count of both salmon and sea trout. This figure is then apportioned between salmon and sea trout to give a total count for each. The separation between the two species is done based on images which are collected by

[6] Environment Agency, Cefas and Natural Resources Wales. 2023. 'Salmon Stocks and Fisheries in England and Wales in 2023', (https://assets.publishing.service.gov.uk/media/66f6ad7ea31f45a9c765ede8/SalmonReport-2023-summary.pdf)

[7] Environment Agency, Solent and South Downs Annual Fish Monitoring Report, https://www.solentforum.org/publications/Environment%20Agency%20SSD%20Fish%20Monitoring%20Report%202023.pdf

the cameras in the counters. The proportion of each species from these images is used to calculate the split between salmon and sea trout for 'unknown' fish I.e., where ID is not possible. This information is then used to provide a final count for each species. The most recent report is for 2022[8].

C: Principal Sea trout River Status to include fishery performance for sea trout

A report is produced on the England sea trout fishery performance results by the England & Wales Sea Trout & Salmon Technical Working Group. This report details the status of England's sea trout stocks based on declared rod catches with the aim of informing management actions to protect and enhance sea trout populations. The current report is for 2020 and was used to calculate the baseline. There are 44 rivers designated as 'principal sea trout rivers' in England, designated based on the rod catch being >50 fish. There has been no updated report since 2020 in which to compare the status of principal sea trout river status.

The assessment of the principal sea trout rivers uses two criteria: trend in CPUE in the last 10 years and current CPUE relative to the last 10 years. Based on this assessment the river is categorised into one of four categories: 'At risk', 'Probably at risk', 'Probably not at risk' and 'Not at risk'. There is no forward prediction for sea trout status as there is with salmon. The assessment reflects rod performance and therefore is not always an indication of overall stock performance, the assessment is intended to give early warning about potential problems. For a full picture of the stock, the assessment should be considered alongside Water Framework Directive Assessments for juvenile trout for the consistent water bodies in the catchment of a particular river (where such assessments exist).

An additional evidence source has been identified for Southampton Water for 2024 – "Salmon Counter Update, Test & Itchen, October 2024". This report provides October 2024 count data for 'trout' against an average count for 2015-2023. Data in the reported is caveated with the fact that provisional monthly counts may be adjusted on basis of further review and the count includes stocked trout where these can't be identified and removed from the data.

D: SSSI Condition Assessment for 'Rivers and Streams'

Each SSSI has a number of units associated with it which cover a certain geographic area. For a SSSI Condition Assessment, the condition of 'reportable features' are assessed periodically within the geographical area of a particular site unit. As such, individual condition assessments are not undertaken specifically for Atlantic salmon or sea trout, but rather for the 'Rivers and Streams' reportable feature, of which salmon and sea trout are a faunal component (which species are included in dependent on the site designation). The assessment of the 'Rivers and Streams' feature considers both the condition of supporting habitat for salmonids and their populations status within the site. Therefore, the condition which is assigned to a particular unit relates to the 'Rivers and Streams' feature as a whole, rather than just the condition of the salmonid population in that area. Condition assessments for SSSIs are updated periodically based on a rolling program.

[8] Environment Agency, Hampshire Avon Fish Counter at Knapp Mill 2022 Q4 report, http://avondiary.net/news/2022q4.pdf

2.0 Net Permits

2.1 Access Criteria

2.1.1 At Introduction of Byelaw

Net Permits were allocated on a restricted entry basis and applicable at the time of byelaw implementation for fishers who had historically engaged in net fishing within the Net Permit Areas. This was an important measure to ensure that the permitted fishing activity remained compatible with the conservation objectives of Designated Sites. Introductory Net Permits will be valid for a period of up to one year.

Applicants seeking a **Christchurch Harbour Net Permit**, or a **Southampton Water Net Permit** needed to demonstrate that, during the reference period of January 2018 to October 2021 (inclusive), they had:

- used a net to fish commercially from a vessel within the Permit Area for which they were applying, *and*
- had fished legitimately during that period.

Applicants seeking a **River Hamble Net Permit** need to demonstrate that during the reference period of January 2018 to October 2021 (inclusive) they had:

- been a holder of a net permit to fish the River Hamble, as issued by the River Hamble Authority, *and*
- used a net to fish commercially within the River Hamble Net Permit Area, *and*
- had fished legitimately during this period.

2.1.2 Year 2

Net Permits will be allocated on a restricted entry basis, the number of available permits is 17 reflecting the number of permits issued at the introduction of the Byelaw (Year 1). Maintaining restricted entry at 17 permits ensures that permitted fishing activity remains compatible with the conservation objectives of Designated Sites and the outcomes of the NFB Conservation Assessment Package.

Applicants seeking a **Christchurch Harbour Net Permit**, or a **Southampton Water Net Permit** must demonstrate they have:

- held a permit in Year 1 for the same permit area for which a Year 2 application is made

Applicants seeking a **River Hamble Net Permit** must demonstrate they have:

- held a permit for the River Hamble Permit Area in Year 1; *and*
- been a holder of a net permit to fish the River Hamble, as issued by the River Hamble Authority in Year 1

The Year 2 permit will be valid from the 1st of March 2025 until the 31st of March 2026 both days inclusive. This one off 13-month permit period allows for alignment between the financial year and permits from 2026 onwards, with Year 3 permits valid between 1st April to the 31st March both days inclusive.

2.1.3 New Entrants Access to fishery

Future entry into this fishery will be subject to the outcomes of the annual review of the Monitoring and Control Plan in line with the Review Procedure identified in paragraph (36) of the NFB. This mechanism is in place to ensure that the future management of the net fishery

remains compatible with the conservation objectives of the Designated Areas, as informed by the best available evidence provided by the annual monitoring process.

New entrants' criteria will be determined by the Authority at a time in which Net Permits may become available.

2.2 Procedure for Application

Net Permit applications are to be made in line with paragraph (22) of the NFB.

Applicants seeking a Net Permit must apply to the Authority in writing. All accompanying evidence, such as sales notes and mooring receipts should be submitted to the Authority at the time of application in order to support the submission.

Applications for introductory Net Permits, must be made during a twelve-week period immediately following the confirmation of the Net Fishing Byelaw by the Secretary of State.

Applications for Year 2 Net Permits must be made during the application window stipulated by the Authority. The Authority will communicate the application window with eligible Year 2 applicants in writing.

It will be at the discretion of the Chief Officer whether an applicant requires an interview following an assessment of the written application. Interviews will be conducted by a Permit Byelaw Panel in order to determine whether the applicant has proved to its satisfaction that the access criteria has been met. The Permit Byelaw Panel will report to the Technical Advisory Committee (TAC) regarding the status of the application. It will be at the discretion of the TAC whether the access criteria have been met.

Permits will be issued to applicants following confirmation of the NFB by the Secretary of State (or a nominated representative). Notice of the NFB confirmation and the procedure for application shall be posted on the Authority's website.

Year 2 Net Permits will be issued to applicants following the closure of the Year 2 Net Permit application window and consideration of all applications received.

EXECUTIVE SUMMARY
Decision Paper

Marked E

Poole Harbour Dredge Permit Byelaw: Permit Condition Review

Report by IFCO Mullen

A. Purpose

For the Members to consider the outcomes of a review of flexible Permit conditions under the Poole Harbour Dredge Permit Byelaw (PHDPB) and the implementation of a Monitoring and Control Plan for the fishery.

B. Recommendations

1. That Members agree the PHDPB Monitoring & Control Plan
2. That Members authorise inconsequential amendments to be made to the HRA (2025 Update) as required following any advice from Natural England.
3. That Members agree the required updates to Permit Condition 2.1 and relevant sections of the PHDPB Access Policy.
4. That Members agree the issuing of 45 permits under the HRA (2025 Update)

C. Annexes

- **Annex 1** - The PHDPB Monitoring and Control Plan
- **Annex 2 -** The PHDPB Habitats Regulations Assessment (2025 Update)
- **Annex 3 -** Update for Permit Condition 2.1 and Sections 5.2, 5.3, 5.4, 6.2 and 6.3 of the PHDPB Access Policy
- **Annex 4 -** Review of Permit Conditions under the PHDPB: Summary of Responses to Consultation

1.0 Introduction

- The Poole Harbour Dredge Permit Byelaw (PHDPB) regulates dredging for shellfish in Poole Harbour through the annual issue of permits.
- Under Section 11 of the PHDPB, the Authority shall conduct a review of the suitability of permit conditions, permit fees, and limitations on the number of permits every three years or sooner in accordance with a set procedure. The last review was carried out in 2021.
- During the 2024/25 season, Southern IFCA received reports from Permit Holders indicating a decline in Manila clam catches. In response, detailed monthly analysis of catch data was conducted and shared with Permit Holders and Members. The Authority recommended that, through a review, a program of action be developed to allow the Authority to be proactive in the management of the fishery.
- The review, commenced in November 2024, focused on the development of a **Monitoring and Control Plan (M&CP)** for the fishery and a review of potential changes to permit conditions which could be implemented in the event that best available evidence (PHDPB paragraph [11]) indicates further management is required to support a sustainable fishery.
- Members of the TAC attended a Working Group on 15th January 2025 to review the available evidence for the review and to discuss the proposed outcomes, **recommendations from the WG** have been incorporated into the Review Outcomes presented in this paper.

2.0 Key Considerations: Available Evidence Feeding into the Review

- There are two main sources of data to inform understanding of stocks of Manila clam in the PHDPB fishery; annual **Poole Harbour Bivalve Survey data** (most recent 2024)[1] which provides Catch Per Unit Effort data (**CPUE**) and **monthly catch return data** provided by Permit Holders which provides Landings Per Unit Effort data (**LPUE**) (reported in Annex 4 to this report).
- A **Habitats Regulations Assessment** (HRA) informs the issuing of permits under the PHDPB in relation to the designated features of the Poole Harbour Special Protection Area (SPA), including

[1] Survey reports to date (up to 2024) can be found on the Southern IFCA website - Poole Harbour Fisheries : Southern IFCA

consideration of the Poole Harbour Site of Special Scientific Interest (SSSI) and Ramsar Site.
  - **2025 Update (Annex 2):** the HRA has been reviewed in line with current best available evidence and to incorporate the outcomes of this review, there are no proposed changes to management resulting from the updated HRA.
- **Consultation with Permit Holders** occurred between 10th December 2024 and 10th January 2025. During this period Permit Holders were provided with an evidence document and consultation questions, with the opportunity to provide comment or feedback at a Permit Holder meeting or via an individual response.
  - A summary of the consultation outputs is provided as Annex 4.

3.0 Review Outcomes

- **Monitoring & Control Plan (M&CP) (Annex 1)**
  The M&CP incorporates:
  - An **On-Site Monitoring Programme** for CPUE (survey) and LPUE (catch data) with defined Threshold Trigger Levels (TTLs), Recovery Thresholds (RTs) and associated control mechanisms to initiate a review of best available evidence in determining if any additional management measures are required to support a sustainable fishery for Manila clam in Poole Harbour.
    - TTLs and RTs have been set in accordance with a defined process using best available evidence from the two main data sources for the fishery.
      - For LPUE, the TTL is above the value (kg/day) Permit Holders defined as being a concern to the economic viability of their businesses providing a point for the consideration of the need for additional management intervention before the level of concern is reached. The RT is within the range of LPUE values specified by fishers as being sustainable for the fishery.
    - The TAC meeting in May will form the Decision Point for any changes to management in the event a control mechanism is activated under the On-Site Monitoring Programme.
    - Evidence gathered through the review, including through the consultation, on the suitability of potential permit condition changes to support a sustainable fishery will be presented to the Authority as part of the evidence to inform any decision on changes to management. In the event that further best available evidence is available to supplement information gathered during the review this will be collated and presented to the Authority.
  - An **SPA Monitoring Programme** for the fishery's HRA aligning potential reviews with monitoring variables associated with the condition of the SPA and the operations of the fishery.
    - The number of permits issued for the 2025/26 season and all subsequent seasons until a review of the HRA is determined to be required is proposed at 45 in line with current effort in the fishery since it's inception in 2015.
  - An **In-Season Monitoring Programme**, providing in-season monitoring of LPUE and CPUE to assess the status of the fishery and support ongoing monitoring and potential Authority decisions under the On-Site Monitoring Programme. In-Season Monitoring Variables are not connected to a trigger point or control mechanism.
- **Administrative Updates (Annex 4)**
  - Administrative changes are required to Permit Condition 2.1 (catch reporting) and the PHDPB Access Policy to facilitate the future use of the Southern IFCA Online Permitting System for the PHDPB fishery.

4.0 Next Steps

- If the Authority resolves to agree the M&CP, HRA (update) and administrative changes to permit conditions and the Access Policy these documents will come into immediate effect.
- Permit Holders will be notified by the Authority of the outcome of the review.
- The application process for 2025/26 PHDP will commence from 1st April 2025.
- Subject to the outcomes of the April 2025 Poole Harbour Bivalve Survey and any TTL reached under the On-Site Monitoring Program, the relevant control mechanism will be activated.
- Permit holders will be informed of the TAC decision on any changes to management following the outcome of a control mechanism process if initiated ahead of the start of the 2025/26 fishing season.

Marked E – Annex 1

Poole Harbour Dredge Permit Fishery Monitoring and Control Plan

Supporting Document as part of the Poole Harbour Dredge Permit Review

Document Control

Title	Southern IFCA Poole Harbour Dredge Fishery Monitoring and Control Plan
Author(s)	Celie Mullen, IFCO Emily Condie, Senior IFCO Policy Specialist
Approver	The Southern Inshore Fisheries and Conservation Authority
Approval Date	***TBC***
Owner	Southern IFCA

Revision History

Date	Author	Version	Status	Reason	Approver

1.0 Purpose of the Monitoring and Control Plan

This Monitoring and Control Plan (M&CP) has been developed as part of the 2024 Southern IFCA Poole Harbour Dredge Permit Review, to support management of the Poole Harbour dredge fishery for shellfish under the Southern IFCA Poole Harbour Dredge Permit Byelaw (PHDPB) and associated permits. The M&CP should be read in conjunction with the Habitats Regulations Assessment (HRA) and relevant documentation for the PHDPB fishery.

The M&CP aims to provide a comprehensive framework for monitoring and feedback within the PHDPB fishery. Management of the permitted clam and cockle fishery will be informed by the M&CP, ensuring that the Authority utilises the best available evidence in understanding the operation of the fishery in relation to target stocks and environmental designations and in any determinations of changes to management.

The M&C Plan considers an **On-Site Monitoring Programme** and an **SPA Monitoring Programme**, which outline specific triggers for various monitoring variables and associated control mechanisms. In addition, an **In-Season Monitoring Programme** allows for continued high level monitoring to provide additional evidence to support a determination under the other two programmes.

The M&CP is a live document and will be reviewed as appropriate in accordance with the Review Procedure outlined in paragraph (11) of the PHDPB.

1.1 Poole Harbour Dredge Permit Fishery

Dredging for shellfish in Poole Harbour is regulated through the annual issue of permits under the PHDPB. Permit conditions attached to the permit provide technical regulations for dredge fishing operations. This approach enables the consolidated management of multiple species under a unified regulatory framework.

Permits are issued annually, with a total of 45 permits currently issued each year. All vessels operating within the fishery are under 9 metres in length, typically small, open boats that conduct day trips during high water periods. The Poole Harbour Dredge Permit Byelaw regulates several key aspects of fishing operations, including:

- Catch restrictions and reporting requirements
- Gear types and specifications
- Gear construction standards and limitations
- Spatial and temporal restrictions
- Mandatory equipment fittings on vessels

1.2 Site designation

The fishery operates within the Poole Harbour Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), and Ramsar Site. Management of the fishery has been developed in close consultation with Natural England and other relevant organisations to ensure that fishing practices align with the site's conservation objectives. Site-specific details can be found in the Poole Harbour SPA Appropriate Assessment – Issue of Permits Under PHDPB (2025 Update).

The issuing of permits under the PHDPB is in line with the conclusions of a Habitats Regulations Assessment (HRA) for the Poole Harbour SPA. The M&CP facilitates the transition from an annual review of the HRA to a process where revision of the HRA is in response to identified trigger points.

2.0 Monitoring & Control Plan

The M&CP considers an **On-Site Monitoring Programme** and **SPA Monitoring Programme**, which outline specific triggers for different control measures based on the type of data collected under each monitoring variable. In addition, the M&CP includes an **In-Season Monitoring Programme** which is used to assess the status of the fishery during each fishing season, monitoring variables under the In-Season Monitoring Programme are not linked to control mechanisms but provide information to support ongoing monitoring and potential information to support any Authority decisions in the event a control mechanism is activated.

2.1 On-Site Monitoring Programme

2.1.1 Threshold Trigger Levels

Threshold Trigger Levels (TTLs) have been established for each monitoring variable under the On-Site Monitoring Programme, with TLLs activating a control mechanism (Section 2.1.3).

The TTLs are calculated using a five-year rolling average of:

a) **Poole Harbour Bivalve Survey data** – average total CPUE (kg/m of dredge/hr) for the Harbour = **CPUE TTL**
   - **Monitoring Variable 1: available data -** 2016-2024

b) **Landings data** from monthly catch returns submitted by Permit Holders – average LPUE (kg/day) for fishing season **= LPUE TTL**
   - **Monitoring Variable 2: available data -** 2016-2024

For each data set, a baseline level was determined using the lowest five-year rolling average across all available data. Variations between each data year and this baseline was then reviewed to determine the level of expected variation around the baseline (expressed as a percentage) based on data available to date. An average of the percentage variation has been applied below the baseline to set the TTL for each data source, for CPUE TTL this is 35%, for LPUE TTL this is 19%. If data from a particular year falls below the TTL a control mechanism will be activated.

a) 2025 CPUE TTL = 34.60 kg/m of dredge/hr
b) 2025 LPUE TTL = 78.25 kg/day

2.1.2 Recovery Threshold Levels

In the event that further management is implemented to support a sustainable fishery following the activation of a control mechanism, annual monitoring at the end of the season will inform whether a control mechanism to consider the removal of that further management is activated through the setting of **Recovery Thresholds (RT)**. The RT utilises the same percentage variation applied to the baseline as used to define the TTL, applied above the baseline level for each data source. If data from a particular year, following a year where additional management was implemented for a full season, is above the RT a control mechanism will be activated.

a) **2025 CPUE RT = 53.09 kg/m of dredge/hr**
b) **2025 LPUE RT = 114.35 kg/day**

The TTL and RT calculation process is progressive and adaptive, evolving in response to the continued collection of data for the fishery under each monitoring variable. At such a time as the M&CP is reviewed, updates will be made to TTLs and RTs based on current best available data.

2.1.3 Control Mechanism

The following text is intended to supplement the Control Mechanism process (Figure 1) in order to provide further clarity regarding how and when **a control mechanism linked to the On-Site Monitoring Programme** will be activated. This section is to be read in conjunction with reporting requirements for the On-Site Monitoring Programme monitoring variables (Annex 1).

To ensure that the Authority is transparent in making management decisions in line with duties under the Marine and Coastal Access Act 2009, the Control Mechanism for the On-Site Monitoring Programme is subject to review at Authority level. If a TTL or RT is met for either Monitoring Variable 1 or 2 under the On-Site Monitoring Programme, Southern IFCA Officers (IFCOs) will consider the circumstances which may have led to the breach in the TTL or achievement of the RT, this will include an assessment of any contributing factor based on best available evidence. Where required IFCOs may also liaise with Permit Holders and/or partner agencies to ascertain a full compliment of information.

The activation of a control mechanism will be considered annually. The Technical Advisory Sub-Committee (TAC) at the annual May meeting will be provided with any evidence associated with the breaching of a TTL or the achievement of an RT = **Decision Point**. This meeting follows the completion of the annual stock survey and occurs prior to the start of the fishing season. As specified in paragraph 10 of the PHDPB, the Authority may attach, vary or revoke conditions attached to a Poole Harbour Dredge Permit, to be agreed at the Decision Point. Following any decision on changes to management through permit conditions agreed by the TAC, this will be communicated to Permit Holders ahead of the relevant fishing season under the PHDPB.

Through a review under the PHDPB in 2024, under which the M&CP was established, potential changes to permit conditions which could be considered by the TAC in the event that the outcome of the Decision Point is to introduce further management to support a sustainable fishery were explored and consulted on with Permit Holders. Information obtained through the review process will be presented to the Authority as part of the evidence to inform any decision on attaching, varying or revoking conditions attached to a Poole Harbour Dredge Permit at the Decision Point, including an Impact Assessment related to any proposed measures. In the event that further best available evidence is available to supplement information gathered during the review this will be collated and provided to the Authority.

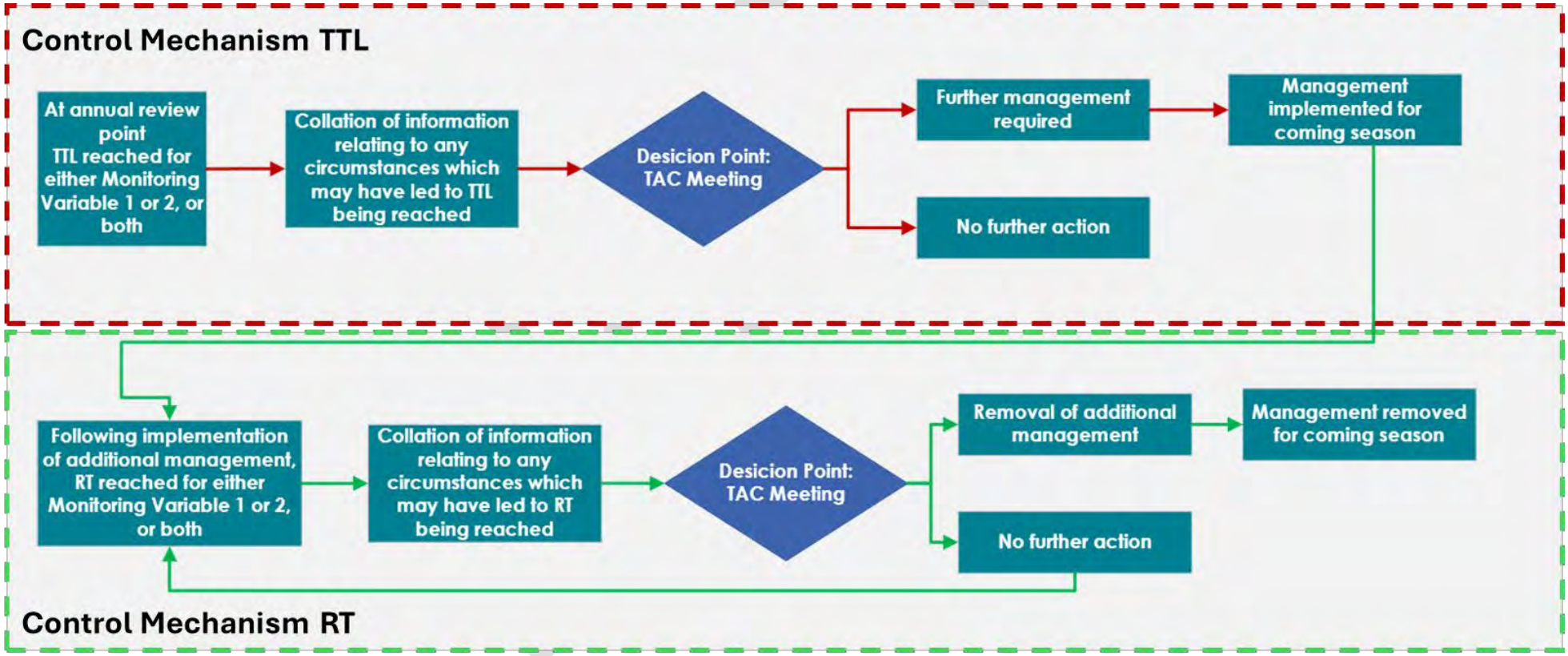


Figure 1: Control mechanism for On-Site Monitoring Programme

2.1.4 On-Site Monitoring Programme Monitoring Variables

The On-Site Monitoring Programme captures two monitoring variables, data from which will indicate whether a TTL or RT has been reached.

Monitoring Variable	Frequency of Reporting	Data Requirement	Responsibility	Analysis	Control
1. Poole Harbour Bivalve Survey	Annual *Survey conducted in April each year*	Catch Per Unit Effort (CPUE) data (see Annex 1)	Southern IFCA	Survey data to be analysed following completion of survey in April each year. CPUE data analysis prioritised.	CPUE TTL or RT reached *Figure 1*
2. Landings data from monthly catch returns submitted by Permit Holders	Annual *Catch data obtained monthly reported as an annual value for the season*	Landings Per Unit Effort (LPUE) data (see Annex 1)	Permit Holders	Catch data analysed monthly during the season, used to provide an annual average following end of fishing season in December.	LPUE TTL or RT reached *Figure 1*

2.2 SPA Monitoring Programme

The SPA Monitoring Programme allows the HRA for the issuing of permits under the PHDPB to be linked to specific monitoring variables, moving from an annual review to consideration of a review under the activation of a control mechanism related to the outputs of one of the **5 identified monitoring variables**. Monitoring the relationship between the fishery and the SPA under the M&CP ensures that updates to the HRA are in line with changes in relevant data and ensures that the Authority continues to meet its duties under the Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

The number of permits issued under the PHDPB each year (2015 to 2024), in line with the conclusions of the HRA, is 45. A review of the HRA (2025 Update) has been carried out alongside the development of the M&CP. Best available evidence in relation to the potential for an adverse impact from the fishery on species and supporting habitats for which the Harbour is designated remains consistent with that used to inform previous versions of the HRA, **therefore the conclusion of the HRA (2025 Update) is to issue 45 permits under the PHDPB.** This will remain the case for each fishing season unless the HRA is reviewed, in line with the SPA Monitoring Programme.

The HRA (2025 Update) considers the potential outputs of the M&CP, in the event that a control mechanism is activated under the On-Site Monitoring Programme. In considering potential outcomes of a control mechanism being additional management intervention to support a sustainable fishery through the limitation of fishing effort, it is determined that this outcome would further support the mitigation provided through the PHDPB and associated permit conditions. On that basis, the conclusion of the HRA (2025 Update), incorporating the potential for the activation of a control mechanism and associated possible management intervention, is that the issuing of permits will not hinder the site from achieving its conservation objectives and as such will not have an adverse effect upon the integrity of the Poole Harbour SPA. In the event that the outcome of the control mechanism process determined management intervention where there was an identified potential risk to site integrity then the specific management measures would be assessed through an addendum to the HRA, to be annexed to the document following seeking advice from Natural England.

2.2.1 SPA Monitoring Programme Monitoring Variables

The SPA Monitoring Programme captures five monitoring variables, analysis of data from which will be used, in conjunction with all other best available evidence to determine whether the control mechanism is initiated, namely whether a review of the HRA for the issuing of permits under the PHDPB is required.

Monitoring Variable	Data Requirement	Responsibility	Analysis	Control
1. Change to MPA designation within Poole Harbour	Detail of new designation and any associated species/habitats including conservation objectives.	Natural England provision of information to Southern IFCA	Any information or data received under Monitoring Variables 1-5 will be reviewed in conjunction with all other best available evidence.	Outputs of analysis will be used to inform a determination as to whether a review of the HRA is required. In the event that a review is required this will be carried out and Formal Advice will be sought from NE on the updated HRA. Any outputs of the updated HRA which suggest further management
2. Change to designated features or supporting habitats within the Poole Harbour SPA	Detail of new designated features or habitats status and conservation objectives.	Natural England provision of information to Southern IFCA		
3. Change to fishery operation or management measures	Detail of new operations/gear types/species as relevant, and/or detail of new management measures and relation to the current assessment under the HRA for the fishery	Southern IFCA		
4. Significant change to site condition	Updated information on site condition and evidence supporting	Natural England provision of information to Southern IFCA		

attributed to fishing activity	relationship between site condition change and fishing activity.			intervention is required will be explored through the Review Procedure as outlined in paragraph (11) of the PHDPB.
5. Significant new best available evidence on potential impacts to the SPA resulting from fishing activity in the PHDP fishery	Provision of new evidence (peer-reviewed or subject to standard QA practice for relevant agency) showing potential impacts to the SPA from fishing activity related to the PHDP fishery.	Natural England provision of information to Southern IFCA Provision of information to Southern IFCA from relevant other organisation/academic institution		

(*) Note, changes to management relates to those separate to any action resulting from activation of M&CP control mechanism for stock, the potential actions resulting from these measures are deemed to result in reduced effort within the fishery and therefore would not lead to a risk of adverse effect to the SPA, the implementation of the M&CP has been considered in the 2025 update to the PHDP HRA.

2.2 In-Season Monitoring Programme

The **In-Season Monitoring Programme** outlines monitoring variables which will be monitored during each fishing season to assess the status of the fishery. Monitoring variables under the In-Season Monitoring Programme are not linked to control mechanisms but provide information to support ongoing monitoring and potential information to support any Authority decisions in the event a control mechanism is activated under either the **On-Site Monitoring Programme** or the **SPA Monitoring Programme**.

Monitoring Variable	Data Requirement	Responsibility	Analysis
1. Monthly analysis of LPUE data	Landings of Manila clam during the fishing season, supplied through monthly catch return submissions by Permit Holders.	Permit Holders	Data analysed to provide average LPUE (kg/day) for each month, identification of any trends in data and comparisons to previous fishing seasons.
2. Pilot Mid-Season Stock Observer Program	CPUE data from active fishing vessels during fishing season.	Southern IFCA with facilitation from Permit Holders.	A pilot program will be explored for the 2025/26 season to determine the ability to obtain CPUE data from active fishing vessels at the mid-season point, collecting data on weight of Manila clam at/above and below MCRS across different fishing areas within the Harbour. Data would be analysed to provide CPUE values that can be compared to annual stock survey data obtained pre-fishing season.

Annex 1: Data for Monitoring Variables, On-Site Monitoring Programme

The table below outlines the monitoring activity, responsible organisation and reporting methods for each of the two monitoring variables for the On-Site Monitoring Programme.

Monitoring Variable	Monitoring Activity	Organisations Responsible	Reporting
Catch Per Unit Effort (CPUE)	Sampling of Manila clam and other key bivalve species (common cockle, American hard-shell) from 27 sites under the annual Southern IFCA Poole Harbour Bivalve Survey. The samples are weighed to determine the CPUE expressed as kilograms of shellfish per meter of dredged ground per hour (kg/m/hr). CPUE is calculated for the total catch, as well as for the catch at/above and below the Minimum Conservation Reference Size (MCRS). Additional information is also gathered from the survey on length-frequency distributions and population structure. This includes determining the proportion of individuals above and below MCRS. This data can be used as an additional data source to inform decisions under the control mechanism for the On-Site Monitoring Programme if required.	Southern IFCA	Data will be collated and analysed on an annual basis following the survey taking place in April each year (*changes to survey time period may be required on the basis of extenuating circumstances such as weather*). CPUE data analysis is prioritised to inform the On-Site Monitoring Programme. A full survey report will be produced annually following completion of all data analysis.
Landings per Unit Effort (LPUE)	Permit holders are required to submit monthly catch returns by the 14th of the following month under the Permit Conditions. Data is required to be provided on the hours fished, quantity of each species caught, fishing zone(s) from which the catch was taken and the buyer(s) of the catch for each day of the month. Data on catches of Manila clam for each month will be used to determine an average annual LPUE value (kg/day) for the fishing season.	**Submission:** Permit Holders **Data Analysis:** Southern IFCA	Data will be analysed monthly (*see In-Season Monitoring Programme*) and collated on an annual basis to inform the On-Site Monitoring Programme. Data on annual LPUE and in-season patterns will be reported annually as part of the full survey report for the Poole Harbour Bivalve Survey.

Title	**Poole Harbour Special Protection Area (SPA) Appropriate Assessment - Issue of Permits Under Poole Harbour Dredge Permit Byelaw (2025 Update)**
SIFCA Reference	SIFCA/HRA_PP/PHDPByelaw2025
Author	Southern IFCA
Approver	The Authority
Owner	Southern IFCA
Template Used	HRA Template Plan/Project v1.0

Revision History

Date	Author	Version	Status	Reason	Approver(s)
17/01/2025	C Mullen	1.1	Initial Draft	• Addition of Monitoring and Control Plan (M&CP) to management of PHDPB fishery. • Outlining move from annual review of HRA to review in line with M&CP. • Updates to S. 4.3 to reflect most current information from Poole Harbour Bivalve Survey and catch data.	S Birchenough

This document has been distributed for information and comment to:

Organisation	Name	Date sent	Comments received
Natural England	Dr Richard Morgan	28th January 2025	

Southern Inshore Fisheries and Conservation Authority (IFCA)

Habitat Regulations Assessment for Plans/Projects

European Marine Site: Poole Harbour SPA

Plan/Project: Issue of permits under Poole Harbour Dredge Permit byelaw

Feature(s): Common tern, Sandwich tern, Mediterranean gull, Little egret, Spoonbill, Avocet, Shelduck, Black-tailed godwit (Icelandic Race), Water bird assemblage (all waterbirds using the site including Dunlin, Dark-bellied Brent goose, Teal, Goldeneye, Red-breasted merganser, Curlew, Spotted redshank, Greenshank, Redshank, Pochard, Black-headed gull [excluding non-native species, vagrants, non-named gull species and terns])

Site Specific Sub-feature(s)/Supporting Habitat(s): Coastal lagoons, Freshwater and coastal grazing marsh, Mediterranean and thermo-Atlantic halophilous scrubs, Atlantic salt meadows, Spartina swards, Intertidal seagrass beds, Intertidal mixed sediments, Intertidal mud, Intertidal sand and muddy sand, Water column

1 Technical Summary

Duties under Regulation 9 of the Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 require Southern IFCA, as a competent authority, to make an appropriate assessment of a plan or project likely to have a significant effect on a site that is part of the National Site Network (either alone or in combination with other plans or projects).

The Poole Harbour Dredge Permit Byelaw regulates the wild shellfish fishery through the annual allocation of 45 fixed permit entitlements, which authorise the use, retention, storage, and transportation of dredges within Poole Harbour, subject to specific conditions. The purpose of the assessment is to determine, whether or not in the view of Southern IFCA the issuing of permits will hinder the achievement of the conservation objectives of the Poole Harbour SPA and lead to an adverse effect on site integrity. The development of the PHDP fishery Monitoring and Control Plan (M&CP) (**Section 6.7**) has facilitated the transition from an annual review of the Appropriate Assessment to the need for a review being identified through and linked to a process of monitoring variables and trigger points as outlined in the M&CP. In the event that analysis of any data received under the monitoring variables, in conjunction with all other best available evidence, indicates that a review of the Appropriate Assessment is required then a review will be carried out in accordance with standard process.

A review of research into shellfish dredging impacts identifies the permitted activity has the potential to disturb bird populations and lead to changes in prey availability. These potential impacts and risks to the integrity of the site are however mitigated through a number of conditions applied under the permit. These include the exclusion of shellfish dredging all year round in a number of key sites which represent important areas for feeding and roosting, prohibition of shellfish dredging during key sensitive times (1st November-23rd December & 25th May-30th June) in a series of areas also important for feeding and roosting, the timing of the closed season (24th December to 24th May) which largely corresponds to the overwintering period, a cap on fishing effort through the allocation of a set number of permits and a number of restrictions on gear configuration. Additional mitigation is afforded to saltmarsh habitats, which are a supporting habitat for the features of the SPA, through four areas where shellfish dredging is prohibited all year round, three at Seagull Island and one at Green Island, and through the Southern IFCA 'Poole Harbour Saltmarsh Protection Code of Practice' which sets out guidelines to avoid disturbance to nesting and roosting birds and promote the protection of supporting breeding habitat.

In the event that further management is required through permit conditions on the basis of a Trigger Threshold Level being reached under the M&CP for the On-Site Monitoring Program (relating to stock monitoring), proposed actions are to limit fishing effort, thus increasing mitigation, and therefore there is no risk to the integrity of the site through the implementation of measures under this process. The output of completing the control mechanism for the On-Site Monitoring Programme will dictate the type of management required, in the event that unforeseen circumstances result in further management being proposed where a risk to site integrity is identified, an addendum to this HRA will be drafted and annexed to this document.

Based on the mitigation measures, in the form of permit conditions and additional protection from the Code of Practice, it is concluded that that issuing of permits under the Poole Harbour Dredge Permit Byelaw will not hinder the site from achieving its conservation objectives and as such will not have an adverse effect upon on the integrity of the Poole Harbour SPA and Ramsar site. As in previous years (2015/16, 2016/17, 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 2024/25) it is therefore proposed the number of permits issued should remain at 45. The number of permits issued will be 45 for all relevant seasons until any further update of the Appropriate Assessment.

Table of Contents

2 Introduction

2.1 Need for a Habitats Regulations Assessment (HRA)

The National Site Network[1] is a network of protected sites which are designated for rare and threatened species and rare natural habitat types. These sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA), designated under the EC Habitats Directive 1992 and EC Birds Directive 2009 (amended), respectively. The Conservation of Habitats and Species Regulations 2017[2], as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[3], transposes the land and marine aspects of the Habitats Directive and the Wild Birds Directive into domestic law, and outlines how the National Site Network will be managed and reflect any changes required by EU Exit.

Southern IFCA has duties under Regulation 9 of the Conservation of Habitats and Species Regulations 2017 as a competent authority, with functions relevant to marine conservation, to exercise those functions so as to secure compliance with the Habitats Directive and Birds Directives.

Article 6(3) of the Habitats Directive requires any plan or project likely to have a significant effect on a European site (SPA or SAC) within the National Site Network, either individually or in combination with other plans or projects, to undergo an Appropriate Assessment to determine its implications for the site.

Article 4(4) of the Birds Directive states that 'Member states shall take appropriate steps to avoid …deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article'.

Regulation 63 of the Conservation of Habitats and Species Regulations 2017 requires Southern IFCA, as the competent authority, to make an appropriate assessment of a plan or project which is likely to have a significant effect on a European site that forms part of the National Site Network (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of the site in question. The implications of any plan or project must be assessed in view of the site's conservation objectives.

This document forms the basis of an appropriate assessment for the issue of permits under the Poole Harbour Dredge Permit byelaw. The purpose of this document is to assess whether or not in the view of Southern IFCA, the issue of permits under the Poole Harbour Dredge Permit byelaw will have a likely significant effect on the bird features and supporting habitats (saltmarsh and intertidal sediment) of the Poole Harbour SPA alone, and in combination with other plans or projects. The assessment ensures Southern IFCA meets its responsibilities as a competent authority by ensuring that the conservation objectives of the Poole Harbour SPA will be met and the integrity of the site is not adversely affected.

2.2 Documents reviewed to inform this assessment

- Reference list[4] (Annex 1)

[1] The National Site Network is the network of sites in the United Kingdom's territory consisting of such sites as immediately before EU Exit day formed part of the Natura 2000 site network.
[2] The Conservation of Habitats and Species Regulations 2017 (legislation.gov.uk)
[3] The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (legislation.gov.uk)
[4] Reference list will include literature cited in the assessment (peer, grey and site specific evidence e.g. research, data on natural disturbance/energy levels etc)

- Natural England's Conservation Advice[5]
- Site map(s) – sub-feature/feature location and extent (Annex 2)
- Fishing activity data (map(s), etc) (Annex 3)
- Natural England's advice on the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour SPA, Ramsar and SSSI (received 3rd June 2014) (Annex 4)
- Fisheries Impact Evidence Database (FIED)/SPA Tool Kit

3 Information about the Special Protection Area

- Poole Harbour SPA (Site Code: UK9010111)

3.1 Overview and qualifying features

The site qualifies under **Article 4** of the Birds Directive (2009/147/EC) for the following reasons (summarised in Table 1):

- The site regularly supports more than 1% of the Great Britain populations of five species listed in Annex I of the EC Birds Directive.

- The site regularly supports more than 1% of the biogeographic population of two regularly occurring migratory species not listed in Annex I of the EC Birds Directive.

Feature		**Interest Type**
A193	Common tern *Sterna hirundo*	Annex 1 Breeding
A191	Sandwich tern *Sterna sandvicensis*	Annex 1 Breeding
A176	Mediterranean gull *Larus melanocephalus*	Annex 1 Breeding
A026	Little egret *Egretta garzetta*	Annex 1 Non-breeding
A034	Spoonbill *Platalea leucorodia*	Annex 1 Non-breeding
A132	Avocet *Recurvirostra avosetta*	Annex 1 Non-breeding
A048	Shelduck *Tadorna tadorna*	Regularly occurring migrant Non-breeding
A156	Black-tailed godwit, Icelandic-race *Limosa limosa islandica*	Regularly occurring migrant Non-breeding

- The site qualifies under **Article 4** of the Birds Directive (2009/147/EC) as it used regularly by over 20,000 waterfowl (waterfowl as defined by the Ramsar Convention) or 20,000 seabirds in any season.

  During the non-breeding season the area supports 25,176 individual waders and waterfowl including (in addition to the species which qualify as features in their own right (Table 1)):

[5] https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9010111&SiteName=Poole%20harbour&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

dunlin (*Calidris alpine)*, great cormorant (*Phalacracorax carbo)*, dark-bellied Brent goose (*Branta bernicla bernicla)*, teal (*Anas crecca),* goldeneye (*Bucephala clangula)*, red-breasted merganser (*Mergus serrator)*, curlew (*Numenius arquata),* spotted redshank (*Tringa erythropus)*, greenshank (*Tringa nebularia)*, redshank (*Tringa tetanus)*, pochard (*Aythya farina)* and black-headed gull (*Chroicocephalus ridibundus),* all of which are present in nationally important numbers. The features; little egret, spoonbill, black-tailed godwit and shelduck are also included within the water bird assemblage.

3.1.1 Supporting Habitat

Natural England's Advice on operations[6] details the supporting habitats as follows. No breakdown of supporting habitats is given per qualifying species.

- Coastal lagoons
- Freshwater and coastal grazing marsh
- Mediterranean and thermo-Atlantic halophilous scrubs
- Atlantic salt meadows
- Spartina swards
- Intertidal seagrass beds
- Intertidal mixed sediments
- Intertidal mud
- Intertidal sand and muddy sand
- Water column

Poole Harbour is a bar-built estuary of nearly 4,000 ha located on the coast of Dorset in southern England. The Harbour occupies a shallow depression towards the south-western extremity of the Hampshire Basin which has flooded over the last 5,000 years as a result of rising sea levels. The unusual micro-tidal regime means that a significant body of water is retained throughout the tidal cycle. The Harbour therefore exhibits many of the characteristics of a lagoon. There are extensive intertidal mudflats and, away from the north shore that has become urbanised through the growth of the town of Poole, there are fringes of saltmarsh and reedbed. The Harbour supports important numbers of water birds in winter and is also an important breeding site for terns and gulls, whilst significant numbers of Little Egret *Egretta garzetta* and Aquatic Warbler *Acrocephalus paludicola* occur on passage. Several river valleys converge on the Harbour, notably the Frome and the Piddle, and these support grazing marshes that contribute to the importance of the SPA for wintering waterbirds. Parts of the Harbour, especially along the western and southern shores, adjoin the Dorset Heathlands SPA. Where the two areas meet, there are unusual transitions from saltmarsh and reedbed to valley mire and heath habitats. The Harbour is separated from Poole Bay by the Studland Dunes (part of the Dorset Heaths [Purbeck and Wareham] and Studland Dunes SAC) and the SPA includes Littlesea, a large oligotrophic dune-slack lake of importance for wintering wildfowl.

In 2016 Natural England held a consultation on a proposed extension to the Poole Harbour SPA to include all areas below the Mean Low Water mark which lie within the Harbour entrance, an additional landward extension in Lytchett Bay and the addition of three qualifying species: Sandwich tern, spoonbill and little egret. The rationale between the extension was to ensure that all areas of marine habitat which are exploited for resting, roosting or feeding by protected bird species were included. Poole Harbour regularly supports more than 1% of each of the populations of the three additional species. The proposed extension became a potential SPA (pSPA) on 21st January and as such the features and species proposed for inclusion were considered as part of the 2017/18 appropriate assessment. On 30th November 2017, the pSPA was included in the Register of

6 https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9010111&SiteName=Poole+harbour&SiteNameDisplay=Poole+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

European Sites in England (as required as Regulation 17 of The Conservation of Habitats and Species Regulations 2010) and as such was confirmed as part of the Poole Harbour SPA.

The full site citation is available at:
http://publications.naturalengland.org.uk/publication/6625771074355200

3.2 Conservation Objectives

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

The high-level conservation objectives for the Poole Harbour SPA are available online at: http://publications.naturalengland.org.uk/publication/6625771074355200

3.3 Ramsar Site

Poole Harbour is a Ramsar site, and as such is recognised as a wetland of international importance designated under the Ramsar Convention. The site was designated for the following reasons:

- Regularly supports 20,000 waterfowl
- Regularly supports over 1% of avocet, black-tailed godwit, common tern, Mediterranean gull and shelduck
- Supports an appreciable assemblage of rare, vulnerable or endangered species including a nationally scarce hydroid species *Hartlaubella gelatinosa* and nationally rare sponge *Suberites massa*
- Is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna including supporting the nationally scarce plants narrow leaved eelgrass *Zostera augustifolia* and dwarf eelgrass *Zostera noltii*

3.4 Site of Special Scientific Interest (SSSI)

Section 28G of the Wildlife and Countryside Act 1981 (as amended) defines 'section 28G authorities', including the Southern IFCA, who have a duty to take reasonable steps, consistent with the proper exercise of their functions, to further the conservation and enhancement of the flora, fauna or geological or physiological features by reason of which the site is of special scientific interest.

In May 2018 Natural England notified additional land as a part of the Poole Harbour SSSI. The largest of which includes the estuarial open water below mean water. The other three areas comprise saltmarsh, wetland and supporting habitats around the fringes of Lytchett Bay and Holes Bay respectively. All four additional areas have been included as they support estuarine habitats

and/or wintering wildfowl and waders for which the site is designated. The area below MLW is also seen to support other features for which the site is designated including foraging habitat for breeding seabirds and subtidal benthic habitats.

In order to ensure the protection of the entirety of the re notified SSSI Southern IFCA worked with Natural England to produce and agree a 'Site Management Statement' for the Poole Harbour SSSI. This importantly includes the ongoing management of Wild Fishing Activity of which clam dredging is a part. In the site management statement, it was agreed that the current process of reviewing the Poole Harbour Dredge Permit Byelaw HRA in consultation with Natural England will ensure that the fishery does not damage or disturb the features of the site.

4 Plan/Project Description

The Poole Harbour Dredge Permit (PHDP) byelaw[7] regulates the wild shellfish fishery in Poole Harbour through the annual allocation of permit entitlements and as such requires a HRA for the issuing of permits.

4.1 Poole Harbour Dredge Permit

The permit allows the use of, retention on board, storage and transportation of a dredge within Poole Harbour.

Under the permit, a series of conditions are applied, relating to catch restrictions and reporting; gear types; gear construction and restrictions and spatial and temporal restrictions (see Annex 5 (Map) and Annex 6 (Permit Conditions)). The permit also allows for a requirement to fit specified equipment to vessels.

The permit is flexible and allows Southern IFCA to review the suitability of the permit conditions, attach conditions to the permit and vary or revoke conditions attached to the permit at any time after the permits have been issued, following a set process. As such, any changes will have regard to the Authority's duties and obligations under section 153 and 154 of the Marine and Coastal Access Act 2009, advice from Natural England, new evidence in the form of scientific data or literature and/or any Habitats Regulations Assessment. This flexibility allows proportionate management of the dredge fishery in Poole Harbour whilst achieving the conservation objectives of the site.

As in previous years (2015/16, 2016/17, 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 2024/25), it is proposed that a maximum of 45 permit entitlements will be issued. This reflects the current level of effort, which is deemed sustainable and will be maintained for the 2025/26 season and future seasons up to the point where the Appropriate Assessment is reviewed.

4.1.1 Permit Conditions

The spatial and temporal restrictions (Annex 5 & 6), which are part of the permit conditions, are designed to mitigate any potential impacts of dredge fishing activity on the nature conservation features of the Poole Harbour SPA and ensures there will be no adverse effect on site integrity. They reflect advice received from Natural England received prior to the introduction of the PHDP byelaw (June 2014) and an ongoing assessment of evidence relating to the marine environment in Poole Harbour and fishing activity under the Poole Harbour Dredge Permit Byelaw. The permit conditions:

[7] https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Poole_Hrbr_D_Permit/Poole-Hrbr-D-Permit-Byelaw.pdf

Provide a network of areas where there is little or no noise and visual disturbance and sediment disturbance, including in the following specific areas:

- bird sensitive areas, areas where declines in some bird species have been observed (Brands Bay, Wych Lake, Lytchett Bay) that are likely to be in part attributable to site specific pressures
- Mediterranean gull nesting sites at Seagull Island
- areas where sediment recovery is likely to be slow (low energy sites)
- fringing saltmarsh, reedbed and lowland water habitats that support breeding birds

This is reflected in the permit conditions through the following measures:

- Shellfish dredging is excluded in Bird Sensitive Areas in Lytchett Bay, Holes Bay, and the inner regions Wych Lake and Middlebere Lake all year round.
- Shellfish dredging is excluded in sensitive saltmarsh habitat areas at Seagull Island and Green Island all year round.
- Shellfish dredging is excluded from overwintering, feeding and roosting bird sensitive areas at Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keysworth Bay and parts of Arne Bay and Brands Bay (Annex 5) during key sensitive times of the year for bird species between 25th May and 1st July, 1st November and 23rd December.

Exclude or manage intensity where high levels of sediment disturbance could result in release of contaminants

- The area of Holes Bay is noted to pose a risk to release of contaminants

This is reflected in the permit conditions through the following measures:

- Shellfish dredging is excluded in Holes Bay all year round

Manage shellfish dredging throughout the Harbour in a way that minimises its impact on prey availability and disturbance

This is reflected in the permit conditions and Byelaw through the following measures:

- Restrictions in the number of permits (45)
- The design of the pump and dredge used
- Restrictions in the timing of when the fishery takes place (closed from 24th December to 24th May). The prohibition on dredge fishing activity from 24th December to 24th May mitigates over-wintering bird disturbance during this lean period.

Provide an ability to monitor catch levels, particularly for the main commercial species (Manila clam and common cockle) that are also prey species for some of the designated bird species.

This is reflected in the permit conditions and Byelaw through the following measures:

- There is requirement for fishers to provide monthly catch return data indicating, for each day of the month, the hours fished, the quantities of shellfish taken, the buyer(s) and the zone of the Harbour from which the catch was taken. This data allows the Southern IFCA to monitor trends in fishing activity and relate catch data to the data from the Poole Harbour Bivalve Stock Assessment[8] to ensure that fishing activity continues to remain sustainable with respect to shellfish stocks.

[8] Reports for the Poole Bivalve Stock Assessment can be found on the Southern IFCA website at https://www.southern-ifca.gov.uk/poole-harbour-fisheries. Note that there was no stock assessment carried out in 2020 due to the COVID-19 pandemic.

4.1.2 Changes to Permit Conditions

There have been no changes to permit conditions since the end of the 2023 fishing season. A review took place following the end of the 2021/22 season, this review was underpinned by a need to consider a long-term management solution for the protection of saltmarsh habitat at Green Island and the wider harbour as well as considering the cost implication for the re-certification of the dredge fishery under the Marine Stewardship Council (MSC) Certification. The changes to management which resulted from this review are incorporated into this Appropriate Assessment as they were for the 2022/23 and 2023/24 assessments.

Through the 2024 Review outlined below, one change to permit conditions was made separate to the M&CP process, this was to allow for the provision for Permit Holders to submit catch data through the Southern IFCA online permitting system in future seasons.

2024 Review: Monitoring and Control Plan

During the 2024-2025 permit season, Southern IFCA received reports from Permit Holders regarding a decline in Manila clam catches. In response, Southern IFCA conducted a thorough monthly analysis of the catch data submitted by Permit Holders through their monthly catch return forms. This data was presented to Permit Holders and Authority Members at two Technical Advisory Sub-Committee meetings held in August and November 2024. Additionally, the findings were communicated directly to Permit Holders via letters sent in August and November 2024, following the respective meetings.

Alongside the observed decline in stocks, section 10 of the PHDP Byelaw states that the permit conditions will be reviewed every 3 years. In light of the observed decline in stock data and the feedback from Permit Holders, the Authority agreed to explore the development of an action plan for effort limitation in the PHDP fishery. The outcome of the review is the development of a Monitoring and Control Plan for the fishery (M&CP)[9] to support management of the dredge fishery under the Poole Harbour Dredge Permit Byelaw and associated permits. The M&CP aims to provide a comprehensive framework for monitoring and feedback within the fishery. Management of the fishery under permit conditions will be informed by the M&CP, ensuring that the Authority utilises the best available evidence in understanding the operation of the fishery in relation to target stocks and environmental designations and in any determinations of changes to management.

The M&C Plan considers an On-Site Monitoring Programme and an SPA Monitoring Programme, which outline specific triggers for various monitoring variables and associated control mechanisms. In addition, an In-Season Monitoring Programme allows for continued high level monitoring to provide additional evidence to support a determination under the other two programmes.

The On-Site Monitoring Programme contains two monitoring variables related to stock of Manila clam in Poole Harbour, Catch Per Unit Effort (CPUE) data from the annual Southern IFCA Poole Harbour Bivalve Survey and Landings Per Unit Effort (LPUE) data from catch return data submitted by Permit Holders. Each monitoring variable has an associated Threshold Trigger Level (TTL) and Recovery Level (RT), determined through an analysis of all existing data and the definition of appropriate triggers to ensure an approach which is appropriate to known trends in stock data observed since 2016. In the event that a TTL or RT is reached, a control mechanism is activated in accordance with the process outlined in the M&CP. The outcome of this process may result in additional management interventions for the fishery, through permit conditions, to support a sustainable fishery. It is dependent on a review of best available evidence as part of the control mechanism process as to whether or what type of additional management may be required. The aim of additional management interventions would be to limit effort in order to allow stock levels to

[9] *Link to be added once M&CP published*

increase, in limiting effort through, for example temporal limitations on hours, days or months fished, restrictions on catch levels or further spatial restrictions, further mitigation would be provided for the fishery operating within the Poole Harbour SPA therefore there is no risk of adverse effect to site integrity from the implementation of such measures. In the event that the outcome of the control mechanism process determined management intervention where there was an identified potential risk to site integrity then the specific management measures would be assessed through an addendum to this HRA, to be annexed to this document following seeking advice from Natural England.

The annual determination point for the initiation of control measures from the On-Site Monitoring Programme will be following the annual Poole Harbour Bivalve Survey in April and analysis of a full season of catch data following the end of the fishing season.

The M&CP also establishes an SPA Monitoring Programme which allows this HRA for the issuing of permits under the PHDPB to be linked to specific monitoring variables, moving from an annual review to consideration of a review under the activation of a control mechanism related to the outputs of one of the 5 identified monitoring variables. Monitoring the relationship between the fishery and the SPA under the M&CP ensures that updates to the HRA are in line with changes in relevant data and ensures that the Authority continues to meet its duties under the Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

4.1.3 Additional work in the Permit fishery

During the 2021/22 fishing season, additional work was carried out in the fishery through 'The Poole Clam and Cockle Fishery Partnership Project' a project funded by the Marine Stewardship Council's Ocean Stewardship Fund which ran from March 2021 to February 2022. The project centred around progressing the condition placed on the fishery by the Marine Stewardship Council (MSC) certification relating to the management of the fisheries with regard to Endangered, Threatened and Protected (ETP) species. Progress had been made in this regard within the fishery following the initial Certification, and the Poole Harbour Clam and Cockle Fishery Group (consisting of the Poole and District Fishermen's Association, the Southern IFCA and Dorset Wildlife Trust) saw that there were shared benefits in continuing the partnership in order to address the condition and improve the fishery. The project was designed to drive performance, promote further innovation in the fishery and enable this work to be communicated widely with others so that the benefits of co-management and MSC certification can be replicated and enjoyed by others.

The aims of the project were to:

- Establish a co-management system to support fishers in minimising interactions with ETP species
- Widen knowledge of ETP species in Dorset
- Improve awareness of the positives of fishermen as sentinels
- Provide a blueprint and supporting information for other fisheries aiming for MSC certification

As part of the project the following outputs were produced:

4.1.3.1 Educational materials

Permit fishers were provided with an updated guide to the most common ETP species (Figure 3) with a link to the Southern IFCA website where more detailed information is provided on these and other ETP species that are found within the Harbour and wider area (https://www.southern-ifca.gov.uk/etp-species). Similar information was also placed on two interpretation boards which were installed at Fisherman's Dock and Rockley Marina.

Figure 3. Waterproof guide to ETP species provided to fishers in the Poole Harbour Dredge Permit Fishery their permit pack.

4.1.3.2 Observer Program

An observer program was carried out between July and October 2021. On-board observations were carried out for 18 permitted vessels over 19 fishing trips in Poole Harbour between July and October 2021. The observer worked covered a total of 37 hours of fishing activity and 424 dredge hauls as follows:

- A 3-4 hour period of observation was caried out for each vessel
- The hauling of the dredge was photographed on each occasion at the point where the dredge reached the sorting riddle
- From this point the haul was continually observed for the presence of ETP species until the dredge was returned to the sea
- Each image was given a GPS coordinate

The locations where dredge hauls were observed are shown in Figure 4. The results showed that there was no gear interaction with ETP species for any of the observer trips, representing 42% of the active fishery participants.

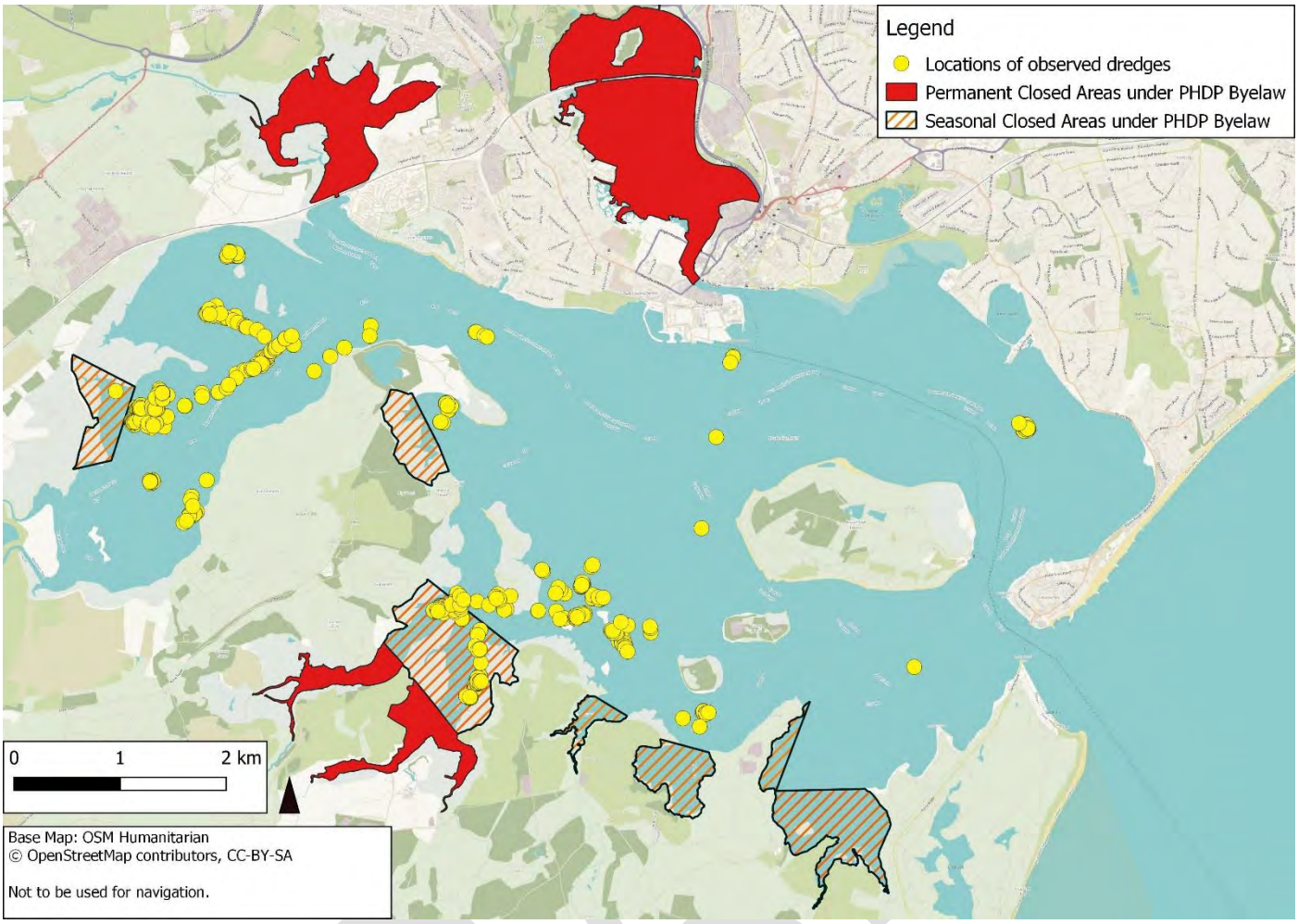


Figure 4. Locations where hauls were observed for permitted fishing vessels in the Poole Harbour Dredge Permit fishery as part of the observer program. Also shown are permanent and seasonal closed areas under the permit conditions.

4.1.3.3 Fishing Gear

Over the last two years, innovations have been made to fishing gear in the Poole Harbour dredge fishery which have added benefits in helping to mitigate potential impacts to ETP species. These innovations fall under three categories; developments to engines and water pumps, developments to fuelling mechanisms, developments to dredges and sorting equipment. Examples are shown in Figure 5.

i) Developments to engines and water pumps

The method of fishing in the dredge fishery has evolved so that the dredge can be operated whilst the vessel is on tick-over rather than running in gear. This has reduced the noise created by the engine whilst fishing is taking place which is in closer proximity to areas where ETP species would be likely to be disturbed by increased noise for example Bird Sensitive Areas. Noise reduction is also seen on larger catamaran style vessels which are being used in the fishery through the need to only use one of the twin engines, again on tick-over, during fishing practice.

Modifications to the water pumps, used to power the hydraulic aspect of the dredge equipment, have also resulted in a reduction in the noise produced from fishing activity. Water cooled exhausts are being used on water pumps which reduces the noise output. In addition, the newer catamaran style vessels and some of the dory style vessels run the water pump using the inboard diesel engine which powers the vessel rather than a stand-alone generator which greatly reduces the noise previously created by requiring a secondary generator which would sit on the deck of the vessel.

Finally, water pumps that are run using a separate petrol generator have been modified to also drive the hydraulics that operate the dredge which has removed the need for a separate power source for the hydraulic system. This reduction in the number of power sources across all modifications has resulted in a reduction in noise in the dredge fishing process. As with engine modifications, the use of this equipment will occur when in fishing locations which are likely to be in closer proximity to areas where ETP species will be located, the reduction in noise will therefore greatly reduce the potential for disturbance impacts to these species both above and below water.

ii) Developments to fuelling mechanisms

The installation of in-board auxiliary water pumps on the newer catamaran style vessels and some existing larger vessels in the permit fishery have resulted in the use of diesel as the fuel source rather than petrol which is less flammable and creates less of a risk of fire on-board vessels. Re-fuelling of the in-board pumps is also required less frequently removing the need to re-fuel in-situ during fishing activity and the location of the pump, in-board, makes the re-fuelling processes easier and, should a spill occur, it is much easier to contain the spill without any risk to the marine environment. All of these modifications reduce the risk of introducing a pollutant into the marine system which can have negative impacts on many ETP species (and the wider marine environment).

iii) Developments to dredges and sorting equipment

Innovations in the fishery have been seen in the pump-scoop dredge used to harvest shellfish. A fisher has been trialling a vibrating pump-scoop dredge which vibrates during the dredging process. This assists in moving material through the dredge whilst it is in the water, meaning that the dredge does not become full of additional sediment and detritus as quickly therefore increasing the retention of the target species which can otherwise be blocked from entering the dredge and minimising the retention of target species under the minimum conservation reference size as they are able to pass more easily through the dredge bars during the fishing process.

Fishers in this fishery also use secondary sorting equipment in the form of a riddle, which is a table with spaced metal bars that aims to minimise retention of target species below the minimum conservation reference size. Fishers have voluntarily increased the bar

spacing on both the riddle and the pump-scoop dredge to greater than that which is required by the Poole Harbour Dredge Permit of 18mm, to either 19mm or, in some cases, 20mm. This increase in bar spacing ensures that material retained by the dredge which is not the target species can be returned more quickly to the seabed and any target species under the minimum conservation reference size can also be returned quickly to the seabed.

Further innovations in the sorting equipment is seen in the use of a mechanised riddle, operated by a computer system which has varying levels each set at a different bar spacing down to the required spacing of 18mm at the lowest level. This improves fishing efficiency and helps to ensure the maximum amount of legal catch can be retained from a single dredge. This method also helps to minimise the quantity of target species under the minimum conservation reference size which would have to be hand gauged by the fisher as there is more opportunity for undersized individuals to pass through the riddle given the several different layers.

All of the modifications to dredges and sorting equipment are designed to reduce the amount of time that a fisher needs to spend gauging catch to ensure compliance with minimum conservation reference size regulations. Whilst some gauging will still be required, the degree to which this is needed between dredges will be reduced. This gives fishers more time to be aware of the area they are fishing in and observe any potential ETP species which may be in the same area thus enabling them to take action to mitigate any potential interaction. In addition, the target species for the fishery are identified as food sources for many of the ETP bird species in the Harbour. By reducing the time that undersized individuals are removed from the sediment and minimising accidental retention there will be benefits to the target species populations which help to support certain ETP species as a food source.

4.1.3.4 Risk Management Strategy

As part of the project a Risk Management Strategy was produced to outline how ETP species management can be approached in an adaptive manner which incorporates significant stakeholder involvement and elements of co-management through the promotion of fishery-dependent data collection. The Strategy presents the outcomes of the Poole Partnership Project and provides a process to follow for management development which aims to be applicable to other fisheries, particularly in the small-scale (<10m) inshore sector where fishing activity overlaps with conservation features. The Strategy also aims to provide guidance to fisheries in the process of or looking to start the process of becoming certified under an ecolabelling scheme such as the Marine Stewardship Council Certification. The Risk Management Strategy can be viewed on the Southern IFCA website (ETP Species : Southern IFCA (southern-ifca.gov.uk)).

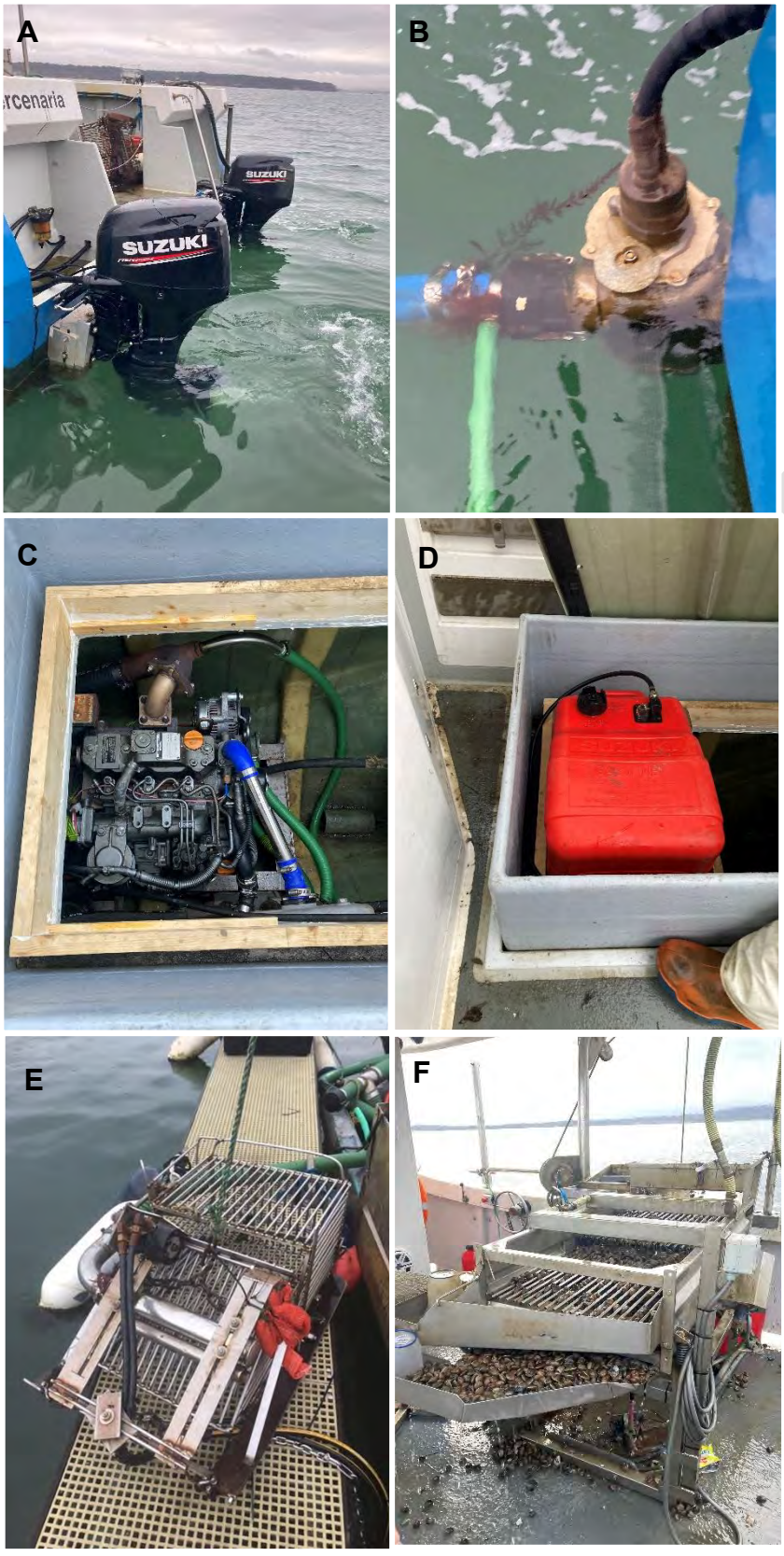


Figure 5. Examples of fishing gear innovations in the Poole Harbour dredge fishery; A) use of a single engine on tick-over during fishing, b) water cooled water pump, c) use of vessel's inboard engine to power water-pump, d) inboard fuel supply for dredge hydraulics and water pump, e) vibrating pump-scoop dredge and f) mechanised riddle table.

4.1.4 Poole Harbour Dredge Permit Access Policy

The Access Policy[10] outlines the way in which the Authority administers the allocation of permits under the byelaw and sets out criteria for applicants based on whether they have held a permit during the previous season or are a new entrant. In either case, the vessel for which an application is made must be a relevant fishing vessel as defined in the byelaw and the applicant must be a majority shareholder in that vessel or nominated for that purpose by a majority shareholder of the vessel provided that the applicant is also named as a shareholder on the vessel's certificate of registry.

This ensures that in order to gain a permit there is a rigorous process and set of criteria which will be tested by the Authority. The specified criteria are designed to ensure that permit entitlements are used during the season and that the fishery is open to those with a genuine desire to engage in the commercial shellfish fisheries within the Harbour. The process also prohibits unregistered/unlicensed fishing and creates a robust regulatory mechanism against illegal activity.

The Southern IFCA Online Permitting System was introduced in 2023 to provide secure and easily accessible permit information via PC, tablet, or mobile phone. To date the Southern IFCA Fish for Sale Permit is available via the online system, however it is the intention of the Authority to have the PHDP operating under this system for the 2025/26 season.

Applying for a permit using the Online Permitting System allows fishers to;

- Access permit information securely online via PC, tablet or mobile phone
- Upload vessel's documents
- Dispense with unnecessary paperwork
- Avoid postal costs and the risk of delayed and lost post

In order to enable applications for a PHDPB Permit through the Online Permitting System, amendments to Sections 5.2, 5.3, 5.4 and 6.2 & 6.3 of the Poole Harbour Dredge Permit Fishery Access Policy were recommended within the 2024 PHDP review. These updates relate to the submission of application forms and are administrative only.

4.2 Technical Gear Specifications

Fishing for shellfish in Poole Harbour is carried out using pump-scoop dredge. A pump-scoop dredge consists of toothed dredge basket which is towed through the seabed alongside a vessel (Jensen *et al*., 2005). Attached to the front end of the dredge is a series of water jets which direct a flow of water to the rear of the dredge basket (Jensen *et al*., 2005) (Figure 6). The water jets, powered by a hydraulic pump, allow sediment to be moved through the dredge basket (Jensen *et al*., 2005). In 2012, the use of a trailed pump-scoop dredge, which uses the aid of a davit arm and winch, was introduced. This type of dredge evolved from the previously used and more physically demanding hand-held dredge or scoop, pushed into the sediment and pulled along by a vessel (Jensen *et al*., 2005; Clarke *et al*., 2018). The pump-scoop dredge is deployed from small (less than 10 metre in length) and shallow drafted vessels. This gear type is unique to Poole Harbour and differs from suction or hydraulic dredging techniques which both fluidise the sediment by spraying water in front of the dredge (Jensen *et al*., 2005).

A comparison between the pump-scoop and hand-held dredge revealed no differences in the areas fished in terms of proximity to the shore (i.e., potential displacement of birds) or sediment penetration

[10] https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Poole_Hrbr_D_Permit/Poole-Hrbr-D-Permit-Access-Policy.pdf

(i.e., likelihood of impacting on infaunal communities). Further observations also showed no increase in fishing intensity when comparing both dredge types.

The pump-scoop dredge is towed in a circular motion with each tow lasting from 2 to 5 minutes depending on the nature of the seabed. After each tow the pump-scoop dredge is lifted into the vessel and the contents of the dredge basket are emptied directly onto the riddle for sorting. Fishers must sort their catch immediately and return all shellfish under minimum size restrictions, as well as bycatch, to the water. The configuration of the pump-scoop dredge is dictated by the conditions of the permit. These include restrictions on the dimensions of a dredge basket to a maximum of 460 mm in width, 460 mm in depth and 30 mm in height (excluding any poles or attachment). Dredges must be constructed on rigid bars having spaces of no less than 18 mm between them. Bar spacing is designed to allow young spat and infauna to go through the dredge basket (Jensen *et al*., 2005). A riddle with bar spacing of 18 mm is mandatory for the sorting of shellfish.

Figure 6. Typical pump-scoop dredge set up with basket dredge, water jets, davit arm and sorting riddle.

4.3 The Poole Harbour Shellfish Fishery: Location, Effort and Scale of Fishing

Prior to the introduction of the PHDP byelaw, commercial shellfish dredging within Poole Harbour was regulated through a combination of the Poole Fishery Order 1985, a hybrid Regulating and Several Order that licensed the wild clam fishery and provided leased ground for shellfish aquaculture, and the ‘Cockle’ byelaw, which regulated commercial cockle fishing. There was

additional clam fishing in areas which fell outside of the Poole Fishery Order 1985, namely Brands Bay and Lytchett Bay. There was also a level of unlicensed/unregistered fishing activity for both clam and cockle, with 18 unlicensed vessels recorded by SIFCA between 1st January 2012 and 1st September 2014.

On 1st July 2015, the Poole Harbour Dredge Permit byelaw was introduced to regulate the use, retention on board, storage and transportation of a dredge through the allocation of permit entitlements. Simultaneously, the Poole Harbour Fishery Order 2015 was also introduced on 1st July 2015 to regulate shellfish aquaculture within the Harbour. Since the introduction of the PHDP byelaw, 45 permit entitlements have been allocated each season. During the most recent season (2024/25), 45 out of 45 permit entitlements were taken out.

4.3.1 Fishing Effort and Landings

During each fishing season, under the permit conditions, permit holders are required to submit a monthly catch return form indicating, for each day of the month:

- The hours spent fishing; and
- The quantity in kilograms of each species caught that day; and
- The number of zone(s) in which the quantities of species caught that day have been taken according to the zonation map provided with the catch return form; and
- The name(s) of the company or individual to whom all parts of the catch was sold or declare that no catch was taken on that day by entering the word ‘nil’ in the column for “Species caught and Quantity”

If no fishing has taken place during a month, the permit holder must indicate this to the Southern IFCA by submitting a ‘nil’ catch return.

The data from these catch returns is used to analyse trends in fishing activity and is presented in figures 7-12.

For the 2024/25 season, the number of permit holders actively fishing per month varied from 29 in May to 41 in July. In all years, the number of active fishers generally increases throughout the months of the season, with a tail off in participation in the final two months (November and December). Figure 7 shows the variation in the average number of active fishers per month for each season (2020-2024).

Statistical analysis using a Kruskal-Wallis test showed that there was no significant difference in the average number of active fishers between from 2020 to 2024 (P=0.667). It is important to note that all permit holders actively fish throughout the season but do not necessarily fish for every month of the season. The reasons for this may be related to weather, vessel maintenance, alternative fishing practices, other work commitments or extraordinary circumstances.

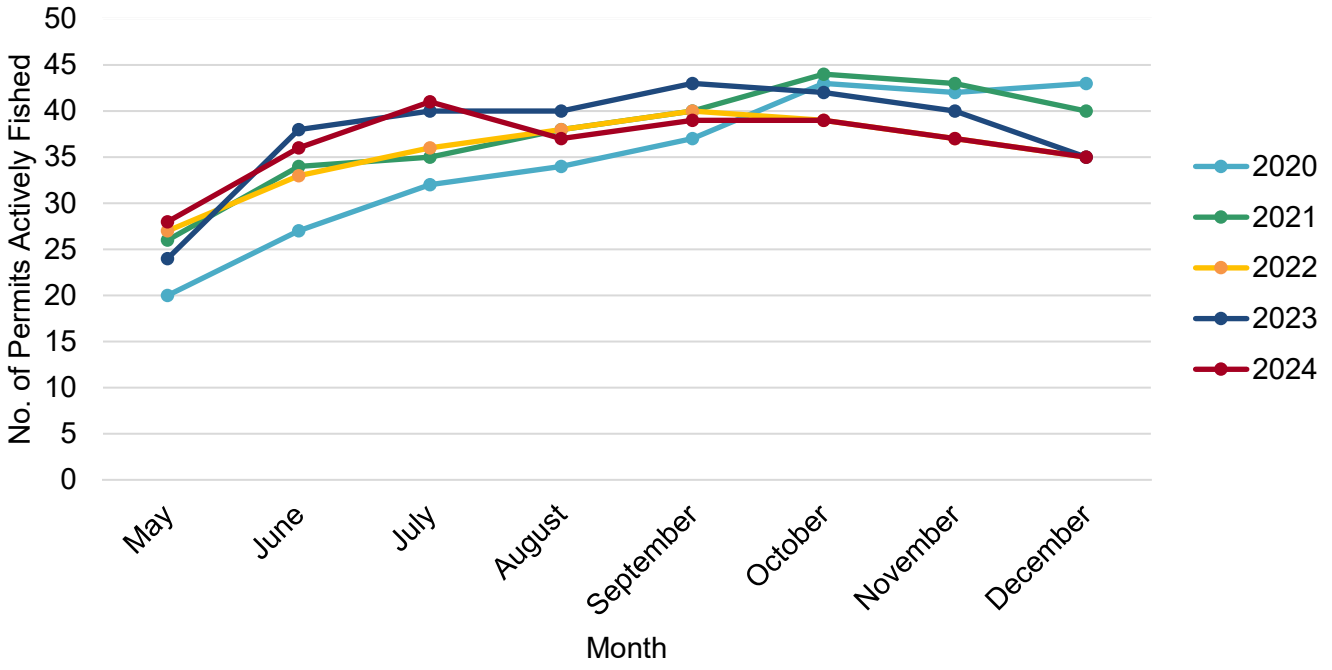


Figure 7: Number of active permits per month of the season for 2020-2024. For all years shown the season commenced on May 25th and ended on 23rd December.

The total number of hours fished in each month of the season is shown in Figure 8a for 2020-2024. For the 2024/25 season, the total number of hours fished in a month (excluding May where there are only 6 days available for fishing), varied from 1469.75 hours in December to 2823 hours in June. Statistical analysis of the hours fished between years (Figure 8b) showed that there was no statistical difference (P=0.769).

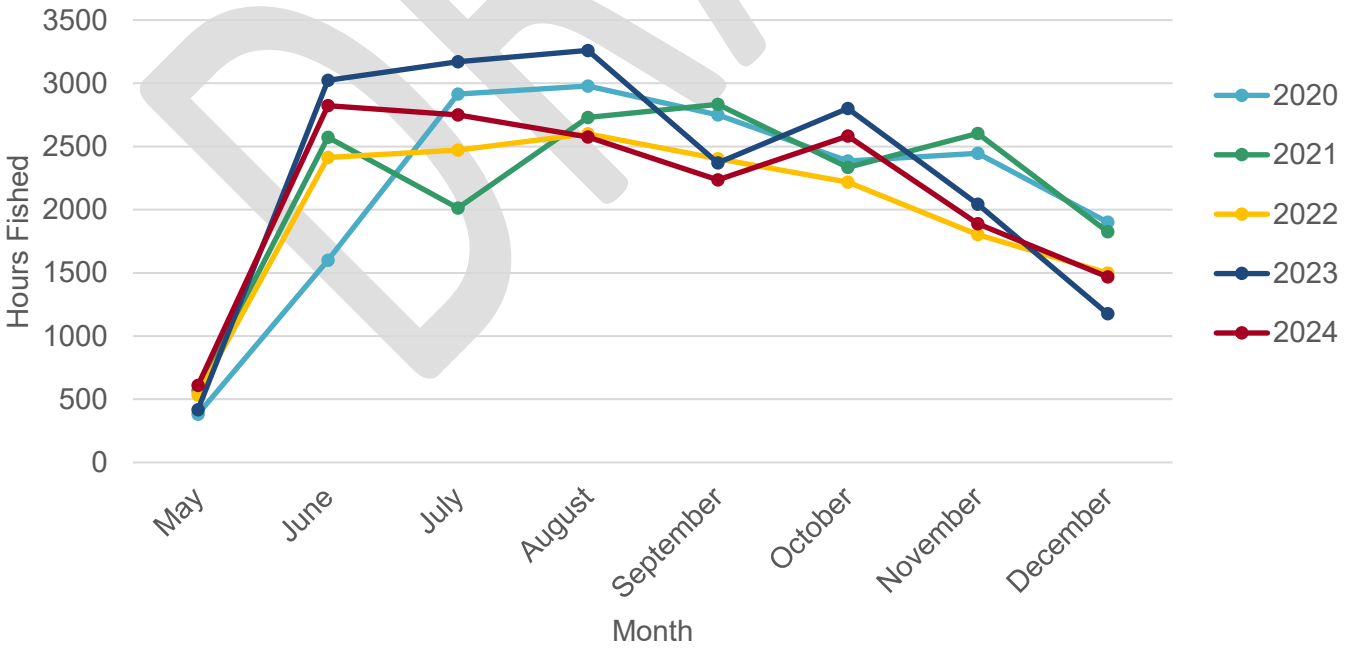


Figure 8a: The total number of hours fished by Poole Harbour Dredge Permit holders for each month of the fishing season for 2020-2024. For all years shown the season commenced on May 25th and ended on 23rd December.

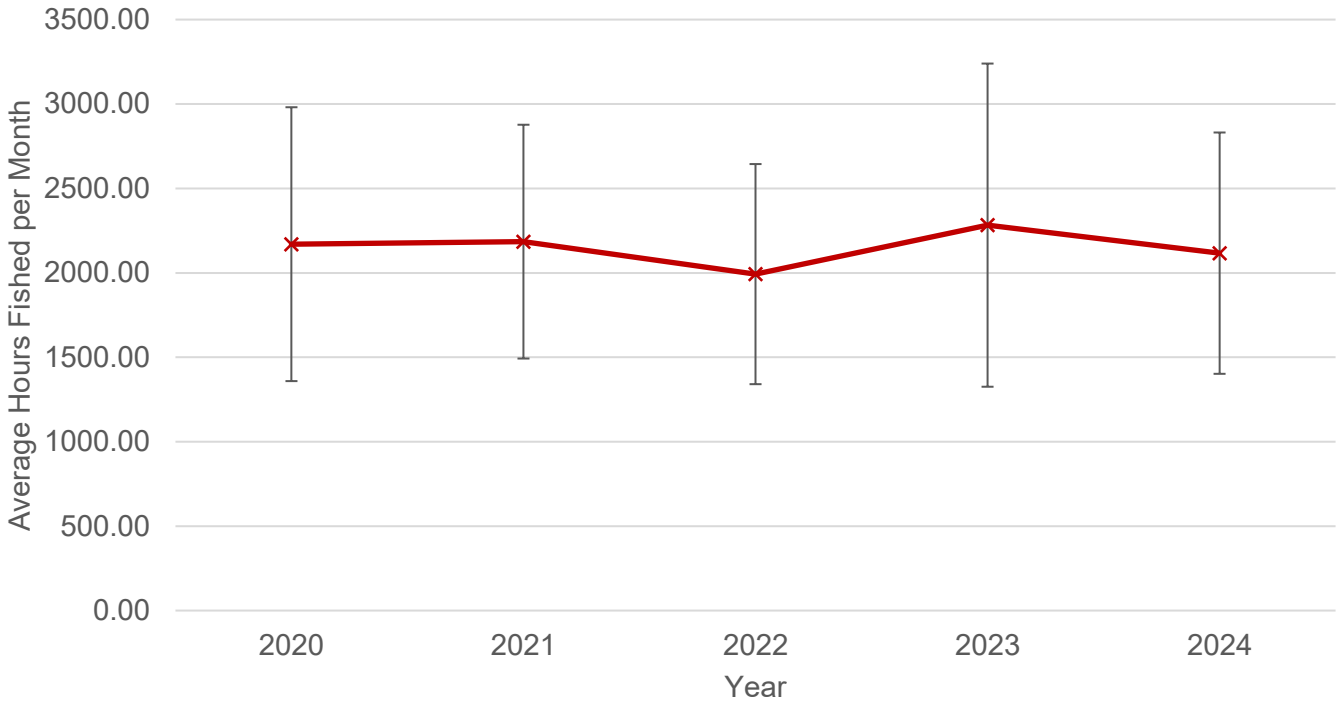


Figure 8b: Average hours fished across the whole fishing season for 2020-2024. The error bars represent the standard deviation.

The main targeted species is the Manila clam (*Ruditapes philippinarum*) which is reflected in the landings data, in comparison to landings for cockle and other bivalve species. The total quantity of Manila clam landed each month of the season for 2020-2024 is shown in Figure 9a. For the 2024/25 season, the total quantity of Manila clam landed by all active fishers in a month (excluding May where there are only 6 days available for fishing), varied from 12,067kg in December to 46,022kg in June.

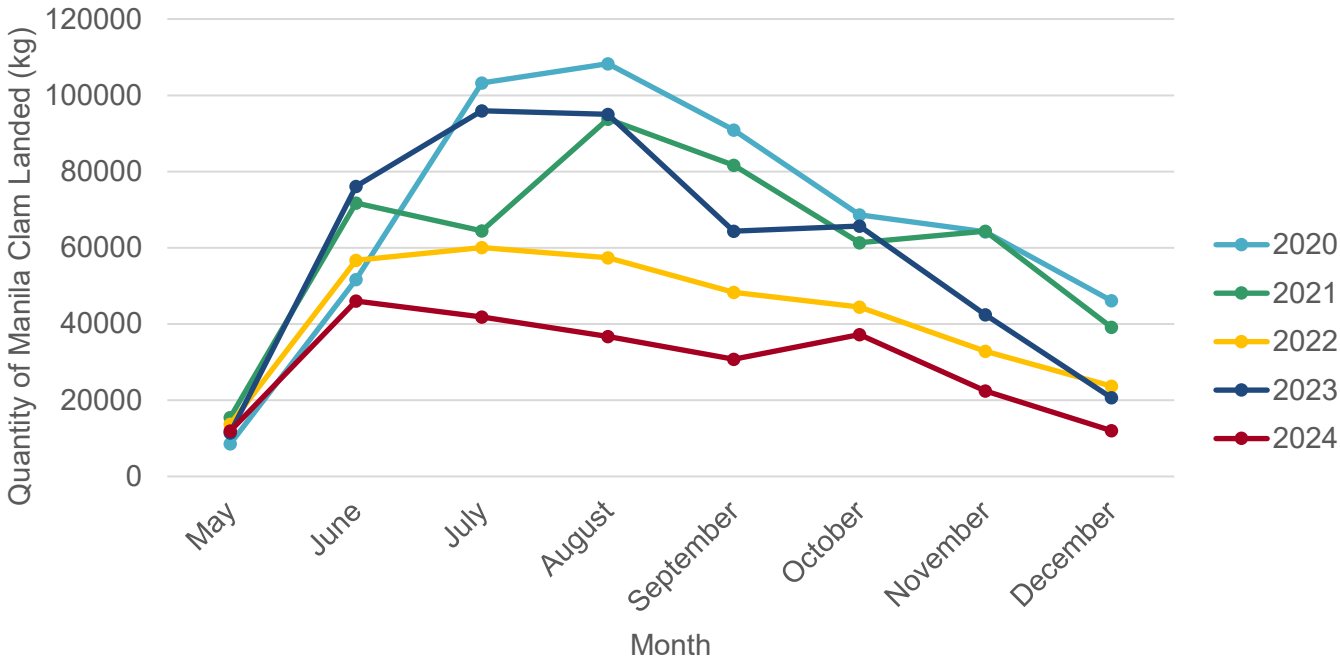


Figure 9a: The total quantity of Manila clam landed by Poole Harbour Dredge Permit holders for each month of the fishing season from 2020 to 2024. For all years shown the season commenced on May 25th and ended on 23rd December.

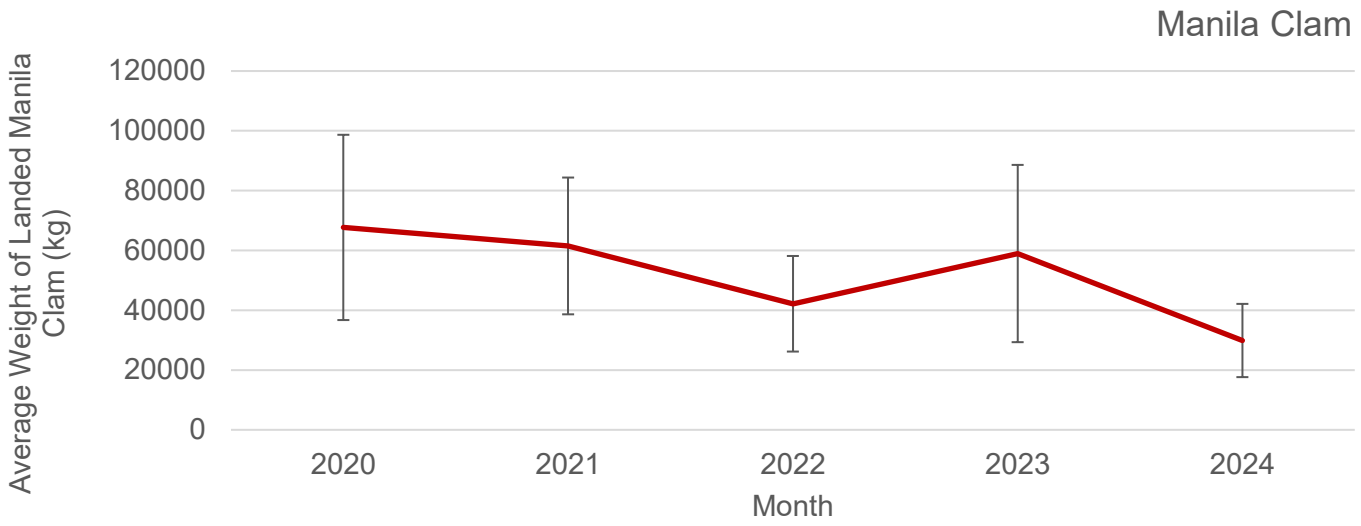


Figure 9b: Average quantity of Manila clam landed across the whole fishing season for 2020-2024. The error bars represent the standard deviation.

Statistical analysis of the quantity of Manila clam landed between 2020-2024 (Figure 9b) showed that there was a significant difference ($P<0.05$). Monthly landings in 2024 were significantly lower than 2020, 2021 and 2023. However, prior to 2020, monthly landings were considerably lower and 2024 does not differ significantly to these years.

A number of fishermen target common cockle (*Cerastoderma edule*) throughout the season; however, it is usually less popular as a target species due to a lower market price, the fact they are less widespread within the Harbour and the difficulties with harvesting the species as they are associated with harder ground. The cockle fishery is also dependent on market demand which can cause large scale monthly fluctuations in catch quantity.

The total quantity of cockle landed each month of the season is shown in Figure 10a for 2020-2024. For the 2024/25 season, the total quantity of cockle landed by all active fishers in a month (excluding May where there are only 6 days available for fishing), varied from 6,131kg in October to 27,633kg in December. Note that there was a large increase in the weight of harvested cockle in December 2024 compared to other months and seasons may have been due to increased demand for cockle over the Christmas period for this particular year.

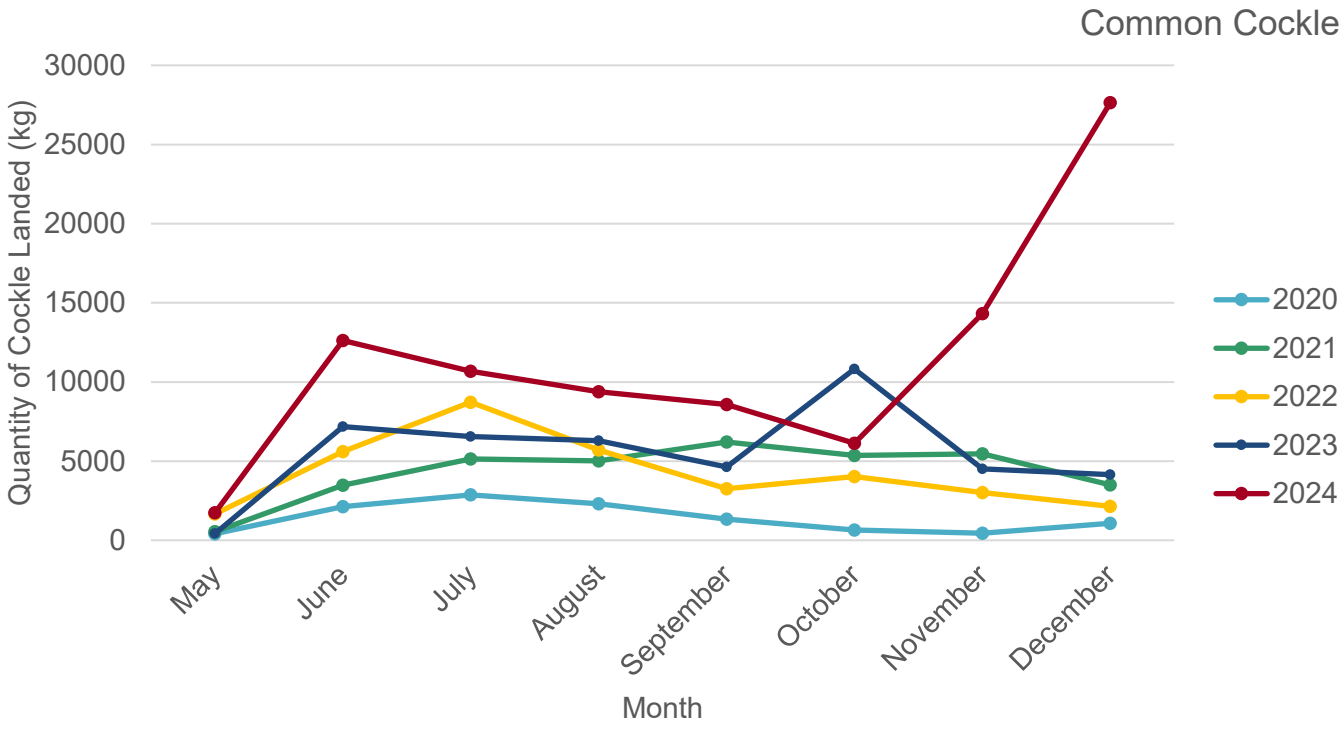


Figure 10a: The total quantity of cockle landed by Poole Harbour Dredge Permit holders for each month of the fishing season from 2020-2024. For all years shown the season commenced on May 25th and ended on 23rd December.

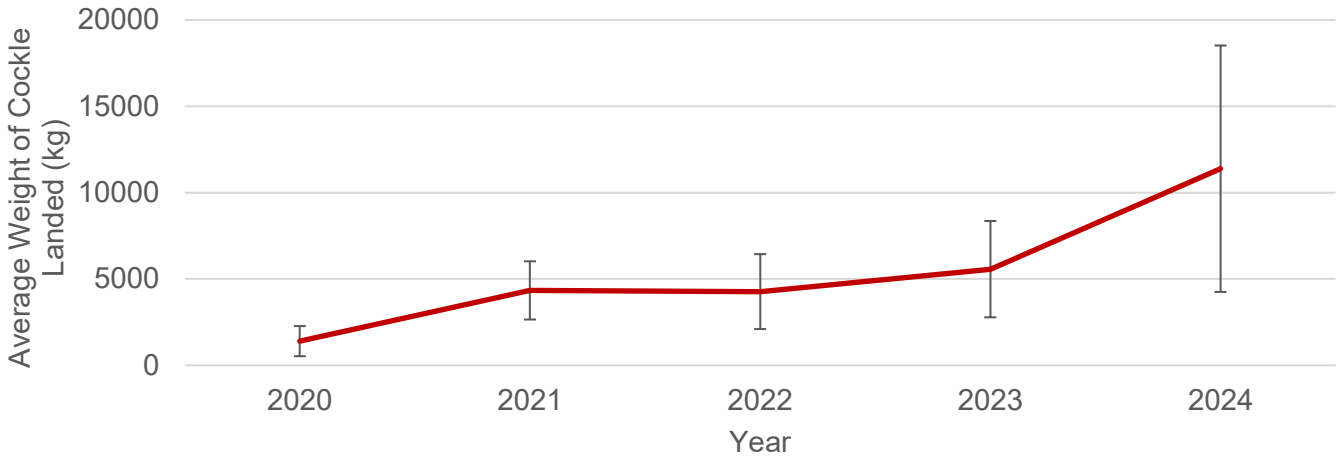


Figure 10b: Average quantity of cockle landed across the whole fishing season for 2020-2024. The error bars represent the standard deviation.

Statistical analysis of the quantity of cockle landed between 2020-2024 (Figure 10b) showed that there was a significant difference ($P<0.05$). Post-hoc testing showed that the quantities landed in 2020 were significantly lower than 2023 and 2024 ($p<0.05$).

Other bivalve species caught and landed within Poole Harbour consist predominantly of American hard-shelled clams (*Mercenaria mercenaria*), as well as the native Palourde clam (*Ruditapes decussatus*). The landings of these species are categorised together as 'other shellfish species' and vary largely between each year with no recognisable pattern.

The total quantity of ‘other shellfish species’ landed each month of the season for 2020-2024 is shown in Figure 11a. For the 2024/25 season, the total quantity of ‘other shellfish species’ landed by all active fishers in a month (excluding May where there are only 6 days available for fishing), varied from 3,764kg in June to 9,584kg in December. Statistical analysis of the quantity of ‘other shellfish species’ landed between years (Figure 11b) showed that there was no significant difference (P=0.243).

As in previous years, the quantity of Native Palourde clam landed represents less than 0.55% of the total shellfish landed during the 2024/25 season. The Palourde clam and the Manila clam are very similar making it difficult to identify the species, particularly out of the water when the siphons are not visible. Whilst the Manila clam is the dominant of the two species, the Palourde clam will often fetch a higher price, and, if in particular demand by markets, fishers may make more of an effort to retain Palourde clams.

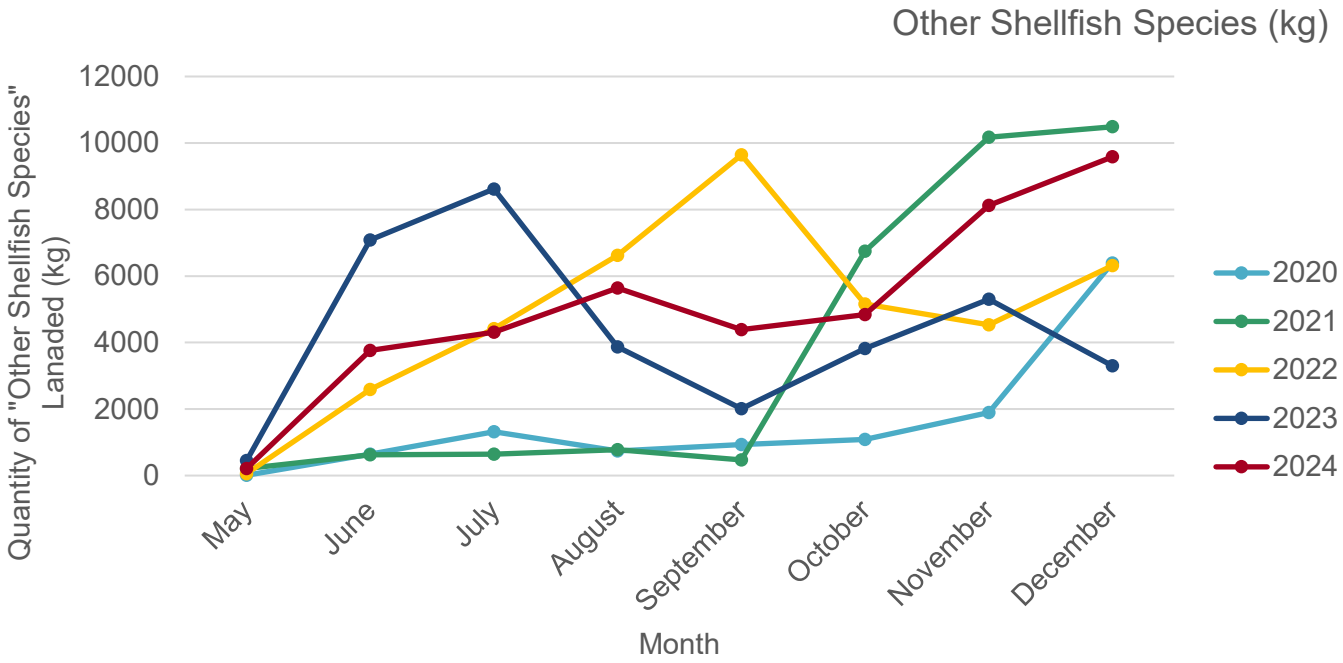


Figure 11a: The total quantity of ‘other shellfish species’ landed by Poole Harbour Dredge Permit holders for each month of the fishing season from 2020-2024. For all years shown the season commenced on May 25th and ended on 23rd December.

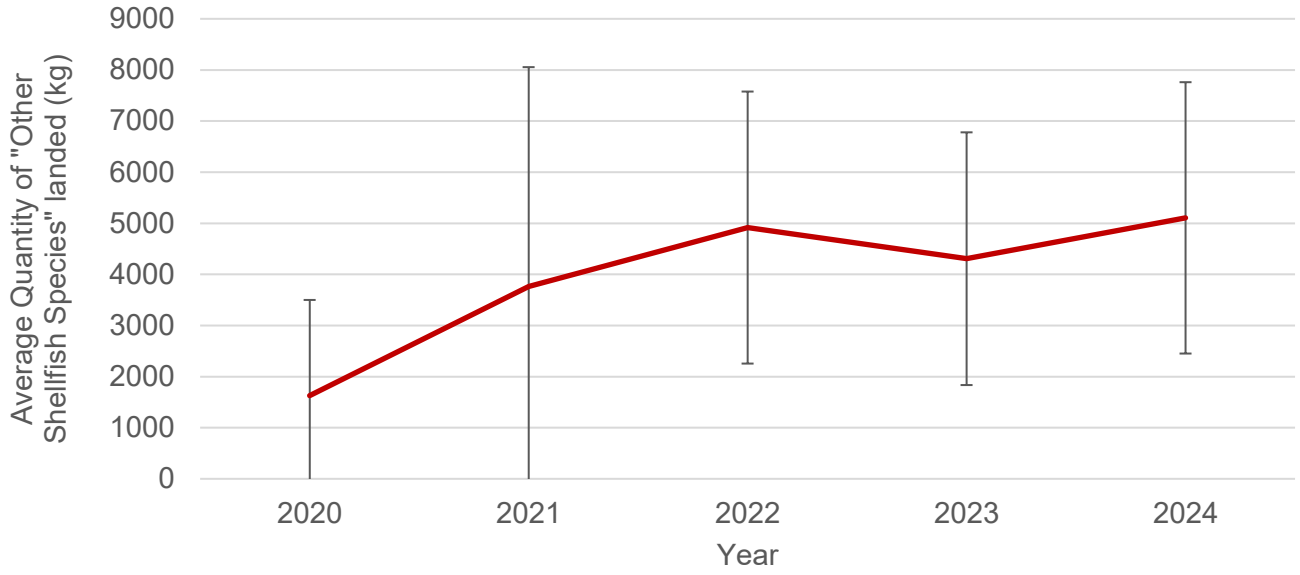


Figure 11b: Average quantity of 'other shellfish species' landed across the whole fishing season for 2019-2023. The error bars represent the standard deviation.

CPUE is measured as kg of shellfish per hour based on the data provided by the fishers in their monthly catch returns. The CPUE for each month of the season for total shellfish landed is shown in Figure 12a for 2020-2024. For the 2024/25 season, the CPUE varied from 18.64 $kghr^{-1}$ in October to 33.53 $kghr^{-1}$ in December (excluding May where there are only 6 days available for fishing). Statistical analysis of the CPUE between years (Figure 12b) showed that there was a significant difference ($P<0.05$). Post-hoc testing showed that the CPUE for 2024 was significantly lower than for 2020 and 2021 ($P<0.05$).

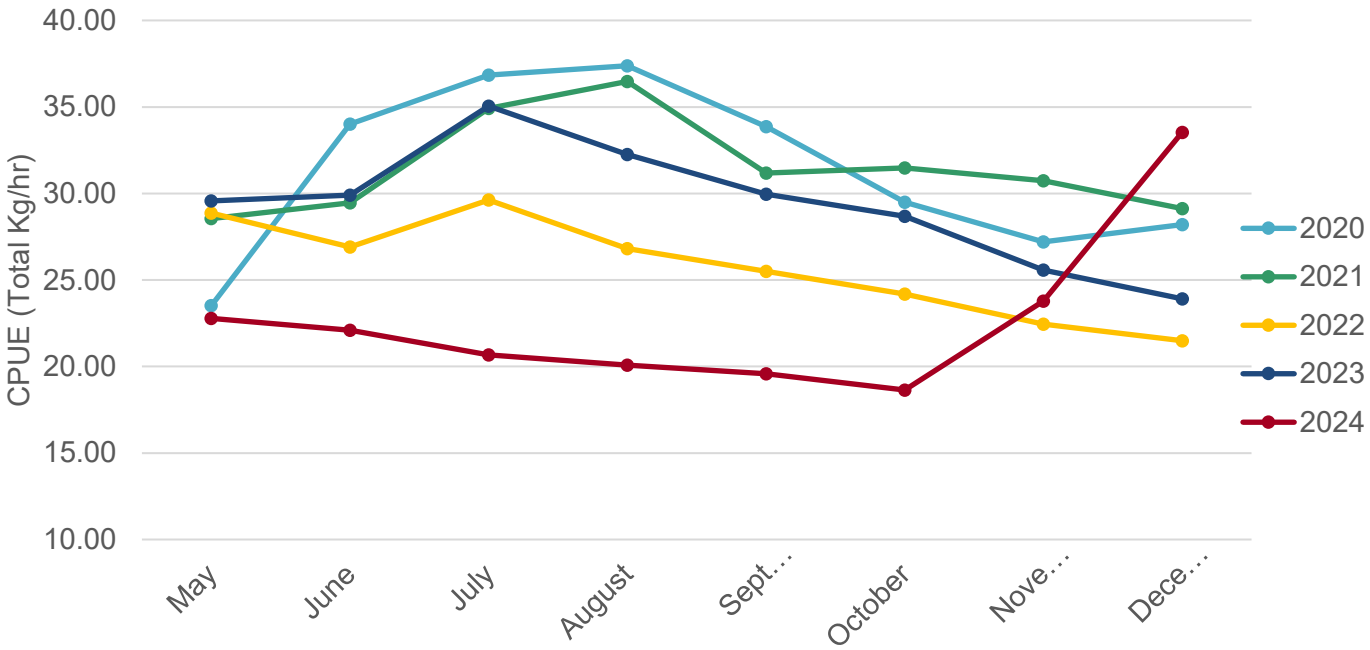


Figure 12a: Catch per Unit Effort (CPUE) measured as kg of shellfish per hour based on the data provided by the Poole Harbour Dredge Permit holders for each month of the fishing season 2020-24 for all shellfish landed. For all years shown the season commenced on May 25th and ended on 23rd December.

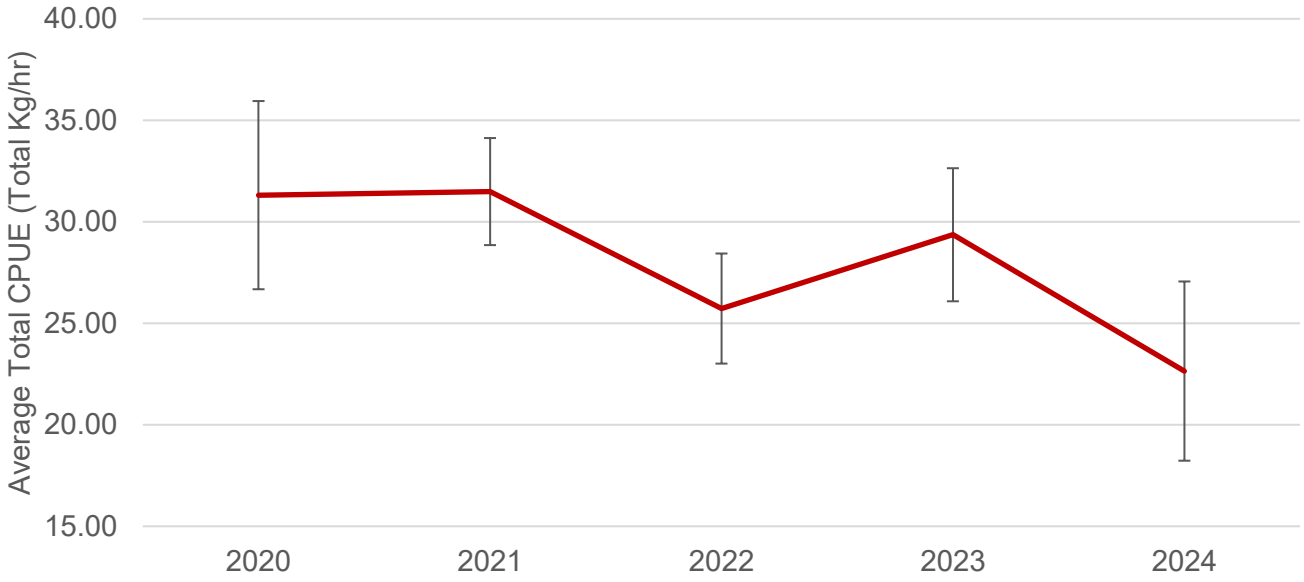


Figure 12b: Average Catch per Unit Effort (CPUE) measured as kg of shellfish per hour across the whole fishing season for 2020-2024. The error bars represent the standard deviation.

4.3.2 Sightings

Shellfish dredging takes in distinct and relatively small spatial areas, where shellfish beds exist. There are a number of beds within Poole Harbour and the level of fishing effort varies between them. This can depend on a number of factors including the target species, substrate type and level of weed. Key sites are well illustrated using Southern IFCA sightings data (Annex 3). Sightings from the dredge season (25th May to 23rd December) for all seasons up to 2024/25 illustrate distinct areas where shellfish dredging takes place, with activity largely concentrated in the area of Holton Mere and the Wards (near to Round Island and Long Island). Sightings data shows shellfish dredging to also take place east of Giggers Island, Arne Bay, Middlebere Lake and Wych Lake, Ower Lake and Brands Bay. Sightings that occur within seasonal closed areas all occurred during periods when these areas were open to fishing activity (1st July to 31st October). Sightings data within the Green Island or Seagull Island closed areas from the 2022/2023 season onwards were investigated and dealt with through the Southern IFCA Compliance and Enforcement Framework. Please note that Southern IFCA's sightings data may reflect the home port of the patrol vessel, high risk areas and typical patrol routes and therefore are only indicative of fishing activity. The frequent nature of patrols conducted in Poole Harbour mean it is likely that the geographical extent of the fishery is well reflected, however intensity may be skewed by aforementioned factors.

4.3.3 Stock Survey Data

The Poole Harbour Bivalve Stock Survey was carried out in April 2024. A summary of the results from the survey is provided:

- The results of the survey focus on the two main commercial species, the Manila clam and the common cockle. Other species found during the survey in smaller quantities included the American Hard-Shelled clam (*Mercenaria mercenaria*), the Native clam (*Ruditapes decussatus*), the native oyster (*Ostrea edulis*), the Pacific oyster (*Magallana gigas*), the spiny cockle (*Acanthocardia aculeata*) and the blue mussel (*Mytilus edulis*).
- The average length for Cockle was above the MCRS of 23.8mm at sites. The average length for Manila calm was above the MCRS of 35mm at all but two sites, these sites was in the inner part of Holton Mere, an area associated with smaller shellfish, the average size was 33mm and 35mm in these sites. Whilst efforts are made to ensure as much shellfish from the dredge is retained as possible, the method of fishing is inherently size selective therefore there is a proportion of the population under the respective MCRS which may not be captured by the survey method, therefore length frequency and CPUE data should be interpreted accordingly.
- A measure of Catch Per Unit Effort (CPUE) was calculated as weight of shellfish (kg) per metre of dredge per hour both above and below MCRS for the two species. The Harbour is divided into 11 catch reporting zones under the Poole Harbour Dredge Permit Byelaw therefore CPUE data from the survey was grouped according to the zone in which the survey site is located.
- For Manila clam, statistical analysis showed no significant difference in CPUE between zones for total CPUE, CPUE over MCRS and CPUE under MCRS ($P>0.05$). The data shows the highest average Total CPUE was in Holes Bay (213 kg per m of dredge per hour, the highest average CPUE over MCRS was also found at the same site (164 kg per m of dredge per hour). The highest average under MCRS was found at Zone 7 (97.65 kg per m of dredge per hour) which encompasses the Wych and Middlebere Lake area of the harbour.
- For Cockle, analysis also showed no significant difference in CPUE between sites for Total CPUE and CPUE under MCRS (all $P>0.05$). Zone 3 showed significantly higher average CPUE above MCRS compared to other zones ($p<0.05$) at 341kg per m of dredge per hour. This zone is located at Jerry's Point and Blood Alley within the harbour.

- For Manila clam, statistical comparisons between the last three survey years for each zone (2022-2024) showed no significant difference in the average total CPUE and CPUE over MCRS ($p>0.05$). Analysis of CPUE in Zone 1 showed the 2024 dataset to have greater below MCRS CPUE when compared to both 2022 and 2023 (both p values were <0.05).
- For cockle, statistical comparison over the last 3 surveys (2022-2024) found no significant differences between total average CPUE or average CPUE above MCRS between years. Holes Bay showed a significantly higher CPUE under MCRS in 2024 than in 2023 ($p<0.05$).
- Higher CPUE values for both Manila clam and cockle are consistent with popular fishing areas for each species and reflects a habitat driven distribution with Manila clam showing a higher CPUE in muddy, fine-grained sediments and cockle showing a higher CPUE in sandy, coarse-grained sediments.
- The survey results suggest that the populations of Manila clam and common cockle in Poole Harbour appear to be robust to the current level of fishing pressure with harvesting remaining sustainable in respect to stock levels.

5 Test of Likely Significant Effect (TLSE)

The Habitats Regulations assessment (HRA) is a step-wise process and is first subject to a coarse test of whether the plan or project will cause a likely significant effect on an EMS[11]. Each feature/sub-feature was subject to a TLSE, a summary can be found in the PHDP TLSE Excel Spreadsheet. Only those features or supporting habitats where there was potential for likely significant effect have been included.

[11] Managing Natura 2000 sites: http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

6 Appropriate Assessment

Note: this is only to be undertaken if the Test for LSE (section 5) concluded 'Yes' or 'Uncertain' for LSE, either alone or in-combination.

6.1 Co-location of Bird Features (and their supporting habitats) and Project/Plan(s)

Key areas favoured by designated bird species in Poole Harbour SPA are summarised in table 2.

Table 2. Key areas for designated bird species in the Poole Harbour SPA. Information taken from the formal advice on conserving and restoring site features, Natural England's Conservation Advice Package and Poole Harbour Aquatic Management Plan Section 4 (Bird Sensitive Areas).

Common Name	Latin Name	Favoured Area(s)
Avocet	*Recurvirostra avosetta*	Roosting areas include Brownsea Lagoon, towards the end of Wych and Middlebere channel and on the Spartina saltmarsh in north Holes Bay. Main feeding areas include Wych and Middlebere channels, Brownsea Lagoon, East Fitzworth.
Black-tailed godwit	*Limosa limosa islandica*	To feed, flocks tend to congregate in one bay, including Holes Bay or Lytchett Bay and roosting is limited to the area in which they are feeding. Preferred feeding sites also include Brownsea Lagoon. Arne Bay, Brands Bay, Wych Lake, Newton Bay, Ower Bay and Middlebere Lake and Brownsea Lagoon are important roost sites for waders, including black-tailed godwit.
Common tern and Sandwich tern	*Sterna hirundo*	Brownsea Island lagoon is the site of the principal and probably only nesting colony of common terns and Sandwich terns within the Poole Harbour SPA.
Mediterranean gull	*Larus melanocephalus*	Only confirmed breeding colony in Poole Harbour is saltmarsh islands of off Holton Heath where the species nests alongside black-headed gulls.
Shelduck	*Tadorna tadorna*	Feeding takes place throughout the harbour, although favoured areas include Keysworth, Hole Bay and Brands Bay. Keysworth is reported to be an important area for feeding, with the food requirements for the numbers of shelduck recorded to exceed food availability.
Eurasian spoonbill	*Platalea leucorodia*	Brownsea Lagoon and Middlebere channel represent favoured feeding sites. Species is also recorded at other locations including Arne and Holes Bay. but also recorded at other locations e.g. Arne and Holes Bay

Little egret	*Egretta garzetta*	Occurs throughout the harbour. Known to roost in trees around Littlesea (the dune slack lake on Studland) and Plantation trees in Arne.
Curlew	*Numenius arquata*	Keysworth is reported to be an important area for feeding, with the food requirements for the numbers of curlew recorded to exceed food availability.
Redshank	*Tringa totanus*	Arne Bay, Brands Bay, Wych Lake, Newton Bay, Ower Bay and Middlebere Lake are important roost sites for waders, including redshank.
Greenshank	*Tringa nebularia*	Arne Bay, Brands Bay, Wych Lake, Newton Bay, Ower Bay and Middlebere Lake are important roost sites for waders, including greenshank.
Waterbird assemblage, non-breeding	Over 20,000 waterbirds over the winter	All of the above sensitive areas are utilised by bird species comprising the waterbird assemblage. Saltmarsh habitats, seagrass beds and reedbed are all important supporting habitats.

A map of shellfish dredging and supporting habitats can be found in Annex 8. This reveals where shellfish dredging activity occurs in relation to designated supporting habitats of the site and shows activity occurring over intertidal mud and in the vicinity of saltmarsh. Using knowledge presented in table 2, shellfish dredging may have some effect on sites used by avocet, black-tailed godwit, Mediterranean gull, shelduck, Eurasan spoonbill, curlew, redshank and green shank. The sites used by these species, which occur in relatively close proximity to shellfish dredging, include outer Wych and Middlebere, Arne Bay, Ower Bay, Newton Bay, Brands Bay, Holton Mere and Keysworth. A number of key feeding and roosting sites identified in table 2 are however not affected by shellfish dredging either by the fact they are inaccessible to fishing vessels (Brownsea Lagoon) or through the year-round closure of certain areas (i.e., Lytchett Bay and Holes Bay).

The potential effect on the sites utilised by designated bird species however is mitigated through a number of permit conditions associated with the Poole Harbour Dredge Permit byelaw, principally, spatial and temporal restrictions and timing of the season (see section 6.6, table 9 for further details). It is also worth noting some effects, particularly disturbance, will be negated by the virtue that birds feed at low tide and shellfish dredging occurs at high tide.

6.2 Potential Impacts

Prior to the introduction of the PHDP byelaw in July 2015, Natural England provided initial advice on the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour. Using the potential impacts identified in this advice, combined with the pressures outlined the Advice on Operations (and identified in the TLSE process), a list of pressures and relevant attributes has been put together and is outlined below. In this section, these pressures are elaborated on using available scientific literature and results from relevant research.

Pressure	Relevant Attribute
Visual disturbance, Above water noise	Supporting habitat: disturbance caused by human activity
Physical change (to another sediment type)	Supporting habitat: extent and distribution of supporting non-breeding habitat; Supporting habitat: extent and distribution of supporting habitat for the breeding season
Removal of non-target species	Supporting habitat: food availability within supporting habitat; Supporting habitat: food availability within the intertidal
Removal of target species	Supporting habitat: food availability within supporting habitat; Supporting habitat: food availability within the intertidal

6.2.1 Disturbance (visual and noise)

Generic impacts

Human disturbance to shorebirds can be defined as 'any situation in which human activities cause bird to behave differently from the behaviour it would exhibit without presence of that activity' (Wheeler *et al*., 2014). The response of birds to disturbance is influenced by a number of factors, including distance from the disturbance source, scale of disturbance and time of year (Stillman *et al*., 2009). Disturbance from many small-scale sources is thought to be more detrimental than fewer, large-scale sources (West *et al*., 2002).

Disturbance can result in displacement when birds are unable to use an area due to the magnitude of the disturbance present (Natural England, 2014). Under certain circumstances the impacts of disturbance may be equivalent to habitat loss, although such effects are reversible (Madsen, 1995; Hill *et al*., 1997; Stillman *et al*., 2007; Natural England *et al*., 2012). The effects of habitat loss through disturbance can include a reduction in the survival of displaced individuals and effects on the population size (Goss-Custard *et al*., 1995; Burton *et al*., 2006). Sites with high levels of human activity are often characterised by lower densities of birds when compared with sites that have low levels (Burger, 1981; Klein *et al*., 1995). The movement of birds to alternate feeding areas as a result of disturbance, which may be less suitable, can lead to increased shorebird density and thus interspecific competition; with alternate sites becoming depleted in food resources if used for prolonged periods of time (Goss-Custard et al., 2006; Wheeler *et al*., 2014). Disturbance can affect wintering bird populations in a number of ways including reduced intake a result of enhanced vigilance (Riddington 1996; Goss-Custard *et al*. 2006; Klaassen *et al*. 2006) and physiological impacts such as stress (Thiel *et al*., 2011). Such impacts can affect the fitness of individuals and have knock-on effects at a population scale (Natural England, 2011). Furthermore, disturbance can cause birds to take flight which increase energy demands and reduce food intake with potential consequences for survival and reproduction.

Birds can modify their behaviour in order to compensate for disturbance (Stillman *et al*., 2009). Some bird species may become habituated to particular disturbance events or types of disturbance (Walker *et al*., 2006, Nisbet, 2000, Baudains & Lloyd, 2007; Blumstein *et al*., 2003) and can do so over short periods of time (Rees *et al*., 2005; Stillman *et al*., 2009). The frequency of the disturbance will help to determine the extent to which birds can become habituated and thus the distance at which they respond (Stillman *et al*., 2009). The behavioural response of a bird to

disturbance is also dependent on the time of year (Stillman *et al*., 2009). Towards the end of winter, when migratory birds need to increase feeding rates to provide energy for migration, behavioural response to disturbance is less (Stillman *et al*., 2009). Birds will approach a disturbance source more closely and return more quickly after a disturbance has taken place (Stillman *et al*., 2009).

In the context of shellfish harvesting from a vessel, limited has taken place to investigate its potential effects on bird populations through disturbance. It is thought that shellfish dredging has very little direct impact on disturbance of waders since it occurs at high tide (Sewell *et al*., 2007). Sewell *et al*. (2007, p. 51) stated that 'We know of no evidence that dredging will have a direct impact in terms of disturbance on seabirds since most dredging occurs subtidally or at high-tide'. Wheeler *et al*. (2014) however stated, like other forms of disturbance, it could cause relocation and increased energy expenditure of birds

Examples of disturbance impacts

In the mid-1980s, localised and sustained disturbance from bait diggers at Lindisfarne National Nature Reserve were considered responsible for significant declines in the numbers of Wigeon, Bar-tailed Godwit and Redshank at the site (Townshend & O'Connor, 1993).

In 1996/97, Gill *et al*. (2001a) investigated the effect of human-induced disturbance on black-tailed godwits across 20 sites on the east coast of England. The study revealed no significant relationship between numbers of godwits and human activity at a range of spatial scales (Gill *et al*., 2001a). There was also no effect of the presence of marinas or footpaths on the number of godwits supported on the adjacent mudflats (Gill *et al*., 2001a).

Using a behaviour-based model, Durell *et al*. (2005) explored the effect if an extension to the port at Le Havre and proposed mitigation measures on the mortality and body condition of three overwintering bird species; curlew, dunlin and oystercatcher. Body condition was expressed as the percentage of birds failing to achieve at least 75% of their target weight for the time of year. Disturbance to feeding birds, day and night, had a significant effect on the mortality and body condition of all three species. The same was found for roosting birds. Roost disturbance was simulated by increased energy costs due to extra flying time of 10 minutes or more each day. Disturbance limited to the daytime only removed the effect of disturbance in curlew and oyster catcher, and although reduced the disturbance effect it still had a significant effect on the body condition and mortality of feeding dunlin. The introduction of a buffer zone, which would prevent disturbance within 150 m of the seawall, reduced the effects of disturbance on mortality and body condition to pre-disturbance levels.

Studies in the Solent which have focused on disturbance to birds, have reported disturbance levels of 30% during the winter of 1993/94 using disturbance events observed during low tide counts. Sources of disturbance from human activity on the shore included dog walkers, walkers, bait diggers and kite flyers (Thompson, 1994). A more recent study conducted from December 2009 to February 2010, which formed phase II of the Solent Disturbance & Mitigation Project, found for water-based recreational activities that 25% of observations resulted in disturbance and on the intertidal 41% of observation result in disturbance (Liley *et al*., 2010). Surfing, rowing and horse riding were activities found to most likely result in disturbance to birds. Over half of incidences where major flight was observed involved activities on the intertidal, with dog walking accounting for

47% of major flight events (Liley *et al*., 2010). The most responsive bird species to different activities were oyster catcher and wigeon (Liley *et al*., 2010). These two species had the highest proportion of observations involving a disturbance response. Primary data collected by Liley *et al*. (2010) was used to predict if disturbance could reduce the survival of birds using computer models (Stillman *et al*., 2012). Dunlin, ringed plover, oystercatcher and curlew were predicted to be the species most vulnerable to disturbance due to a combination of disturbance distances (see species-specific response), night-time feeding efficiency and vulnerability to food competition at high competitor densities (Stillman *et al*., 2012). Redshank, grey plover and black-tailed godwit typically had the shortest disturbance distances and were able to feed relatively effectively at night, meaning that these species were less affected by visitors (Stillman *et al*., 2012). Disturbance was predicted to result in increases in the level of time spent feeding intertidally by dunlin, ringed plover, redshank and grey plover, with no effect on black-trailed godwit and reductions in oystercatcher and curlew (Stillman *et al*., 2012). This was related to the ability of modelled birds to feed in terrestrial habitats, as those unable to do so spent longer feeding in intertidal habitats (Stillman *et al*., 2012).

Site-specific impacts

Liley and Fearnley (2012) surveyed a total of 15 sites located within the vicinity Poole Harbour between November to February, recording access levels, birds counts and bird response to disturbance, in addition to paired night and day counts at 13 sites. During the survey period there was 1981 potential disturbance events, generating a total of 3755 species-specific observations. Of these, 87% resulted in no visible change in behaviour or response and 12% resulted in some form of disturbance, with 6% involving birds undertaking major flight. Disturbance was found to have a significant effect on the numbers of waders and wildfowl present and overall 5.6 potential disturbance event were recorded per hour and a response of 1.7 times per hour, with birds flushed approximately once per hour. In December, the number of disturbance events resulting in a response, particularly birds being flushed, was markedly higher and locations where birds were more frequently flushed included Arne and Studland. In areas with the highest levels of access, bird was found less likely to respond to a disturbance event. Dog walkers without a lead accounted for 40% of birds flushed, followed by walkers (17%) and canoeists (17%).

A number of variables were found to influence the probability of major flight, including distance, with a shorter disturbance more likely to result in major flight, flock size, with a larger flock less likely to result in major flight, as well as the presence of a dog, availability of alternate foraging or roosting sites, temperature and the bird species present. A higher probability of major flight was recorded for curlew, oystercatcher and shelduck. The highest proportion of flushing in response to a disturbance events were seen in the species red-breasted merganser and sanderling. Water-based activities, including canoeing, pump-scoop dredging, small sailing boats and kite surfing, relative to other activities, were more likely to cause disturbance. This activity type made up a relatively small proportion of all recorded activities and it is worth noting the low sample sizes for water-based activities, with only 2 observations of pump-scoop dredging throughout the survey period. Thus, distorting the likelihood of disturbance, if for example major flight occurred 1 out of 2 observations, disturbance would be considered to occur 50% of the time.

Species-specific response

Responsiveness to disturbance is thought to be a species-specific trait (Yasué, 2005). Gathe and Hüppop (2004) developed a wind farm sensitivity index (WSI) for seabirds. The index was based on nine factors, derived from specie' attributes, and include; flight manoeuvrability, flight altitude,

percentage of time flying, nocturnal flight activity, sensitivity towards disturbance by ship and helicopter traffic, flexibility in habitat use, biogeographical population size, adult survival rate and European threat and conservation status (Gathe & Hüppop, 2004). Each factor was scored on a 5-point scale from 1 (low vulnerability of seabirds) to 5 (high vulnerability of seabirds). The WSI was used by King *et al*. (2009) to develop sensitivity scores for species likely to be susceptible to cumulative impacts of offshore wind farms development. Table 3 provides available sensitivity scores of species within Poole Harbour SPA, with details of scores given for the species vulnerability to disturbance by ship and helicopter traffic.

Table 3. Sensitivity scores for designated bird species in the Poole Harbour SPA to offshore wind farm developments. Higher scores are indicative of a greater sensitivity. Information on species vulnerability to disturbance by ship or helicopter traffic is also provided. Scores were taken from King *et al*. 2009 who calculated scores using methods by Garthe & Hüppop (2004).

Species	Total sensitivity score	Disturbance by ship and helicopter traffic (1 – very flexible in habitat use, 5 – reliant on specific habitat characteristics)
Sandwich tern	25.0	2
Dark-bellied Brent goose	21.7	2
Red-breasted merganser	21.0	3
Goldeneye	15.8	3
Common tern	15.0	2
Black-tailed godwit	9.9	1
Black-headed gull	7.5	2
Redshank	6.7	1
Curlew	5.7	1
Shelduck	5.3	1
Teal	3.8	1
Dunlin	3.3	1

There is great variation in the escape flight distances between species (Kirby *et al*., 2004) and the distance at which birds fly away from a disturbance can be viewed as a specie-specific trait (Blumstein *et al*., 2003). Response distances can depend on a number of different factors, including the time of year, tide, frequency, regularity and severity of disturbance, flock size and age of bird (WWT Consulting, 2012). Body mass has also been shown to be positively related to response distance (Liley *et al*., 2010). Table 9 and 10 provides details of response distances of species within Poole Harbour SPA, with Table 4 providing details of response distances in relation to different types of activities.

Table 4. Distances from disturbance stimuli (in metres) at which study waterbird species took flight. Taken from Kirby *et al*., 2004 in WWT Consulting 2012.

	Study						
	Tydeman 1978	Cooke 1980	Tensen and van Zoest	Watmough 1983a,b	Smit and Visser 1993	Smit and Visser 1993	Smit and Visser 1993
Activity	Boats	Researcher	People	Researcher	People	Kayaks	Surfers
Distance measure	Min	Mean	Mean	Mean	Mean	Mean	Mean
Brent goose					105		
Shelduck		126			148/250	220	400
Teal	400	86					
Pochard	60						
Goldeneye	100	168		280			
Dunlin		30			71/163		
Redshank		92	95			175	260

Mitigation

The effects of disturbance on the quality of an area for birds are reversible (Natural England *et al*., 2012). Studies have shown that bird numbers increase when either the source of disturbance is removed or mitigated (Natural England *et al*., 2012). Modelling of wintering oystercatchers on the Exe estuary revealed that preventing disturbance during late winter, when feeding conditions are harder and a migratory bird's energetic demands are higher, has been shown to largely eliminate any predicted population consequences (West *et al*., 2002). Following this modelling, it was recommended that to eliminate predicted population consequences of disturbances, competent authorities responsible for management should prevent disturbance to birds during late winter (West *et al*., 2002).

Establishing flight-initiation distances may be considered a starting point for competent authorities responsible for management in order to minimise adverse effects of disturbance (Wheeler *et al*., 2014). The establishment of such buffer areas are dependent on a number of factors including population densities, food availability, time of year and behaviour of individuals (Wheeler *et al*., 2014). As aforementioned, a buffer zone of 150 m from the seawall was found to reduce the effects of disturbance from an extension to the port at Le Havre on the mortality and body condition to pre-disturbance levels for three bird species (dunlin, curlew and oystercatcher) (Durell *et al*. 2005). Investigation into disturbance caused by recreational activities in the Solent however suggested that there was no clear set-back distance, for all species on all sites due to the large variability observed in response distances, which would result in no disturbance (Liley *et al*., 2010). The largely variability in flight-initiation distances suggests that competent authorities should be conservative when developing buffer zones, although previously published flight-initiation distances for a given species may be used as a guideline for setting buffer zones (Blumstein *et al*., 2003).

Whilst many authors may try and define a distance beyond which disturbance is assumed to have no effect, which is then used in turn to determine set-back distances, it may be inappropriate to set such distances (Stillman *et al*., 2009). The reason for this is because of the variation between

species (Blumstein *et al*., 2005), as well as variation between individuals of the same species (Beale & Monaghan, 2004). This is further compounded by particular circumstances such as habitat, flock size, cold weather, variations in food availability, all of which will influence a birds' ability to response to disturbance and hence the scale of the impact (Rees *et al*., 2005; Stillman *et al*., 2001). In addition, there is no guarantee that the behavioural response i.e. response distance, will be related to population consequence (Gill *et al*., 1996; 2001b).

6.2.2 Physical change (to another sediment type)

Advice from Natural England, received prior to the introduction of the PHDP byelaw, outlining the potential impacts of shellfish dredging on the nature conservation features of the Poole Harbour SPA, highlighted a concern related to the potential erosion of saltmarsh taking place where shellfish dredging occurs in close proximity to this habitat type. Natural England advice refers to a study undertaken by Dyrynda (1995) in Liley *et al.* (2012) looking at the impacts of bait dragging on the seabed within Poole Harbour, who states

'Bait dragging would undoubtedly cause substantial damage to communities involved rooted species such as saltmarsh, seagrass and peacock-worm beds. However, these areas are not usually suitable for dragging and are avoided (R. Castle, pers. comm).'

As stated by Natural England and recognised in the above statement with regards to bait dragging, pump-scoop dredging is unlikely to occur over saltmarsh. This is further supported by a lack of literature on the impacts of towed gear with regards saltmarsh habitats, as any interaction between the two is not thought to occur (i.e., Hall *et al*., 2008; Roberts *et al*., 2010). Whilst fishing on saltmarsh is not a common occurrence, dredging has the potential to result in accidental interactions which could impact the root system of the saltmarsh. In addition, fishing in close proximity to saltmarsh habitat may cause an impact through changes in sedimentary conditions and increased wave exposure.

Saltmarsh habitat provides important ecosystem services including as a supporting roosting and breeding habitat for bird species, nursery areas for juvenile fish and in coastal protection via dissipation of wave energy (Moller *et al.,* 2001). Additionally, saltmarsh has been found to be a modest but sustained sink for atmospheric carbon dioxide (Burden *et al.,* 2013). Physical mechanisms resulting in changes to saltmarsh include a lack of sediment in the system (Ravens *et al.,* 2009) which has been attributed to sea level rise (Townend *et al.,* 2007) and dredging and disturbance mechanisms which create changes to the tidal prism that then result in saltmarsh retreat (Cox *et al.,* 2003). Increased wave action as the seaward edge of saltmarsh has also been postulated to contribute to saltmarsh decline (Burd, 1992). Waves from boat wakes have been noted to contribute to this and result in front erosion of marshes (Ravens *et al.,* 2009). Additional impacting physical factors include storms and extreme weather events which can increase wind and wave exposure, altered sediment distribution from tidal asymmetry and slack water periods, and general variation in tidal range (Gardiner, 2015). Similar contributing factors have been identified to contribute to saltmarsh decline in the Greater Thames area (van de Wal and Pye, 2004). It is agreed that multiple drivers are likely to be responsible for saltmarsh decline (Gardiner, 2015) and for studies in other sites such as the Netherlands, it has been found that the feedback mechanisms between plant growth, morphology and hydrodynamics of both saltmarsh and the surrounding mudflats required consideration in determining the status of saltmarsh and potential impacts (van de Wal *et al.,* 2008). Recovery of saltmarsh appears to be dependent on the species but some species in Poole Harbour are known to be slow to recover.

Recovery is dependent on recruitment from other populations and the ability to replace eroded sediment. In some cases, recovery may take up to five years.

While there are no studies directly on impacts from dredge fishing activity, a PhD thesis examining saltmarsh change in Poole Harbour identified fishing activity as being a potential additional human driver for saltmarsh change (Gardiner, 2015). The thesis states that during field work, deep grooves were observed in some of the mudflats fronting saltmarsh areas that were felt to be linked to the shellfish dredge fishery (Gardiner, 2015). It was identified that the mudflats in question were relatively high in the tidal frame and would therefore only be accessible to vessels at high tide with any sediment suspended into the water column during dredging likely to be redistributed during the following ebb tide (Gardiner, 2015). It was suggested that further work would be required to determine the impacts of shellfish dredging on the sediments and how this links to a potential driver for saltmarsh change (Gardiner, 2015).

6.2.3 Removal of target species

Commercial shellfisheries can provide a potential source of conflict by competing with the same food resources as certain bird species (Schmechel, 2001; Atkinson *et al*., 2003). The removal of food resources by shellfishing therefore has the potential to have detrimental effects on the amount of food available per bird and subsequently increases the chance of a threshold being reached where mortality from starvation begins to increase (West *et al*., 2005; Navedo *et al*., 2008). The removal of shellfish from productive beds, along with associated disturbance, can drive birds from preferred feeding grounds to areas of poorer quality. This can lead to an increase in bird densities and a subsequent intensification of interference and exploitation competition for food which can reduce intake rate and probability of starvation, particularly in winter (Goss-Custard & Verboven, 1993; Clark, 1993; Goss-Custard *et al*., 1996). It is important to understand to what degree bird species are able to switch to other food resources, if their target species (that may also be the target species of the fishery) is reduced (Schmechel, 2001). It was reported by Zwarts *et al*. (1996a) that along the north west European coast there are limited possibilities of alternative prey items for certain bird species, especially in winter due to changes in availability (Schmechel, 2001). Using individual behaviour-based models it has been shown that shellfish stocks should not fall below 2.5 to 8 times the biomass that shorebird populations require to survive (Stillman *et al*. 2003; Goss-Custard *et al*. 2004; Stillman *et al*. 2010).

A link has been shown between the state of shellfish stocks and oystercatcher survival in the Wash (Schmechel, 2001). The Wash, constitutes an important estuary for supporting large numbers of wintering waterfowl (310 000), including internationally important numbers of knot and oystercatcher (Schmechel, 2001; Atkinson *et al*., 2003). The area also supports one of the three major cockle fisheries in Britain (Atkinson *et al*., 2003). The majority of cockle harvesting involves the use of continuous delivery hydraulic suction dredges (Bannister, 1998; 1999). Between 1990 and 1999, stocks of cockles and mussels collapsed following a period of poor recruitment and high levels of fishing effort in the 1980s (Bannister, 1998; 1999). During this period, oystercatcher populations fell from 110,000 to 40,000 (Atkinson *et al*., 2000). Population modelling has confirmed that declines in the availability of these prey items were associated with changes in oystercatcher survival between 1970 and 1998, which included three periods of mass mortality (Atkinson *et al*., 2003). Oystercatchers are particularly sensitive to low cockle stocks in years where stocks of

mussels are also low and in the Wash, it is thought that mussels act as a buffer during periods when cockle numbers are low (Atkinson *et al*., 2003; Velhurst *et al*., 2004). In the Wash, oystercatcher mortality occurred during winters when stocks of both species were low (Atkinson *et al*., 2003).

Atkinson *et al*. (2010) investigated overall changes in the waterbird assemblage in the Wash between 1980-1982 and 2002-2003. During this study period, the waterbird assemblage underwent a gradual change from one being dominated by species with a high proportion of bivalves or 'other' prey i.e. crustaceans and fish in their diet to those with a higher proportion of worms (Atkinson *et al*., 2010). Three winters in this period were characterised by elevated levels of oystercatcher mortality, 5 to 13 times greater than normal winter levels (Atkinson *et al*., 2010). The great declines were observed in oystercatcher, knot and shelduck (Atkinson *et al*., 2010). Bar-tailed godwit and grey plover showed large increases over the study period. As expected, these changes were found to be significantly related to mussel and cockle stock levels and nutrient levels to a lesser extent (Atkinson *et al*., 2010). Six out of 11 bird species investigated, showed significantly lower rates of annual change in the 10 years before and after the crash of mussel stocks (which occurred during 1992) (Atkinson *et al*., 2010).

There have also been changes in the bird populations in other areas were cockle fisheries are known exist. Like the Wash, the Burrey Inlet cockle fishery saw a decrease in the number of oystercatchers feeding in the inlet for a number of years, in response to removal of less than 25% of available cockle stocks (Norris *et al*., 1998). Oystercatcher numbers remained stable or slightly increased from 1970 to 1986, before declining through to 1993 and then recovering slightly (Schmechel, 2001). In the Thames, there has been a consistent increase in the number of birds from 5000 in the 1970s to 16000 in 1997/98, despite a simultaneous increase in cockle dredging (Schmechel, 2001). Contrasting to Schmechel (2001) in the Dutch, Wadden Sea international MPA a gradual loss of intertidal resources explained the loss of red knots (*Caldris cantrus islandica*) from the local populations and a decline in the EU wintering population (van Gils *et al.* 2006). Cockle (*Cerastoderma edule*) mechanical dredging led to lower settlement rates of cockles and reduced their quality (ratio of flesh to shell) (van *Gils et al.* 2006).

Stillman *et al*. (2001) used a behaviour-based model to investigate the effects of present-day management regimes of the Exe estuary mussel fishery and Burry Inlet cockle fishery on the survival and numbers of overwintering oystercatchers. Results of the study concluded that at present intensities (2 fishing units in the Exe estuary and 50 fishing units in Burry Inlet) in both fisheries does not cause oystercatcher mortality to be higher than it would be in absence of the activity (Stillman *et al*., 2001). Theoretical changes in management, such as fishing effort, a reduction in the minimum size of target species and increase in the daily catch quota were shown to have an impact on oystercatcher mortality and population size (Stillman *et al*., 2001). Different fishing methods were investigated as part of the study. The model predicted the use of dredges on either estuary increased the time birds would spent feeding and the use of supplementary feeding areas (Stillman *et al*., 2001). As would be expected, the removal rates of mussels and cockles using mussel dredges and suction dredges were much greater that hand-raking or hand-picking (Stillman *et al*., 2001). Sixty suction dredges could kill all the Burry Inlet oystercatchers (Stillman *et al*., 2001). Hand-raking for mussels however was found to reduce the area of beds, permanently increase interference and disturb birds, temporarily increasing interference, whilst dredging for mussels only decreased bed area (Stillman *et al*., 2001). The varying impacts of different fishing methods reflect differences in the way they deplete shellfish stocks (Stillman *et al*., 2001).

Size of prey species

The exact role of the fishery and its effect on bird population, as a result of direct competition, will largely depend on the different size fractions of the stock that may be exploited by fishers and birds (Schmechel, 2001). Whilst there may be an overlap in the size of cockles taken by both fishers and birds, most bird predation is of a smaller size class than fishers take (Norris *et al*., 1998). If sizes overlap there can be a genuine conflict of interest between the birds and the fishery, therefore larger minimum sizes are therefore more favourable to birds (Lambeck *et al*., 1996). Oystercatchers have shown a preference for older cockles, 20 to 40 mm, and will not take cockles less than 10 mm when these larger size classes are available (Hulscher, 1982; Zwarts *et al*., 1996a). On the other hand, oystercatchers do not necessarily choose the largest cockles as they are difficult to handle, with studies reporting that larger cockles were refused more often than small ones (Zwarts *et al*. 1996a). Oystercatchers are known to refuse small prey due to low profitability and the size of cockles left after fishing may therefore have an impact on feeding rate of the oystercatcher (Zwarts *et al*. 1996b; Wheeler *et al*., 2014).

Caldow *et al*. (in Jensen *et al.* 2005) demonstrated, the main target species of pump-scooping dredging, the non-native Manila clam, forms a prey item of the oystercatcher population in Poole Harbour. In the study, it is speculated the fishery, which reduces abundance, maximum age and size of Manila clam, may suppress potential benefits to the oystercatcher population. Between late summer and the following spring, a significant increase in the proportion of the population (up to 40 to 50%) consumes this target species. Using an individuals-based simulation model, the study predicts the presence of Manila clams in the Harbour, at low densities of 5 clams per m^2 (mean density when the study was undertaken), has reduced over-winter mortality rates of oystercatchers by 3.5%. The size of individuals targeted by oystercatchers range in length from 16 to 50 mm, which overlaps to some extent with the fishery, where individuals 35 mm and above are removed. As such, there will be some level of direct competition between the two.

6.2.4 Removal of non-target species

Fishing activity can have indirect impact upon birds by affecting the availability of prey through pathways that do not include targeted removal (Natural England, 2014). In general, bottom towed fishing gear has been shown to reduce biomass, production and species richness and diversity of benthic communities where fishing activities take place (Veale *et al*., 2000; Hiddink *et al*., 2003). Alterations in the size structure of populations and community are also known to occur (Roberts *et al*., 2010). When dredges are towed along the seafloor, surface dwelling organisms can be removed; crushed, buried or exposed and sessile organisms will be removed from the substrate surface (Mercaldo-Allen & Goldberg, 2011). Direct burial or smothering of infaunal and epifaunal organisms is possible due to enhanced sedimentation rates (Mercaldo-Allen & Goldberg, 2011). In a meta-analysis of 39 studies investigating the effects of bottom towed gear, there was an overall reduction of 46% in the abundance of individuals within disturbed (fished) plots (Collie *et al*., 2000). In a separate meta-analysis of 38 studies, investigating the impacts of intertidal harvesting on benthic invertebrate communities, which represent bird prey sources, harvesting was shown to cause a significant reduction of 42% in the average abundance across all taxa in the first 10 days following disturbance (Clarke *et al*., 2017). A simultaneous increase in species diversity of 39% was reported in the first 10 days following disturbance, however this was followed by a significant reduction in diversity 51-500 days post-fishing and

no significant effect after >500 days (Clarke *et al*., 2017). The magnitude of the response of fauna to bottom towed fishing gear varied with gear type, habitat (including sediment type) and among taxa (Collie *et al*., 2000).

In a study by Ferns *et al*. (2000), bird feed activity increased shortly after the mechanical harvesting of cockles using a tractor, particularly in areas of muddy sand rather than in areas of clean sand. Gulls and waders took advantage of the invertebrates made available by harvesting. For example, 80 dunlins and seven curlews were observed feeding on harvested areas 6 days after harvesting. Following this increase, the level of bird activity declined in areas of muddy sand when compared with control areas and become particularly apparent 21 and 45 days after harvest (Figure 13). Levels of bird activity remained significantly lower in curlews and gulls for more than 80 days after harvesting and in oystercatchers for more than 50 days. Any initial net benefit of harvesting was matched by decreased feeding opportunities in the winter. Harvesting large areas however would not result in a neutral effect, firstly as the bird population would not be large enough to fully exploit the enhanced feeding opportunities and secondly the subsequent reduction in feeding opportunities would extend over a longer period of time (Ferns *et al*., 2000). Other effects would include the migration of birds into unharvested areas which would then lead to increased bird densities in these areas (Sutherland & Goss-Custard 1991; Goss-Custard 1993).

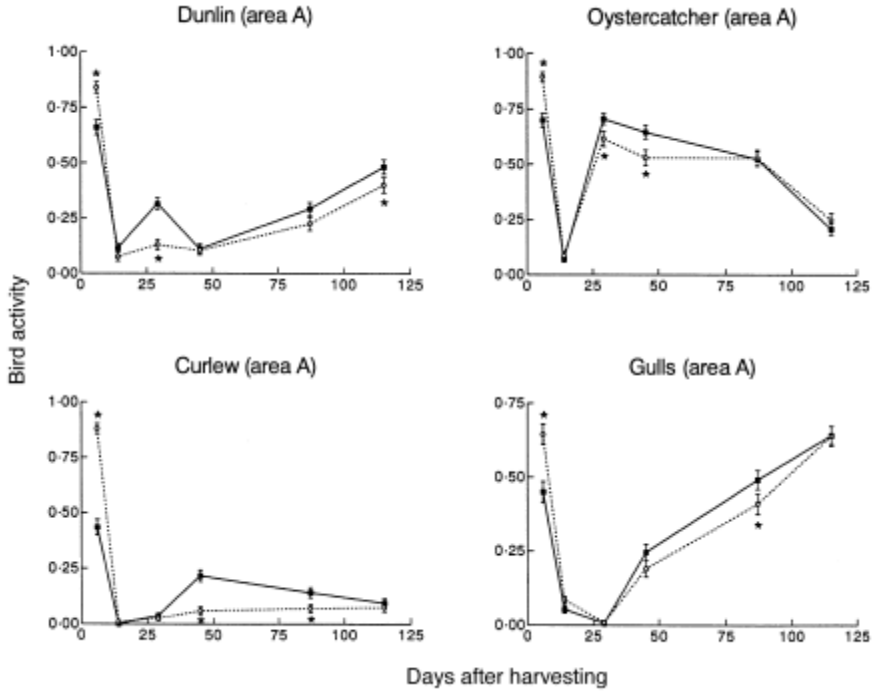


Figure 13. Mean proportion (±SD) of samples in control (black squares) and harvested (white circles) sectors containing footprints of different bird species. Significant differences between sectors are indicated by an asterisk and estimated by bootstrapping. Source: Ferns *et al*., 2000

The relative impact of shellfish dredging on benthic organisms, which form potential prey items, is species-specific and largely related to their biological characteristics and physical habitat (Mercaldo-Allen & Goldberg, 2011). The vulnerability of an organism is ultimately related to whether or not it is infaunal or epifaunal, modile or sessile and soft-bodied or hard-shelled (Mercaldo-Allen & Goldberg, 2011). Epifauna, organisms inhabiting the seabed surface, are subject to crushing or at risk of being buried, in addition to effects of smothering, whilst infauna, organisms living within sediment, may be excavated and exposed (Mercaldo-Allen & Goldberg, 2011). A number of studies have found soft-bodied, deposit feeding crustaceans, polychaetes and ophiuroids to be most affected by dredging activities (Constantino *et al*., 2009). This is supported by a meta-analysis conducted by Collie *et al*. (2000) who predicted a reduction of 93% for anthozoa, malacostraca, ophiuroidea and polychaete after chronic exposure to dredging. This is further supported by another meta-analysis conducted by Clarke *et al*. (2017) which reported the most severe decline in the taxonomic group annelida (39.17%), followed by mollusca (33.76%) and crustacea (29.61%) in the first 10 days following disturbance from intertidal harvesting. Furthermore, a study looking at the effects of mechanical cockle harvesting in intertidal plots of muddy sand and clean sand, found that annelids declined by 74% in intertidal muddy sand and 32% in clean sand and molluscs declined by 55%in intertidal muddy sand and 45% in clean sand (Ferns *et al*., 2000). Similar results were reported by EMU (1992), who found a distinct reduction in polychaetes, but less distinct difference in bivalves, after dredging had taken place and between dredged and control samples. This corresponds with analysis completed by Collie *et al*. (2000) who reported that bivalves appeared to less sensitive to fishing disturbance than anthozoa, malacostraca, ophiuroidea, holothuroidea, maxillopoda, polychaeta, gastropoda and echinoidea,

A number of studies have highlighted species that are particularly vulnerable to dredging as well as those which appear to be more tolerant. For example, the polychaete *Lanice conchilega* are highly incapable of movement in response to disturbance and therefore take a significant period of time to recolonise disturbed habitats (Goss-Custard, 1977). Deep burrowing molluscs, such as *Macoma balthica*, also have limited capability to escape. Following suction dredging for the common cockle on intertidal sand, the abundance of *Macoma* declined for 8 years from 1989 to 1996 (Piersma *et al*., 2001). Ferns *et al*. (2000) reported reductions of 30% in the abundance of *Lanica conchilega* in intertidal muddy sand after mechanical cockle harvesting (using a tractor) took place, although abundances of *Macoma balthica* increased. The same study also revealed large reductions of 83% and 52% in the abundance of the polychaete *Pygospio elegans* and *Nephtys hombergii*, respectively (Ferns *et al*., 2000). The former species remained significantly depleted in the area of muddy sand for more than 100 days after harvesting and the latter for more than 50 days (Ferns *et al*., 2000). Other polychaete species also thought to be particularly affected are *Arenicola*, *Scoloplos*, *Heteromastus* and *Glycera* (Collie *et al*., 2000). A meta-analysis of 38 studies investigated the initial impacts (0-10 days post-fishing) of intertidal harvesting on bird prey resources down to a specie-level response. The study reported reductions in all species (23.58% in *Cerastoderma edule*, 16.18% in *Nephtys* spp., 47.25% in *Hydrobia* (*Peringia*) *ulvae*, 48.78% in *Scoloplos* spp), although only significant for *Scoloplos* spp. and except for *Macoma baltica* which increased by 14.09%.

Furthermore, a study by Beukema and Dekker (2018) investigated the effects of cockle (*Cerastoderma edule*) abundance and fishery on bivalve abundance, finding that low adult cockle density led to high cockle recruit density. Low recruit densities were apparent before fishing started indicating that these low densities were a result of the high cockle abundance itself. Recruit numbers, which had not changed post fishing activity were not different between fishing and non-fishing years, nor between fished and unfished areas (Beukema & Dekker, 2018). This study was conducted in relatively muddy sediments a reason suggested for the lack of significant influences of fishery in the studied area.

Site-Specific Studies

A number of studies have specifically investigated the impacts of pump-scoop dredging in Poole Harbour (Parker & Pinn, 2005; Cesar, 2003 in Jensen *et al*., 2005), with the most recent being the most extensive

Jensen *et al*. (2005) reported on the preliminary results of a MSc project looking at potential impact of pump-scoop fishing (for clam species) in Poole Harbour At thirteen sites, three replicate sediment samples were taken before and after the 2002/03 clam fishing season (late October to early January). Preliminary results from four sites, including data from a site experiencing ‘high’ fishing pressure (Seagull Island) were analysed and presented. The results show the infaunal community at Seagull Island to have a qualitatively similar level of disturbance before and after the fishing season, with no significant differences at all four sites before and after the season. Some quantitative changes were observed in the fine sediment granulometry at Seagull Island, however sediment samples from all four sites showed no significant differences before and after the season. From the preliminary results it was concluded that there was no significant additional disturbance to the infaunal community before and after the 2002/03 season occurred and whilst no statistically significant, changes to sediment granulometry at the site subject to high fishing pressure did occur.

Parker and Pinn (2005) investigated the impacts of pump-scoop dredging (for cockles) on the intertidal sedimentary environment and macro-infaunal community at two sites located within the Whitley Lake area of Poole Harbour. The study area was characterised by sandy mud with some patches of shingly ground occurring close inshore. Samples from each site were collected in April prior to the cockle fishery season (1st May to 31st January) opening, and then again in May, June and July during the season. The results show little change in the sediment particle size distribution on a monthly basis, with no significant differences observed. After three months of dredging, species richness had declined by from 17.2±1.1 to 12.6±0.9 at the first site and 17.0±2.3 to 14.8±2.3 at the second site. Post-hoc tests reveal significant differences between July and all other months. A decline in abundance was also observed, with reductions of 42.3% at the first site and 50.6% at the second site, with post-hoc tests revealing difference differences between April and July. No significant differences were found in infaunal communities between April and May, indicating either low fishing effort or no initial impact of pump-scoop dredging. After three months, significant differences were detected, with changes between June and July potentially attributable to sudden temperature changes, reproduction-induced mortality or disturbance from another source (hand gathering of cockles or bait digging), although also potentially indicative of a chronic effect of pump-scoop dredging. The species characterising the faunal assemblage in April consisted of *Scoloplos armiger*, *Cingula trifasciata* and *Hydrobia* spp., with May and June similar to April, although with the additional of *Arenicola marina*. In July the dominant species characterising faunal assemblage were *Urothoe* spp., *C. trifasciata*, *A. marina* and *Corophium* spp. *S. armiger* abundance showed the most change, with abundance decreasing to zero in July at both sites. Over the duration of the study *Hydrobia* spp. abundance declined at both sites, whilst *Corophium* abundance and *Urothoe* spp. increased and *A. marina* abundance increased at the first site and remained constant at the second site. It was noted by authors that two species commonly cited as important prey species for bird populations, *Arenicola marina* and *Corophium* spp., did not observe any obvious reductions in response to pump-scoop dredging and as such dredging may not have an obvious adverse impact on bird populations through impacts on the infaunal community.

Clarke *et al*., (2018) used a Before-After-Control-Impact (BACI) sampling design to assess the impacts of pump-scoop dredging on the benthic physical characteristics and community structure. Core samples were taken from separate areas representing different levels of dredging intensity: an area that has historically been intensively dredged and remains open for a seven-month season; an area that has historically been closed to dredging but will be opened for a four-month season and an area that remains permanently closed to dredging (control site). The samples were taken in June, prior to the start of the fishing season in 2015 and November, before the end of the season.

Organic content and the proportion of fine sediments decreased in all sites throughout the study period, with the greatest declines in the intensively dredged site. Statistical analyses showed a significant effect with respect to site, with post-hoc tests revealing significantly less organic content at the intensively dredged site than the newly dredged and control sites, which showed no difference. However, the interaction term between time and site, which would indicate an overall impact of dredging activity in terms of relative change, appeared non-significant, thus indicating a small effect of dredging on the fine sediment content and very slight effect on organic content throughout the study period. The lower level of organic content and volume of fine sediments may be reflective of the higher fishing intensity or a more dynamic environment dominated by coarser sediments.

Throughout the study period significant changes in community structure occurred in both dredged sites, with statistical analyses showing a significant effect of both site and time before and after fishing, indicating a variation in the magnitude of change in overall assemblage between sites. The overall community structure of the newly dredged site shifted during the study period from those resembling the control site to those at the intensively dredged site. The community structure of the intensively dredged site and to some extent that of the newly dredged site in November, were characterised by high abundances of polychaete worms, in particular *Hediste diversicolor*, *Aphelochaeta marioni*, *Streblospio shrubsolii* and *Tubificoides* spp.; with the former three species showing notable increases in the newly dredged site (Figure 14). Densities of *H. diversicolor* more than doubled in the newly dredged site and were largely dominated by smaller (<10mm) individuals. Control sites were largely dominated by *Peringia ulvae* and *Abra tenuis*, which declined at both dredged sites and also had a general absence of *A. marioni*. *A. tenuis* represents a key prey item for molluscivorous shorebirds. Throughout the study period, densities of all species at the control site were generally much lower but more stable than at both dredged sites, at which the magnitude of change was much larger. Across both months, species richness was also found to be significantly higher in both dredged site compared to the control site. Biotic indices indicate all sites to be classed as 'moderately disturbed', with the control site and newly dredged site classified as 'good' quality and the intensively dredged site classified as 'moderate' quality. Despite the significant changes in community structure in the newly dredged site, as described above, no change in the biotope or ecological quality of either of the dredged sites were identified. It is worth noting that prior to the opening of the fishing season statistical analyses showed site differences in community structure, likely to be driven by a gradient in sediment type. Throughout the study period there were also clear seasonal changes in species abundance. The BACI sampling design allows for assessment of seasonally-induced changes however, and the greatest changes in community structure were observed in the newly dredged site with significant increases in species richness and total abundance.

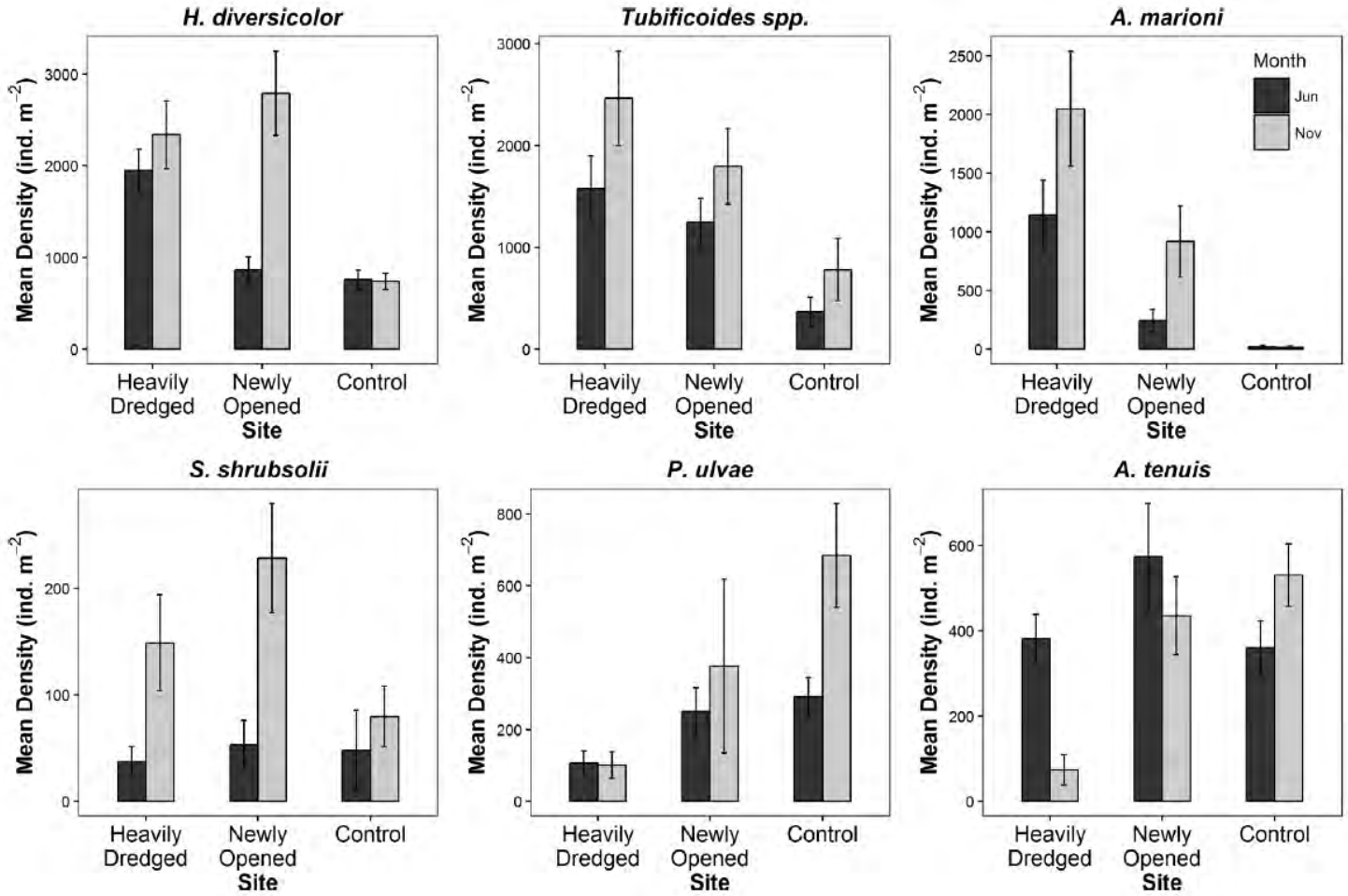


Figure 14. Mean densities of common species in June (dark grey) and November (light grey) 2015 at three sites representing different levels of pump-scoop dredging intensity (heavily dredged, newly opened, control) in Poole Harbour. Heavily dredged; an area that has historically been intensively dredged and remains open for a seven-month season (May 25th-December 23rd). Newly dredged; an area that has historically been closed to dredging but will be opened for a four-month season (1st July-31st October). Control site; an area that remains permanently closed to dredging (control site). Source: Clarke *et al*., 2018.

Recovery

The timescale of recovery for benthic communities and potential prey species largely depends on sediment type, associated fauna and the rate of natural disturbance (Roberts *et al*., 2010). In locations where natural disturbance levels are high, the associated fauna are characterised by species adapted to withstand and recover from disturbance (Collie *et al*., 2000; Roberts *et al*., 2010). More stable habitats, which are often distinguished by high diversity and epifauna, are likely to take a greater time to recover (Roberts *et al*., 2010). The recovery for gravel habitats has been predicted to be in the order of ten years (Collie *et al*., 2005). This was reported by recovery rates observed during a 10-year monitoring program of a gravel habitat located close to the Isle of Man following closure of the area to scallop dredging (Bradshaw *et al*., 2000). Similar recovery periods were estimated for muddy sands, which Kaiser *et al*. (2006) estimated to take years after finding the sediment type was particularly vulnerable to impacts of fishing activities. The recovery periods for sandy habitats is estimated to take days to months (Kaiser *et al*., 2006). In the meta-analysis conducted by Kaiser *et al*. (2006), a significant linear regression with time for the response of annelids to the impacts of intertidal dredging in sand and muddy sand habitats was reported. Annelids were predicted to have recovered after 98 days post fishing in sand habitats and 1210 days in muddy sand habitats (Kaiser *et al*., 2006). Authors stated recovery for the latter however should be treated with caution (Kaiser *et al*., 2006).

Population recovery rates are known to be species specific (Roberts *et al*., 2010). Long-lived bivalves will undoubtedly take longer to recovery from disturbance than other species (Roberts *et al*., 2010). Megafaunal species such as molluscs and shrimp over 10 mm in size, especially sessile species, are more vulnerable to impacts of fishing gear than macrofaunal species as a result of their slower growth and therefore are likely to have long recovery periods (Roberts *et al*., 2010). Short-lived and small benthic organisms on the other hand have rapid generation times, high fecundities and therefore excellent recolonization capacities (Coen, 1995). For example, slow-growing large biomass biota such as sponges and soft corals are estimated to take up to 8 years, whilst biota with short life-spans such as polychaetes are estimated to take less than a year (Kaiser *et al*., 2006).

In a meta-analysis of 38 studies, investigating the recovery of invertebrate communities from intertidal harvesting, the recovery of non-target species (of the fishery) did not appear more than 500 days following disturbance across all habitat types, with a further reduction in abundance occurring at this time (Clarke *et al*., 2017). When broken down by habitat type, some habitats may demonstrate a trend towards recovery at 51-500 days (Clarke *et al*., 2017). Recovery trends for the majority of gear-habitat combinations were shown to be are unstable and highly variable. The recovery for hydraulic dredging in mud habitats show relatively short-term impacts with respect to abundance, with reductions in the first 10 days following disturbance, and close to no effect thereafter. The recovery of from mechanical dredging in mud differs between phyla with a decline in mollusc abundance suppressed for >60 days post-fishing, but positive trend in other phyla (annelids, crustaceans), demonstrating near recovery over the same period. Recovery in may is variable with clear trends towards recovery only evidence for hydraulic and mechanical dredging. The recovery for mechanical dredging in sand indicates a positive trend, with partial recovery after 400 days.

Studies on recovery rate

There are a limited number of studies which examine the recovery rate from biological and physical disturbance caused by shellfish dredging. Five studies were found on the impacts of shellfish harvesting on intertidal habitats, four of which are based in the UK (details are provided in Annex 9). The recovery rates reported range from no effect (thus no recovery is required) up to 12 months, with intermediate recovery rates reported at 56 days and 7 months (Kaiser *et al*., 1996; Hall & Harding, 1997). Spencer *et al*. (1998) reported a recovery rate of up to 12 months, although inferred it was not possible to be certain recovery had not occurred before this as not all treatment replicates were taken 4 and 8 months after sampling. The authors compared their findings with similar studies and speculated the greater length of recovery in comparison was related to the protected nature of the site (Spencer *et al*. 1998). This study highlights the importance of exposure in determining recovery rates of different habitats and also how recovery rates are site-specific.

Species-specific diets

While shorebirds will typically eat a range of different prey species such as molluscs and annelids, the type of preferred prey species will vary between bird species (Natural England, 2014). It is important to knowledge these variations in prey preference as the impacts of dredging on bird species are likely to be reflective vary depending on the vulnerability of prey species to impacts of dredging. The plasticity of a bird's diet will also vary depending on the species and it is important to consider alternate prey species as bird will not be restricted to one source of food. Table 5 provides details of prey items taken by designated bird species within the Poole Harbour SPA. For example, oystercatchers will prey upon small cockles, Baltic tellins, soft-shell clams, lug-worms and ragworms (Wheeler *et al*., 2014). Some prey items may be of low value to the birds and not a major component of their diet (Zwarts *et al*. 1996ab; Atkinson *et al*. 2003). Alternative prey sources may also be less available as organisms may bury deeper into the sediment and thus require the birds to expend a greater amount of energy (Zwarts *et al*. 1996ab). Birds may directly compete with the fishery if both target the same species. The key bird species at risk from changes in prey availability are non-breeding overwintering species as food requirements are considerably greater during winter due to thermoregulatory needs and metabolic costs (Wheeler *et al*., 2014).

Table 5. Typical prey items known to be taken by designated bird species in Poole Harbour SPA. Information on general prey preference was obtained from the SPA Tool Kit and Natural England's Poole Harbour Conservation Advice Package. Specific information on prey species was taken from the draft supplementary advice on conserving and restoring site features and also from other conservation advice packages from nearby SPAs with the same bird features.

Common Name	Latin Name	General Prey Preference	Prey Species
Avocet	*Recurvirostra avosetta*	Fish, molluscs, crustaceans, insects, worms	*Gammarus, Corophium, Nereis, Hydrobia, Cardum,* gobie spp.
Little egret	*Egretta garzetta*	Fish, amphibians, insects	
Eurasian spoonbill	*Platalea leucorodia*	Insects, small fish, crustaceans, frogs and tadpoles, worms, leeches	

Black-tailed godwit	*Limosa limosa islandica*	Insects, worms, plants/grasses/seeds	*Scrobicularia, Macoma, Hediste, Arenicola, Cardium, Nereis*
Shelduck	*Tadorna tadorna*	Molluscs, crustaceans, worms, insects	*Hydrobia ulvae, Macoma, Corophium, Hediste, Enteromorpha, Nereis*
Dunlin	*Calidris alpina*	Molluscs, insects, worms	*Macoma, Hydrobia* spp., *Nereis, Crangon, Carcinus, Scrobicularia, Corophium, Hediste*
Dark-bellied brent goose	*Branta bernicla bernicla*	Plants/grasses/seeds	*Zostera* spp., *Enteromorpha, Ulva lactuca*
Goldeneye	*Bucephala clangula*	Fish, molluscs, crustaceans, insects	
Teal	*Anas crecca*	Plants/grasses/seeds	*Enteromorpha* spp., *Ulvae* spp.
Curlew	*Numenius arquata*	Molluscs, crustaceans, insects, worms	*Mya, Cerastoderma, Scrobicularia, Macoma, Hediste, Arenicola, Carcinus*
Red-breasted merganser	*Mergus serrator*	Fish	Gobies, flatfish, herring fry (<11cm), shrimp, sticklebacks, *Nereis* spp.
Spotted redshank	*Tringa erythropus*	Insects, worms	
Greenshank	*Tringa nebularia*	Fish, crustaceans, worms	
Redshank	*Tringa totanus*	Molluscs, crustaceans, insects, worms	*Mya, Scrobicularia, Macoma, Hydrobia, Corophium, Hediste, Nereis*
Pochard	*Aythya farina*	Fish, insects, plants/grasses/seeds	

Additional information was also obtained from Durrell & Kelly (1990), Cox *et al*. (2014), European Commission (2009), Brearey (1982) & Clarke *et al*., (2017) (Supplement 1)

6.3 Site-Specific Seasonality Table

Table 6 below indicates (highlighted in grey) when significant numbers of each mobile designated feature are most likely to be present at the site during a typical calendar year. Where count data was available, highlighted months with significant numbers were defined on the basis of one or both of the following criteria being met in more than three-fifths (60%) of the years within the six years period 2007-2012. The two criteria used were: i) monthly maxima exceed 10% of the highest mean of monthly maxima over the six-year period; ii) monthly maxima exceed the 2012/2013 national significance threshold. These criteria were predominantly used for non-breeding bird features (based on WeBS data). Where insufficient count data were available to use these criteria, months with significant numbers were highlighted on the basis of generic information on seasonal patterns of occurrence in published sources. The data has been taken from NE Advice on Seasonality for Poole Harbour SPA, last updated 13th March 2020.

Table 6. Presence by month of mobile designated features at the Poole Harbour SPA. Grey indicates periods of presence in significant numbers whereas blank (white) indicates either periods of absence or presence in less significant numbers but where there may still be a significant effect.

Common Name	Latin Name	Designated Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avocet	*Recurvirostra avosetta*	Nonbreeding; Wintering												
Black-tailed godwit	*Limosa limosa*	Nonbreeding; Wintering												
Common tern	*Sterna hirundo*	Breeding												
Mediterranean gull	*Larus melanocephalus*	Breeding												
Shelduck	*Tadorna tadorna*	Nonbreeding; Wintering												
Little egret	*Egretta garzetta*	Nonbreeding; Wintering												
Sandwich tern	Sterna sandvicensis	Breeding												
Spoonbill	Platalea leucorodia	Non-breeding												

6.4 Site Condition

Natural England provides information on the condition of designated sites and describes the status of interest features.

Under the Habitats Directive, relevant for Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs), the United Kingdom is obliged to report on the Favourable Conservation Status of Annex I and Annex II features every 6 years. There are similar reporting requirements under the Birds Directive, relevant for Special Protection Areas (SPAs). Feature condition influences the Conservation Objectives in that it is used to determine whether a 'maintain' or 'recover' objective is needed to achieve the target level for each attribute.

During 2015-16 Natural England reviewed, refined and tested condition assessment methodology to provide more robust results. Natural England will employ this methodology to start a rolling programme of marine feature condition assessments in 2017-18, which will be conducted by their Area Teams. The condition assessment currently available for Poole Harbour SPA is comprised of an analysis of data collected by the British Trust for Ornithology (BTO) and the condition assessment of Poole Harbour SSSI which was compiled in 2010, with a few of the units having been reassessed in 2018.

6.4.1 Poole Harbour SSSI Condition Assessment

An indication of the condition of site interest features can be inferred, if available, from assessments of SSSIs[12] that underpin the SPA. There are a number of SSSIs which exist within the area covered by Poole Harbour SPA and these, along with relevant feature condition assessments are summarised in Table 7. Note that only SSSI sites where shellfish dredging is known to occur have been chosen. There have been no changes to unit condition and thus no changes to this HRA required since the 2023/24 HRA was completed.

SSSI Site Name	Habitat	Unit number	Unit Name	Condition	Date	Comments
Poole Harbour	Littoral Sediment	02	Whitley Lake	Favourable	2010	Intertidal mudflat feature – reduction in the biomass of s mall invertebrates (particularly worms) from 2002-2009, although *Nephtys* had increased. Change may be a result of slightly seasonal differences in sampling or natural variation. Estuarine feature – no significant algal mat coverage in 2005, so no further samples.

[12] SSSI Condition assessments: http://designatedsites.naturalengland.org.uk/.

						Saltmarsh feature – substantial loss, approx. 80%, of marsh since 200 attributed to natural change and some human activity (trampling). No adverse pollution signs. Some trampling as heavily used site during summer months but no adverse effects apparent, no signs of pollution, appears to be natural change. Aggregation of non-breeding birds- large numbers of feeding and roosting wildfowl although some disturbance may be from activities such as windsurfing and dog walking.
Poole Harbour	Littoral Sediment	15	Ham Common	Favourable	2010	Estuarine feature – no significant algal mat coverage in 2005, so no further samples.
Poole Harbour	Fen, Marsh and Swamp – Lowland	31	Holton Mere and Wood Bar Looe	Unfavourable - declining	2021	Unfavourable status in 2021 due to decline in littoral sediment, saltmarsh, and some wintering bird features. Primary cause of decline was eutrophication, supported by water quality and biological indicators. Unfavourable littoral sediment features due to widespread macroalgae on mudflats (nitrogen and other environmental factors contribute). Saltmarsh feature: Unfavourable saltmarsh feature due to rapid erosion of the 'gull islands' and minor reed invasion at Wood Bar
Poole Harbour	Fen, Marsh and Swamp – Lowland	32	Keysworth Saltings and Shag Looe Head	Favourable	2010	Very few changes since 2001.
Poole Harbour	Fen, Marsh and Swamp – Lowland	34	Swineham point	Favourable	2010	Communities and zonation noted in 2001, still present. The sward is mainly quite long and closed. Some minor encroachment of reedbed on the south side.
Poole Harbour	Fen, Marsh and	36	Gigger's Island mudflat and Arne Reedbeds	Favourable	2010	Intertidal sediment feature is favourable. Reduction in small invertebrates biomass form 2002-2009. Change is likely due to seasonal sampling differences or natural variation.

	Swamp – Lowland					Estuarine feature – no significant algal mat coverage in 2005. No further samples.
Poole Harbour	Fen, Marsh and Swamp – Lowland	37	Patchin Point and Arne Bay	Unfavourable – Declining	2019	Unfavourable condition of waterenvironment, saltmarsh, mudflat habitats and wintering birds in 2010, still applicable. Eutrophication effecting ecology. Decline in overwintering shelduck numbers. Nitrogen levels in winter are below WFD good status across the Harbour. Nitrogen enrichment encourages macroalgae growth in mudflats and saltmarsh. Macroalgae biomass and extent are borderline between WFD Moderate and Good based on three years' data. Saltmarsh loss in Poole Harbour over many years, following rapid expansion in the early 20th century due to Spartina introduction. Arne Bay saltmarsh seems relatively stable compared to other areas. EA geomatic data (2011-2014) shows no significant changes at Arne Bay; some algae accumulations on the edges. Decline in shelduck numbers below the indicative level for favourable condition. Steeper decline observed at this site compared to regional and national trends. Likely caused by site-specific pressures, including reduced food availability due to algal mats and increased vulnerability to disturbance.
Poole Harbour	Fen, Marsh and Swamp – Lowland	42	Wych Lake	Favourable	2009	Little change and limited erosion in saltmarsh feature. Some die-back of Spartina anglica in lower marsh. No changes in upper saltmarsh, which remains in good conditions. Mudflats are largely free of green seaweed. Estuarine habitats are favourable. Algal mats recorded in 2009 but no samples exceeding 2kg/m^2
Poole Harbour	Fen, Marsh and Swamp - Lowland	46	Long and Round Island saltmarsh and mudflat	Favourable	2010	Little change in saltmarsh feature between 2002-2009 except for small retreat on NE shorelines of both islands. 2009 aerials shows significant bare mud areas, mainly in lower marsh, likely caused by Spartina dieback. Reduction in biomass of small worms and overall invertebrate biomass of intertidal sediment feature, including decline of Corophium. Changes may be due to seasonal sampling differences or natural variation.

Poole Harbour	Fen, Marsh and Swamp – Lowland	47	Ower Bay and Fitzworth	Unfavourable - declining	2018	There are both water quality and biological indicators show ongoing eutrophication (nutrient enrichment) affecting the ecology. Monitoring reveals no reduction in the problem. Nitrate-nitrogen load from the catchment continues to rise, though more slowly in recent years. Saltmarsh erosion is evident and Wintering shelduck numbers have declined significantly. Current measures to address these issues are inadequate for achieving favourable condition. Elevated levels of nitrogen enrichment encourage macroalgae growth on mudflat and saltmarsh. Green algal mats were widespread in 2016 and 2017. Algal species present dense impenetrable mats. Research indicates macroalgae can cause adverse effects on mudflat invertebrates and wintering birds, as well as saltmarsh by increasing its susceptibility to erosion. The nitrate-nitrogen load continues to increase but more slowly in recent years.
Poole Harbour	Fen, Marsh and Swamp – Lowland	52	Newton Bay	Unfavourable – declining	2018	Both water quality and biological indicators show ongoing eutrophication (nutrient enrichment) problem. Monitoring indicates no reduction in the issue. Saltmarsh erosion is evident and there is a significant decline in wintering shelduck numbers in recent years. Current measures are insufficient to achieve a favourable condition. 2002-2009 data comparison shows reduced biomass of small worms and decreased overall invertebrate biomass. Decline includes fewer Corophium, which are important prey for avocets. Changes could be due to seasonal sampling variations or natural fluctuations. AZTI Marine Biotic Index indicates site as "heavily disturbed." Further investigation is needed.
Poole Harbour	Littoral rock	63, 53	Brands Bay north; Inner Brand's Bay and Drove Island	Unfavourable - declining	2017	See Unit 64
Poole Harbour	Littoral sediment	64	Brands Bay east	Unfavourable - declining	2017	Assessment of Brands Bay unit conditions (also applicable to units 63 and 53). Eutrophication:

						- Water quality and biological indicators point to ongoing eutrophication affecting the ecology. - Monitoring shows no reduction in the issue. - Nitrogen enrichment promotes growth of opportunistic macroalgae on mudflat and saltmarsh. Extent/ density and biomass of macroalgae place the unit in WFD Moderate status based on 4 years of data. Macroalgae Impact: - Green algal mats widespread in 2016 and 2017 on mudflats. Algal mats form dense, impenetrable layers of species like *Ulva compressa* and *intestinalis*. - Research shows macroalgae negatively affect mudflat invertebrates and wintering birds. - Nitrate-nitrogen load continues to increase, though more slowly in recent years. - Further actions required to reduce nitrogen and possibly phosphorus. Saltmarsh Condtiion: - Saltmarsh extent assessed using aerial photos and EA geomatic data (2011, 2014). Substantial loss of saltmarsh vegetation, mainly between 1972-1997, with stability since then. - Algal mats from mudflat contribute to saltmarsh erosion by smothering vegetation. - High nitrogen levels increase saltmarsh erosion due to reduced root growth and instability. - Spartina dieback noted in lower saltmarsh areas, linked to anaerobic conditions. Wintering Shellduck: - Numbers of wintering shelduck have declined significantly below the favourable condition threshold. Decline steeper than regional and national trends, indicating site-specific pressures. - Potential link to reduced food availability due to algal mats and vulnerability to disturbance.

						- Local data for Brands Bay is incomplete but suggests better shelduck numbers than the broader Harbour.
Poole Harbour	Littoral sediment	65	Poole Harbour channels and open water	Unfavourable – declining	2020	Condition of unit is assessed based on ecological attributes, bird population health, and nationally important species dependent on the sub-tidal environment. Estuary is in unfavourable decline condition due to ongoing trends caused deterioration. Eutrophication: - Both water quality and biological indicators point to eutrophication affecting critical features: littoral sediment, saltmarsh, and benthic flora and fauna. - Dense macroalgae now occur on mudflat, saltmarsh, and sub-tidally. - In 2003, *Ulva rigida* green macroalgae was widespread in the sub-tidal channel system. - Phytoplankton abundance is still rated WFD Good, but composition has shifted to high-nutrient species, indicating water quality decline. - Decrease in water clarity and increase in turbidity since 2000. - Eelgrass beds show signs of ephiphyte loads and wasting disease, linked to nutrient pressures. Nitrogen levels are too high for successful eelgrass restoration. Waterbird assembled decline: - The waterbird assemblage is unfavourable for not meeting SPA conservation objectives. Declines in various species not explained by national trends, linked to eutrophication. - Changes include altered wintering population composition and declines in species that no longer meet international/national importance thresholds. Red-breasted Merganser decline: - 46% decline since the late 1980s. - Poole Harbour numbers fell from 9.7% to 7.2% of the GB population. - Decline more severe than national and regional trends, suggesting site-specific factors.

						Goldeneye decline: - 43% decline since the late 1980s. - Poole Harbour's wintering goldeneye population has sharply decreased, more than national trends. - Poole is the most important site for goldeneye in the region but faces site-specific issues. Stable or increasing breeding bird populations include sandwich tern, common tern, brent goose, teal, pintail and cormorant.

Overall, the SSSI condition assessment shows that there are units in favourable condition and there are units where the condition is noted to be declining. The unfavourable condition appears to be primarily caused by eutrophication and resulting significant algal mat cover, there are also some concerns noted with regard to certain bird species comprising the waterbird assemblage where populations are declining, and the decline cannot be explained by national trends. A number of the changes to the waterbird assemblage have been linked to the eutrophication effects. A number of units considered to be in favourable condition do however note reductions in the overall biomass of small invertebrates (particularly worms) with respect to intertidal sediment communities. Such reductions however do not constitute a reason to classify such units as unfavourable.

Advice from Natural England received prior to the introduction of the PHDP byelaw, outlining the potential impacts of shellfish dredging on the nature conservation features of the Poole Harbour SPA, reiterated the findings of the 2010 SSSI condition assessment:

'The main concern from the assessment is the high inputs of nitrogen into the Harbour and the consequent algal mat growth which is at levels that could impact on bird prey availability and bird foraging behaviour. A further concern is the possible reduction in the abundance and variety of benthic invertebrates with a decline in biomass of some 26% between surveys in 2002 and 2009. This may be due to year-to-year fluctuations in variability and slight differences in the sampling methodology, although the difference is of sufficient magnitude to cause concern.'

6.4.2 Population trends

Population trend data, where available, can be used to identify site-specific pressures. Information on population trends comes from Natural England's Conservation advice packages available here: https://designatedsites.naturalengland.org.uk/. The setting of population abundance targets for the species is derived based on Wetland Bird Survey (WeBS) and JNCC's Seabird Monitoring Programme (SMP) population data. The population trend data is available for 8 species that are qualifying features of the site and the waterbird assemblage, non-breeding. The information is presented in table 8 below.

Table 8. Population abundance targets for the bird species found in the Poole Harbour SPA. Please note all information presented in this table has been taken from Natural England's Conservation Advice Package available at: https://designatedsites.naturalengland.org.uk/. These do not represent condition assessments.

Species	Target	Explanation
Mediterranean gull	Maintain	Since classification in 1999, the number of breeding pairs of Mediterranean gulls in Poole Harbour has increased from 5 pairs to the new baseline of 64 pairs. This count represents a 10-fold increase in numbers since the site was originally classified. The most recent count of 155 pairs in 2018 represents 13% of the latest (2013-2017) GB breeding population estimate of 1200 pairs.
Sandwich Tern	Maintain	The most recent five-year mean (2017-2021) of 154 pairs (classified population was 181), represents 1% of 14,000 pairs breeding in Britain.
Common Tern	Maintain	When classified in 1999 the site supported 155 pairs, representing over 1% of the British population. When the site was re-classified in 2017, a new baseline for this species was set at 178 pairs. The most recent five-year mean of 174 pairs (2017-2021) represents 1.6% of the GB breeding population (11,000 pairs).
Little Egret	Maintain	Little egret was added as an over-wintering feature of the Poole Harbour SPA in 2017, due to its presence in the harbour in numbers exceeding qualifying thresholds. At classification, there were 114 individuals (2010-2014), representing 2.5% of the British population. Currently, the Poole Harbour population peak mean is 155 individuals (2015/16-2019/20), representing 2.6% of the British population of 5916 individuals.
Spoonbill	Maintain	Spoonbill was added as an overwintering feature of the Poole Harbour SPA in 2017, due to its presence in the harbour in numbers exceeding qualifying thresholds. At classification, there were 20 individuals (2010-2014), representing 100% of the British population estimate in 2015. Since then, the British population estimate has been revised to a maximum of 198 and so the current five-year peak mean of 54 individuals (2015/16 – 2019/20) represents 27% of the British population. Poole Harbour is currently the most important site in the UK for overwintering spoonbill, whilst the North Norfolk Coast SPA holds the highest number of spoonbill during the summer.
Shelduck	Restore	When classified in 1999, the site supported 3,569 individuals, then representing 1.2% of the north-west European population. The over-wintering population of Shelduck in Poole Harbour has declined in the years following designation (by 65%) and the site now supports a five-year peak mean of 1,223 individuals, recorded between 2015/16 and 2019/20. As such, the SPA is currently only the 17th most important site for the species in the UK, holding less than 0.40% of the north-west European population.
Avocet	Maintain	When classified in 1999, the SPA supported nationally important numbers of pied avocet (459 individuals) then representing 36% of the GB population. The over-wintering population of pied avocet in Poole Harbour has significantly increased in the years following classification and the site now supports a five-year peak mean of 1,526 individuals (2015/16 and 2019/20). This represents approximately 19% of the latest GB wintering population estimate of 7,969 individuals, ranking as the fourth most important wintering site in the UK.
Black-tailed godwit (Icelandic Race)	Maintain	When classified in 1999, the site supported 1,576 individuals, then representing 2.4% of the Icelandic population. The over-wintering population of black-tailed godwit in Poole Harbour has increased in the years following classification, and the site now supports a five-year peak mean of 3,110 individuals (2015/16 – 2019/20), making it the 7th most important over-wintering

		sites for species in the UK. This five-year peak mean represents 7.6% of the latest GB over-wintering population estimate of the Icelandic race of this species of just over 40,000 individuals.
Water bird assemblage	Maintain	Poole Harbour is one of the most important estuaries in the UK for overwintering wildfowl and waders. The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds over the winter. At the time of classification, the site supported 25,091 individual waterbirds in the non-breeding season (four-year peak mean 1993/94 to 1996/97 as no waterfowl count available in 1992/93). These included: black-tailed godwit *Limosa limosa islandica*; shelduck *Tadorna tadorna*; dunlin *Calidris alpina*; cormorant *Phalacrocorax carbo*; dark-bellied brent goose *Branta bernicla bernicla*; teal *Anas crecca*; goldeneye *Bucephala clangula* red-breasted merganser *Mergus serrator*; curlew *Numenius arquata*; spotted redshank *Tringa erythropus*; greenshank *Tringa nebularia*; redshank *Tringa totanus*; pochard *Aythya ferina*. In addition to the main components of the assemblage described above, the assemblage also includes numbers of all other waders and waterfowl that occur in the SPA. With little egret and Eurasian spoonbill added as features of the SPA in 2017, they are included within the assemblage, thus deriving the new assemblage baseline total of 25,176.

It is important to note that the time periods of data used to inform conservation advice packages vary and therefore this data may not have captured the effects of fishing activities that have since commenced or altered since publication. The effects of fishing activities may not necessarily be captured in the next population abundance targets due to the time lag between cause and effect. The data presented in the table above is based on the information contained in the Poole Harbour SPA Conservation Advice Package as of January 2025 reflecting any updates listed for each feature on the NE Designated Sites webpage.

6.5 Existing Management

This list details the management measures which also apply in Poole Harbour, relevant to measures developed for shellfish management or management of SPA species, in addition to the Poole Harbour Dredge Permit Byelaw:

- **Bottom Towed Fishing Gear 2016** byelaw – prohibits bottom towed fishing gear over sensitive features including seagrass features within the Poole Harbour SPA.
- **Prohibition of Gathering (Sea Fisheries Resources) in Seagrass Beds** byelaw. This prohibits any person from digging for, fishing for or taking any sea fisheries resource in or from the prohibited areas and does not apply to fishing/taking fisheries resources by means of net, rod and line and hook and line. It also does not apply to fishing for/taking sea fisheries resources using a vessel, provided that no part of the vessels hull in contact with the seabed. No person shall carry a rake, spade, fork or any similar tool in prohibited areas.
- **Fishing for Oysters, Mussels and Clams** byelaw states that when fishing for these species only the following methods are used; a) hand picking and b) dredging using a dredge with a rigid framed south so designed to take shellfish only when towed along the sea bed.
- **Poole Harbour Shellfish Hand Gathering** byelaw prohibits persons from fishing for or taking shellfish by hand picking or using a hand rake or similar instrument from 1st November to 31st March in defined areas.
- **Fishing for Cockles** byelaw applies restrictions to the fishing for cockles by hand in Poole Harbour through a seasonal closed season (1st February to 30th April inclusive) and specifications on the methods of collection, specifying hand picking or a rake or other similar instrument

with specified size requirements. The dredge specifications under this byelaw do not apply in Poole Harbour as this is regulated under the Poole Harbour Dredge Permit Byelaw. The minimum conservation reference size for cockles is set under this byelaw at 23.8mm, this applies to hand gathering and dredging fishing.

- **Memorandum of Agreement for Bait Digging within Poole Harbour**. Bait diggers are asked to avoid conducting activity within the bird sensitive areas in Poole Harbour between 1st November and 30th March, backfill any holes which are dug and a number of general provisions, including avoiding trampling saltmarsh and reedbeds and carrying torch lights at night which may disturb roosting birds.
- **Poole Harbour Fishery Order 2015** is a Several Order which allows Southern IFCA to lease ground for the purposes of aquaculture and is achieved by granting exclusive rights to individuals to cultivate and harvest shellfish of any kind within designated lease beds. The Order is accompanied by a Management Plan which outlines the extent of the proposed Order (837.8 hectares) and how the area within that extent will be managed, including the positioning and allocation of leased beds and the process criteria and conditions by which access to leased beds is determined. For any leased ground allocated, a number of management measures are apply including a restriction of vessel length, the persons and vessels that can operate and remove shellfish from a leased bed and a requirement that all commercial shellfish species removed are subject to minimum size restrictions, as would be the case for commercial fisheries operating within Poole Harbour.
- **Minimum Conservation Reference Size Byelaw.** Minimum conservation reference sizes listed in the schedules of this byelaw apply to all fishery participants and through the supply chain. A person must not take, retain on board, tranship, land, transport, store, display or offer for sale from a fishery within the District, any fish of shellfish species specified in the schedules which measure less than the minimum conservation reference size specified in the schedule. Any such fish or shellfish must be returned to the sea immediately.

6.6 Table 9: Summary of Impacts

The potential pressures, associated impacts, level of exposure and mitigation measures are summarised in table 9.

Feature	Supporting habitat(s)	Attribute	Target	Potential Pressure(s) and Associated Impacts	Nature and Likelihood of Impacts	Mitigation measures
Avocet Little egret Eurasian spoonbill	Saltmarsh: Atlantic salt meadows *Spartina* swards	Supporting habitat: extent and distribution of supporting non-breeding habitat;	Restore the extent and distribution of suitable habitat (either within or outside the	Natural England raised concerns with respect to potential erosion caused by pump-scoop dredging taking place in close proximity to saltmarsh supporting habitats.	Shellfish dredging occurs in the vicinity of saltmarsh, in particular to Seagull Island. The shallow nature of these areas and pattern of the dredging activity means vessels are likely to be operating at a slow speed in these areas.	Shellfish dredging is prohibited between 23rd December and 25th May. Shellfish dredging is excluded all year round from Holes Bay, Lytchett Bay, upper Wych Lake and upper Middlebere Lake.

Black-tailed godwit Shelduck Waterbird assemblage (Non-breeding – winter and//or passage season)			site boundary) which supports the feature for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing, feeding).		As stated by Natural England and recognised in the above statement with regards to bait dragging, pump-scoop dredging is unlikely to occur over saltmarsh. This is further supported by a lack of literature on the impacts of towed gear with regards saltmarsh habitats (i.e. Hall *et al*., 2008; Roberts *et al*., 2010).	Shellfish dredging is excluded all year round from the closure areas at Green Island and Seagull Island. Temporal closures prohibit shellfish dredging during key sensitive times of the year (1st November-23rd December & 25th May to 30th June) during the fishing season in key feeding and roosting areas for overwintering birds (Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keysworth and parts of Arne Bay and Brands Bay). The level of fishing effort is capped through the allocation of a set number permits at a level of maximum of 45 vessels. The Southern IFCA 'Poole Harbour Saltmarsh Code of Practice' (Annex 10) sets out the following provision in order to prevent disturbance to breeding and roosting bird species and promote protection of supporting habitat and apply to any person carrying out dredge fishing activity within Poole Harbour between 25th May and 23rd December: • No person should fish using a dredge within 10 metres of saltmarsh
Common tern Sandwich tern Mediterranean gull (Breeding (summer) season)	Saltmarsh: Atlantic salt meadows *Spartina* swards	Supporting habitat: extent and distribution of supporting habitat for the breeding season	Maintain the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding)			
Avocet	All habitats	Supporting habitat:	Reduce the frequency,	Visual disturbance and above-water noise were identified as	During the 2016/17 and 2017/18 seasons, 43 out of 45 permit entitlements were	Shellfish dredging is excluded all year round from Holes Bay,

Little egret Eurasian spoonbill Black-tailed godwit Shelduck Waterbird assemblage (Non-breeding (winter and/or passage) season) Common tern Mediterranean gull (Breeding (summer) season)		disturbance caused by human activity	duration and / or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	potential pressures of pump-scoop dredging. A pump-scoop dredge uses a hydraulic pump to power water jets attached to the front edge of the basket dredge. As such, the noise associated with pump-scoop dredging has previously been raised as a concern (Parker & Pinn, 2005). Disturbance can result in displacement when birds are unable to use an area due to the magnitude of disturbance. The effects of disturbance can include a reduction in the survival of displaced individuals and effects on the population size. The movement of birds to less suitable feeding areas can lead to increased densities and interspecific competition. Disturbance can cause birds to take flight which increase energy demands and reduce food intake with potential consequences for survival and reproduction. The significance of disturbance is likely to depend on the availability of alternative undisturbed areas for birds and the frequency, seasonality and intensity at which shellfish dredging takes place. Responsiveness to disturbance is largely thought to be a species-specific trait.	taken out. In the 2018/19 and 2019/20 seasons 45 permits were taken (one permit was not fished during the 2018/19 season). The number of permit holders fishing per month varies. The average number of active fishers per month was highest in 2018 and 2019 with 43, compared to 33 in 2017 and 2016, and 27 in 2015. Sightings data show shellfish dredging occurs intertidally (at high tide) in distinct and relatively small spatial areas. Activity is largely concentrated in the area of Holton Mete and the Wards, with activity also taking place east of Giggers Island, Arne Bay, Middlebere Lake, Wych Lake, Ower Lake and Brands Bay. Using the co-location analysis, shellfish dredging may have some effect on sites used by avocet, black-tailed godwit, Mediterranean gull, shelduck, curlew, redshank and greenshank with potentially sensitive sites including outer Wych and Middlebere, Arne Bay, Ower Bay, Newton Bay, Brands Bay, Holtojn Mere and Keysworth. Avocet are present from September to February, black-tailed godwit are present from September to March and Mediterranean gull are present from April to August. Shelduck, curlew, redshank and greenshank are part of the overwintering bird assemblage and as such will be present during the winter months (September – March). The wind-sensitivity farm indicates black-tailed godwits have moderate to low	Lytchett Bay, upper Wych Lake and upper Middlebere Lake which represent key feeding and roosting areas for designated bird species. Shellfish dredging is excluded all year round from the closure areas at Green Island and Seagull Island. Temporal closures prohibit shellfish dredging during key sensitive times of the year (1st November to 23rd December & 25th May to 30th June) during the fishing season in key feeding and roosting areas for overwintering birds (Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keysworth and parts of Arne Bay and Brands Bay). Shellfish dredging is prohibited between 23rd December and 25th May. This corresponds to the period of highest disturbance sensitivity due to the cold weather conditions and availability of food resources. The start of the fishing season takes place after the start of the gull breeding season (1st April). Shellfish dredging is only permitted between 06:00 and 18:00 each day and from Monday to Saturday.

					sensitivity and curlew and shelduck have very low sensitivity to offshore wind farm developments. The escape flight distance exhibited by the shelduck has been reported to vary from 126 metres in response to disturbance by researchers to 400 m in response to surfers. The escape flight distance exhibited by redshank has been reported to vary from 92 in response to disturbance by researchers to 260 m in response to people. In a Poole Harbour disturbance study shelduck were highlighted to have a higher probability of major flight. The mitigation measures outlined reduces the likelihood of disturbance through a number of permanently and seasonally closed areas which not only provide areas where no disturbance through pump-scoop dredging can occur in the overwintering period, it also provides alternative undisturbed sites for birds. These sites were chosen based on a number of criteria including bird sensitive areas and in areas where declines in some species have been observed. The timing of the fishing season eliminates any disturbance over a large proportion of the overwintering period and beginning of the Mediterranean gull breeding season. Additional protection is afforded for Mediterranean gulls through guidelines set out in the code of practice.	Disturbance is minimised through the allocation of a set number permits, thus capping fishing effort at a level of maximum of 45 vessels. The Southern IFCA 'Poole Harbour Saltmarsh Code of Practice' (Annex 10) sets out the following provision in order to prevent disturbance to breeding and roosting bird species and promote protection of supporting habitat and apply to any person carrying out dredge fishing activity within Poole Harbour between 25th May and 23rd December: - No person should fish using a dredge within 10 metres of saltmarsh
Avocet Little egret Eurasian spoonbill	Intertidal mud Intertidal mixed sediments Intertidal sand and muddy sand	Supporting habitat: food availability within supporting habitat	Maintain the distribution, abundance and availability of key prey items (e.g. Gammarus,	Removal of target and non-target species were identified as potential pressures of pump-scoop dredging. Shellfish dredging can lead to impacts on non-target species through physical disturbance or damage to supporting habitats	During the 2016/17 and 2017/18 seasons, 43 out of 45 permit entitlements were taken out. In the 2018/19 and 2019/20 seasons 45 permits were taken (one permit was not fished during the 2018/19 season). The number of permit holders fishing per month varies. The average number of active fishers per month was highest in 2018 and	Shellfish dredging is excluded all year round from Holes Bay, Lytchett Bay, upper Wych Lake and upper Middlebere Lake and as such protect key feeding areas for designated bird species. These areas provide alternative undisturbed foraging sites.

			Corophium, flies, beetles, Nereis, Hydrobia, Cardium, gobies) at preferred prey sizes (e.g. fish or worms between 4-15 mm long).	which in turn can cause changes in community structure, the removal and mortality of non-target organisms through interaction with fishing gear and smothering of prey through increased sedimentation. Generally, bottom towed fishing gear has shown to reduce biomass, production, species richness and diversity communities. In a meta-analysis of 38 studies, intertidal harvesting was shown to cause a reduction in abundance of benthic invertebrates by 42% and 39% reduction in species diversity in the first 10 days following disturbance (Clark *et al*., 2017). The relative impact of shellfish dredging on benthic organisms is species-specific and often related to their biological characteristics and physical habitats. A number of studies have found soft-bodied, deposit feeding crustaceans, polychaetes and ophiuroids to be most affected by dredging activities (Collie *et al*., 2000; Constantino *et al*., 2009; Clark *et al*., 2017). Recovery of affected species is largely species-specific, with short-lived and small benthic organisms, such as polychaetes having excellent recolonization capacities	2019 with 43, compared to 33 in 2017 and 2016, and 27 in 2015. Sightings data show shellfish dredging occurs intertidally (at high tide) in distinct and relatively small spatial areas. Activity is largely concentrated in the area of Holton Mete and the Wards, with activity also taking place east of Giggers Island, Arne Bay, Middlebere Lake, Wych Lake, Ower Lake and Brands Bay. Using the co-location analysis, shellfish dredging may have some effect on sites used by avocet, black-tailed godwit, Mediterranean gull, shelduck, curlew, redshank and greenshank with potentially sensitive sites including outer Wych and Middlebere, Arne Bay, Ower Bay, Newton Bay, Brands Bay, Holtojn Mere and Keysworth. Avocet are present from September to February, black-tailed godwit are present from September to March and Mediterranean gull are present from April to August. Shelduck, curlew, redshank and greenshank are part of the overwintering bird assemblage and as such will be present during the winter months (September – March). Using the co-location analysis and information on diet (table 5), the species likely to be sensitive to changes in food availability are black-tailed godwit, shelduck, curlew, redshank and greenshank. Prey preferences exhibited by these species in particular include *Scrobicularia*, *Macoma*, *Hediste* and N*ereis*. A number of studies have reported increases in M*acoma* following disturbance	Shellfish dredging is excluded all year round from the closure areas at Green Island and Seagull Island. Temporal closures prohibit shellfish dredging during key sensitive times of the year (1st November-23rd December & 25th May to 30th June) during the fishing season in key feeding areas for overwintering birds (Wych Lake, Middlebere Lake, Newton Bay, Ower Bay, Keysworth and parts of Arne Bay and Brands Bay). Shellfish dredging is prohibited between 23rd December and 25th May. This largely overlaps with the overwintering periods for a number of designated bird species. Disturbance to intertidal sediments is minimised through the allocation of a set number permits, thus capping fishing effort at a level of maximum of 45 vessels. A number of restrictions are imposed on the gear configuration of the dredge basket including specified bar spacing which allows small invertebrates to pass through the dredge. There is a requirement to sort catch immediately and return
Black-tailed godwit	Intertidal mud Intertidal mixed sediments Intertidal sand and muddy sand	Supporting habitat: food availability within the intertidal	Maintain overall prey availability (e.g. Macoma, Cardium, Nereis) at preferred prey sizes.			
Shelduck	Intertidal mud Intertidal mixed sediments Intertidal sand and muddy sand	Supporting habitat: food availability within the intertidal	Restore availability of key prey species (e.g. especially Hydrobia, but also Nereis, Corophium, hatching midges) at preferred prey sizes.			

				(Coen, 1985; Kaiser *et al*., 2006).	from harvesting (Ferns *et al*., 2000; Clark *et al*., 2017). Studies specific to the impacts of pump-scoop dredging in Poole Harbour report increases in *Hediste diversicolor*, (Clark *et al*.,2018) as well as other species considered as key bird prey items including *Arenicola marina* and *Corophium* spp (Parker & Pinn, 2005). Many small benthic organisms, including crustaceans, polychaetes and molluscs, some of which are listed above, have short generation times and high fecundities, both of which enhance their capacity for rapid recolonization (Coen, 1995). In such instances, the effect of shellfish dredging is likely to only be short term. The mitigation measures outlined reduces the likelihood of disturbance through the removal of target and non-target species through a number of permanently and seasonally closed areas which provide a series of foraging and feeding areas where no pump-scoop dredging can occur in the overwintering period (or all year round in a number of sites). These sites were chosen based on a number of criteria including bird sensitive areas, in areas where declines in some species have been observed and where sediment recovery is likely to be slow i.e. low energy sites. The timing of the fishing season eliminates any disturbance of intertidal mudflats over a large proportion of the overwintering period and allows for the recovery of impacted communities over a five-month period.	all shellfish under minimum size restrictions (as per Southern IFCA byelaws), as well as bycatch, to the water. The Southern IFCA 'Poole Harbour Saltmarsh Code of Practice' (Annex 10) sets out the following provision in order to prevent disturbance to breeding and roosting bird species and promote protection of supporting habitat and apply to any person carrying out dredge fishing activity within Poole Harbour between 25th May and 23rd December: - No person should fish using a dredge within 10 metres of saltmarsh

6.7 Monitoring and Control Plan

The PHDPF M&CP establishes a robust framework for monitoring and feedback within the clam and cockle fishery, supporting its management through a flexible permit system. The annual management will be informed by the plan, ensuring the use of the best available evidence on the interactions between dredging practices and harvested species. The plan transitions from the annual review of the Habitats Risk Assessment (HRA) to an adaptive monitoring program, which includes both on-site and SPA status monitoring of key variables such as Catch per Unit Effort (CPUE), Landings per Unit Effort (LPUE), and evidence of impacts or mitigating factors, along with any changes in fishery or environmental parameters within the Poole Harbour SPA.

If on-site monitoring reaches a predetermined trigger threshold for CPUE or LPUE data, the Authority will consider the most appropriate management for the forthcoming fishing season, such as changes in permit conditions under the PHDPB. Following the implementation of additional management, if monitoring outputs exceed the recovery threshold, the authority will reassess whether further management is necessary. Outputs from SPA monitoring will also guide the consideration of a potential revision of the HRA, should the associated trigger mechanisms indicate the need for intervention.

The potential pressures, associated impacts, level of exposure and mitigation measures should further management intervention be deemed necessary under the M&CP, are summarised in table 10.

Feature	Supporting habitat(s)	Attribute	Target	Potential Pressure(s) and Associated Impacts	Nature and Likelihood of Impacts	Mitigation measures
All	All	All	As per specific species	As listed in table above for relevant habitats	As listed in table above for relevant habitats	There is the potential for management changes as a result of control mechanisms being activated through the M&CP, dependent on a decision by the Authority in reviewing best available evidence. Potential additional permit conditions which could be implemented would result in reducing effort within the fishery therefore there is no risk of management changes in this regard resulting in adverse impact to the SPA. In the event that the outcome of the control mechanism process determined management intervention where there was an identified potential risk to site integrity then the specific management measures would be assessed through an addendum to the HRA, to be annexed to the document following seeking advice from Natural England.

7 Conclusion[13]

In order to conclude whether the issuing of permits under the Poole Harbour Dredge Permit byelaw, which will allow up to 45 vessels to undertake pump-scoop dredging (subject to a number of permit conditions), has an effect on the integrity of the Poole Harbour SPA, it is necessary to assess whether the impacts of the permitted activity (pump-scoop dredging) will hinder the site's conservation objectives, namely:

"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site

The review of research into the impacts of shellfish dredging (detailed in section 6.2) identifies that this activity has the potential to disturb regularly occurring migratory birds and waterfowl species and lead to changes in prey availability. Disturbance can occur visually or through noise. Changes in prey availability mainly relate to the indirect effects of pump-dredging which include interactions with fishing gear through crushing, burial or exposure. It is also noted that there is a potential risk of physical changes to saltmarsh habitat although peer-reviewed research is lacking.
It is therefore recognised that this activity has the potential to lead an adverse effect upon the following SPA attributes:

- Supporting habitat: disturbance caused by human activity
- Supporting habitat: extent and distribution of supporting non-breeding habitat
- Supporting habitat: extent and distribution of supporting habitat for the breeding season
- Supporting habitat: food availability within supporting habitat
- Supporting habitat: food availability within the intertidal

These potential impacts and risks to the integrity of the site are mitigated through a number of conditions applied under the permit which;

- Provides a network of areas where there is little or no noise and visual disturbance and supporting habitat disturbance including; bird sensitive areas, areas where declines in some bird species have been observed that are likely to be in part attributable to site specific pressures, Mediterranean gull nesting sites at Seagull Island, areas where sediment recovery is likely to be slow (low energy sites), fringing saltmarsh, reedbed and lowland water habitats supporting breeding birds. Shellfish dredging is excluded in Lytchett Bay, Holes Bay, and inner regions Wych Lake and Middlebere Lake all year round. Shellfish dredging is also excluded from defined areas at Green Island and Seagull Island all year round. Shellfish dredging is excluded from overwintering, feeding and roosting bird sensitive areas at Wych Lake,

[13] If conclusion of adverse effect alone an in-combination assessment is not required.

Middlebere Lake, Newton Bay, Ower Bay, Keysworth Bay and parts of Arne Bay and Brands Bay during key sensitive times of the year for bird species between 25th May and 30th June, 1st November and 23rd December. The 'Poole Harbour Saltmarsh Code of Practice' provides an extra voluntary provision to reduce disturbance and reduce the risk of impacts to supporting habitats year-round.

- Manage shellfish dredging throughout the Harbour in a way that minimises its impact on prey availability and disturbance, through restrictions in the number of permits (45), the design of the pump and dredge used and restrictions in the timing of when the fishery takes place (closed from 24th December to 24th May). The prohibition on dredge fishing mitigates over-wintering bird disturbance during this lean period.
- Allow for an assessment of fishing effort of key commercial species including the Manila clam and common cockle, which are prey items for some of the designated bird species, through the requirement for catch data indicating, for each month, the hours fished, the quantities of species caught, the buyer(s) and the zone from which the catch was taken. This data can be used to indicate trends in fishing activity and can be related to data from the Poole Harbour Bivalve Stock Assessment to ensure that the level of fishing remains sustainable and will not have an adverse impact on prey availability of the commercially harvested species.

The PHDPF M&CP provides a comprehensive framework for monitoring and managing the clam and cockle fishery, utilising a flexible permit system and the best available evidence on dredging practices and species interactions. The plan shifts from an annual HRA review to an adaptive monitoring program, incorporating on-site and SPA monitoring of key variables. If monitoring triggers are reached for CPUE or LPUE, the Authority will assess the need for management adjustments, such as changes to permit conditions. Should monitoring outputs exceed recovery thresholds, the need for further management will be reconsidered. SPA monitoring outcomes will inform potential revisions to the HRA if required, linked to monitoring variables. Potential management changes under the action plan, as a result of control mechanisms being activated through the M&CP are dependent on a decision by the Authority in reviewing best available evidence. Potential additional permit conditions which could be implemented would result in reducing effort within the fishery therefore there is no risk of management changes in this regard resulting in adverse impact to the SPA. In the event that the outcome of the control mechanism process determined management intervention where there was an identified potential risk to site integrity then the specific management measures would be assessed through an addendum to the HRA, to be annexed to the document following seeking advice from Natural England.

Taking into account all the evidence presented in this Appropriate Assessment, including scientific literature, habitat feature data and sightings data, it is concluded that issuing of permits for 2025/26 season, and future seasons until the point at which the Appropriate Assessment is reviewed, under the Poole Harbour Dredge Permit byelaw will not hinder the site from achieving its conservation objectives and as such will not have an adverse effect upon on the integrity of the Poole Harbour SPA. As in previous years (2015/16, 2016/17, 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 2024/25) it is therefore proposed the number of permits issued should remain at 45. This reflects the current level of effort which is considered to be sustainable. As outlined above, the permit conditions and Code of Practice will continue to mitigate against any potential impacts of the fishery on the bird features and supporting habitats of this site. In addition, required catch reporting will allow catch rates and fishing effort to be monitored. Furthermore, the permit is flexible and Southern IFCA can therefore review the suitability of the permit conditions, attach conditions to the permit and vary or revoke conditions attached to the permit at any time after the permits have been issued, following a set process, guided through the outputs of the M&CP. As such, any changes will have regard to the Authority's duties and obligations under section

153 and 154 of the Marine and Coastal Access Act 2009, advice from Natural England, new evidence in the form of scientific data or literature and/or any Habitats Regulations Assessment and any data from stakeholder consultation. This flexibility allows proportionate management of the dredge fishery in Poole Harbour whilst achieving the conservation objectives of the site.

8 In-combination assessment

Based on the mitigation measures, in the form of permit conditions, it is concluded that issuing 45 permits under the Poole Harbour Dredge Permit byelaw alone will not have an adverse effect on bird features and their supporting habitats within Poole Harbour SPA.

Under Article 6(3) of the Habitats Directive and outlined in the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019, the assessment of any plan or project likely to have a significant effect on a site within the National Site Network, must be assessed in combination with other plans or projects. Any commercial plan or project require a Habitat Regulations Assessment in their own right and must also account for any in-combination effects with the Poole Harbour Dredge Permit byelaw.

Commercial plans and projects that occur within or that may affect the Poole Harbour SPA are considered in below. The impacts of these plans or projects require a Habitat Regulations Assessment in their own right and must also account for any in-combination effects with the Poole Harbour Dredge Permit byelaw.

Project	Status	In-combination Assessment
Poole Local Plan	Ongoing	Poole Local Plan describes the requirement that Poole District must add at least 14,200 homes between 2013 and 2033. An increase in homes will directly increase the number of people living in the area. As it is well known that those who live close to the sea often take recreational visits to these areas it is likely that this will lead to an increased level of disturbance to protected overwintering birds around Poole Harbour. Therefore, one common impact pathway between this project and the Poole Harbour Dredge Permit of visual disturbance/above water noise is possible. However, through this assessment of the Poole Harbour Permit Dredge Byelaw it is clear that these pressures have been screened out from having an adverse effect on the integrity of the site. Furthermore, each individual housing development will have to undergo a Habitats

		Regulations Assessment of its own as well as an in-combination assessment with fishing activity to ensure it does not cause adverse effect to the integrity of Poole Harbours MPAs. As these developments are not yet in the planning stages, and are likely to come in the form of many smaller developments over a long period of time, and with the consideration of the permits mitigating factors considered within this HRA it is unlikely that there will be a combination effect between those developments and the Poole Dredge Permit Byelaw.
MLA/2024/00355: Reconstruction of the Sandbanks Ferry Jetty	Ongoing- application stage	The proposed plan involves the reconstruction of the ferry jetty connecting Sandbanks and Brownsea Island to ensure the safe operation of the ferry service. The site of interest is not located near any shellfish beds; therefore, the impact of the ferry reconstruction works will not combine with or affect the impact of the Poole Harbour dredge fishery on its site features. Southern IFCA has recommended that the applicant engage with local stakeholders to gain a deeper understanding of the potential impacts and to develop appropriate mitigation measures throughout the project.
MLA/2023/00510: Hamworthy Barracks Jetty Works	Ongoing- assessment stage	The plan is currently in its assessment stage to improve waterside facilities at Hamworthy Barracks. The proposed works, specifically the piling process, have the potential to increase suspended sediment concentrations in the water, potentially affecting shellfish beds that are vital for the fishery. Southern IFCA has recommended an assessment to determine where the disturbed sediment may be carried within the harbour to assess potential impacts on these fishing areas. Southern IFCA suggests that the potential impacts should be considered under Marine Plan Policy S-FISH-2, which requires proposals that may adversely affect fishing or aquaculture sites to demonstrate efforts to avoid, minimize, or mitigate these impacts. The project would require an HRA as well as an in-combination assessment with fishing activity to ensure no adverse effect to the SPA. The impacts of sediment change from dredging has been addressed through this HRA and appropriately mitigated through permit conditions and the Saltmarsh Code of Conduct therefore there is no risk of an in-combination effect.

8.1 Fishing Activity In-combination Assessment

The Poole Harbour Fishery Order 2015	The Poole Harbour Fishery Order 2015 is a several order which sets an area within the Harbour within which the Southern IFCA can lease out areas of seabed for aquaculture. Leases are issued on a five yearly basis and the current leases are for the period 2020-25. The conclusion of the 2020-25 HRA for the issuing of leases under the Order was that the issuing of leases would not have an adverse effect on the integrity of the Poole Harbour SPA. Lease beds under the Order are severed from the public right to fish therefore there is no potential for spatial overlap of the two activities within Poole Harbour. Based on this and the conclusion of both this HRA and the HRA for the issuing of leases under the Order of no adverse effect on the integrity of the SPA it is concluded that there will be no in-combination effect on the integrity of the Poole Harbour SPA from these two fishing activities.
Light otter trawl	Light otter trawls do not interact with the features. At a TSLE level no common pressures between light otter trawl and the Dredge Permit Byelaw were screened in. Therefore, there is unlikely to be any in-combination effect between the two gear types.
Pots/creels	At a TSLE level no common pressures between static gear and the Dredge Permit Byelaw were screened in. Therefore, there is unlikely to be any in-combination effect between the two gear types.
Handlines (rod/gurdy) & Jigging/trolling	At a TSLE level no common pressures between handline/jigging and the Dredge Permit Byelaw were screened in. Therefore, there is unlikely to be any in-combination effect between the two gear types.
Net Fishing	At a TSLE level no common pressures between net fishing and the Dredge Permit Byelaw were screened in. Therefore, there is unlikely to be any in-combination effect between the two gear types.

8. Summary of consultation with Natural England

Date	Contact	Sent	Comments Received
28th January 2025	Dr Richard Morgan	28th January 2025	

9 Integrity test

Based on the mitigation measures, in the form of permit conditions, it is concluded that the issuing of permits under the Poole Harbour Dredge Permit byelaw for the 2025/26 season, and subsequent seasons until such a time as the Appropriate Assessment is reviewed, will not have an adverse effect, alone or in-combination, on bird features and their supporting habitats within Poole Harbour SPA. As in previous years (2015/16, 2016/17, 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 2024/25) it is therefore proposed the number of permits issued should remain at 45.

Annex 1: Reference list

Atkinson, P.W., Austin, G.E., Burton, N.H.K., Musgrove, A.J., Pollitt, M., Rehfisch, M.M., 2000. WeBS Alerts 1998/99: Changes in Numbers of Wintering Waterbirds in the United Kingdom at National, Country and Special Protection Area (SPA) Scales (BTO Research Report No. 239). BTO, Norfolk. 127 pp.

Atkinson, P.W., Clark, N.A., Bell, M.C., Dare, P.J., Clark, J.A. & Ireland, P.L. 2003. Changes in commercially fished shellfish stocks and shorebird populations in the Wash, England. *Biol. Cons*., **114**, 127-141.

Atkinson, P.W., Maclean, I.M.D. & Clark, N.A. 2010. Impacts of shellfisheries and nutrient inputs on waterbird communities in the Wash, England. *J. Appl. Ecol*., **47**, 191-199.

Bannister, R.C.A., 1998. Analysing cockle and mussel stocks. Part 1—The Wash. *Shellfish News*, **6**, 25–29.

Bannister, R.C.A., 1999. The Dr Walne memorial lecture. A review of shellfish resources and their management. In: Proceedings of the Thirtieth Annual Shellfish Conference of the Shellfish Association of Great Britain. SAGB, London.

Baudains, T. P. & Lloyd, P. 2007. Habituation and habitat changes can moderate the impacts of human disturbance on shorebird breeding performance. *Anim. Conserv*., **10,** 400-407.

Beale, C. M. & Monaghan, P. 2004. Behavioural responses to human disturbance: a matter of choice? *Anim. Behav*., **68,** 1065-1069.

Beukema J.J. & Dekker R. 2018. Effects of cockle abundance and fishery on bivalve recruitment. *Journal of Sea Research*. **140.** Pp81-86. https://doi.org/10.1016/j.seares.2018.07.013

Blumstein, D.T., Anthony, D.T., Harcourt, R.G. & Ross, G. 2003. Testing a key assumption of wildlife buffer zones: is flight initiation distance a species-specific trait? *Biol. Cons*., **110**, 97-100.

Blumstein, D. T., Fernandez-Juricic, E., Zollner, P. A. & Garity, S. C. 2005. Inter-specific variation in avian responses to human disturbance. *J. Appl. Ecol.*, **42**, 5, 943-953

Bradshaw, C., Veale, L.O., Hill, A.S., & Brand, A.R. 2000. The effects of scallop dredging on gravelly seabed communities. In Kaiser, M.J. & de Groots, S.J. (Eds). *The Effects of Fishing on Non-Target Species and Habitats: Biological Conservation and Socio-Economic Issues*. Oxford, Blackwell Science, pp. 83-104.

Brearey, D.M. 1982. The feeding ecology and foraging behaviour of Sanderling *Calidris alba* and Turnstone *Arenaria interpres* at Teesmouth N. E. England. Theses. Durham University. UK. 412 pp.

Burd, F. 1992. *Erosion and Vegetation Change on the Saltmarshes of Essex and North Kent between 1973 and 1988*. Peterborough, UK, pp. 116

Burden, A., Garbutt, R. A., Evans, C. D., Jones, D. L. and Cooper, D. M. 2013. Carbon sequestration and biogeochemical cycling in saltmarsh subject to coastal managed realignment. *Est. Coast. Shelf. Sci.*, **120**, 12-20

Burger, J. 1981. The effect of human activity on birds at a coastal bay. *Biol. Cons.*, **21**, 231-241.

Burton, N.H.K., Rehfisch, M.M., Clark, N.A. & Dodd, S.G. 2006. Impacts of sudden winter habitat loss on the body condition and survival of redshank *Tringa totanus*. *J. Appl. Ecol.*, **43**, 464-473.

Burton, N.H.K., Rehfisch, M.M., Clark, N.A. & Dodd, S.G. 2006. Impacts of sudden winter habitat loss on the body condition and survival of redshank *Tringa totanus*. *J. Appl. Ecol.*, **43**, 464-473.

Clark, N.A. 1993. Wash oystercatchers starving. *BTO News*, **185**, 1, 24.
Clarke L.J., Hughes K.M., Esteves L.S., Herbert R.J.H. and Stilman R.A. 2017. Intertidal invertebrate harvesting: a meta-analysis of impacts and recovery in an important waterbird prey resource. *Marine Ecology Progress Series*. Vol **584**: 229-244.

Clarke, L., 2018. *Ecosystem impacts of intertidal invertebrate harvesting: from benthic habitats to bird predators.* Doctorate Thesis (Doctorate). Bournemouth University. Available at: http://eprints.bournemouth.ac.uk/31136/. Date Accessed: 24/09/2018

Clarke, L.J., Esteves, L.S., Stillman, R.A. & Herbert, R.J.H. 2018a. Impacts of a novel shellfishing gear on macrobenthos in a marine protected area: pump-scoop dredging in Poole Harbour, UK. *Aquat. Living Resour.*, **31**, 5, https://doi.org/10.1051/alr/2017044.

Clarke, L.J., Stillman, R.A. & Herbert, R.J.H. 2018b. Monitoring of the Solent bottom-towed fishing gear management measures: a focused project on shellfish dredging in Langstone Harbour. BU Global Environmental Solutions (BUG) report (BUG2801) to Natural England. 100 pp.

Coen, L.D. 1995. A review of the potential impacts of mechanical harvesting on subtidal and intertidal shellfish resources. SCDNR-MRRI, 46 pp.

Collie, J.S., Hall, S.J., Kaiser, M.J. & Poiner, I.R. 2000 A quantitative analysis of fishing impacts on shelf-sea benthos. *J. Anim. Ecol.*, **69**, 785-798.

Collie, J.S., Hermsen, J.M., Valentine, P.C. & Almeida, F.P. 2005. Effects of fishing on gravel habitats: assessment and recovery of benthic megafauna on Georges Bank. American Fisheries Society Symposium. American Fisheries Society. 325 pp.

Constantino, R., Gaspar, M.B., Tata-Regala, J., Carvalho, S., Curdia. J., Drago, T. Taborda, R. 2009. Clam dredging effects and subsequent recovery of benthic communities at different depth ranges. *Mar. Environ. Res.*, **67**, 89-99.

Cox, R., Lancaster, J. & Rutherford, V. 2014. Review of Potential Impacts on the Diet of Sanderlings and Ringed Plovers and their Foraging Distribution. Tidal Lagoon Swansea Bay. 1063030. Natural Power. 15 pp.

Cox, R., Wadsworth, R. A. and Thomson, A. G. 2003. Long-term changes in salt marsh extent affected by channel deepening in a modified estuary. *Cont. Shelf. Res.,* 474-479

Durell, S.E.A. Le V. Dit. & Kelly, C.P. 1990. Diets of Dunlin *Calidris alpine* and Grey Plover *Pluvialis squatarola* on the Wash as determined by dropping analysis. *Bird Study*, **37**, 1, 44-47.

Durell, S.E.A. Le V. dit., Stillman, R.A., Triplet, P., Aulert, C., Biot, D.O. dit., Bouchet, A., Duhamel, S., Mayot & Goss-Custard, J.D. 2005. Modelling the efficacy of proposed mitigation areas for shorebirds: a case study on the Seine estuary, France. *Biol. Cons*., **123**, 67-77.

Dyrynda, P. 1995. Impacts of bait dragging on the seabed within Poole Harbour. Report to Southern Sea District Fisheries Committee from Marine Environmental Research Group, University of Wales, Swansea.

European Commission. 2009. European Union Management Plan 2009-2011. Redshank *Tringa totanus*. Technical Report – 2009 – 031. 44 pp.

Ferns, P.N., Rostron, D.M. & Sima, H.Y. 2000. Effects of mechanical cockle harvesting on intertidal communities. *J. Appl. Ecol*., 37. 464-474.

Gardiner, S. C. 2015. Physical drivers of saltmarsh change in enclosed microtidal estuaries. PhD Thesis, University of Southampton, Southampton, pp. 238

Garthe, S. & Hüppop, O. 2004. Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. *J. Appl. Ecol*., **41**, 724-734.

Gill, J.A., Sutherland, W.J. & Watkinson, A.R. 1996. A method to quantify the effects of human disturbance on animal populations. *J. Appl. Ecol.,* **33**, 786-792.

Gill, J.A., Norris, K. & Sutherland, W.J. 2001a. The effects of disturbance on habitat use by black-tailed godwits *Limosa limosa*. *J. Appl. Ecol*., **38**, 846-856.

Gill, J.A., Norris, K. & Sutherland, W.J. 2001b. Why behavioural responses may not reflect the population consequences of human disturbance. *Biol*. *Conserv*. **97,** 265–268.

Goss-Custard, J.D. & Verboven, N. 1993. Disturbance and feeding shorebirds on the Exe estuary. Wader Study Group Bull. 68.: 59-66.

Goss-Custard, J.D. 1977. The ecology of the Wash. III. Density-related behaviour and the possible effects of a loss of feeding grounds on wading birds (Charadrii). *J. Anim. Ecol*., **14**, 721-739.

Goss-Custard, J.D. 1993. The effect of migration and scale on the study of bird populations: 1991. Witherby Lecture. Bird Study, 40, 81-96.

Goss-Custard, J.D., Stillman, R., West, A.D., Caldow, R.W.G., Triplet, P., Durell, S.E.A. Le V.dit. & McGrorty, S. 2004. When enough is not enough: Shorebirds and shellfishing. *Proc. R. Soc. Lond. B*., **271**, 233-237.

Goss-Custard, J.D., Triplet, P., Sueur, F. & West, A.D. 2006. Critical Thresholds of Disturbance by People and Raptors in Foraging Wading Birds. *Biol. Cons.*, **127**, 88–97.

Goss-Custard, J.D., Clarke, R.T., Durell, S.E.A. le V. dit, Caldow, R.W.G. & Ens, B.J. 1995. Population consequences of winter habitat loss in a migratory shorebird. II. Model predictions. *J. Appl. Ecol.*, **32**, 337-351.

Goss-Custard, J.D., Durell, S.E.A. le V. dit, Goater, C.P., Hulscher, J.B., Lambeck, R.H.D., Meininger, P.L. & Urfi, J. 1996. How oystercatchers survive the winter. In Goss-Custard, J.D. (Ed). *The Oystercatcher: From Individuals to Populations*. Oxford, UK, Oxford University Press. pp. 133–154.

Hall, S.J. & Harding, M.J.C. 1997. Physical disturbance and marine benthic communities: the effects of mechanical harvesting of cockles on non-target benthic infauna. *J. App. Ecol.*, 34, 497-517.

Hall, K., Paramor, O.A.L., Robinson L.A., Winrow-Giffin, A., Frid C.L.J., Eno, N.C., Dernie, K.M., Sharp, R.A.M., Wyn, G.C.& Ramsay, K. (2008). Mapping the sensitivity of benthic habitats to fishing in Welsh waters- development of a protocol. CCW [Policy Research] Report.

Hiddink, J.G. 2003. Effects of suction-dredging for cockles on non-target fauna in the Wadden Sea, *J. Sea. Res.*, **50**, 315-323

Hill, D., Hockin, D., Price, D., Tucker, G., Morriss, R. & Treweek, J. 1997. Bird disturbance: improving the quality and utility of disturbance research. *J. Appl. Ecol.*, **34**, 275-288.

Hulscher, J.B. 1982. The oystercatcher *Haematopus ostralegus* as a predator of the bivalve *Macoma balthica* in the Dutch Wadden Sea. *Ardea*, **70**, 89–152.

Jensen, A & Humphreys, John & Caldow, Richard & Cesar, Christopher. (2005). 13. The Manila Clam in Poole Harbour. Proceedings in Marine Science**. 7**. 10.1016/S1568-2692(05)80018-X.

Kaiser, M.J., Edwards, B. & Spencer, B.E. 1996. Infaunal community changes as a result of commercial clam cultivation and harvesting. *Aquat. Living Resour.,* 9, 57-63.

Kaiser, M.J., Clarke, K.R., Hinz, H., Austen, M.C.V., Somerfield, P.J. & Karakassis, I. 2006. Global analysis of response and recovery of benthic biota to fishing. *Mar. Ecol. Prog. Ser.*, **311**, 1-14

King, S., Maclean, I.M.D., Norman, T. & Prior, A. 2009. Developing Guidance on Ornithological Cumulative Impact Assessment for Offshore Wind Farm Developers. COWRIE. 129 pp.

Kirby, J., Davidson, N., Giles, N., Owen, M. & Spray, C. 2004. Waterbirds & Wetland recreation handbook. A review of issues and management practice. WWT. 128 pp.

Klaassen, M., Bauer, S., Madsen, J. & Tombre, I. 2006. Modelling Behavioural and Fitness Consequences of Disturbance for Geese Along Their Spring Flyway. *J. Appl. Ecol.*, **43**, 92–100.

Klein, M.L., Humphrey, S.R. & Percival, H.F. 1995. Effects of ecotourism on the distribution of waterbirds in a wildlife refuge. *Conserv. Biol.*, **9**, 1454-1465.

Lambeck, R., Goss-Custard, J.D. & Triplet, P. 1996. Oystercatchers and man in the coastal zone. In Goss-Custard, J.D. (Ed). The Oystercatcher: From Individuals to Populations. Oxford, Oxford University Press. pp. 289-326

Liley, D., Cruickshanks, K, Fearnley, H. & Lake, S. 2012 The effect of bait collection on waterfowl foraging behaviour in Holes Bay, Poole Harbour. Report for Natural England. Footprint Ecology Ltd., Wareham, Dorset.

Liley, D. & Fearnley, H. (2012). Poole Harbour Disturbance Study. Report for Natural England. Footprint Ecology Ltd., Wareham, Dorset.

Liley, D., Stillman, R. A. & Fearnley, H. 2010. The Solent Disturbance and Mitigation Project: results of disturbance fieldwork 2009/10. Report to the Solent Forum. 71 pp.

Madsen, J. 1995. Impacts of disturbance on migratory waterfowl. *Ibis*, **137** (Supplement), S67-S74.

Mercaldo-Allen, R. & Goldberg, R. 2011. Review of the Ecological Effects of Dredging in the Cultivation and Harvest of Molluscan Shellfish. NOAA Technical Memorandum NMFS-NE-220. 84 pp.

Moller, I., Spencer, T., French, J. R., Leggett, D. J. and Dixon, M. 2001. The sea defence value of saltmarshes – a review in the light of field evidence from North Norfolk. *Journal of the Chartered Institute of Water and the Environmental Management*, 15, 109-116

Natural England. 2011. Bait collection in Poole Harbour European Marine Site. 19 pp.

Natural England. 2014. Poole Harbour Fishing Dredge Permit Byelaw – NEs advice on the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour SPA, RAMSAR and SSSI. 3 June 2014. Pp1-10

Natural England. 2018. Natural England Conservation Advice for Marine Protected Areas: Poole Harbour SPA. **A**vailable at: **https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9010111&SiteName=poole%20Harbour&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=**. **Date** Accessed: 17/01/18

Natural England, Wildside Ecology & Suffolk Coast and Heaths AONB. 2012. A simple method for assessment the risk of disturbance to birds and coastal sites. 32 pp.

Navedo, J.G. & Masero, J.A. 2008. Effects of traditional clam harvesting on the foraging ecology of migrating curlews (*Numenius arquata*). *J. Exp. Mar. Biol. Ecol.*, **355**, 1, 59-65.

Nisbet, I. C. T. 2000. Disturbance, habituation, and management of waterbird colonies – Commentary. *Waterbirds: The International Journal of Waterbird Biology,* **23,** 312-332.

Norris, K., Bannister, R.C.A. & Walker, P.W. 1998: Changes In the number of oystercatchers, *Haematopus ostralegus* wintering in the Burry Inlet in relation to the biomass of cockles *Cerastoderma edule* and its commercial exploitation. *J. Appl. Ecol.*, **35**, 75–85.

Piersma, T., Koolhaas, A., Dekinga, A., Beukema, J.J., Dekker, R. & Essink, K. 2001. Long-term indirect effects of mechanical cockle-dredging on intertidal bivalve stocks in the Wadden Sea. *J. Appl. Ecol*. **38**, 976-990.

Poole Harbour Commissioners. 2013. Poole Harbour Aquatic Management Plan. Available at: http://www.pooleharbouraqmp.co.uk/

Ravens, T. M., Thomas, R. C., Roberts, K. A. and Santschi, P. H. 2009. Causes of salt marsh erosion in Galvestion Bay, Texas. *J. Coastal. Res.,* **25**, 265-272

Rees, E. C., Bruce, J. H. & White, G. T. 2005. Factors affecting the behavioural responses of whooper swans (*Cygnus c. cygnus*) to various human activities. *Biol. Cons.,* **121,** 369-382

Riddington, R., Hassall, M., Lane, S.J., Rurner, P.A. & Walters, R. 1996. The impacts of disturbance on the behaviour and energy budgets of Brent Geese *Branta b. bernicla*. *Bird Study*, **43**, 269-279.

Roberts, C., Smith, C., Tillin, H. & Tyler-Walters, H. 2010. Review of existing approaches to evaluate marine habitat vulnerability to commercial fishing activities. Report: SC080016/R3.Environment Agency, Bristol. 150 pp.

Schmechel, F. 2001. Potential impacts of mechanical cockle harvesting on shorebirds in Golden and Tasman Bays, New Zealand. DOC Science Internal Series 19. New Zealand Department of Conservation. 51 pp.

Sewell, J., Harris, R., Hinz, H., Votier, S. & Hiscock, K. 2007. An Assessment of the Impact of Selected Fishing Activities on European Marine Sites and a Review of Mitigation Measures. SR591. Seafish Technology. 219 pp.

Spencer, B.E., Kaiser, M.J. & Edwards, D.B. 1998. Intertidal clam harvesting: benthic community change and recovery. *Aquac. Res.*, 29, 429-437.

Stillman, R. A., Goss-Custard, J. D., West, A. D., Durell, S., McGrorty, S., Caldow, R. W. G., Norris, K. J., Johnstone, I. G., Ens, B. J., Van der Meer, J. & Triplet, P. 2001. Predicting shorebird mortality and population size under different regimes of shellfishery management. *J. Appl. Ecol.,* **38,** 857-868.

Stillman, R., West, A.D., Goss-Custard, J.D., Caldow, R.W.G., McGrorty, S., Durrel, S.E.A. Le V.dit., Yates, M.C., Atkinson, P.W., Clark, N.A., Bell, M.C., Drare, P.J. & Mander, M. 2003. An individual behaviour-based model can predict shorebird mortality using routinely collected shellfishery data, *J. Appl. Ecol.*, **6**, 1090-1101.

Stillman, R.A., West, A.D., Caldow, R.W.G. & Durell, S.E.A. le V. dit. 2007. Predicting the effect of disturbance on coastal birds. *Ibis*, **149** (Suppl. 1), 9-14.

Stillman, R., Cox, J., Liley, D., Ravenscroft, N., Sharp, J. & Wells, M. 2009. Solent disturbance and mitigation project: Phase I report. Report to the Solent Forum. 103 pp.

Stillman, R.A., Moore, J.J., Woolmer, A.P., Murphy, M.D., Walker, P., Vanstaene, K.R., Palmer, D. & Sandersond, W.G. 2010. Assessing waterbird conservation objectives: An example for the Burry Inlet, UK. *Biol. Cons.*, **143**, 2617-2630.

Stillman, R. A., West, A. D., Clarke, R. T. & Liley, D. 2012. Solent Disturbance and Mitigation Project Phase II: Predicting the impact of human disturbance on overwintering birds in the Solent. Report to the Solent Forum. 121 pp.

Sutherland, W.J. & Goss-Custard, J.D. 1991. Predicting the consequences of habitat loss on shorebird populations. *Acta Congressus Internationalis Ornithologica*, **20**, 2199-2207.

Thiel, D., Jenni-Eiermann, S., Palme, R. & Jenni, L. 2011 Winter Tourism Increases Stress Hormone Levels in the Capercaillie *Tetrao urogallus*. *Ibis*, **153**, 122–133.

Thompson, J. R. 1994. Report on pilot project to investigate recreational disturbance to overwintering birds in the Solent 1993-94. Hampshire County Council.

Townend, I. H., Wang, Z. B. and Rees, J. G. 2007. Millennial to annual volume changes in the Humber Estuary. *Pro. Royal. Soc. A.,* **463**, 837-854

Townsend, D. J., & O'Connor, D. A. 1993. Some effects of disturbance to waterfowl from bait-digging and wildfowling at Lindisfarne National Nature Reserve, north-east England. In Davidson, N. & Rothwell, P. (Eds). *Disturbance to Waterfowl on Estuaries*. Wader Study Group Bulletin, 68 (Special Issue). pp. 47–52.

van de Wal, D. and Pye, K. 2004. Patterns, rates and possible causes of saltmarsh erosion in the Greater Thames area (UK). *Geomorphology*, **61**, 373-391

van Gils J.A., Piersma T., Dekinga A., Spaans B., Kraan C. 2006. Shellfish dredging pushes a flexible avian top predator out of a marine protected area. *PLoS Biol* **4(12):** pp376. DOI: 10.1371/journal.pbio.0040376

Veale, L.O., Hill, A.S., Hawkins, S.J. & Brand, A.R. 2000. Effects of long-term physical disturbance by commercial scallop fishing on subtidal epifaunal assemblages and habitats. *Mar.Biol.*, **137**, 2, 325-337.

Verhulst, S., Oosterbeek, K., Rutten, A.L. & Ens, B.J. 2004. Shellfish fishery severely reduces condition and survival of oystercatchers despite creation of large marine protected areas. *Ecol. Soc.*, **9**, 1, 17.

Walker, B. G., Dee Boersma, P. & Wingfield, J. C. 2006. Habituation of Adult Magellanic Penguins to Human Visitation as Expressed through Behaviour and Corticosterone Secretion. *Cons. Biol.,* **20,** 146-154.

West, A. D., Goss-Custard, J. D., Stillman, R. A., Caldow, R. W. G., Durell, S. & McGrorty, S. 2002. Predicting the impacts of disturbance on shorebird mortality using a behaviour-based model. *Biol. Cons.,* **106,** 319-328.

West, A.D., Goss-Custard, J.D., Durell, S.E.A. Le V.dit. & Stillman, R.A. 2005. Maintaining estuary quality for shorebirds: towards simple guidelines. *Biol. Cons.*, **123**, 211-224.

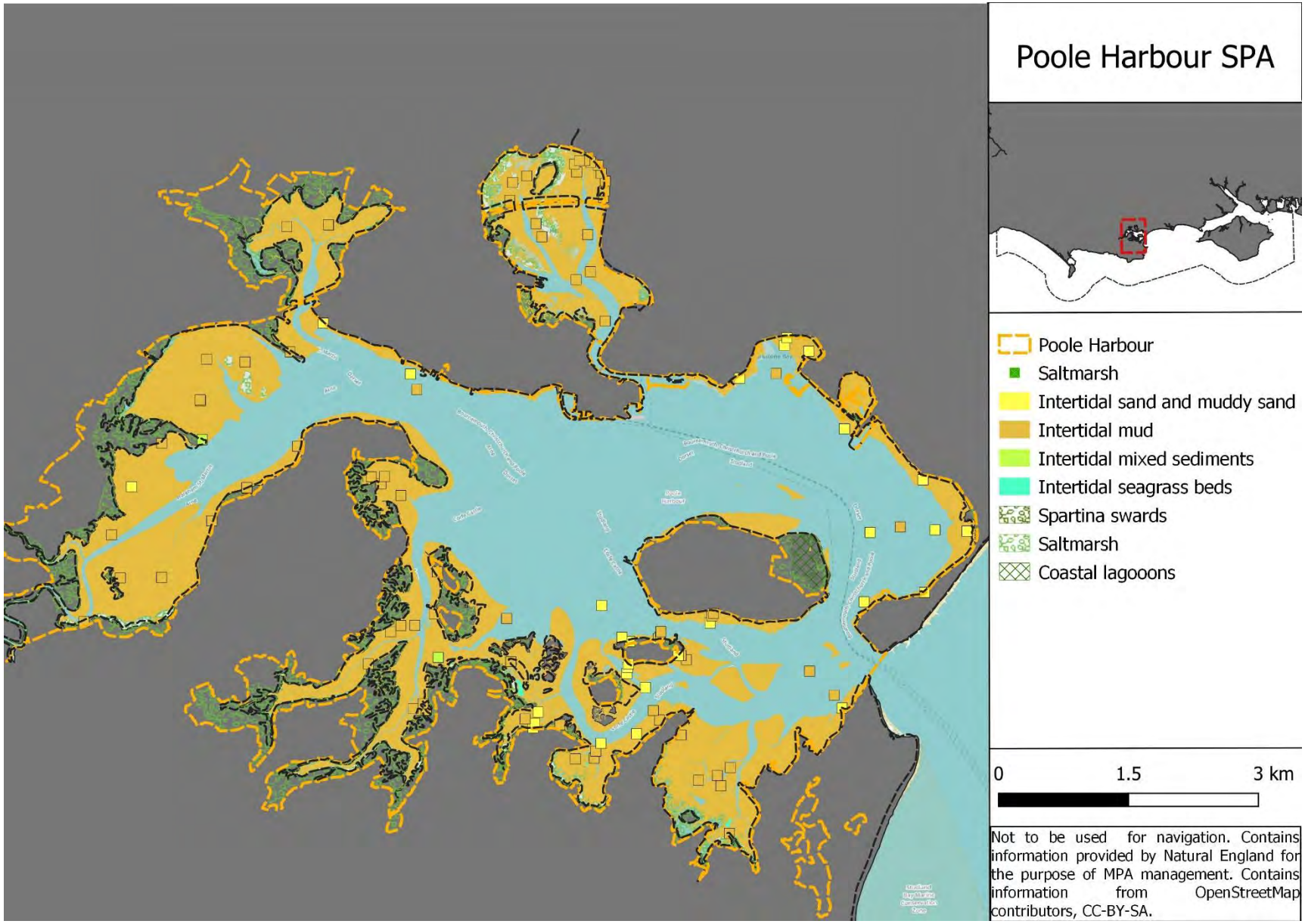
Wheeler, R., Stillman, R.A.S. & Herbert, R.J.H. 2014. Ecological impacts of clam and cockle harvesting on benthic habitats and waterfowl. Report to Natural England. Bournemouth University. 42pp.

Yasué, M. 2005. The effects of human presence, flock size and prey density on shorebird foraging rates. *J. Ethol.*, **23,** 199-204.

Zwarts, L., Cayford, J.T., Hulscher, J.B., Kersten, M. & Meire, P.M. 1996a. Prey size selection and intake rate. In Goss-Custard, J.D. (Ed). *The Oystercatcher: From Individuals to Populations*. Oxford, Oxford University Press.

Zwarts, L., Ens, B.J., Goss-Custard, J.D., Hulscher, J.B., Durell. S.E.A. le V.dit. 1996b. Causes of variation in prey profitability and its consequences for the intake rate of the oystercatcher *Haematopus ostralegus*. *Ardea*, **84a**, 229-268.

Annex 2: Supporting Habitat(s) Site Feature Map for Poole Harbour SPA



Annex 3: Poole Harbour Dredge Permit Activity Maps

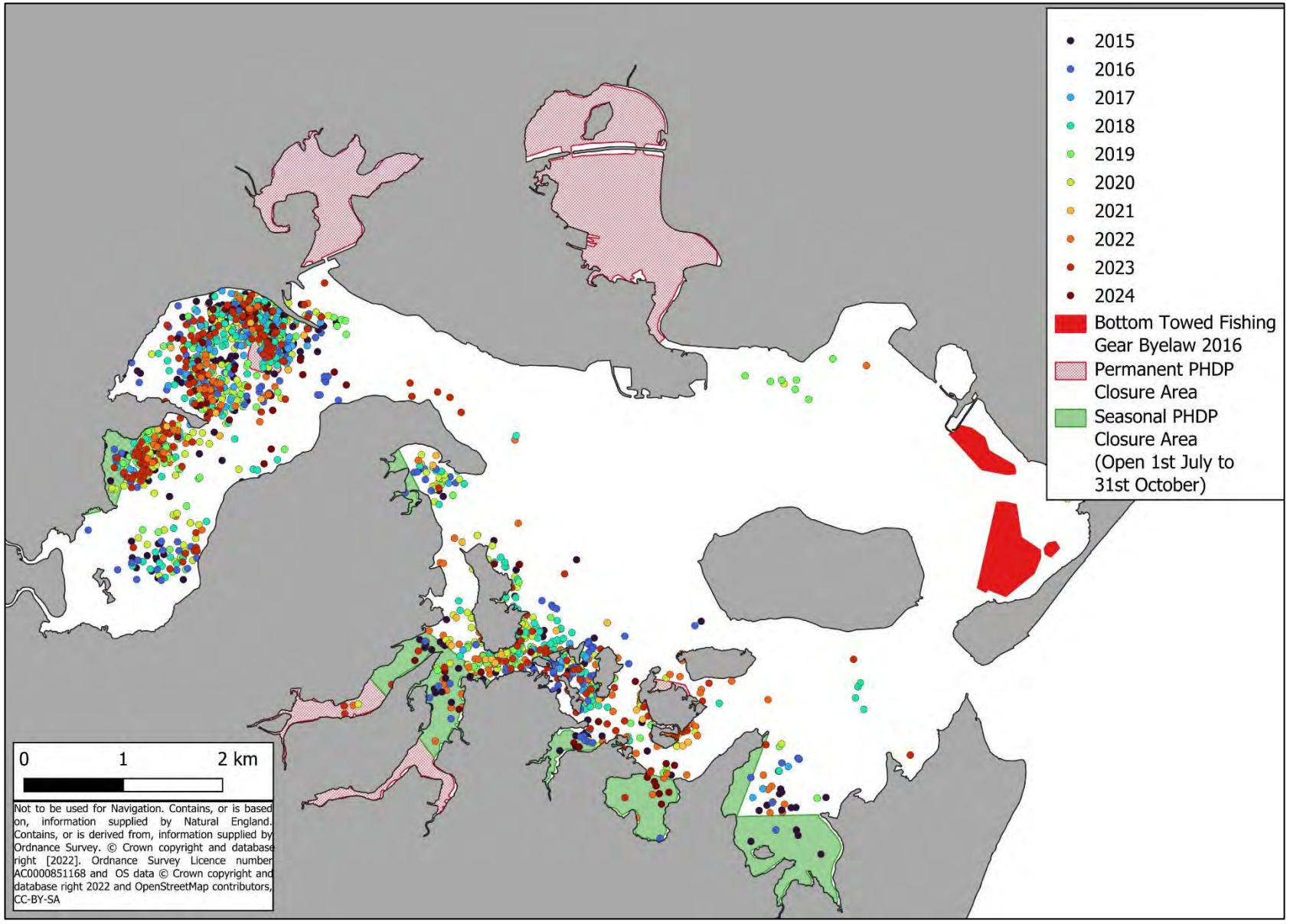


Figure A3: The map shows permit vessel sightings for the 2015/16 to 2024/25 seasons. Prohibited areas, seasonal closed areas and areas of seagrass closed under the Bottom Towed Fishing Gear Byelaw 2016 are also shown. Where vessel sightings overlap with seasonal closed areas, all sightings occurred during the period when these areas are open for fishing activity (1st July to 31st October). Note that the closed areas at Seagull Island and Green Island were not in place under permit conditions prior to the 2022/23 season and any subsequent sightings within these areas have been dealt with under the Compliance and Enforcement Framework.

Annex 4: Natural England's advice on the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour SPA, Ramsar and SSSI.

Date 3rd June 2014

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Dear Rob

Poole Harbour Fishing Dredge Permit byelaw - NEs advice on the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour SPA, Ramsar and SSSI

The following constitutes Natural England's formal advice as to the potential impacts of shellfish dredging on the nature conservation features of Poole Harbour.

1. Legal Requirements

Shellfish dredging takes place within Poole Harbour Site of Special Scientific Interest (SSSI). This SSSI is part of Poole Harbour Special Protection Area (SPA), and Poole Harbour Wetland of International Importance under the Ramsar Convention (Ramsar Site). Poole Harbour SPA and Ramsar site is afforded protection under the Habitats and Species Regulations 2010 (as amended) while Poole Harbour SSSI is afforded protection under the Wildlife and Countryside Act (1981) (as amended under the Countryside and Rights of Way Act 2000).

Natural England and S-IFCA have duties under Regulation 9 (3) of the Conservation of the Habitats & Species Regulations 2010 as competent authorities with functions relevant to marine conservation to exercise those functions so as to secure compliance with the Habitats Directive. Article 6.2 of the Habitats Directive requires appropriate steps to be taken to avoid, in Natura 2000 sites, the deterioration of natural habitats and habitats of species as well as significant disturbance of the species for which the area has been classified[1]. The IFCA also need to ensure that the measures proposed are compatible with the conservation and enhancement of the special interest of the Poole Harbour SSSI in line with the status as a Section 28 G authority under the Wildlife and Countryside Act 1981 (as amended).

This advice is to inform the scope of an assessment required by SIFCA to ensure that sufficient management measures are put in place through the fishing dredge permit byelaw to avoid damage or deterioration to the conservation features of the European Marine Site and ensure the activity is not likely to disturb or damage any of the interest features of the SSSI.

2. Protected Sites

Poole Harbour was classified as a SPA for birds because it supports an assemblage of over 20,000 waterfowl, internationally important populations of overwintering shelduck and black tailed godwit and over 1% of three species listed on Annex 1 of the birds directive (overwintering avocet, breeding common tern and breeding Mediterranean gull).

It is also a wetland of international importance under the Ramsar convention because it regularly supports over 20,000 waterfowl and over 1% of populations of avocet, black tailed godwit, common tern, Mediterranean gull and shelduck while also being a good example of an estuary, supporting an appreciable assemblage of rare, vulnerable or endangered species and being of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna including supporting the nationally scarce plants narrow leaved eelgrass *Zostera augustifolia* and dwarf eelgrass *Zostera noltii*.

Poole Harbour is also recognised as nationally important for its extensive mudflats and marshes which together with the permanent channels support large populations of overwintering waders and wildfowl. The fringing habitats support further rare and scarce fauna and flora including nesting birds. Several rare marine invertebrates also occur within the Harbour. With respect to nesting birds Poole Harbour condition assessment in 2010 noted the harbour was nationally important for its breeding populations of common and Sandwich terns, Mediterranean and black-headed gulls, Cetti's warbler, bearded tit and water rail. In a local context, the breeding population of the amber-listed redshank and reed bunting are also important. Other relevant species recorded breeding and part of the breeding bird assemblage include shelduck, little egret, grey heron, teal, mute swan, snipe, ringed plover, oystercatcher, reed warbler (Underhill-Day et al., 2010.)

The Poole Harbour SPA, Ramsar and SSSI citation are provided in Appendix 1.

3. Poole Harbour Special Protection Area

a) Conservation objectives

The conservation objectives for Poole Harbour SPA are found at Appendix 2.

In summary, the qualifying features are Common shelduck (Non-breeding), Pied avocet (Non-breeding), Black-tailed godwit (Non-breeding), Mediterranean gull (Breeding), Common tern (Breeding) and the Waterbird assemblage. In addition, little egret and aquatic warbler were identified as qualifying features by the UK SPA Review in 2001. However more recent data suggests aquatic warbler noloniger qualify in terms of numbers. Breeding sandwich terns are however now occurring in internationally important numbers and therefore qualify. http://jncc.defra.gov.uk/page-1419). Natural England recommends that as a matter of best practice these additional qualifying features should be a material consideration when assessing the impact of activities on a site.

With regard to the individual species and/or assemblage of species for which the site has been classified ('the Qualifying Features') the conservation objectives are to '*Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable the aims of the Birds Directive.*'

Subject to natural change, to maintain or restore

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The populations of the qualifying features;
- The distribution of the qualifying features within the site.

b) *Sub Features (Supporting Habitats for the Qualifying Features)*

The key sub features (or habitats for the SPA qualifying features) are listed in the Regulation 33 advice Package for Poole Harbour:-

Internationally important populations of the regularly occurring Annex 1 species

Shallow Inshore Waters inc. Lagoons - Shallow tidal waters provide key feeding habitat for the Annex 1 species common tern, avocet, and Mediterranean gull. Brownsea Island lagoon is an essential feeding area for wintering avocet. It also provides key nesting islands for common tern, however these are above highest astronomical tide and therefore not within the European marine site boundary. Shallow inshore waters are of importance for feeding common terns and to a lesser extent, for the qualifying population of breeding Mediterranean gulls which will also occasionally feed in these areas.

Intertidal Sediment Communities - Mudflats and sandflats support rich populations of intertidal invertebrate species, which in turn provide a food source for wintering avocets and breeding Mediterranean gull. Although avocets occasionally swim, they generally feed whilst wading on the intertidal sediments in areas of very shallow water. These habitats also provide important roosting areas for both species

Saltmarsh Communities - This habitat is of importance for providing roosting, feeding and nesting habitat. Upper saltmarsh is of importance as nesting habitat for both common tern and Mediterranean gull, whilst saltmarsh habitats, and in particular the associated creeks are also used as a feeding area by Mediterranean gull. Saltmarsh provides ideal highwater roosts for all of the annex 1 species.

Internationally important assemblage of waterfowl including internationally important populations of regularly occurring migratory bird species

Shallow Inshore Waters inc. Lagoons - Shallow tidal waters provide key feeding and roosting habitat for the internationally important populations of wintering shelduck. Shallow tidal waters also provide key feeding habitat for nationally important populations of goldeneye, red-breasted merganser and cormorant, which feed on fish and small molluscs.

Intertidal Sediment Communities Mudflats and sandflats support rich populations of intertidal invertebrate species, which in turn provide a food source for the internationally important populations of black-tailed godwit and shelduck. Nationally important populations including dunlin, teal, curlew, spotted redshank, greenshank, redshank and black-headed gull also feed on these rich populations of intertidal invertebrate species. Nationally important populations of dark-bellied brent geese feed on *Zostera* and *Enteromorpha* that grow on the intertidal sediment communities. These habitats provide important roosting areas for all of these species.

Saltmarsh Communities - Upper and lower saltmarsh provide important feeding areas for the internationally important assemblage of waterfowl and its qualifying species. Upper saltmarsh in particular also makes ideal highwater roost sites. Dark-bellied brent geese and teal feed on saltmarsh plants and their seeds.

Reedbeds - These provide feeding and roosting areas for a proportion of the internationally important assemblage of waterfowl. They are of particular importance for teal and pochard. Reed beds also play a key role in providing shelter for adjacent sub features.'

c) Potential impacts on attribute targets that could prevent the achievement of the conservation objectives for the SPA

The attributes listed in the tables in Appendix 3 are considered to be those most likely to contribute to this European Site's ecological integrity and towards the achievement of the European Site Conservation Objectives.

Natural England consider that shellfish dredging activity could prevent the site from achieving its conservation objectives through impacts on the following attributes:-

i) Disturbance caused by human activity (minimising disturbance)

The frequency, duration and/or intensity of disturbance affecting the foraging and roosting overwintering waterbird assemblage, avocet, black tailed godwit, shelduck and little egret should not reach levels which significantly affects the feature.

Potential Impact
Over the winter 2011/2012 a study of disturbance with respect to bird behaviour (waders and wildfowl) in relation to activities in the Harbour took place (Liley & Fearnley, 2012). The report found disturbance levels appeared to affect the distribution of birds within the harbour with bird densities lower where more people or boats were observed. The report found water based activities were generally more disturbing than intertidal activities with shore based activities the

least disturbing. Although the study did not focus on the areas where shellfishing activity took place, major fights were observed to occur at Wareham channel and the frequency at which the activity was observed more widely to take place in proximity to important areas for feeding and roosting birds was deemed a concern. It cannot be dismissed therefore that shellfish dredging together with other disturbance factors are not causing a significant disturbance to the features of the SPA when taking place in proximity to key feeding and roosting habitat (eg saltmarsh and shallow inshore waters).

The European Commission guidance states that any event contributing to the reduction or to the risk of reduction of the range of the species within the site or a reduction of the size of the habitat of the species within the site can be regarded as a significant disturbance[1].

Shellfish dredging activity can cause noise and visual disturbance (either alone or in combination with other plans and projects) to the features listed above when taking place at key times of the year for the overwintering and in proximity to important feeding and roosting sites. The significance of this disturbance is likely to depend on the availability of alternative undisturbed areas for birds, and the frequency and intensity at which shellfish dredging takes place (Liley & Feamley, 2012).

ii) Extent and Distribution of supporting non-breeding habitat

The extent and distribution of suitable habitat (either within or outside the site boundary) which supports overwintering waterbird assemblage, avocet, black tailed godwit, shelduck and little egret for all stages of the non-breeding period (moulting, roosting, loafing, and feeding) is maintained.

Potential Impact
The main eelgrass beds within the intertidal sediment communities in Poole Harbour are known to support fish eating species such as red breasted mergansers as well as providing a food source for dark bellied brent geese. Physical damage could occur from shellfish dredging if it takes place within this habitat. The direct impact of shellfish dredging on seagrass beds is significant through uprooting shoots and cutting through shoots which immediately reduces seagrass density and biomass) (Wheeler et al. 2014). The towed gear byelaw recently introduced to prohibit towed gear over the main eelgrass beds in Poole Harbour is an important mitigation measure to avoid an impact from this activity.

Shellfish dredging if taking place in close proximity to saltmarsh roosts sites could potentially also cause erosion of this supporting non breeding habitat.

iii) Extent and Distribution of supporting breeding habitat

The extent, distribution and availability of suitable breeding habitat which supports common tern, sandwich tern and mediterranean gull for all stages of their breeding cycle (courtship, nesting, feeding) is maintained.

Potential Impact
Mediterranean gulls nest primarily at Seagull island in the Wareham channel. Shellfish dredging if taking place in close proximity to saltmarsh nesting sites could potentially cause erosion of this supporting breeding habitat. Dyrynda (1995) considered saltmarsh to be a habitat that would be sensitive to baitdragging and similarly the habitat would likely to be sensitive to other towed gear if it takes place here. As with dragging it would be considered unlikely to take place in this habitat although this should be monitored.

[1] European Commission. 2000. **Managing Natura 2000 sites : The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.** Luxembourg: Office for Official Publications of the European Communities.

Common and sandwich tern nest at Brownsea Lagoon where there is no fishing access.

iv) Breeding Population (productivity and survival)

Overall breeding productivity and adult survival is at a level which is consistent with maintaining the structure and abundance of the population of Mediterranean gulls at or above its current or target level, whichever is the higher or all stages of its breeding cycle (courtship, nesting, feeding) is maintained.

Potential Impact
Disturbance of Mediterranean gull nesting sites from fishing taking place in proximity to Seagull Island could cause a decline in the annual productivity or breeding success of the population (i e the number of chicks successfully raised per breeding pair per year) and this may adversely affect the overall size and age-structure of the breeding population and its long-term viability. Common and sandwich tern nest at Brownsea Lagoon where there is no fishing access and would therefore not be exposed to disturbance.

iv) Food availability (Function and supporting processes)

Maintain the overall prey availability of key prey species of preferred prey sizes which supports overwintering waterbird assemblage, avocet, black tailed godwit, shelduck and little egret and breeding common tern, sandwich tern and Mediterranean gull

Potential Impact
Sediment disturbance as a result of shellfish dredging (and in combination with other activities eg baitdigging and baitdragging) can potentially impact on bird prey availability, prey size and the birds ability to forage. This can be through removal (mortality) of target and non target species species and impacts on non target prey availability through changes in habitat structure of the intertidal sediment communities.

Dredging on muddy habitats has generally been found to have a greater impact on benthic communities compared to mobile sands. Dredge scars on deeper, more stable habitats appear to persist longer than more mobile intertidal habitats. Impacts on sediment disturbance are likely to be related to whether the impact takes place at a high energy site or a sheltered site, with sediment recovery slower at the latter. Most small-scale experimental studies have shown that recovery of communities following cessation of fishing can generally occur within months to a year. However the longer-term impacts of broad scale, intensive and frequent disturbances to benthic communities has not been well researched (Wheeler et al,2014)).

The length of time that harvested areas would require for recovery will be a function of the amount of natural disturbance experienced in that environment, and the timing of harvesting in relation to larval recruitment of target and non-target species (Wheeler et al 2004).

Release of sediment contaminants such as heavy metals from sediment disturbance by shellfish dredging could also impact on prey availability.

4. Poole Harbour Ramsar

In addition to the above overwintering waders and wildfowl, the Ramsar site is also designated for its eelgrass beds. As stated above physical damage could occur from shellfish dredging if it takes place within this habitat. The direct impact of shellfish dredging on seagrass beds is significant through uprooting shoots and cutting through shoots which immediately reduces seagrass density and biomass) (Wheeler et al, 2014) The towed gear byelaw recently introduced to prohibit towed gear over the main eelgrass beds in Poole Harbour is an important mitigation measure to avoid an impact from this activity

5. Poole Harbour SSSI

In addition to the bird features for which the SPA is classified the SSSI is designated for nesting birds using the fringing reedbed and saltmarsh habitats of Poole Harbour and marine invertebrates. Shellfish dredging activity has the potential to damage the breeding bird assemblage feature through disturbance to breeding birds effecting breeding productivity when taking place in proximity to their nesting and feeding sites. Unusually dense forests of the peacock worm *Sabella pavonina* were recorded in the channels of the Harbour in the 80's associated with the subtidal fine sands of the central harbour and towed gear could potentially damage this feature if it was to take place over these channels (Dyrynda, 1995).

Poole Harbour Aquatic Management Plan

Poole Harbour's Aquatic Management Plan serves as Poole Harbour's European Marine Site management scheme under which relevant authorities functions (including any power to make byelaws) are to be exercised so as to secure in relation to that site compliance with the requirements of the Habitats Directive. *www.pooleharbouraqmp.co.uk*

The management plan sets out the need to manage shellfish dredging in the harbour due to the potential for this activity to displace birds from breeding, feeding & roosting grounds, possible damage to eel grass beds and subtidal habitats by dredging equipment and the detrimental effects on non target species. The importance of SIFCAs byelaws to manage this activity is highlighted as an important management measure.

Bird Sensitive Areas – All recreational users are asked in Poole Harbour's Aquatic Management Plan to avoid these areas at key times of the year. (The Poole Harbour Aquatic Management Plan serves as Poole Harbours European Marine Site Management Scheme).

Bird Sensitive Areas
These are areas where at present there is relatively little disturbance, or areas where the geographically enclosed nature of the bays means that activities such as shellfish dredging would have the potential to disturb birds over a large area. They are also areas where birds appear to be preferentially feeding and roosting and where the key bird interests for which the Harbour is recognised as important reside (Drake, 2006).

Appendix 4 shows the Bird Sensitive Areas which have been identified as being of particular importance to overwintering and breeding birds. During the winter, principally between 1st November and 31st March, it is essential that disturbance in the 'Overwintering Bird Sensitive Areas' are kept to a minimum to ensure these migratory birds have every opportunity to feed and rest.

During the spring, between mid April and the end of June Mediterranean gulls and common terns breed at 'Gull Island' and 'Brownsea Lagoon' respectively and disturbance should be avoided to ensure the successful hatching of eggs and rearing of chicks of these rare bird species. Appendix 4.

6. Poole Harbour Condition Assessment

SIFCA should also consider the current condition of the site when determining the significance of effect of shellfish dredging on Poole Harbour SPA, Ramsar and SSSI.

The latest analysis of data spanning over several decades by the British Trust for Ornithology (BTO) recorded declines in a numbers of some bird species in Poole Harbour. Comparison by BTO of national, regional and local trends suggest that for shelduck, curlew, redshank and lapwing these declines are likely to be due to site-specific pressures while the declining trends of the other species appear to reflect a broad-scale shift in population. For further information see the species accounts under http://www.bto.org/volunteer-surveys/webs/publications/webs-alerts.

Bird count data (WeBs data) analysed by Natural England in 2012 also highlighted declines in the numbers of overwintering birds in some sectors of the Harbour. (Appendix 6). The data analysis highlighted in particular there was concern regarding declines in some species in Lytchett Bay (shelduck, redshank and dunlin) Brands Bay (shelduck, redshank, dark bellied brent geese, dunlin) and Wych (shelduck, black tailed godwit, dunlin).

A condition assessment of Poole Harbour SSSI was compiled in 2010.The features of interest of the Ramsar and SPA were also covered in this assessment. The main concern from the assessment is the high inputs of nitrogen into the Harbour and the consequent algal mat growth which is at levels that could impact on bird prey availability and bird foraging behaviour. A further concern is the possible reduction in the abundance and variety of benthic invertebrates with a decline in biomass of some 26% between surveys in 2002 and 2009. This may be due to year to year fluctuations in variability and slight differences in the sampling methodology although the difference is of sufficient magnitude to cause concern. There is still uncertainty as to the long term effects of pump scoop dredging and other disturbances on invertebrate distribution and abundance. (Underhill-Day et al., 2010).

Generally the breeding bird community in the Harbour is retaining its interest, and scores as in favourable condition both for sand dunes and salt marshes, and for lowland open water and margins. However breeding redshank were last recorded as being in decline. (Underhill-Day et al. 2010; Chown & Cook, 2004).

Summary
SIFCA need to take appropriate steps to manage shellfish dredging to avoid the deterioration of natural habitats and habitats of species as well as significant disturbance of the species for which the area has been classified as a SPA and a Ramsar site. Without adequate mitigation measures put in place in SIFCAs fishing dredge permit byelaw a likely significant effect on Poole Harbour Special Protection Area and Ramsar site cannot be excluded, either individually or in combination with other plans or projects. SIFCA need to consider what mitigation measures are needed to exclude this significant effect from shellfish dredging or commence work on an appropriate assessment in order to ascertain that the activity will not adversely affect the integrity of Poole Harbour SPA and Ramsar.

Furthermore, Natural England is of the view that without adequate mitigation measures there would likely be damage to the interest features of the Poole Harbour SSSI from this activity and mitigation measures need to be provided in order to avoid this damage to the SSSI.

7. Potential Mitigation Measures

Natural England's advice is that to protect the SPA, Ramsar interest and SSSI, management should seek to:-

i) Provide a network of areas where there is little or no noise and visual disturbance and sediment disturbance

These areas could include a combination of spatial or temporal areas where potentially disturbing activities are excluded at key times of the year in areas vulnerable to disturbance and sediment disturbance and that are particularly important to securing the SPA and Ramsar and SSSI interests.

Vulnerable/important areas should include:-

- Bird Sensitive Areas,
- Areas where declines in some bird species have been observed eg Brands Bay, Wych and Lytchett Bay,
- Mediterranean gull nesting sites at Seagull island
- Areas where sediment recovery is likely to be slow ie low energy sites
- Fringing saltmarsh, reedbed and lowland water habitats supporting breeding birds

Appendix 5 provides key times of year where SPA, Ramsar and SSSI features may be vulnerable to an impact from cockle and clam dredging through noise/visual disturbance or impacts on prey availability through sediment disturbance.

ii) Exclude or manage intensity where high levels of sediment disturbance could result in release of contaminants eg parts of Holes Bay

iii) Manage shellfish dredging throughout the Harbour in a way that minimises its impact on prey availability and disturbance. For example through restrictions in the number of licences, the design of the pump and dredge used and restrictions in the timing of when the fishery should take place

iv) Ensure measures are taken to protect habitats (ie eelgrass and saltmarsh) and marine invertebrates (eg *Sabella pavonina*) that are potentially sensitive to damage if they are at risk of exposure to shellfish dredging

8) Summary

In summary when SIFCA decide on the management measures to be put under the permit conditions of the dredge byelaw, after consultation with the stakeholders, they will need to consider this advice, and other evidence of the potential effects of shellfish dredging on Poole Harbour SPA and Ramsar site, to ensure the proposed measures are sufficient to be able to conclude no likely significant effect either alone or in combination with other plans and projects.

The effectiveness of any management measures implemented to avoid an adverse effect on Poole Harbour SPA and Ramsar from shellfish dredging should subsequently be monitored and reviewed.

The IFCA should also ensure that the measures proposed are compatible with the conservation and enhancement of the special interest of the Poole Harbour SSSI in line with the status as a Section 28 G authority under the Wildlife and Countryside Act 1981 (as amended).

Natural England would be happy to provide further advice on any specific management options put forward and our views as to whether sufficient measures have been put forward to ensure the nature conservation interests of the site have been adequately protected.

Please do not hesitate to contact me if you would like to discuss any of the above further.

Yours sincerely

Sue Burton
Lead Marine Adviser
Dorset, Hampshire and Isle of Wight Team
07500 097405
Susan.burton@naturalengland.org.uk

References

Chown D. & Cook, K.(2004) Important Breeding Birds of Poole Harbour. Poole Harbour Study Group

Dyrynda, P. 1995. Impacts of bait dragging on the seabed within Poole Harbour. Report to Southern Sea District Fisheries Committee from the Marine Environmental Research Group, University of Wales, Swansea.

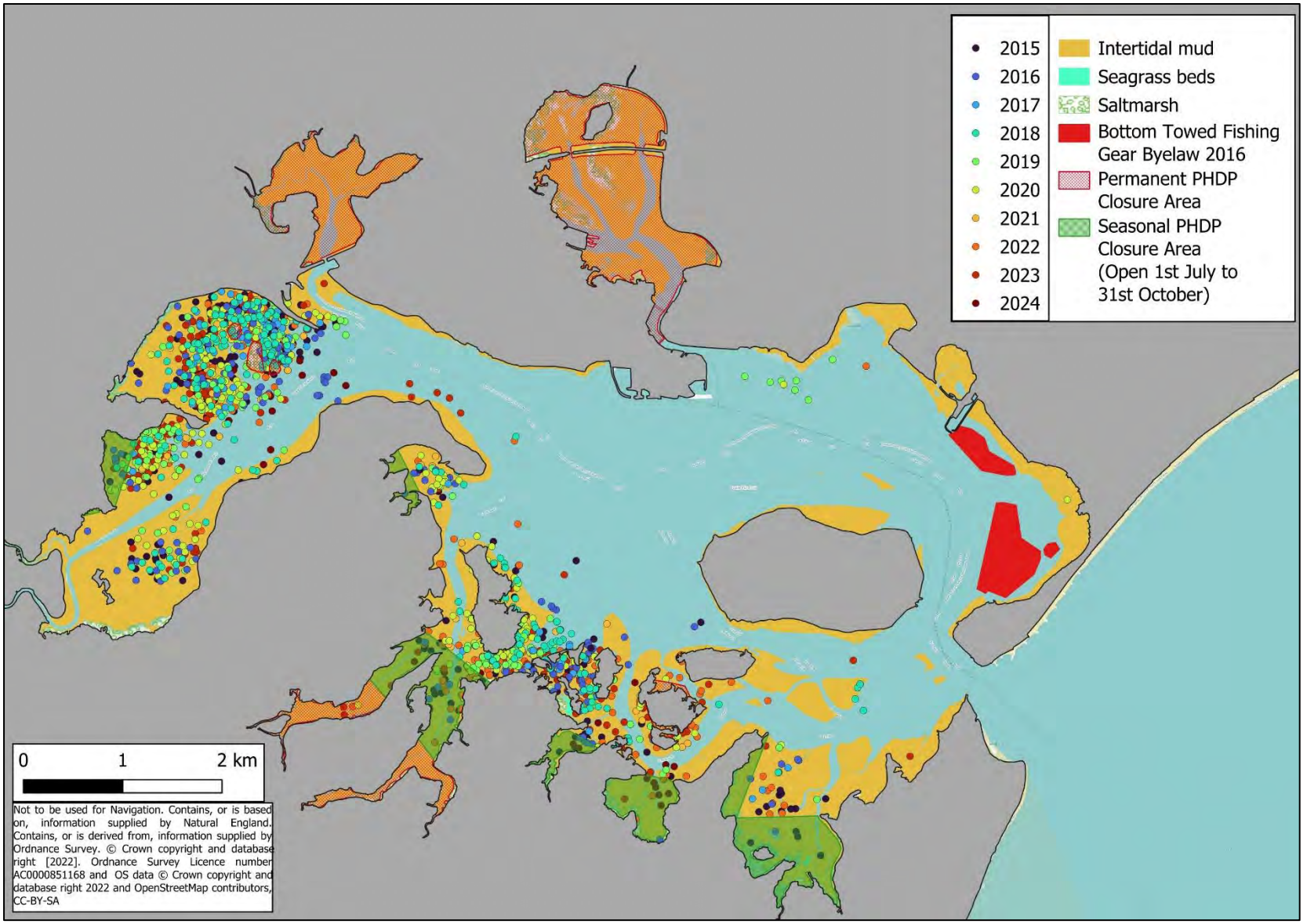
English Nature (2000) English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994

Liley, D. and Fearnley, H.(2012) Poole Harbour Disturbance Study. Report for Natural England. Footprint Ecology Ltd. Wareham, Dorset

Underhill-Day, J., Underhill-Day, N., White, J. & Gartshore, N. (2010) Poole Harbour SSSI Condition Assessment. A report to Natural England. Wareham

Wheeler R, Stillman R, and Herbert R. (2014) Ecological impacts of clam and cockle harvesting on benthic habitats and waterfowl. Report to Natural England. University of Bournemouth

Annex 5: Poole Harbour Dredge Permit byelaw spatial and temporal restrictions



Annex 6: Poole Harbour Dredge Permit 2025/26 including permit conditions

The conditions of the permit are subject to modification should the M&CP thresholds be exceeded, thereby necessitating a review of the management plan.

Southern IFCA Inshore Fisheries and Conservation Authority

Poole Harbour Dredge Permit

This permit authorises the named person in respect to the named vessel, for the period of validity specified below, to use, retain on board, store or transport a dredge within Poole Harbour, subject to the provisions of the Poole Harbour Dredge Permit Byelaw and to the additional conditions listed in this permit.

Vessel Authorised is: **NAME and PLN**

Permit is issued to: **Mr/Mrs X**

Permit Number: **2025-26 XXX**

Vessel length (m):

Vessel engine power (kw):

Cost of Permit: **£675.00**

Permit valid for period: **1st April 2025 – 31st March 2026**

The permit holder should ensure that they have read and understand the Southern IFCA Poole Harbour Dredge Permit byelaw and the Permit Conditions prior to fishing.

Failure to comply with any of the Permit Conditions constitutes contravention of the Poole Harbour Dredge Permit byelaw.

Permit Conditions

1. **Definitions**

1.1 In this permit:

a. “spray bar” means any object that directs a pressurised jet(s) of water;

b. “riddle” means a table with spaced bars for the sorting of shellfish;

c. “tooth bar” means the bar, to which is attached teeth, the ends of which point downwards and are dragged along the sea bed when the dredge is towed;

d. “auxiliary hydraulic equipment” shall include but is not limited to any water pump and associated hoses that are designed for, or capable of being used in connection with a shellfish dredge and any hydraulic lifting equipment, when used in connection with a shellfish dredge.

e. “interaction” means direct contact between any part of the fishing vessel or dredge, as defined in the Poole Harbour Dredge Permit byelaw, and any part of an individual listed as an Endangered, Threatened and Protected (ETP) Species; and

f. “Endangered, Threatened and Protected (ETP) Species” are those species protected by and listed under national and international legislation and listings including but not limited to The Birds Directive (2009/147/EC), The Habitats Direct (92/43/EEC), the Convention on International Trade in Endangered Species (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

2. Catch reporting

2.1 For the months of May, June, July, August, September, October, November and December the permit holder must submit to the Authority a completed catch return using a ‘Poole Harbour Dredge Permit Monthly Catch Return Form’. Completed catch returns must be submitted either in hard copy or as an electronic PDF document and must be received by the Authority no later than the 14th day of the following month.

2.2 For each day of the month the permit holder must state in their catch return:

i. the hours spent fishing; and
ii. the quantity in kilograms of each species caught that day; *and*
iii. the number of the zone(s) in which the quantities of species caught that day have been taken according to the zonation map provided with the catch return form; *and*
iv. the name(s) of the company or individual to whom all parts of the catch was sold.

2.3 If no fishing has taken place during a day, the permit holder must declare that no catch was taken on that day by entering the word "nil" in the column for "Species caught and Quantity”.

2.4 If no fishing has taken place during a month, the permit holder must indicate this to the Southern IFCA by submitting a “nil” catch return.

2.5 If a permit holder has an interaction between their fishing activity and an Endangered, Threatened and Protected (ETP) Species, the permit holder must submit to the Authority a completed interaction form using a 'Poole Harbour Dredge Permit Byelaw Interaction between dredge fishing activity and Endangered, Threatened and Protected (ETP) Species Reporting Form'.

3. Catch Restrictions

3.1 No person shall fish for or take from Poole Harbour any Native oyster (*Ostrea edulis*).

4 Gear types

4.1 Dredge designs are restricted to a basket size not exceeding 460 mm in width by 460 mm in depth by 300 mm high excluding any pole or attachments.

5 Gear construction and restrictions

5.1 Dredges must be constructed of rigid bars having spaces of not less than 18 mm between them. Any cross pieces used to strengthen the basket must have minimum spaces of 40 mm between them.

5.2 Only one dredge is allowed to be used at any one time on each vessel.

5.3 The contents of the dredge may only be removed after the dredge has been lifted into the vessel.

5.4 A second dredge may be carried on board but it must be inboard, stowed and disconnected.

5.5 Only one pump is permitted on board any vessel and any hoses connected to the pump and/or dredge should have a diameter of no greater than a 3 inch inlet and a 3 inch diameter outlet.

5.6 The maximum horsepower of the pump is 15 (fifteen).

5.7 A maximum of one spray bar is permitted to be used per dredge and must be fixed to the dredge. When using a dredge fitted with a tooth bar any associated spray bar must direct the flow of water towards the rear of the basket and at no times directly towards the seabed.

5.8 A riddle with 18mm bar spacing is mandatory for the sorting of shellfish. Any shell discards are to be re-deposited forthwith.

6 Spatial and temporal restrictions

6.1 Closed Season

6.1.1 A dredge shall not be used, retained on board, stored or transported in any area of Poole Harbour from 1st April to 24th May 2025, both days inclusive, and from 24th December 2025 to 31st March 2026, both days inclusive.

6.2 Daily Fishing Hours

6.2.1 A dredge shall not be used in any area of Poole Harbour between 18.00 and 06.00 each day.

6.2.2 A dredge shall not be used in any area of Poole Harbour during all Sundays.

6.3 Seasonal Closure Areas

6.3.1 A dredge shall not be used, retained on board, stored or transported in the following areas from 25th May to 30th June, both days inclusive and from 1st November to 23rd December, both days inclusive, in the same year:

AREA 1 – NEWTON BAY
The area enclosed by a line drawn from:
Point 1 (50 Degrees 40.351 minutes North, 001 Degrees 59.493 minutes West) to
Point 2 (50 Degrees 40.402 minutes North, 001 Degrees 59.750 minutes West)
From point 2 along the coast at the level of mean high water spring tide to point 1

AREA 2 – OWER BAY
The area enclosed by a line drawn from:
Point 3 (50 Degrees 40.522 minutes North, 002 Degrees 00.101 minutes West) to
Point 4 (50 Degrees 40.670 minutes North, 002 Degrees 00.464 minutes West)
From point 3 along the coast at the level of mean high water spring tide to point 4

AREA 3 – WYCH LAKE AND MIDDLEBERE LAKE
The area enclosed by a line drawn from:
Point 5 (50 Degrees 41.255 minutes North, 002 Degrees 01.755 minutes West) to
Point 6 (50 Degrees 40.891 minutes North, 002 Degrees 01.030 minutes West)
From point 6 along the coast at the level of mean high water spring tide to point 7
Point 7 (50 Degrees 40.468 minutes North, 002 Degrees 01.529 minutes West) to
Point 8 (50 Degrees 40.795 minutes North, 002 Degrees 01.911 minutes West) to
Point 9 (50 Degrees 40.896 minutes North, 002 Degrees 02.157 minutes West)
From point 9 along the coast at the level of mean high water spring tide to point 5

AREA 4 – ARNE BAY
The area enclosed by a line drawn from:
Point 10 (50 Degrees 41.941 minutes North, 002 Degrees 01.651 minutes West) to
Point 11 (50 Degrees 42.204 minutes North, 002 Degrees 01.843 minutes West)
From point 11 along the coast at the level of mean high water spring tide to point 10

AREA 5 – KEYSWORTH
The area enclosed by a line drawn from:
Point 12 (50 Degrees 42.400 minutes North, 002 Degrees 04.510 minutes West) to

Point 13 (50 Degrees 42.264 minutes North, 002 Degrees 04.078 minutes West) to
Point 14 (50 Degrees 41.890 minutes North, 002 Degrees 04.259 minutes West) to
Point 15 (50 Degrees 41.842 minutes North, 002 Degrees 04.555 minutes West)
From point 15 along the coast at the level of mean high water spring tide to point 12

AREA 6 - BRANDS BAY SOUTH
The area enclosed by a line drawn from:
Point 16 (50 Degrees 40.156 minutes North, 001 Degrees 58.984 minutes West) to
Point 17 (50 Degrees 40.156 minutes North, 001 Degrees 58.249 minutes West)
From point 16 along the coast at the level of mean high water spring tide to point 17

AREA 7 – BRANDS BAY WEST
The area enclosed by a line drawn from:
Point 16 (50 Degrees 40.156 minutes North, 001 Degrees 58.984 minutes West) to
Point 18 (50 Degrees 40.610 minutes North, 001 Degrees 58.702 minutes West)
From point 18 along the coast at the level of mean high water spring tide to point 16

6.4 Closed Areas

6.4.1 A dredge shall not be used in the following areas at all times:

AREA 8 - LYCHETT BAY
The area enclosed by a line drawn from:
Point 19 (50 Degrees 43.212 minutes North, 002 Degrees 02.412 minutes West) to
Point 20 (50 Degrees 43.205 minutes North, 002 Degrees 02.439 minutes West) From point 20 along the coast at the level of mean high water spring tide to point 19

AREA 9 - HOLES BAY
The area enclosed by a line drawn from:
Point 21 (50 Degrees 42.771 minutes North, 001 Degrees 59.539 minutes West) to
Point 22 (50 Degrees 42.734 minutes North, 001 Degrees 59.591 minutes West)
From point 22 along the coast at the level of mean high water spring tide to point 21

6.4.2 A dredge shall not be used, retained on board, stored or transported in the following areas at all times:

AREA 10 – WYCH LAKE
The area enclosed by a line drawn from:
Point 7 (50 Degrees 40.468 minutes North, 002 Degrees 01.529 minutes West) to
Point 8 (50 Degrees 40.795 minutes North, 002 Degrees 01.911 minutes West)
From point 8 along the coast at the level of mean high water spring tide to point 7

AREA 11 – MIDDLEBERE LAKE
The area enclosed by a line drawn from:
Point 8 (50 Degrees 40.795 minutes North, 002 Degrees 01.911 minutes West) to
Point 9 (50 Degrees 40.896 minutes North, 002 Degrees 02.157 minutes West)
From point 9 along the coast at the level of mean high water spring tide to point 8

AREA 12 – GREEN ISLAND
The area enclosed by a line drawn from:
Point 1 (50 Degrees 40.876 minutes North, 001 Degrees 59.407 minutes West) to
Point 2 (50 Degrees 40.809 minutes North, 001 Degrees 59.357 minutes West) to
Point 3 (50 Degrees 40.739 minutes North, 001 Degrees 59.310 minutes West) to

Point 4 (50 Degrees 40.684 minutes North, 001 Degrees 59.398 minutes West) to
Point 5 (50 Degrees 40.626 minutes North, 001 Degrees 59.490 minutes West) to
Point 6 (50 Degrees 40.567 minutes North, 001 Degrees 59.550 minutes West) to
Point 7 (50 Degrees 40.580 minutes North, 001 Degrees 59.600 minutes West) to
Point 8 (50 Degrees 40.594 minutes North, 001 Degrees 59.650 minutes West) to
Point 9 (50 Degrees 40.640 minutes North, 001 Degrees 59.670 minutes West) to
Point 10 (50 Degrees 40.732 minutes North, 001 Degrees 59.724 minutes West) to
Point 11 (50 Degrees 40.852 minutes North, 001 Degrees 59.780 minutes West) to
Point 12 (50 Degrees 40.913 minutes North, 001 Degrees 59.690 minutes West) to
Point 13 (50 Degrees 40.898 minutes North, 001 Degrees 59.550 minutes West) to
Point 1.

AREA 13 – SEAGULL ISLAND NORTH
The area enclosed by a line drawn from:
Point 1 (50 Degrees 42.880 minutes North, 002 Degrees 03.233 minutes West) to
Point 2 (50 Degrees 42.869 minutes North, 002 Degrees 03.174 minutes West) to
Point 3 (50 Degrees 42.818 minutes North, 002 Degrees 03.161 minutes West) to
Point 4 (50 Degrees 42.792 minutes North, 002 Degrees 03.200 minutes West) to
Point 5 (50 Degrees 42.791 minutes North, 002 Degrees 03.249 minutes West) to
Point 6 (50 Degrees 42.839 minutes North, 002 Degrees 03.287 minutes West) to
Point 1.

AREA 14 – SEAGULL ISLAND CENTRE
The area enclosed by a line drawn from:
Point 1 (50 Degrees 42.781 minutes North, 002 Degrees 03.056 minutes West) to
Point 2 (50 Degrees 42.769 minutes North, 002 Degrees 03.005 minutes West) to
Point 3 (50 Degrees 42.749 minutes North, 002 Degrees 02.990 minutes West) to
Point 4 (50 Degrees 42.680 minutes North, 002 Degrees 02.987 minutes West) to
Point 5 (50 Degrees 42.613 minutes North, 002 Degrees 02.971 minutes West) to
Point 6 (50 Degrees 42.606 minutes North, 002 Degrees 02.986 minutes West) to
Point 7 (50 Degrees 42.626 minutes North, 002 Degrees 03.086 minutes West) to
Point 8 (50 Degrees 42.649 minutes North, 002 Degrees 03.120 minutes West) to
Point 9 (50 Degrees 42.715 minutes North, 002 Degrees 03.108 minutes West) to
Point 10 (50 Degrees 42.768 minutes North, 002 Degrees 03.079 minutes West) to
Point 1.

AREA 15 – SEAGULL ISLAND SOUTH
The area enclosed by a line drawn from:
Point 1 (50 Degrees 42.679 minutes North, 002 Degrees 02.897 minutes West) to
Point 2 (50 Degrees 42.678 minutes North, 002 Degrees 02.875 minutes West) to
Point 3 (50 Degrees 42.661 minutes North, 002 Degrees 02.853 minutes West) to
Point 4 (50 Degrees 42.628 minutes North, 002 Degrees 02.831 minutes West) to
Point 5 (50 Degrees 42.618 minutes North, 002 Degrees 02.832 minutes West) to
Point 6 (50 Degrees 42.605 minutes North, 002 Degrees 02.849 minutes West) to
Point 7 (50 Degrees 42.592 minutes North, 002 Degrees 02.911 minutes West) to
Point 8 (50 Degrees 42.599 minutes North, 002 Degrees 02.928 minutes West) to
Point 9 (50 Degrees 42.645 minutes North, 002 Degrees 02.925 minutes West) to
Point 1.

Date .....

Signed .....
Chief / Deputy Chief Officer, Southern Inshore Fisheries and Conservation Authority

Annex 8: Co-Location of Shellfish Dredging and Site Feature(s)/Sub-feature(s)

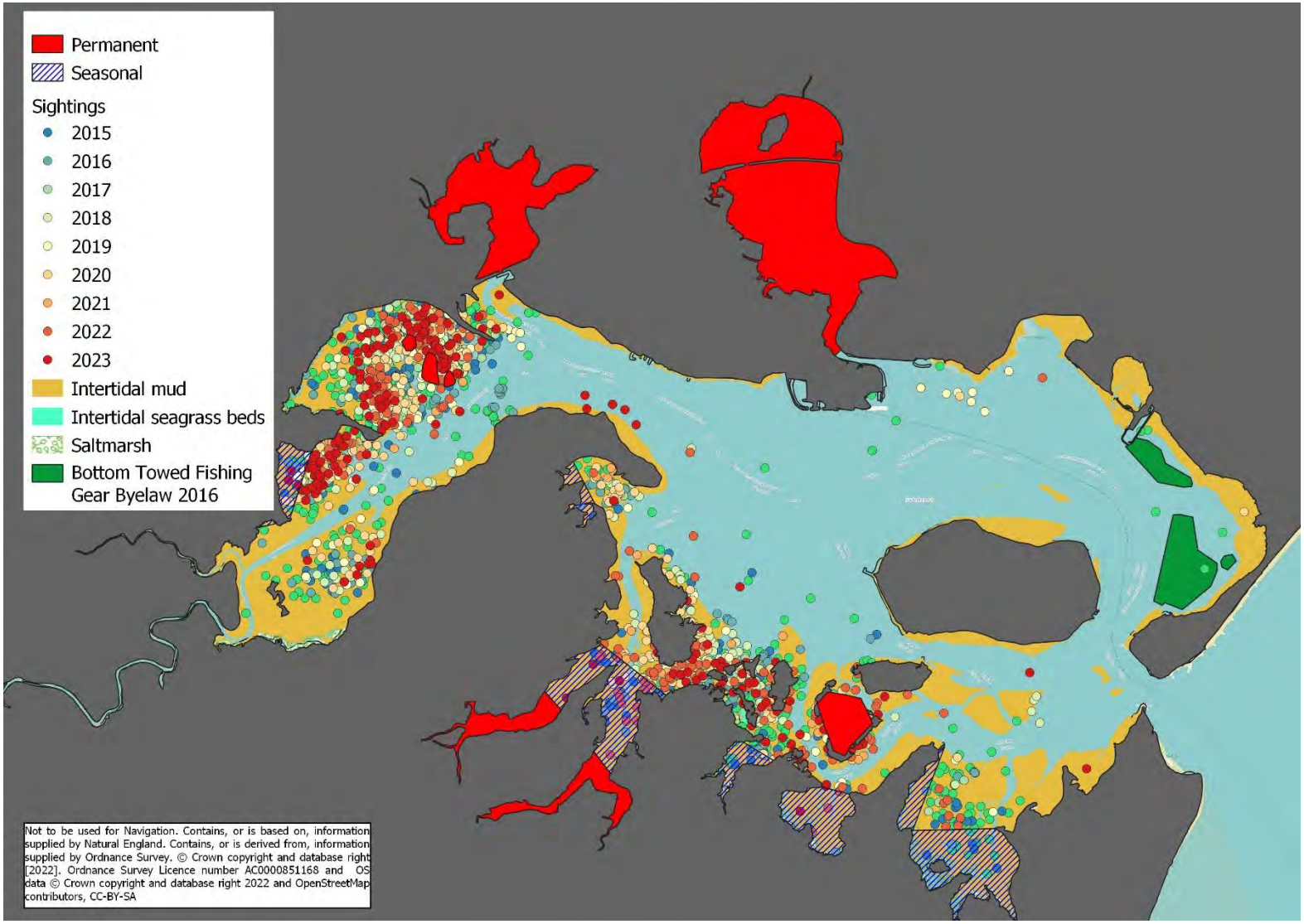


Figure A8: The map shows permit vessel sightings for the 2015/16 to 2023/24 seasons. Prohibited areas, seasonal closed areas and areas of seagrass closed under the Bottom Towed Fishing Gear Byelaw 2016 are also shown as well as layers showing supporting habitats for the SPA. Where vessel sightings overlap with seasonal closed areas, all sightings occurred during the period when these areas are open for fishing activity (1st July to 31st October). Note that the closed areas at Seagull Island and Green Island were not in place under permit conditions prior to the 2022/23 season and any subsequent sightings within these areas have been dealt with under the Compliance and Enforcement Framework.

Annex 9: Table of studies investigating the impacts of shellfish dredging and recovery rates.

Study	Location and Exposure	Gear Type and Target Species	Sediment Type	Recovery Period	Species-Specific Recovery
Ferns, P.N., Rostron, D.M. & Sima, H.Y. 2000. Effects of mechanical cockle harvesting on intertidal communities. *Journal of Applied Ecology*, 37, 464-474.	Burry Inlet, South Wales	Tractor-towed cockle harvester Common cockle -*Cerastoderma edule*	Intertidal clean sand and muddy sand	Recovery was considered with invertebrate sampling conducted 15 and 86 days after harvesting in both sediment types and 174 days in muddy sand only. Unfortunately sampling was not continued long enough to determine how long invertebrate communities took to recover. Movement of adults or passive transport as a result of sediment movements, was sufficient to allow recovery of modest invertebrate populations in clean sand, but inadequate to allow recovery of large populations in muddy sand. See species-specific recovery.	Muddy sand: *Pygospio elegans* - >174 days *Hydrobia ulvae* - >174 days *Nephtys hombergii* – 51 days *Bathyporeia pilosa* – 51 days *Lanice conchilega* – 0 days *Corophium arenarium* – 0 days *Macoma balthica* - >86 days Cerastoderma edule - >174 days *Pygospio elegans* - >86 days *Crangon creangon* - >86 days *Retusa obtusa* - >86 days Clean sand: *Bathyporeia pilosa* – 39 days *Macoma balthica* - <86 days Cerastoderma edule – 0 days

					Pygospio elegans - >86 days *Nephtys homergii* - <86 days *Carcinus maenas* - <86 days
Kaiser, M.J., Edwards, B. & Spencer, B.E. 1996. Infaunal community changes as a result of commercial clam cultivation and harvesting. *Aquatic Living Resources*, 9, 57-63.	Whitestable, Kent, south-east England	Suction dredge Manila clam – *Tapes philippinarum*	Clay interspersed with patches of shell debris and lignin deposits (from local paper mill) overlaid with fine sand and silt. Exposed to prevailing north easterly winds.	Seven months after harvesting, no significant differences in infaunal communities were found between the harvested clam lay and either of the control sites (near and far). After seven months, sediment fractions in the harvested plot did not significantly differ from the sediment in control areas, as sedimentation had nearly restored sediment structure.	*Nephtys hombergii* contributed to the most similarity between samples taken from the clam lay 7 months after harvesting and was also dominant in control areas.
Hall, S.J. & Harding, M.J.C. 1997. Physical disturbance and marine benthic communities: the effects of mechanical harvesting of cockles on non-target benthic infauna. *Journal*	Auchencairn Bay, Solway Firth, Dumfries, Scotland	Suction dredge & tractor dredge Common cockle – *Cerastoderma edule*	Sediments generally become coarser in the centre of the bay and low water mark (median diameter = 3.5ø, 88*µ*m) (near to the study area). Silt/clay fraction (<62.5 *µ*m)	Suction dredge – statistically significant effects were present, but overall faunal structure in distributed plots recovered after 56 days. This occurred against a background of seasonal response. Tractor dredge – no statistically significant	Suction dredge - significant treatment (disturbed versus undisturbed) effects were reported for *Pygospio elegans* and *Cerastoderma edule*. There were also a significant time effect and significant time-treatment interaction for *Pygospio elegans*.

of Applied Ecology, 34, 497-517.			ranges from 25 to 60% in the centre.	effects on total abundance and number of species and overall faunal structure in distributed plots recovered after 56 days. This occurred against a background of general seasonal decline.	Tractor dredge – mean abundance of *P. elegans* remained higher in the undisturbed treatment until day 56. No significant treatment effect occurred for any species but a significant time treatment occurred for *P. elegans*, *Nepthys* sp. and *C. edule*, with a significant time treatment interaction for *P. elegans*.
Spencer, B.E., Kaiser, M.J. & Edwards, D.B. 1998. Intertidal clam harvesting: benthic community change and recovery. *Aquaculture Research*, 29, 429-437.	River Exe, England (see Spencer *et al*., 1996; 1997)	Suction dredge Manila clam – *Tapes philippinarum*	Unknown – study refers to stable sediment and protection from onshore winds by a sand dune bar.	Recovery of sediment structure and invertebrate infaunal communities occurred 12 months after harvesting. Four months after harvesting, significant differences between the harvested plot, previously net-covered plot and control plot were detectable (67% similarity between treatments), although there were indication of recruitment or migration. Eight months after harvesting, similarity between treatments increased to 85%, however significant differences were still	*Pygospio elegans* abundance was greater in the harvested plot than any other four months after harvesting, whilst *Nephtys hombergii* abundance remained lower.

				apparent between treatment and control plots (excluding previously net-covered plot and the harvested plot). Trenches (10 cm deep) left by suction dredging were infilled within 2 to 3 months.	
Peterson, C.H., Summerson, H.C. & Fegley, S.R. 1987. Ecological consequences of mechanical harvesting of clams. *Fishery Bulletin*, 85, 2, 281-298.	Back Sound, North Carolina, USA	'Clam kicking' – mechanical form of clam harvest involving the modification of boat engines to direct propeller wash downwards to suspend bottom sediments and clams into a plume and collected in a trawl net towed behind the boat. American hard shell clam - *Mercencaria mercenaria*	Seagrass bed and sandflat	Monitored the impact of different intensities of clam kicking, as well as clam raking, for up to four years. Clam harvesting had no impact on the density or species composition of small benthic macroinvertebrates, largely made up of polychaetes. The study concluded that polychaetes recover rapidly from disturbance and as such the communities are unlikely to be adversely affected by clam harvesting.	-

Annex 10: Southern IFCA's Poole Harbour Roosting Sites Code of Practice

Poole Harbour Saltmarsh Protection Code of Practice

Within Poole Harbour, to prevent disturbance to breeding and roosting birds and to protect their supporting habitat, **no person should fish using a dredge within 10 metres of saltmarsh**, as mapped in figures 1 and 2.

EXPLANATORY NOTE

This Code of Practice (CoP) aims to avoid disturbance to breeding and roosting bird species and promote protection of supporting habitat within specific areas of Poole Harbour. Saltmarsh is a supporting habitat of the Poole Harbour Special Protection Area and is identified as being at risk. Dredge fishing over saltmarsh will likely lead to the erosion of this habitat. The Authority has a duty under the Conservation of Habitats and Species Regulations 2019, to ensure that fishing activity does not disturb or have an adverse effect on the wildlife for which a site in the National Site Network is legally protected. This CoP was developed as a first alternative to statutory measures. Where there is evidence of immediate risk to the habitat, statutory measures, in the form of Poole Harbour Dredge Permit Conditions, have been developed to protect areas of saltmarsh around Green Island and Seagull Island. This CoP will be reviewed at least annually and, should the CoP prove ineffective, Southern IFCA will consider the introduction of statutory measures. To further reduce the risk of disturbance to bird species, fishers are advised to avoid these areas of saltmarsh between fishing activities and to avoid the use of excessive noise when close by.

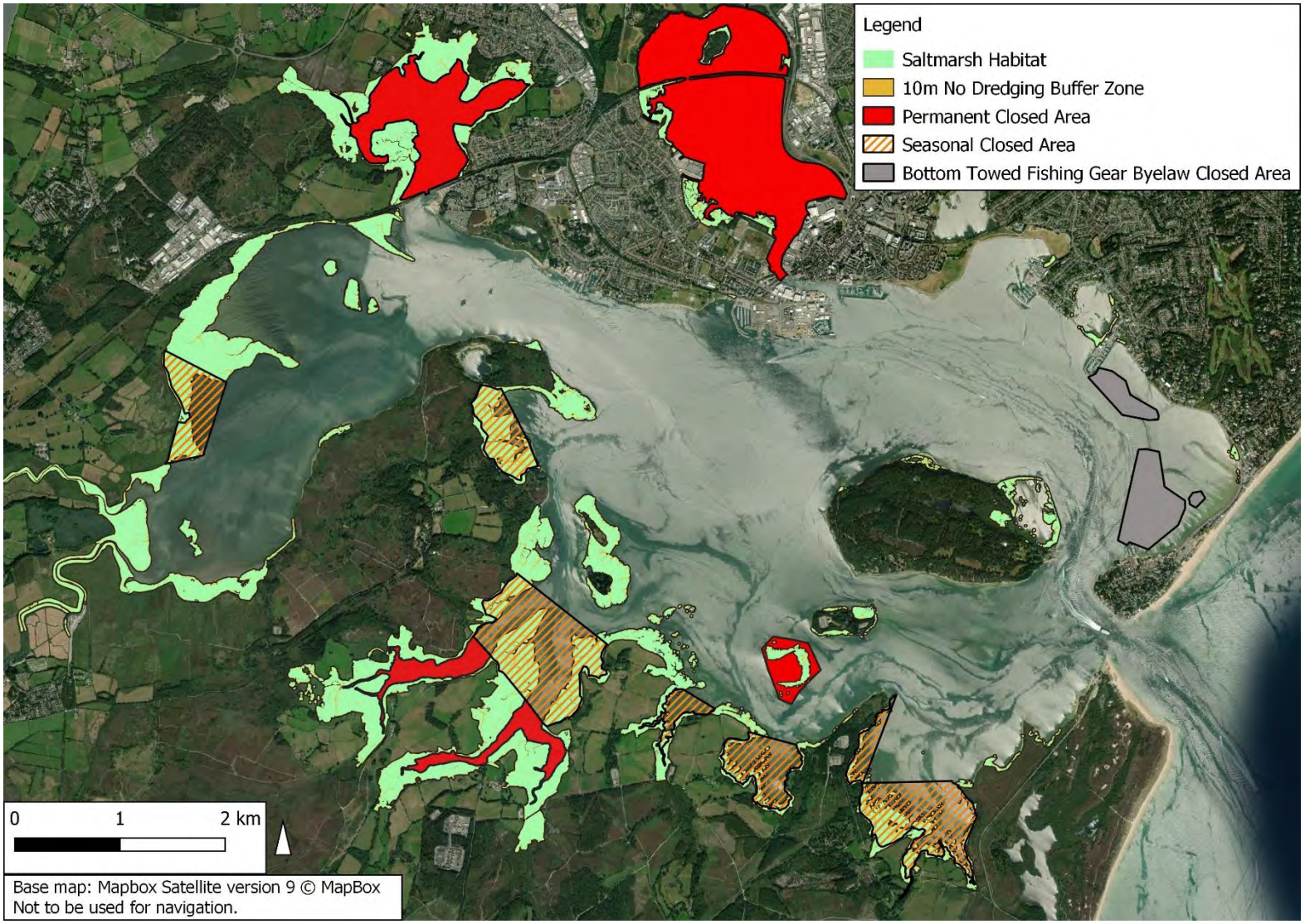
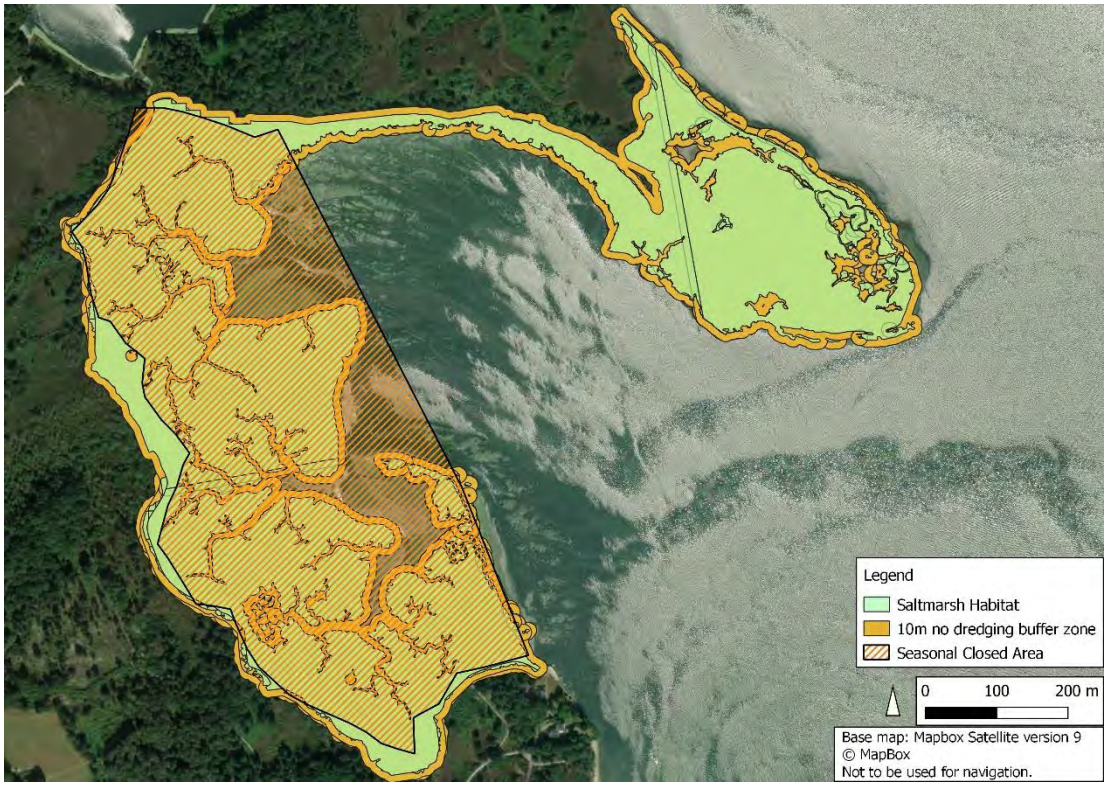


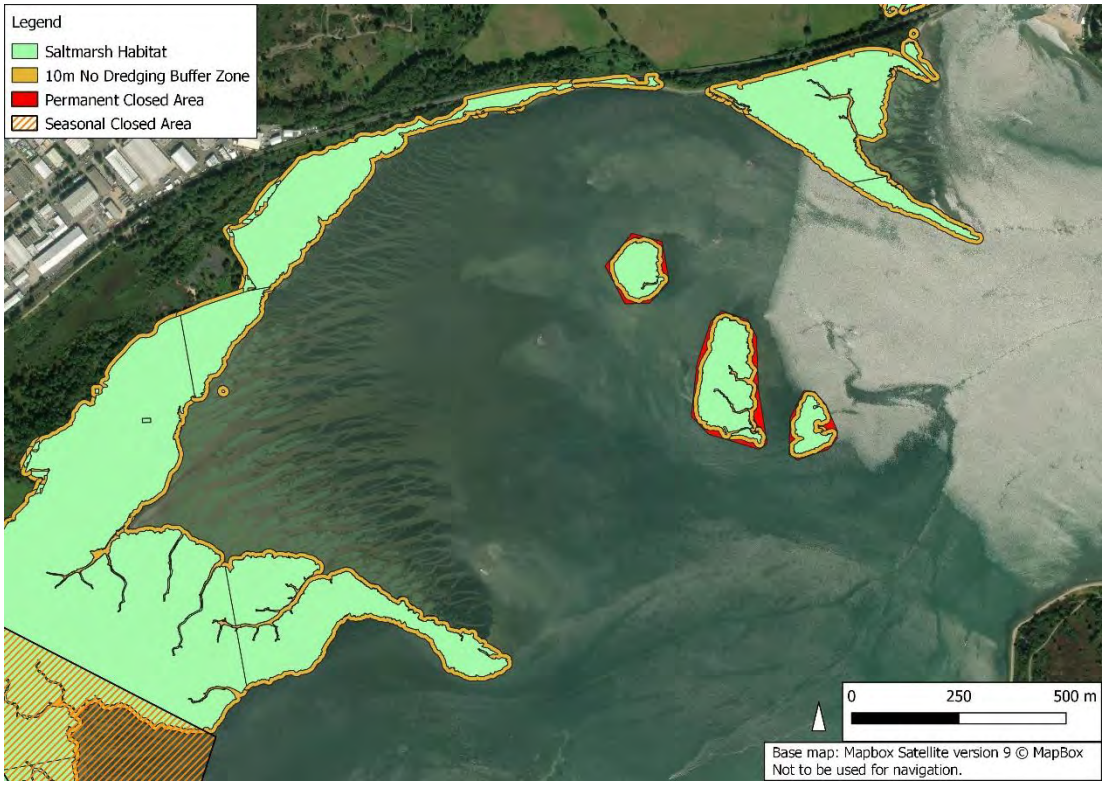
Figure 1: Saltmarsh in Poole Harbour with a 10m buffer zone, also shown are regulations under the Poole Harbour Dredge Permit and the Bottom Towed Fishing Gear Byelaw 2016.

Figure 2: Key areas where saltmarsh habitat is found in Poole Harbour and the 10m no dredging zone. Note that this 10m no dredging zone applies to all saltmarsh in Poole Harbour, the following maps are provided to aid fishermen in areas where fishing activity occurs in proximity to saltmarsh areas

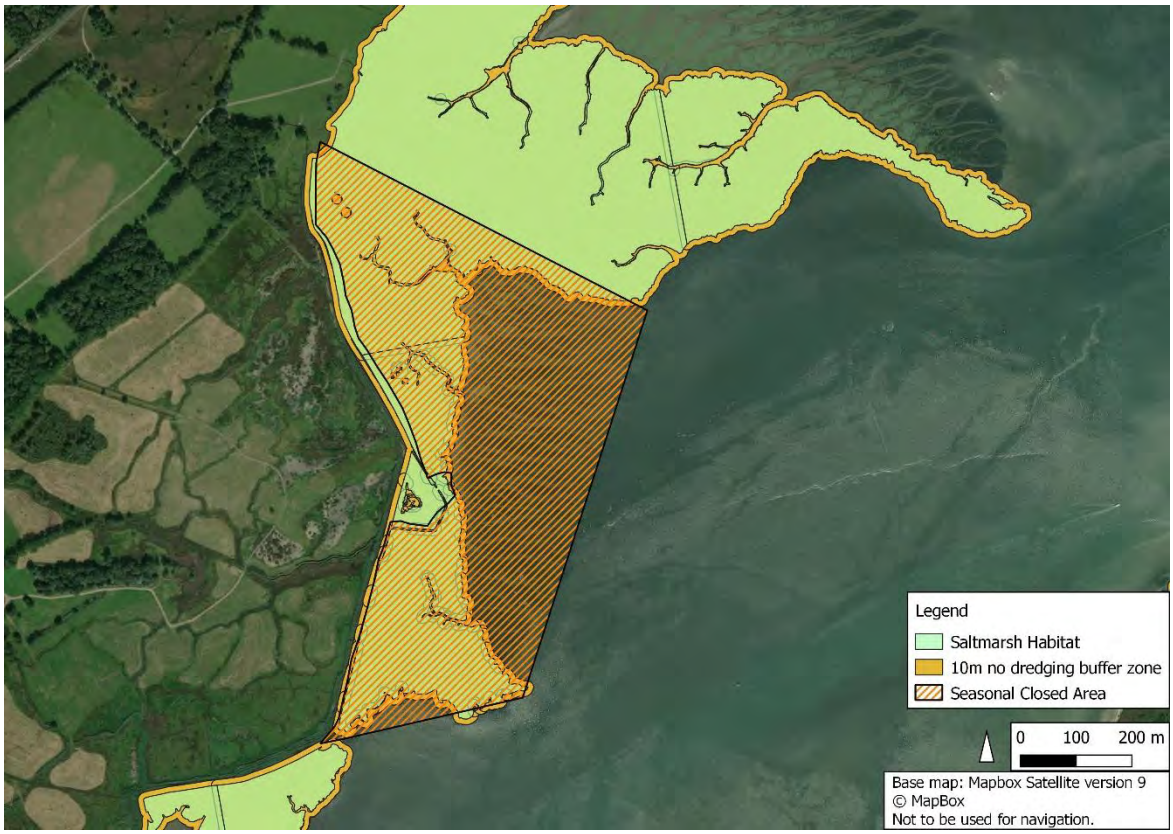
Arne Bay



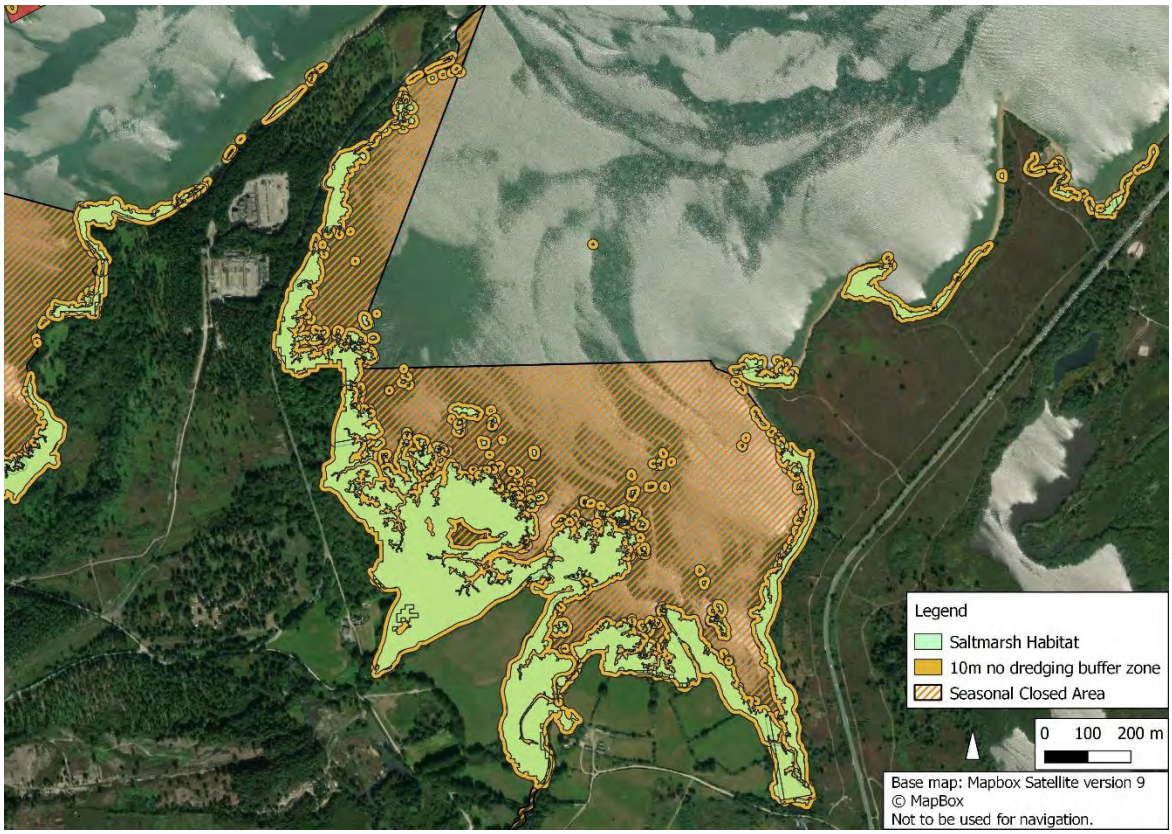
Holton Mere



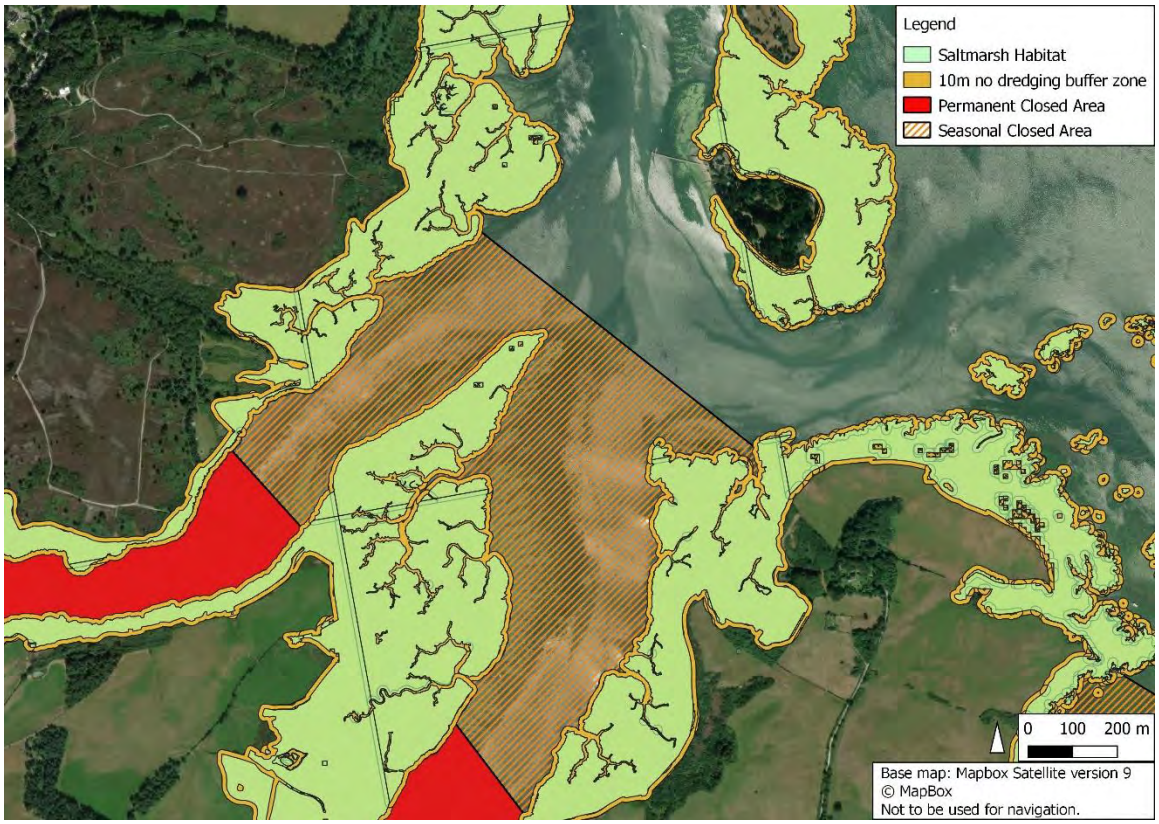
Keysworth



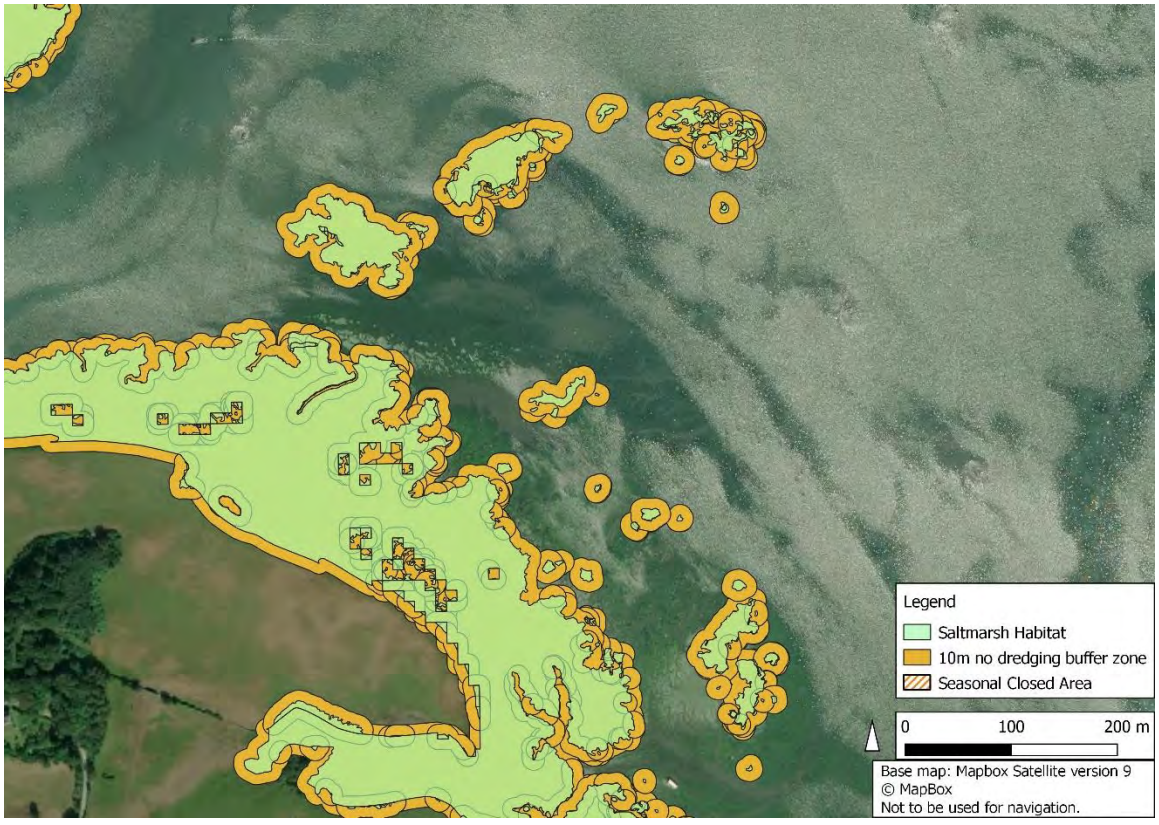
Brands Bay



Wych Lake and Middlebere Lake



The Wards



Annex 3: Updates to Permit Condition 2.1 and Relevant Sections of the Poole Harbour Dredge Permit Byelaw Access Policy

The Southern IFCA Online Permitting System was introduced in 2023 to provide secure and easily accessible permit information via PC, tablet, or mobile phone. To date the Southern IFCA Fish for Sale Permit is available via the online system, however it is the intention of the Authority to have the PHDP operating under this system for the 2025/26 season.

Applying for a permit using the Online Permitting System allows applicants to;

- Access permit information securely online via PC, tablet or mobile phone
- Upload vessel documents
- Dispense with unnecessary paperwork
- Avoid postal costs and the risk of delayed and lost post

The Online Permitting System will also allow for the submission of monthly catch return data, making this process easier and removing risk associated with submission of paper returns.

Permit Conditions

To enable the submission of catch returns through the Online Permitting System, an administrative amendment to the wording in **Section 2.1** of the Permit Conditions[1] is required.

Section 2.1 currently reads:
"For the months of May, June, July, August, September, October, November and December the permit holder must submit to the Authority a completed catch return using a 'Poole Harbour Dredge Permit Monthly Catch Return Form'. Completed catch returns must be received by the Authority no later than the 14th day of the following month."

The proposed update is:
"For the months of May, June, July, August, September, October, November and December the permit holder must submit to the Authority a completed catch return in a manner specified by the Authority. Completed catch returns must be received by the Authority no later than the 14th day of the following month."

Access Policy

In order to enable applications for a PHDPB Permit through the Online Permitting System, there is a need to amend **Sections 5.2, 5.3, 5.4** and **6.2 & 6.3** of the Poole Harbour Dredge Permit Fishery Access Policy[2]. These updates relate to the submission of application forms and are administrative only.

The current text in **Section 5.2** reads:
"Applications for a permit entitlement should be made using the Poole Harbour Dredge Permit Application Form."

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[1] https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Poole_Hrbr_D_Permit/Poole%20Harbour%20Dredge%20Permit-Conditions.pdf

[2] https://secure.toolkitfiles.co.uk/clients/25364/sitedata/Redesign/Poole_Hrbr_D_Permit/Poole-Hrbr-D-Permit-Access-Policy.pdf

The proposed amendment is:
"Applications for a permit entitlement must be made in accordance with the method stipulated by the Authority for the relevant permit season."

The current text in Section 5.3 reads:
"Completed application forms should be sent to the office of the Southern IFCA at 64 Ashley Road, Parkstone, Poole, Dorset, BH14 9BN."

The proposed amendment is:
"Completed applications must be submitted to Southern IFCA in the manner specified by the Authority for the relevant permit season."

The current text in **Section 5.4** reads:
"Completed application forms should be received no later than 14 days after the final day of the preceding season (31st March). Application forms received after this date will not be considered."

The proposed amendment is:
"Completed applications should be received no later than the date specified by the Authority for the relevant season. Application forms received after this date will not be considered."

The current text in **Section 6.2** reads:
"Applicants wishing to apply as a new entrant must submit their application using the Poole Harbour Dredge Permit Application Form."

The proposed amendment is:
"Applicants wishing to apply as a new entrant must submit their application in accordance with the method stipulated by the Authority."

The current text in **Section 6.3** reads:
"Completed application forms should be sent to the office of the Southern IFCA at 64 Ashley Road, Parkstone, Poole, Dorset, BH14 9BN."

The proposed amendment is:
"Completed applications must be submitted to Southern IFCA in the manner specified by the Authority."

Please note that for points 6.2 and 6.3, applications for new entrants to the fishery are not currently being taken, the proposed amendments are administrative and do not indicate that new entrant applications are being taken at this time. New entrants to the PHDP fishery continue to be dealt with in accordance with Section 6.8 of the Access Policy, the Poole Harbour Dredge Permit Waiting List is currently closed.

Marked E – Annex 4

Permit Holder Consultation

Review of permit conditions under the Poole Harbour Dredge Permit byelaw

Summary of Responses to Consultation

(11th December 2024 to 10th January 2025)

Title: Permit Holder Consultation on Review of Permit Conditions under the Poole Harbour Dredge Permit Byelaw

Author: C Mullen

About this document: This document has been developed to summarise the consultation with Poole Harbour Dredge Permit Byelaw Permit Holders undertaken by Southern IFCA between 11th December 2024 and 10th January 2025 as part of a review of permit conditions under the Poole Harbour Dredge Permit Byelaw. The responses received by the Authority have been summarised in this document.

Contents

Section 1: Introduction

The Poole Harbour Dredge Permit byelaw (PHDPB) regulates dredging for shellfish in Poole Harbour through the annual issue of permits. The byelaw allows the Southern IFCA Authority to attach conditions to the permit relating to the following:

- Catch restrictions and reporting.
- Gear types.
- Gear construction and restrictions.
- Spatial and temporal restrictions.
- The fitting of specified equipment to vessels.

1.1 PHDP Review Process

Under Section 11 of the PHDP, the Authority shall conduct a review of the suitability of permit conditions, permit fees, and limitations on the number of permits at intervals of no more than three years, or sooner if deemed necessary, in accordance with the procedure outlined below:

a. a consultation meeting will be held with permit holders to present available data and discuss options.
b. the Authority will decide what changes, if any, are required to the permit conditions or permit fees, having regard to:
    i. the Authority's duties and obligations under sections 153 and 154 of the Marine and Coastal Access Act 2009.
    ii. any available scientific and survey data.
    iii. any statutory advice given by Natural England.
    iv. any Habitats Regulations Assessment: conditions or permit fees; any feedback received from consultation with permit holders under sub paragraph (a).
c. the outcome of the review will be notified by the Authority to permit holders.

Section 2: Poole Harbour Dredge Permit Review 2024/25

During the 2024-2025 season, Southern IFCA received reports from Permit Holders indicating a decline in Manila clam catches. In response, a monthly analysis of catch data was conducted and shared with Permit Holders, as well as with Members of the Technical Advisory Sub-Committee (TAC) during the August 2024 and November 2024 meetings.

The Authority recommended that, through a review, a program of action be developed to allow the Authority to be proactive in the management of the fishery.

The 2024 review primarily focused on two key objectives. The first was the development of a comprehensive Monitoring and Control Plan, designed to assess Catch Per Unit Effort (CPUE) and Landing Per Unit Effort (LPUE) of harvested stocks within the PHDP fishery, achieved through the utilisation of data from the annual Poole Bivalve Survey, alongside data submitted by Permit Holders via monthly catch returns.

The second objective was the formulation of an action plan, which outlines a set of agreed-upon steps to be implemented should further management intervention be deemed necessary.

2.1 Consultation

A formal consultation period was conducted for the PHDP review 2024/25, from 11th December 2024 to 10th January 2025. During this period, all permit holders of the PHDPF were provided with a consultation document outlining the purpose and focus of the review, along with a series of consultation questions regarding the fishery. Additionally, permit holders were supplied with a consultation evidence document containing key information, including catch data from the most recent fishing season (Annex 1)[1], significant findings from the Poole Bivalve Survey conducted in April 2024[2], and proposed administrative changes.

The questions included in the consultation document focused on two key areas to gather permit holders' views to aid in the development of the Monitoring and Control Plan (M&CP) and Action Plan. These questions sought to understand the catch rates within the fishery and to determine the level of catch at which fishers would express concerns regarding the sustainability of the fishery and the economic viability of their associated businesses. Additionally, permit holders were asked to consider any potential changes that could be made to permit conditions, should management intervention be deemed necessary for the 2025/26 season.

A Poole Harbour Permit Review meeting was held on Tuesday, 18th December 2024, to provide permit holders with an opportunity to complete a consultation response form in person with the assistance of an officer. Southern IFCA also accepted consultation responses, both electronically and physically, from permit holders up until 10th January 2025 offered the option for a meeting with Officers for Permit Holders unable to attend the review meeting.

Section 3: PHDP Review 2024/25 Consultation Responses

Southern IFCA received a total of 16 responses to the PHDP review 2024/25. Of these, seven responses were submitted in person during the Southern IFCA Permit Review Meeting. Additionally, one follow-up in-person meeting was conducted, resulting in three further responses. Five responses were received via post or email.

The following text provides a summary of the key outputs from the consultation responses, based on the questions addressed to permit holders within the Consultation Document.

[1] Catch data for the months of November and December is also provided although it is noted that this data was not available at the time of the consultation.
[2] Poole Harbour Bivalve Survey Report 2024

3.1 Catch Levels

Question 1: ***Based on a catch rate as kg per day (with associated hours in which you would expect to achieve that catch rate), at what level of catch would you be concerned about the sustainability of the fishery?***

Table 1: The number of responses indicating the catch per day threshold at which permit holders would express concern regarding the sustainability of the PHDP fishery, should levels fall below this threshold, as derived from the 2024/25 PHDP review consultation responses.

Kg per day	No. of Responses
</50	2
51-100	0
101-150	8
151-200	2
201-250	0
>250	0
No quantity provided	3

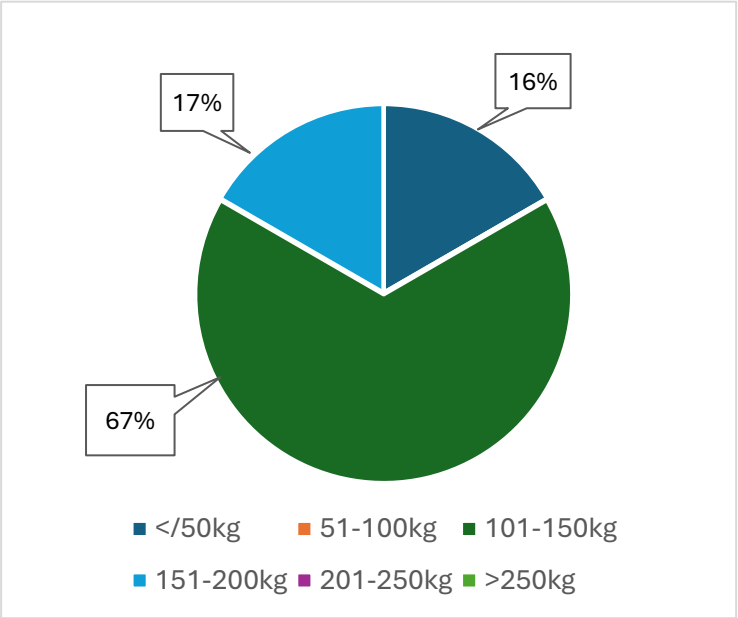


Figure 1: A pie chart illustrating the proportion of responses indicating the catch per day threshold at which permit holders would express concern regarding the sustainability of the PHDP fishery, should catch levels fall below this threshold, as derived from the 2024/25 PHDP review consultation responses.

The most common catch weight per day at which permit holders expressed concern regarding the sustainability of the fishery ranged between 100-150kg per day of fishing (Table 1, Figure 1). Not all respondents provided an estimate of the hours required to achieve this catch, with some indicating that the stated amount would typically be collected in a single day. For those who did provide an estimate, the range was generally between 5-8 hours.

Values were influenced by factors such as fuel costs, crew fees, and other associated expenses. Three respondents did not provide a specific quantity for this question, with some noting that it is difficult to set a definitive catch rate due to the variable nature of market prices, crew availability, weather conditions, tides, and other influencing factors.

<u>Question 2:</u> ***Based on a catch rate measured as kg per day (with associated hours in which you would expect to achieve that catch rate), at what level of catch would you be concerned about the economic impact on you and your business?***

Table 2: The number of responses indicating the catch per day threshold at which permit holders would express concern regarding the economic viability of the PHDP fishery, should levels fall below this threshold, as derived from the 2024/25 PHDP review consultation responses.

Kg per day	No. of Responses
</50	5
51-100	2
101-150	0
151-200	1
201-250	0
>250	1
No quantity provided	4

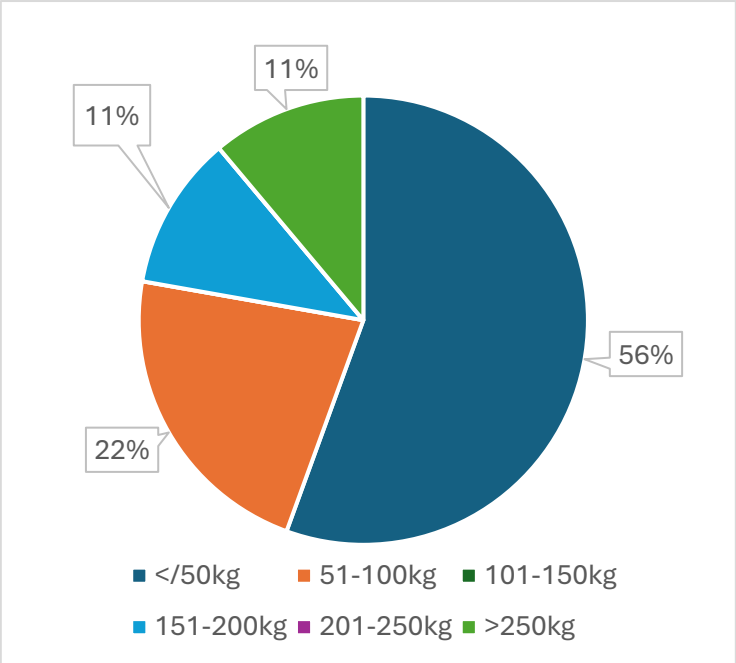


Figure 2: A pie chart illustrating the proportion of responses indicating the catch per day threshold at which permit holders would express concern regarding the economic viability of the PHDP fishery, should catch levels fall below this threshold, as derived from the 2024/25 PHDP review consultation responses.

The most common catch weight per day at which permit holders expressed concern regarding the economic viability of their businesses was 50kg per day of fishing (Table 2, Figure 2). Similar to Question 1, not all respondents provided an estimate of the hours required to achieve this catch; however, the range provided was generally between 5 and 8 hours. Four respondents did not provide a specific quantity for this question.

Higher catch weights were predominantly reported by permit holders with additional costs, such as those incurred from paying crew members. The variation in reported catch weights is attributed to several independent variables, including the presence of crew members, fuel costs, market value, weather conditions and tide impacting available fishing time, and seasonality affecting catch volumes. It was noted that fishers employing crew members tended to report higher daily catch values compared to those operating solo. Furthermore, most respondents indicated that, should the fishery become economically unviable, permit holders would seek alternative sources of income.

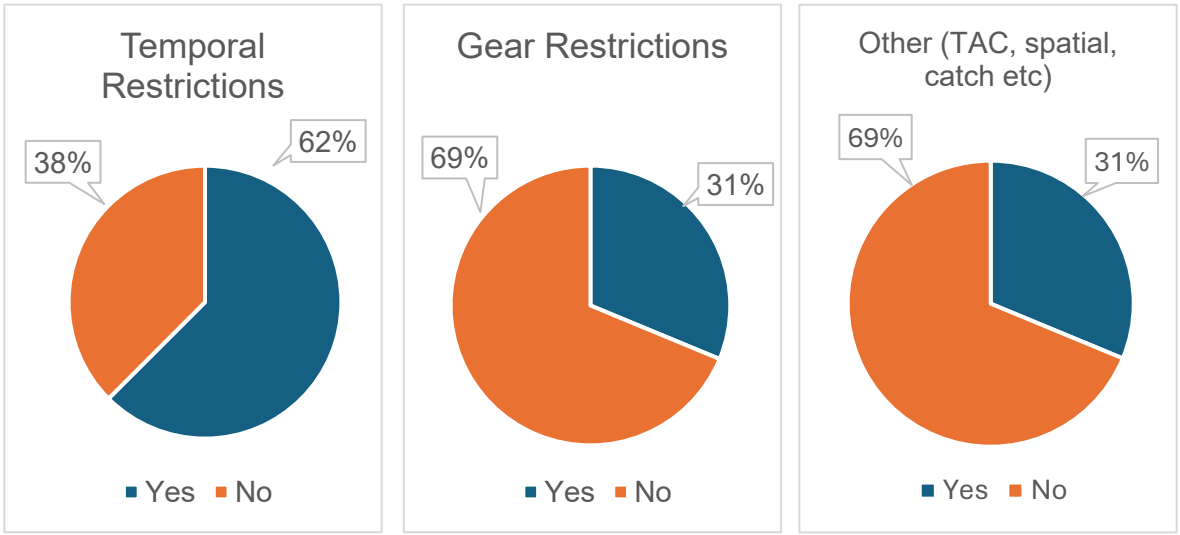
3.2 Potential changes to permit conditions

The following information provides a summary of the responses regarding potential changes to permit conditions, should further management be deemed necessary to support a sustainable fishery.

Question 3: ***In the event that further management is required to support a sustainable fishery, which type(s) of permit conditions could be changed to achieve that sustainability?***

Table 3: The number of responses from the 2024/25 PHDP Review consultation indicating support for temporal restrictions, gear restrictions, and other potential measures, including changes to the Total Allowable Catch (TAC), spatial closures, catch reporting requirements, and additional suggestions from permit holders.

Permit Condition	Yes	No
Temporal Restrictions	10	6
Gear Requirements	5	11
Other Permit Condition Changes (Total Allowable Catch (TAC), spatial closures, catch reporting) etc)	5	11



Figures 3A, 3B, and 3C: Pie charts illustrating the level of support from consultation responses for temporal restrictions (A), gear restrictions (B), and other proposed management interventions (C), which could be incorporated into permit condition changes should further management be deemed necessary to support a sustainable fishery.

Eleven out of sixteen responses supported the potential implementation of additional temporal restrictions on the fishery. Five agreed with the use of gear restrictions. Five agreed that additional restrictions on other measures such as spatial limitations and Total Allowable Catch (TAC) restrictions would be beneficial (Table 3, Figures A, B and C).

Temporal Restrictions

Comments regarding temporal restrictions indicated that such measures would have the least impact on fishers while still contributing to the sustainability of the fishery. A common suggestion was to reduce the number of fishing days by removing Saturdays, resulting in a five-day fishing week, rather than limiting daily fishing hours. Increased restrictions on time spent fishing each day was criticized, and it was noted that tides already significantly affect the available fishing time. Although those that did prefer the removal of hours rather than days suggested the removal of 1hr at the from the beginning of the curfew and 1hr form the end of the curfew making the fishing day from 0700-1700.

The length of the fishing season was also a point of discussion, with the understanding that any changes would need to be communicated a year in advance to allow fishers to adjust, given that many have already prepared for the off-season between December 2024 and the start of the season in May 2025. If the season were to be shortened, fishers would require time to prepare financially. Consequently, it was proposed that any consideration of changes to the season length would need to be considered for the 2026 season or beyond, with careful consideration of the financial implications for fishers during the off-season.

Comments against changes to temporal restrictions referenced that time spent fishing is already controlled and that any additional temporal restrictions could increase safety risks due to permit holders attempting to fish in more adverse weather conditions.

Gear Requirements

Comments regarding gear requirements included suggestions for increasing riddle spacing. Additionally, comments were made regarding the direction of spray bars within the dredge, noting the differences in spray bar orientation when fishing for cockles as opposed to Manila clams. Responses that did not identify a need for changes to gear requirements highlighted that these are already effectively managed under the permit conditions outlined in the relevant byelaw.

Other Restrictions (spatial and total allowable catch/TAC)

Comments on spatial restrictions primarily emphasised that no further restrictions were necessary, comments included that there would be a concentration of effort in open areas and that dependent on stock patterns fishers are already spatially regulating themselves through normal fishing practice, moving around the Harbour in line with differing catch levels. Southern IFCA took note of concerns regarding the increased growth of weed in areas that are seasonally closed.

Three responses referred to a Total Allowable Catch as a potential permit conditions change. 2 of these responses listed a blanket TAC between 160-300kg per day, while one response suggested individual TACs based on a 5-year annual average of landings data for each permit holders.

Question 4: ***Do you think changes to a certain type of measure would be more beneficial, for example changes to temporal measures rather than changes to fishing gear?***

Table 4: **The percentage of responses from the 2024/25 PHDP Fishery Review consultation indicating the perceived preference of change, should action and adjustments to permit conditions be necessary for further management of the fishery.**

Potential permit condition change	Percentage (%)
Temporal Restriction	62.5
Fishing Gear	18.75
Other	12.5
No Preference	6.25

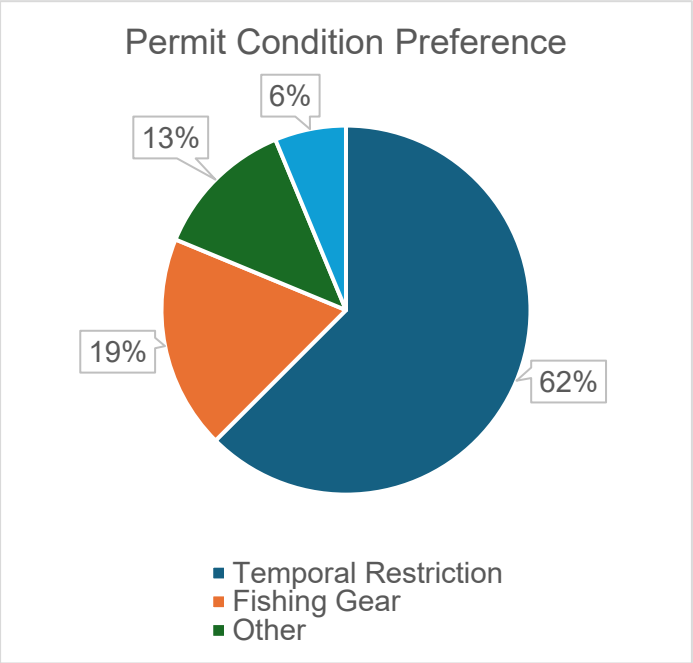


Figure 4: **A pie chart illustrating the percentage of responses from the 2024/25 PHDP Fishery Review consultation indicating the perceived preference of change, should action and adjustments to permit conditions be necessary for further management of the fishery.**

Fifteen out of the sixteen responses indicated a preference for one or two permit condition changes from the categorised table above. Of these, ten responses described temporal adjustments as the preferred change. Notably, while ten respondents favoured temporal changes, eleven of the sixteen specifically referenced the removal of Saturdays as their preferred adjustment, if further management of the fishery were required (Table 4, Figure 4).

Question 5: ***Considering the answers to Questions 3 and 4, what impact would any changes to those permit conditions have on your fishing or business considering any economic, social or other impacts?***

Table 5: The percentage of responses from the 2024/25 PHDP Fishery Review consultation, indicating the perceived level of impact on fishers should management intervention be required for the fishery.

Response	Percentage (%)
No impact	31.4
Impact to fishers but manageable/ benefits fishery long term	25
Impactful to fishers	18.8
No response	12.5

Fourteen respondents provided feedback on the potential impact of changes to fishing restrictions under the permit conditions of the Poole Harbour Dredge Fishery (Table 5). Five respondents specifically stated that the removal of Saturdays would have no impact on their business. Four responses said that any changes to permit conditions would be impactful to fishers but manageable. Comments included that changes would result in financial impacts and changes in the availability to fish but would result in benefits for the fishery. Five responses listed that any changes would negatively impact fishers. Three responses referenced the impact to those investing in the fishery, including purchasing gear and vessels, while 2 responses highlighted the possibility for redundancy of crew and no alternative employment.

3.3 Administrative Changes

The following sections summarises responses surrounding administrative changes suggested to the permit conditions under the wording for catch reporting each month to allow for the transitions towards catch return submissions through the Southern IFCA online permitting system.

Question 6: ***Do you have any comments on the administrative changes to the Access Policy (address) or Permit Conditions 2.1 for catch reporting (permitting system)?***

Table 6: The number of responses from the 2024/25 PHDP Review consultation that raised concerns regarding administrative changes to the wording of the permit conditions for the PHDPB.

No Comment	Raised Concerns
13	3

Thirteen respondents expressed no concerns and indicated they were indifferent to proposed changes. Three respondents raised concerns, which primarily focused on technological difficulties and a preference for paper catch returns versus the online permitting system (Table 6).

Question 7: ***Do you have any other feedback or comments regarding other aspects of the Poole Harbour Dredge Permit fishery?***

Several responses highlighted feedback regarding the 2024 fishing season. There were varied perspectives on the decline in clam fishing for the year. Some attributed this decline to prolonged rainfall and mild temperatures during the winter of 2023, which impacted salinity and water temperatures, seen as factors crucial for clam health and reproduction. While concerns were also raised about the increased presence of weed in closed areas and the delayed appearance of growth rings in clams, which were not observed until July 2024, later than anticipated.

Conversely, others were not largely concerned about the low catch numbers, suggesting that clam populations may rebound in subsequent seasons. Additionally, some fishers reported no significant changes in their fishing season compared to previous years.

Section 4: Next Steps

This summary of responses document will be shared with Permit Holders as part of the notification of the outcome of the review by the Authority.

In determining what changes, if any, are required to the permit conditions through the review, the Authority will have regard to any other available evidence as listed in paragraph (11b) of the PHDPB.

Section 5: Annexes

Annex 1: Evidence Related to PHDP Landings Data

1.1 Catch Data Analysis for the 2024 Fishing season

In response to concerns raised by Permit Holders regarding levels of catch of Manila clam during the 2024 fishing season, Southern IFCA undertook detailed monthly analysis of catch data submitted by Permit Holders.

The analysis included a detailed examination of the landings of Manila clam, expressed in kilograms for each permit holder, alongside data on fishing zones and hours fished. Stock assessments were conducted considering multiple parameters, including the total kilograms of clams landed, hours fished, the number of active fishers, and zonal coverage of the harbour.

Below is the analysis of Catch Per Unit Effort (CPUE) as kilograms of Manila clam landed per hour within the Poole Harbour Dredge Permit Fishery (refer to Table 1, Figures 2 and 3).

Catch Per Unit Effort Data

Table 1. The Catch Per Unit Effort (CPUE) of Manila clam stocks in the Poole Harbour Dredge Permit fishing seasons from 2016-2024, expressed as total weight of Manila clam (kg) harvested per hour across all Permit Holders. The years with the highest and lowest total kg/hour for each month are highlighted in green (highest) and orange (lowest). The average kg/hour for each year is also provided.

MONTH	2016	2017	2018	2019	2020	2021	2022	2023	2024
MAY	11.71	12.85	12.60	13.34	22.40	27.22	25.64	27.50	19.59
JUNE	14.28	13.73	12.88	16.88	32.28	27.87	23.52	25.18	16.30
JULY	11.38	14.31	14.36	15.96	35.41	32.05	24.30	30.26	15.20
AUGUST	13.04	14.13	14.17	16.25	36.35	34.35	22.07	29.14	14.25
SEPTEMBER	14.38	12.82	13.87	15.99	33.04	28.83	20.13	27.15	13.78
OCTOBER	12.94	11.19	14.39	13.66	28.77	26.29	20.04	23.46	14.40
NOVEMBER	10.23	8.80	11.92	13.08	26.25	24.72	18.25	20.77	11.89
DECEMBER	8.88	7.28	11.86	11.33	24.28	21.47	15.84	17.58	8.21(*)
Yearly Average kg/hour	**12.11**	**11.89**	**13.26**	**14.56**	**29.85**	**27.85**	**21.22**	**25.13**	**14.20**

(*) Note that in December 2024 there was a large increase in kg/hr for common cockle and American Hard-shelled clam, this resulted in hours remaining high but the main target species not being Manila clam.

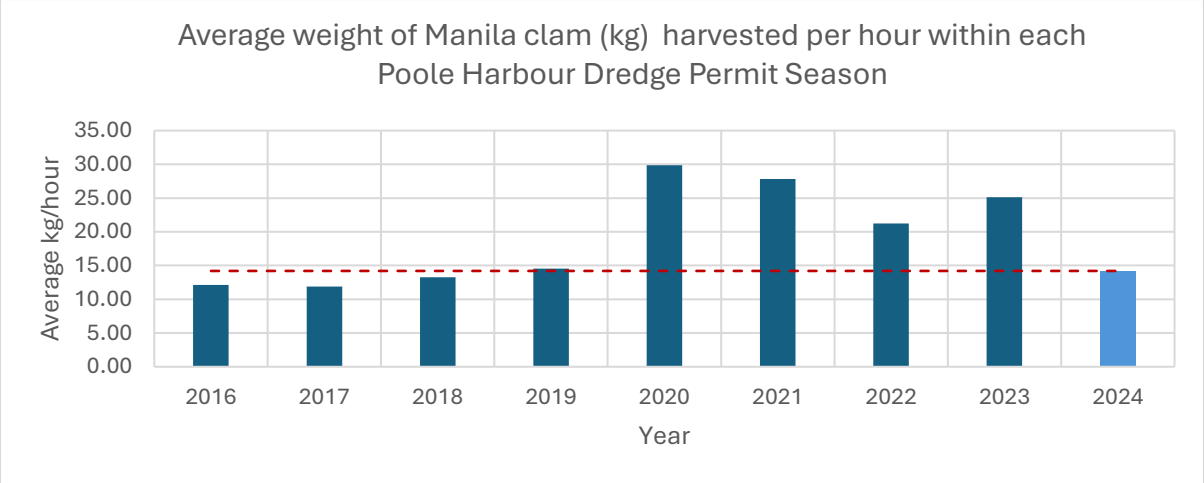


Figure 2: Average weight of Manila clam harvested (kg) per hour within a fishing season of the Poole Harbour Dredge Permit Fishery (25th May-23rd December) between 2016 and 2024. The red dashed lined indicates the CPUE for 2024 in comparison to previous years.

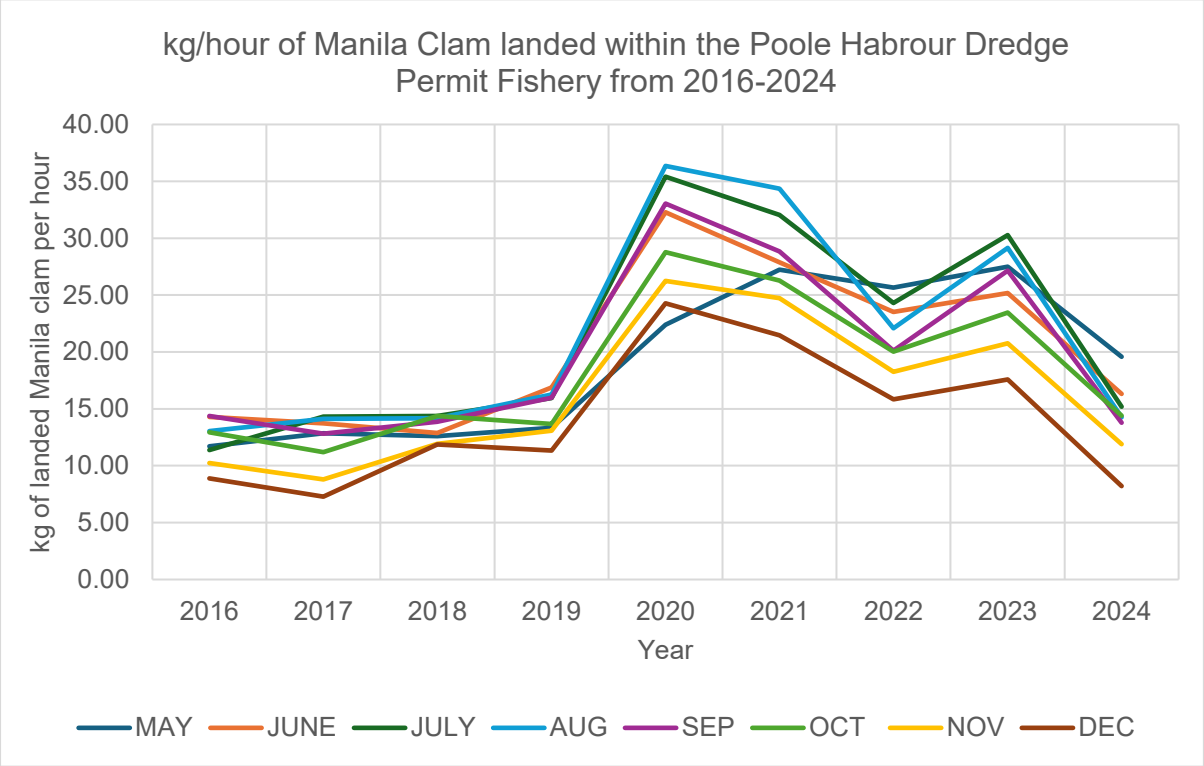


Figure 3: kg of Manila clam per hour for the months of May, June, July, August and September for 2016-2024 based on data supplied by Permit Holders in the PHDP fishery through monthly catch return submissions.

For May 2024, the total CPUE was 19.59 kg/hour

- This is a decrease compared to May 2023 of 28.7% (May 2023 = 27.5 kg/hour)
- Compared to 2016-2019, the CPUE for May 2024 is between a 67.3% increase when compared to 2016 (11.71 kg/hour) and a 47% increase compared to 2019 (13.33 kg/hour).
- The CPUE for May 2024 was a 28.8% decrease when compared to the highest recorded value (27.5kg/hour in May 2023).
- Values showed consistency between 2016-2019 followed by an increase in 2020 to peak in 2021. The CPUE decrease to 2022 followed by an increase in 2022 and a decline again in 2024.

For June 2024, the total CPUE was 16.3 kg/hour.

- This is a decrease compared to June 2023 of 35.3% (June 2023 = 25.18 kg/hour)
- Compared to 2016-2019, the CPUE for June 2024 is between a 26.6% increase compared to 2018 (12.88kg/hour) and a 3.4% decrease compared to 2019 (16.88kg/hour).
- CPUE in June 2024 was a 49.5% decrease when compared to the highest recorded value (32.28kg/hour in June 2020).
- Values showed relative consistency between 2016-2019 before a large increase in 2020, a steady decline in CPUE was seen to 2022 followed by a slight increase again in 2023. Stocks have declined again in 2024.

For July 2024, the total CPUE was 15.2 kg/hour.

- This was a decrease from July 2023 of 49.77% (July 2023= 30.26 kg/hour).
- Compared to 2016-2019, the CPUE in July 2024 was between a 33.57% increase compared to 2016 (11.38kg/hour) and a 4.76% decrease compared to 2019 (15.96kg/hour).
- CPUE in July 2024 was a 57.1% decrease when compared to the highest recorded value (25.41 kg/hour in July 2020).
- Values showed consistency between 2016-2019 before a large increase in 2020. CPUE for July decreased again between 2020 and 2022 followed by a sharp incline in 2023. Levels have decrease again in 2024.

For August 2024, the total CPUE was 14.25 kg/hour.

- This was a decrease from August 2023 of 51.1% (August 2023= 29.14 kg/hour).
- Compared to 2016-2019, the CPUE in August 2024 was between a 9.28% increase when compared to 2016 (13.04. kg/hour) and a 12.3% decrease compared to 2019 (16.25 kg/hour).
- CPUE in August 2024 was a 60.8% decrease when compared to the largest CPUE value (36.35 kg/hour in August 2020).

- Values showed consistency between 2016-2019 before a large increase in 2020. CPUE for August decreased again between 2020 and 2022 followed by a sharp incline in 2023. Levels have decrease again in 2024.

For September 2024, the total CPUE was 13.78 kg/hour.

- This was a decrease from September 2023 of 49.2% (September 2023= 27.15kg/hour)
- Compared to 2016-2019, the CPUE in September 2024 was between a 7.5% increase compared to 2017 (12.82 kg/hour) and 13.8% decrease compared to 2019 (15.99 kg/hour).
- CPUE in September 2024 was a 58.3% decrease when compared to the highest recorder value (2020).
- Values showed consistency between 2016-2019 before a large increase in 2020. CPUE for September decreased again between 2020 and 2022 followed by a sharp incline in 2023. Levels have decrease again in 2024.

For October 2024, the CPUE was 14.4 kg/hour.

- This was a decrease from October 2023 of 38.62% (23.46 kg/hour in October 2023).
- Compared to 2016-2019, October 2024 was between a 28.7% increase from 2017 (11.19 kg/hour) and 0.1% increase compared to 2018 (14.39 kg/hour).
- CPUE in October 2024 was a 49.9% decrease compared to the highest record value (28.77 kg/hour in October 2020).
- Values remained consistent between 2019 followed by a peak in CPUE in 2020. This gradually declined between 2020-2022 followed by another increase in 2023. Since 2023, the CPUE decreased again in 20224 to levels just above those seen in 2019.

For **November 2024,** the CPUE was 11.89kg/hour.

- This was a decrease from November 2023 of 42.76% (20.77 kg/hour in November 2023).
- Compared to 2016-2019, November 2024 was between a 35.11% increase from 2017 (8.80 kg/hour) and 9.10% decrease from 2019 (13.08 kg/hour).
- CPUE in November 2024 was a 54.7% decrease compared to the highest record value (26.15 kg/hour in November 2020).
- Values showed a gradual increase between 2016-2019 followed by a peak in CPUE in 2020. This gradually declined between 2020-2022 followed by another increase in 2023. Since 2023, the CPUE decreased again in 20224 to levels just above those seen in 2019.

For **December 2024,** the CPUE was 8.21 kg/hour.

- This was a decrease from December 2023 of 53.3% (17.58 kg/hour in December 2023).
- Compared to 2016-2019, December 2024 was between a 12.77% increase from December 2017 (7.28 kg/hour) and a 30.18% decrease from 2018 (11.86 kg/hour).
- CPUE in December 2024 was a 66.2% decrease from the highest record value (24.28 kg/hour in December 2020).
- Values showed a gradual increase between 2016-2019 followed by a peak in CPUE in 2020. This gradually declined between 2020-2022 followed by another increase in 2023. Since 2023, the CPUE decreased again in 2024 to levels just above those seen in 2019.

EXECUTIVE SUMMARY

Marked F

Fisheries Management Plans Updates
Paper For Information

Report by PO Wright

A. Purpose

For Members to receive updates on the development of Fisheries Management Plans (FMPs).

B. Annex

1. Southern IFCA consultation responses to T3 FMP formal consultation; Cockle FMP, Southern North Sea and Channel Skates and Rays FMP, Queen Scallop FMP and North Sea and Channel Sprat FMP

1.0 Introduction

- FMPs, developed under the Joint Fisheries Statement (JFS) aim to carry out the objectives of the Fisheries Act 2020 by ensuring the continued provision of a shared natural resource for future generations, through the management of fish stocks, geographic area and fishing methods.
- Each FMP is developed by a delivery partner which, to date, includes Defra, the MMO, Seafish, the AIFCA and industry bodies.
- The development process includes collaborative engagement between delivery partners and stakeholders and each FMP will be monitored, reviewed and adapted every 6 years.

The FMP Program

	Tranche 1 & Tranche 2	Tranche 3	Tranche 4
No. of Plans:	6	5	4
Relevant to SIFCA:	6	4	4
Development:	2021-2023	2023-2025	2023-2026
Publication:	Dec 2023 (*)	*Intended 2025*	*Intended 2026*
Implementation:	2024 - ongoing	*Intended 2025*	*Intended 2026*

(*) Mixed Flatfish FMP published in October 2024

2.0 Summary of Key Updates

General

- The consultation on the Joint Fisheries Statement (JFS) closed on the 21st November 2024. The results of this consultation were announced on the 18th December 2024, with most respondents agreeing with the proposed changes[1]
- Most relevant to Southern IFCA are changes to deadlines of unpublished FMPs. The revised deadlines for Tranche 3 FMPs is December 2025 and for Tranche 4 is December 2026. Additionally, there was a change to the name of the Black seabream FMP to the Seabream FMP and the inclusion of Gilthead bream, and the inclusion of cuckoo wrasse in the Wrasses Complex FMP.

[1] The outcome of the consultation on Annex A of the JFS has been published today – Fisheries Management Plans

EXECUTIVE SUMMARY

Marked F

Tranche 1 and Tranche 2 FMPs

- On 16th October 2024, Defra laid legislation in Parliament (in the form of a Statutory Instrument) which proposed to enact a number of management measures from the frontrunner FMPs.
- The following measures came into force on **16th December 2024**:
    - New MCRS for lemon sole (250mm), turbot (300mm), brill (300mm) in ICES areas 7d and 7e, and crawfish (110mm) in all English waters.
        - The sizes for fish species are an output from the Channel Non-Quota Demersal Species and Southern North Sea and Eastern Channel Mixed Flatfish FMPs and the crawfish an output from the Crab and Lobster FMPs.
        - The proposed MCRS all align with MCRS which Southern IFCA currently have in place for the District.
    - Flyseining vessels are to have engine power restrictions for those vessels with a power > 221Kw and all vessels using flyseining gear will have to use a larger mesh (100mm minimum) in English waters.
        - This is an output from the Channel Non-Quota Demersal Species FMP.
    - Changes which allow commercial catch limits for bass to be updated promptly in fishing licences following international negotiations, so they are in line with evolving evidence. This is instead of having to change legislation, which takes time.
        - This is an output from the Bass FMP.
- The Cuttlefish stakeholder roundtable was attended by PO Wright, where the draft action plan was discussed, this is an output from the Channel Non-Quota Demersal Species FMP. Southern IFCA received a second copy of the draft action plan in December for comment, comments have been provided. This is the second round of comments that have been given on the plan.

Tranche 3 FMPs

Consultation

- Defra published the consultation documents for the 5 proposed T3 FMPs in English Waters.
- 4 of the 5 FMPs cover the Southern IFCA District, the Southern North Sea Demersal Non-Quota Species FMP does not have any geographic overlap.
- The consultation ran from **October 2024 to 19th January 2025.**
- Below are the links to the draft FMP documents:
    - Cockle FMP
        - Cockle: proposed fisheries management plan consultation - GOV.UK (www.gov.uk)
    - Queen scallop FMP
        - Queen scallop: proposed fisheries management plan consultation - GOV.UK (www.gov.uk)
    - North Sea and Channel Sprat
        - North Sea and Channel sprat: proposed fisheries management plan consultation - GOV.UK (www.gov.uk)
    - Southern North Sea and Channel skates and rays
        - Southern North Sea and Channel skates and rays: proposed fisheries management plan consultation - GOV.UK (www.gov.uk)
    - Southern North Sea demersal non-quota species
        - Southern North Sea demersal non-quota species: proposed fisheries management plan consultation - GOV.UK (www.gov.uk).

Consultation Events

As part of the consultation, Defra held consultation events across the country where the FMP team were available to talk about the T3 plans in more detail.

- Throughout the consultation period Southern IFCA participated in the engagement. PO Wright and DCO Birchenough attended the two in-person events held within the District, for the Cockle and Southern North Sea and Channel Skates and Rays FMPs. PO Wright then attended a further four online engagement events, this covered engagement for all the T3 FMPs. This engagement provided an understanding of how stakeholders both within and outside the District were receiving the FMPs and any points that were being raised.
- Several points that were raised in these meetings were incorporated into SIFCAs responses to the consultation.

Consultation Response

- A Members Workshop was run in December by PO Wright to present an overview of the four relevant FMPs under consultation to the Members and offer an opportunity for any comments, discussion and points to raise on each FMP which could then be incorporated into Southern IFCA consultation responses.
- For each of the four FMPs relevant to the District: Cockle, North Sea and Channel Sprat, Queen Scallop and Southern North Sea and Channel Skates and Rays, a formal response was written by SIFCA and submitted to DEFRA. These responses incorporated relevance of the FMP to the District and any points on proposed goals, actions and measures incorporating feedback from both stakeholder events and the Members Workship.
- Each of the responses are available in Annex 1 to this report.

Tranche 4 FMPs

- There are 4 T4 FMPs which are currently being developed:
    - Seabream FMP (*all Southern IFCA District*)
    - Wrasses Complex FMP (*all Southern IFCA District*)
    - Celtic Sea and Western Channel Demersal FMP (*ICES 7e part of Southern IFCA District)*
    - Celtic Sea and Western Channel Pelagic FMP (*ICES 7e part of Southern IFCA District*)

- DCO Birchenough and PO Wright have been engaging with the MMO FMP team on the Seabream and Wrasses Complex FMPs. Working Groups for both FMPs were attended by PO Wright and DCO Birchenough in October and December 2024 with the next meeting scheduled for February 2025.
- In person engagement for the Wrasses Complex and Seabreams FMPs commenced on the 13th January 2025, with events in Mudeford and Poole attended by DCO Birchenough. A further event on the **30th January** in Weymouth[2] will be attended by DCO Birchenough and PO Wright.
- The CSWC Pelagic Fisheries Management Plan - 2nd Partnership meeting was attended by PO Wright.

Consultation

- Two surveys to gain stakeholder views have been published by the MMO for: The Wrasses complex and Black seabream FMP[3] and the Celtic Sea and Western Channel Demersal FMP[4].
    - These surveys close on the **31st January 2025.**

3.0 Next Steps

- That Members note the report.
- The Southern IFCA FMP webpage continues to be updated with all new developments in the FMP program - Fisheries Management Plans : Southern IFCA (southern-ifca.gov.uk).

[2] Wrasses complex and black seabream FMP workshop
[3] Wrasses Complex FMP and Seabream FMP online survey - GOV.UK
[4] Online survey for stakeholders of demersal fisheries in Celtic Sea and Western Channel - GOV.UK

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18th January 2025

Fisheries Management Plans Team
Marine & Fisheries Directorate
Seacole Building
2 Marsham Street
SW1P 4DF

Dear Fisheries Management Plans Team,

RE: Southern Inshore Fisheries and Conservation Authority consultation response to the proposed Cockle Fisheries Management Plan

Thank you for the opportunity to respond to the consultation on the Cockle Fisheries Management Plan (FMP). The Southern IFCA would like to raise the following points through this consultation.

Southern IFCA District Application

The extent and importance of cockle fisheries within the Southern IFCA District ("the District") has been outlined in the FMP, there are two dredge fisheries for cockle in Poole Harbour and the Solent, both managed under permit byelaws, with 45 and 47 permit holders respectively for the most recent fishing seasons under each permit. The size of the vessel which can be used in the District is limited to 12nm under the Southern IFCA 'Vessels Used in Fishing Byelaw 2012' (with certain exceptions applying to historic use and charter vessels).

Hand-gathering for cockle also takes place within the District, areas of note being Poole Harbour, Southampton Water, Langstone Harbour and Portsmouth Harbour.

The importance of these fisheries within the District means that the proposed FMP and resulting outputs has potential to impact the fishing industry within our area.

Southern IFCA Research

Southern IFCA note that detail has been provided in the FMP and accompanying Evidence Statement on the research undertaken in Poole Harbour with regard to cockle stocks. There is limited detail provided on the research undertaken in the Solent to support the bivalve fisheries under the Solent Dredge Permit Byelaw. Whilst cockle is not the primary target species for the fishery and landings under the Permit Byelaw have not included cockle to date, cockle is a primary species which is surveyed through the Solent Bivalve Stock Survey. Page 30 of the FMP currently states analysis from this survey has focused on Manila clam, both Manila clam and cockle are subject to analysis under this survey. The survey is conducted twice per year, at periods representing the pre-fishing season and post-fishing season. Data is collected as outlined in the FMP using a box dredge and chartered fishing vessels, with data on cockles collected as length frequency and abundance, expressed as Catch Per Unit Effort (kg of cockle per meter of dredge per hour) for cockles above and below the Minimum Conservation Reference Size (MCRS). Survey reports detailing the analysis of cockle stocks through this survey are available on the Southern IFCA website[1].

Southern IFCA would welcome the opportunity to continue to contribute to the evidence base for cockle in English waters through the provision of data from bivalve surveys in Poole Harbour and the Solent to help represent fisheries within the District in the wider evidence base.

[1] https://www.southern-ifca.gov.uk/solent-dredge-permit

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Goals and Actions

Southern IFCA is supportive of the FMP recognizing the importance of local management for cockle fisheries which are appropriate for the needs of local stocks and the local fishing fleet. Southern IFCA agrees that it is important that this approach is maintained with the management established for the current cockle fisheries continuing to be overseen by the relevant IFCA. Working with stakeholders in the fisheries in the District is key to achieving good management under the flexible and adaptive system which the two District permit byelaws provide. The ability to manage cockle fisheries at a local level allows relationships with the stakeholder community to be developed and strengthened to facilitate this collaborative working.

Southern IFCA agrees with the suggested evidence need to investigate discrepancies between national and regional data collection programmes. It has been noted that for bivalve species in particular, including cockles, there are often large discrepancies between national datasets and those collected at a local/regional level, such as the data obtained through permit catch returns. It is the local and regional data which most often indicates larger landings that are represented through national data, therefore alignment in this regard would ensure that data used at a national scale is not underrepresenting the importance of cockle fisheries (and other bivalves) from well-managed fisheries at local/regional scales.

Under Action 3 (Goal 2) it is proposed that the data collection framework and evidence base relating to interactions between cockle fisheries and designated bird prey requirements is reviewed. Whilst Southern IFCA supports the provision of best available evidence to inform management measures, the implementation of this Action needs to be considered in line with the views expressed under Action 1, that cockle fisheries need to continue to be managed at a local level in line with the specific requirements of that fishery, with this including management in relation to any relevant Marine Protected Area (MPA). In seeking to provide regulators with estimates of bird food prey requirements, it needs to be recognized that this may form one source of evidence informing determinations of appropriate management in cockle fisheries and that regulators need to retain the ability to consider all relevant evidence in making determinations regarding the suitability of management in relation to the conservation objectives of MPAs. Existing mechanisms for assessing the suitability and requirement for management for cockle fisheries within MPAs in the Southern IFCA District allows for appropriate conclusions as to the absence of an adverse effect to be made, with the current approach incorporating best available evidence on known prey species, designated bird species distribution and overlap between relevant habitats and fishing activity. It is recommended that any outputs from this action seek to be complementary to existing practice recognizing the nuances of local circumstances which are currently appropriate considered by the relevant regulator.

Southern IFCA is supportive of an assessment of the data collection framework for social and economic data for cockle fisheries. Data on social and economic impacts in relation to specific management measures is assessed as part of byelaw Impact Assessments by IFCAs in accordance with Defra Byelaw Guidance, however a wider picture of this data at a national level would be beneficial and provide further support for the importance of these fisheries in English waters. It is agreed that disaggregation of cockles from clam and other arc shell species would be a useful early intervention to ensure that national data is fully representative of cockle fisheries.

The establishment of a national forum would have benefits in providing a national level overview of issues affecting cockle fisheries and to discuss good examples of best practice. The issue of water quality and the significant effect this can have on cockle fisheries has been raised by the fishing industry in the District. Poor water quality and the resulting potential for impacts to and even closures of shellfish beds is of great concern to the fishing industry, and has significant relevance to social and economic aspects of these fisheries. It is noted that the forum could be a way of discussing these issues at a national level which is welcomed, in addition it is suggested by stakeholders in the District

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that a national forum could consider possible future climate change impacts on cockle fisheries. Having a national forum is an opportunity to determine where any research to address evidence gaps could be achieved collaboratively, maximizing use of available resource and discussion prioritization of evidence collection to achieve the greatest benefit. It is key that the members of such a forum provide for representation across all relevant sectors including smaller scale fishing practice as well as larger operators, processor/market representation, aquaculture operators and those engaged in hand worked as well as vessel-based fisheries.

General Points

With regard to water quality and the significant potential impact on cockle fisheries, in addition to this being a subject for the national forum, it has been raised to Southern IFCA that the impacts of water quality should also be included into the assessment of environmental impacts related to cockle fisheries. At present understanding environmental impacts through the environmental assessment focuses on impacts to the environment from fishing activity itself rather than also considering how environmental factors, such as changes in water quality, may affect the fishery. It would be beneficial if the environmental assessment aspects of the FMP could be extended to include issues which may have an impact on fishery operation to promote action on addressing significant potential influencing factors such as water quality.

In reference to aquaculture species within Poole Harbour on page 30 of the FMP, clam species are currently a focus for aquaculture activity in addition to Pacific oysters and mussels. In reference to the current Solent fishery on page 30, the main target species currently are King scallop in addition to Manila clam under the Solent Dredge Permit Byelaw.

Southern IFCA appreciates both online and in-person events being held to engage with the community on this tranche of FMPs including during this consultation period. However, it would be beneficial if the dates and locations of in-person events in particular could be advertised earlier, giving stakeholders the opportunity to make appropriate arrangements to attend and thus maximise attendance.

Southern IFCA would like to request that Evidence Statements associated with FMPs are made available at the start of a consultation period so that the information can be reviewed alongside the proposed FMP. Having reviewed the Evidence Statement for this FMP, Southern IFCA notes that Poole Harbour is well represented with data provided on management and research, however the Solent is not as well covered, particularly with regard to research outputs. Whilst the Solent is currently showing limited landings of cockle within the Solent Dredge Permit Fishery, the twice annual bivalve survey, as outlined in this response, provides data on cockle as one of two primary commercial species (the other being Manila clam) which are sampled through this survey program. It would be helpful if data from survey outputs for the Solent could also be included in the Evidence Statement for this FMP in greater detail to align with that included for Poole Harbour.

Yours sincerely

Dr Sarah Birchenough
Deputy Chief Executive Officer – Research & Policy Team
Southern IFCA

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18th January 2025

Fisheries Management Plans Team
Marine & Fisheries Directorate
Seacole Building
2 Marsham Street
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Dear Fisheries Management Plans Team,

RE: Southern Inshore Fisheries and Conservation Authority consultation response to the proposed Southern North Sea and Channel Skates and Rays Fisheries Management Plan

Thank you for the opportunity to respond to the consultation on the Southern North Sea and Channel Skates and Rays Fisheries Management Plan (FMP). The Southern IFCA would like to raise the following points through this consultation.

Southern IFCA District Application

The seven species listed within the FMP are subject to fishing activity throughout the year by both the recreational and commercial fishing fleets in the Southern IFCA District ("the District").
Considering potentially relevant gear types, the current number of commercial fishers registered within the District to use each gear type are[1]:

- Nets – 234 using under 10m vessels and 14 using over 10m vessels
- Trawling – 86 using under 10m vessels and 17 using over 10m vessels
- Lines – 174 using under 10m vessels and 8 using over 10m vessels

The number of charter vessels and private recreational sea anglers operating in the District cannot be quantified, however there are several significant ports for charter vessels including Weymouth, Swanage, Poole, Christchurch, Southampton, Portsmouth and ports on the Isle of Wight. The size of vessel that can be used in the District is limited to 12m under the Southern IFCA 'Vessels Used in Fishing Byelaw 2012' (with certain exceptions applying to historic use and charter vessels.

The importance of skate and ray species listed in the FMP to both the recreational and commercial fleets and the spread of these fisheries across the District means that the proposed FMP has the potential to impact a large number of stakeholders.

Southern IFCA Research

Southern IFCA does not currently conduct specific research on skate and ray species, however data has been gathered on Minimum Conservation Reference Size (MCRS) as part of Southern IFCA's development of species profiles for key species within the District. Please see the comments under the Management Measures section related to MCRS.

Southern IFCA are a project partner in the Angling for Sustainability Project, lead by the University of Plymouth, working with the Angling Trust, the Professional Boatman's Association and Natural England as other project partners. The project aims to address evidence gaps to help inform sustainable management through monitoring tagged animals via a network of receivers, with one part of the project looking at shark and ray species including two species covered by the FMP, Undulate ray and Thornback ray. The outputs of this project would support Evidence goals and actions contributing to the development of the evidence base for these species.

[1] Please note that fishers within the District will indicate use of multiple gear types therefore there will be overlap between each gear category.

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Southern IFCA is supportive of the Evidence Goals in the FMP to develop the evidence base for skates and rays and address evidence gaps through both the consolidation of existing data and establishing new data collection channels where needed. The establishment of a skates and rays management group or similar forum as suggested under Goal 5 could contribute to this by including, as proposed, fisheries scientists, ensuring that existing research can be incorporated into this evidence base and resources can be best used through collaborative working where new research is required.

Goals

It is recognized that effective and sustainable management for skate and ray species is beneficial to both the species and associated fisheries and that there is a need for the FMP to work towards the Fisheries Objectives as outlined in The Fisheries Act 2020. The goals should consider how the actions under each goal can be implemented alongside one another so that, for example, the actions under Goals 2 and 3 can provide information to feed into the actions under Goal 1 where there is a focus on a precautionary approach in the absence of full information on stock assessments and management needs. In addition, working through the actions under Goals 4 and 5 will ensure that such an approach is taken in accordance with developed understanding of the social and economic benefits of skate and ray fisheries, and enable stakeholders to fully participate in the process of, for example, the definition of the precautionary approach in mixed fisheries proposed under Goal 1, Action 1. Without utilizing information obtained through all proposed actions collaboratively there is a risk that any precautionary measures taken forward may not be proportionate to the level of risk which can only be understood through a combination of evidence on management needs, socioeconomics and biological needs obtained from multiple inputs including data and stakeholder co-development.

The proposal for a stakes and rays management group is welcomed to facilitate wider discussions on these species and to bring together all relevant sectors. It is key that members of such a group provide for representation across all relevant sectors including commercial, recreational (both charter vessels and private anglers) and both larger and smaller scale fishing operations, processor/market representation and scientific representation.

It is beneficial that the FMP is seeking to develop management approaches that take account of mixed and multi-species fisheries. For the inshore sector in particular it is key that fishers are able to access multiple fisheries to allow for diversification, both on a seasonal basis and in response to changes in fisheries over time. The proposed approach to allow for implementation of measures that are effective for a cohort of species rather than a single stock will need to be considered in line with access to the relevant fisheries which target those species and how management in relation to one particular gear type may impact fishers targeting other species to prevent disproportionate impacts. This consideration is also required for charter and recreational anglers who will often target multiple species during a season or a single fishing trip. The identification of the need for data collection to be broken down by vessel, gear and location of capture is welcomed in helping support knowledge of how management may impact diversity in fishing practice. With regard to location, Southern IFCA suggest that the geographic breakdown of data needs to encompass the inshore area at an appropriate scale to accurately capture fishing practice by inshore commercial vessels, charter vessels and recreational angling vessels.

Management Measures

1. Consider the implementation of minimum conservation reference sizes

Southern IFCA is supportive of evidence gathering to support an appropriate MCRS. Southern IFCA have developed species profiles for all species included in the FMP outlining available evidence on

life history, Size of Maturity (SOM), fishing activity in the District, landings, economic information and current management. These profiles are available to view on the Southern IFCA website[2].

Southern IFCA understands that there is a mixture of opinion relating to the appropriate method of implementing a minimum size, therefore it is beneficial that the FMP is seeking to explore different approaches including species-specific, brigading MCRS for smaller-bodied and larger-bodied species and a universal MCRS. It is also welcomed that evidence gathering in this regard aims to incorporate economic impact as well as biological evidence. The current management in the Southern IFCA District utilizes a universal MCRS, as outlined in the FMP, of a total size (400mm) and a wing size (200m), however data from the above-mentioned species profiles indicates that to fully align with best available evidence on SOM, individual species MCRS may be more appropriate. Southern IFCA understands that a move to species-specific MCRS would increase the onus on those fishing for these species therefore it is important that changes to MCRS are fully informed by the proposed evidence gathering exercises.

Southern IFCA has received input from stakeholders that, dependent on the approach taken, it would be necessary to fully understand that any proposed wing size be related to an appropriate whole animal size to avoid a wing size being determined which results in smaller than appropriate whole individuals being targeted and removed from the stock.

Changes to MCRS would impact fishers, both commercial and recreational, within the District, the utilization of the proposed forum for skate and ray management would be beneficial in considering the impact from different approaches across the range of relevant sectors. A change in MCRS, dependent on the resulting value and geographic application, may result in the need for a change to current Southern IFCA management.

2. Consider the implementation of a maximum conservation reference size

As per MCRS, Southern IFCA is supportive of evidence gathering to inform the effectiveness of MaxCRS as a potential management measure. Whilst the biological benefits of such an approach are understood, it is recommended that there is emphasis on economic evidence gathering in this regard to evaluate the potential impacts of MaxCRS on all relevant sectors as commonly, larger individuals would command a higher value commercially than smaller individuals. This is also recommended in regard to the proposal to explore trade-offs between increasing MCRS versus introducing a MaxCRS, with the proposed evidence gathering incorporating socioeconomic information as well as biological and environmental data.

It is noted that the proposed action would be to have a universal MaxCRS, it would be beneficial through evidence gathering to understand whether this would be the most appropriate approach, particularly given the suggested range of approaches which could be adopted for MCRS. It is also highlighted that improved evidence on survivability following capture would be required to ensure that the potential stock benefits of a MaxCRS would be realized.

As outlined for MCRS, the implementation of a MaxCRS would also impact both the commercial and recreational fishing sectors and require a change to current Southern IFCA management. It is important to understand the cumulative impacts of potentially changing both MCRS and introducing a MaxCRS as well as the impact of these measures individually.

3. Voluntary Guidelines

Southern IFCA is supportive of the introduction of handling guidelines for recreational and commercial fishers. The exploration of approach to size limit changes in terms of universal or species-specific

[2] Species profiles are available on the 'key species' page of the Southern IFCA website - Key Species : Southern IFCA

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could be aided by understanding gathered from implementing the medium-term aim to use guidelines to help in species identification and training. In all cases, development of such guidelines through the proposed management group would ensure that the expertise of both the fishing sector and scientific representatives can be utilized to create the most appropriate and effective set of guidelines, addressing concerns which have been raised by stakeholders that guidance cannot be too complex and must take account of the context in which it is being applied in order to be most effective.

4. Establish sentinel fishery for small-eyed ray in 7e

Southern IFCA is supportive of this measure being explored through the gathering of appropriate evidence. It is noted that the fishery is moving from scientific research to limited quota to the proposed sentinel fishery, it is important that the evidence gathered at each stage is able to feed into the determination of an appropriate next stage to ensure robust, evidence-based management.

5. Alternative approaches to the current group total allowable catch (TAC)

It is known that in certain geographic areas, skate and ray populations are dominated by 1-2 species. On that basis, the exploration of species-specific TACs could be beneficial allowing for more diversification between species dependent on geographic location and ensure that the industry is not disproportionately affected by a change in the stock of one species. It is important that the impacts of such a measure are explored across the commercial sector including both larger-scale and smaller-scale operators to ensure that any impacts are fully understood.

6. Seasonal and spatial closures

Spatial and seasonal closures would have an impact on commercial and recreational fishers within the District, there are not currently any seasonal or spatial measures relating to these species under Southern IFCA management. Southern IFCA support the identification that such measures would need to be evidence based and that the most appropriate method of implementing any such measures needs to be explored in order to be proportionate to the risk in relation to any identified socioeconomic impact to different sectors. The advantages and disadvantages of a universal versus species specific approach would also need to be explored in this regard as, for example, a universal approach may impact the ability to diversify between species and appropriate seasonal and spatial closures for one species may not be appropriate for another species.

7. Sector support measures

Southern IFCA is supportive of all measures to provide support for the fishing sector. Exploring this through the management group would allow industry to input into what type of support measures would be most beneficial.

<u>General Points</u>

Southern IFCA appreciates both online and in-person events being held to engage with the community on this tranche of FMPs including during this consultation period. However, it would be beneficial if the dates and locations of in-person events in particular could be advertised earlier, giving stakeholders the opportunity to make appropriate arrangements to attend and thus maximise attendance.

Southern IFCA would like to request that Evidence Statements associated with FMPs are made available at the start of a consultation period so that the information can be reviewed alongside the proposed FMP.

It would be beneficial if it could be identified where common research objectives exist across the FMPs, for example the impacts of netting fisheries and bycatch are identified as an evidence gap

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across both this and the Bass FMP. As previously outlined, within inshore fisheries the need for diversification is very important to the success of business and individual operators and in allowing fishers to operate year-round. Fishing using similar gear types for species across a range of FMPs will occur within the inshore area and therefore research outputs based on a single species risks disproportionately affecting the ability for fishers to diversify. Where there is overlap, impacts should be researched on this basis, identifying any required mitigation measures in recognition of the potential for a cumulative impact. The Benthic Impact Group which is proposed through FMPs including Queen Scallop and King Scallop is a good example of a proposal to combine efforts where similar gear types are involved, the additional benefit being to promote collaboration and most efficient use of resources to address multiple evidence gaps through a single process.

Yours sincerely

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18th January 2025

Fisheries Management Plans Team
Marine & Fisheries Directorate
Seacole Building
2 Marsham Street
SW1P 4DF

Dear Fisheries Management Plans Team,

RE: Southern Inshore Fisheries and Conservation Authority consultation response to the proposed Queen Scallop Fisheries Management Plan

Thank you for the opportunity to respond to the consultation on the Queen Scallop Fisheries Management Plan (FMP). The Southern IFCA would like to raise the following points through this consultation.

Southern IFCA District Application

The scope of the FMP to cover English Waters would include the Southern IFCA District ("the District"). At present queen scallop is not a targeted fishery within the District, landings of this species have been observed historically, occurring as a bycatch from other targeted dredge fisheries.

There are currently 107 under 10m vessels and 18 over 10m vessels registered to fish with dredges within the Southern IFCA District. The size of vessel in the District is limited to 12m under the Southern IFCA 'Vessels Used in Fishing Byelaw 2012' (with certain exceptions applying to historic use and charter vessels). Dredge fisheries include fisheries for bivalves including King scallop, Manila clam and common cockle in the Solent, Manila clam and common cockle in Poole Harbour and King scallop in the west of the District in Lyme Bay. Both the fishery in the Solent and in Poole Harbour are managed under permit systems with adaptive technical management through permit conditions.

Southern IFCA Research

Southern IFCA do not currently have any specific research programs related to Queen scallop. Bivalve stock surveys are undertaken in Poole Harbour and the Solent to support the permit fisheries referenced above. Any bivalve species obtained in samples from these surveys are recorded and a length measurement taken, historically Queen scallop have been recorded through these surveys but on an infrequent basis.

Management Objectives and Proposed Initial Interventions

Southern IFCA is supportive of continued evidence gathering in order to support well-informed, sustainable management. Due to a targeted Queen scallop fishery currently not being established in the District, Southern IFCA is unable to comment on specific potential impacts of objectives on the District's fishing industry, however there are a number of points which Southern IFCA wish to raise.

It would be beneficial to have further clarity on how any implemented management measures would consider the proximity and/or overlap with other bivalve fisheries, both under the objectives and proposed management interventions, particularly measures 2 and 3. For example, how any identified management measures would align with areas where there is not a targeted Queen scallop fishery, but the species may be caught as a bycatch through dredge fisheries for other bivalves. Inshore fisheries are inherently mixed fisheries therefore it is

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important to consider, particularly where species may overlap, how management outputs for one species may affect the ability for fishers to target a different species using a similar gear type. It is identified in the FMP that exploring opportunities for broad alignment or expansion of measures which exist already in Queen scallop fisheries is one possible output, as well as gear specifications for queen scallop fishing. In understanding the suitability of this approach, it is important that any regional/local differences in fisheries and the overlap between Queen scallop and other bivalves is understood in order that different parts of the industry are not disproportionately affected by any management implementation or changes. It is recognized that the FMP references alignment with outputs of the King scallop FMP, Southern IFCA agrees that it is important that outputs from both these FMPs are considered alongside one another, with the aim to avoid any unintended consequences on fishers targeting either of these two species by management measures based on consideration of one species in isolation.

Considering proposed measure 5, the development of a scientifically based fisheries management framework, based on output or input controls, it is beneficial that this approach is proposed to be progressed alongside the development of a similar framework for King scallop. Southern IFCA has such a framework in place for management of the King scallop fishery in the Solent, where fishing for bivalves including King scallop is managed through a permit system with technical measures, in the form of input controls, contained in permit conditions. This provides a flexible approach to management which can be adaptive to changing circumstances, responding to best available evidence from both Southern IFCA stock surveys and environmental data. This management system also allows for continued stakeholder engagement and the implementation of a monitoring/feedback loop which relates directly to reviewing the appropriateness of management measures. Southern IFCA would be happy to provide more detail on this management system as part of the FMP process to aid in exploring the potential for such an approach in other fisheries.

The proposed establishment of a Benthic Impact Working Group which covers multiple FMPs and explores benthic impacts of fishing activity in a joined-up approach is welcomed and will allow multiple fishing activities to be researched to ensure that evidence on potential impacts is consistent. It is suggested that this Working Group be utilized to explore how research can be aligned to make best use of resources when the same potential impacts are being investigated across multiple FMPs.

<u>General Points</u>
Southern IFCA would like to request that Evidence Statements associated with FMPs are made available at the start of a consultation period so that the information can be reviewed alongside the proposed FMP. Having reviewed the Evidence Statement for this FMP, Southern IFCA are in agreement that the data provided appropriately represents the situation for the District, however limited time was available to make this assessment due to the Evidence Statement only recently being made available.

Yours sincerely

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18th January 2025

Fisheries Management Plans Team
Marine & Fisheries Directorate
Seacole Building
2 Marsham Street
SW1P 4DF

Dear Fisheries Management Plans Team,

RE: Southern Inshore Fisheries and Conservation Authority consultation response to the proposed North Sea and Channel Sprat Fisheries Management Plan

Thank you for the opportunity to respond to the consultation on the North Sea and Channel Sprat Fisheries Management Plan (FMP). The Southern IFCA would like to raise the following points through this consultation.

Southern IFCA District Application

Within the scope of the FMP, the English Channel area, UK waters of ICES divisions 7d and 7e within 6nm would include the Southern IFCA District ("the District"). At present there is not an active target fishery for sprat therefore the goals put forward in the FMP would not impact the fishing industry within the District. There is however the potential for a fishery for this species to occur in the future, diversification within the inshore fishing sector provides for the ability for different species to be targeted based on changing circumstances such as markets and access to other species.

Southern IFCA Research

Southern IFCA does not collect data specifically on sprat. The Juvenile Fish Survey program which is run twice a year in key estuarine sites has found sprat occurring at certain survey sites over the timeseries dataset, with data collected on the abundance of any species caught and the length of the first 50 of each species. Southern IFCA is happy to be contacted in relation to this data if this would be of assistance to the FMP.

FMP Goals

Southern IFCA is supportive of the general approach through the FMP goals to build the evidence base around this species and for best available evidence to support understanding of the stock, the relationship of fishing for sprat to the marine environment, management of sprat fisheries, the economics of the fishery and potential impacts from climate change.

Due to the absence of a sprat fishery within the District, Southern IFCA is not able to comment on the potential impact of these goals. The approach to develop proactive management for this species, based on best available evidence, which could be implemented in the event that sprat fisheries develop within the geographic scope of the FMP is an approach which would allow the fishing industry to appropriately plan for any diversification to this species. It is suggested that opportunities for industry involvement in the evidence gathering process should be explored to facilitate a co-development approach.

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There are two points which Southern IFCA wish to raise in relation to this FMP which have been put forward by stakeholders within the District.

1. Is there any scientific evidence available to indicate the reason for the size of sprat being caught having reduced, that size now being smaller than the size preferred by markets leading to the absence of a sprat fishery. If not, could this be an evidence gap that could be addressed by the FMP.
2. In determining sustainable harvest for this species, could the approach be through adaptive management which could be reactive to increased evidence and incorporate a method of further data collection in collaboration with industry, in the event that a fishery develops, which would further support the evidence base.

General Points

Southern IFCA would like to request that Evidence Statements associated with FMPs are made available at the start of a consultation period so that the information can be reviewed alongside the proposed FMP. Having reviewed the Evidence Statement for this FMP, Southern IFCA are in agreement that the data provided appropriately represents the situation for the District, however limited time was available to make this assessment due to the Evidence Statement only recently being made available.

Yours sincerely

Dr Sarah Birchenough
Deputy Chief Executive Officer – Research & Policy Team
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EXECUTIVE SUMMARY

Marked G

Solent Bivalve Survey 2024 Report
Paper For Information

Report by IFCO Churchouse

A. Purpose

To provide members with a report on the outcomes of the Solent Bivalve Survey carried out in 2024.

B. Annex

1. The Southern IFCA Solent Bivalve Survey Report 2024

1.0 Introduction

- The Southern IFCA Solent Bivalve Survey is carried out twice a year to assess the distribution and abundance of bivalve species in three of the Bivalve Management Areas (BMAs) defined under the Solent Dredge Permit Byelaw (SDPB).
- The SDPB issues permits for the dredging for shellfish within the Solent area, which is split into 6 Bivalve Management Areas (BMAs). The fishing season runs from 1st November to 31st March each year, with the areas of Southampton Water, Portsmouth Harbour and Langstone Harbour closing to dredge fishing from the 1st March each year. Using a dredge to fish for bivalves other than the native oyster is permitted through the annual issuing of Category A permits.
- The areas of Southampton Water (BMA 4), Portsmouth Harbour (BMA 5) and Langstone Harbour (BMA 6) are surveyed in the autumn (pre-fishing season) and the spring (post-fishing season) each year, with a particular focus on monitoring the stocks of two commercially important bivalve species; the Manila clam (*Ruditapes philippinarum*) and the Common cockle (*Cerastoderma edule*).
- The data from the survey is used, in conjunction with previous years, to create a timeseries dataset which can be used to monitor trends in stock levels and help to inform management under the SDPB.
- This paper provides Members with the report for the Solent Bivalve Survey for 2024, analysing the data collected for both the spring and autumn surveys and comparisons between available survey years.

2.0 Summary of Key Points

General Points

- In 2024, surveys were undertaken in March and September, collecting weight and length data on populations of Manila clam and Common cockle at:
    - 10 survey sites in Southampton Water
    - 7 survey sites in Portsmouth Harbour
    - 6 survey sites in Langstone Harbour
- For analysis, data is combined from all survey sites within each BMA, allowing Southern IFCA to monitor populations at the level of the BMA to align with how areas are defined under the SDPB and to understand patterns in stock levels which would inform any potential future spatial management of the fishery if this was deemed to be required.

Manila Clam

- Only one significant result (equal to/above MCRS, Southampton Water, increase) in comparisons of CPUE between the Autumn 2023 (pre-fishing season) and Spring 2024 (post-fishing season) surveys was found, suggesting that current fishing pressure is not having an effect on the populations of the three sampled BMAs.
- With no significant results found in comparisons of CPUE between Spring 2024 (post-fishing season) and Autumn 2024 (pre-fishing season) surveys, the trend observed in previous years of no significant population change within the sampled populations during the Solent Bivalve Fishery Closed Season continues.
- Average length of Manila clam in Southampton Water remains below the MCRS, while the average length for the other two BMAs remains above MCRS.
- The average kg of Manila clam landed per vessel for each of the four months of the Solent Bivalve Fishing Season was higher in the 23/24 season than in both the 21/22 and 22/23 seasons.

Common Cockle

- No significant changes in the populations across the three BMAs sampled were found between the Autumn 2023 (pre-fishing season) and Spring 2024 (post-fishing season) surveys. No significant change was found between the Spring 2024 (post-fishing season) and Autumn 2024 (pre-fishing season) surveys either.
- Significant decreases for 2024 in comparison to previous years were seen for the Spring (post-fishing season) surveys in both Portsmouth and Langstone Harbours.
- Significant decreases were also seen for 2024 in comparison to previous years for the Autumn (pre-fishing season) surveys in Portsmouth and Langstone Harbours.
- The decrease in CPUE has occurred in the last 2 years, however there is no defined trend through the time series or across all BMAs, with non-significant increases seen in some portions of the stock in some of the BMAs.
- No harvesting of common cockle occurred in the 23/24 season, with no landings data recorded in any year since the permit fishery was established. It is therefore more likely that the stock variation is due to natural factors or environmental influence. It is noted in other populations of common cockle, such as in Poole Harbour, that cockle stocks can be cyclical over periods of 3-4 years. The trends will continue to be monitored through analysis of survey data, the lack of targeting of this species does not suggest any further action beyond monitoring is required at this stage.

3.0 Next Steps

- The 2025 Solent Bivalve survey programme will begin in March with the Spring survey sampling for post the 24/25 fishing season. Data from 2025 will be analysed following the completion of the Autumn survey, built into the survey timeseries dataset and reviewed against previous survey years.
- That Members note the report.

Marked G– ANNEX 1

Southern IFCA Survey Report

Solent Bivalve Survey 2024

1. Introduction

The Solent Bivalve Survey runs twice a year to assess the distribution and abundance of key bivalve species in three Bivalve Management Areas (BMA) defined under the Solent Dredge Permit Byelaw, namely Area 4 (Southampton Water), Area 5 (Portsmouth Harbour), and Area 6 (Langstone Harbour). The spring survey provides information on the stock following the closure of the fishing season and the autumn survey on the stock prior to the opening of the fishing season in November.

The survey focuses on the two main bivalve species harvested commercially in these BMAs, the Manila clam (*Ruditapes philippinarum*) and the Common cockle (*Cerastoderma edule*). The results from the survey provide data which can be used as a baseline against which to monitor trends in the stock levels of these species in the Solent, which informs management under the Solent Dredge Permit Fishery.

2. Methodology

In 2024, the Spring survey took place from the 11th March to the 13th March and the Autumn survey took place from the 2nd October to the 4th October, using three local fishing vessels familiar with the BMA within which they were sampling. On each vessel, the same box clam dredge was deployed, which is of the same class as that used in normal fishing practice (Figure 1).

Each management area has defined survey beds which represent areas of different fishing intensity and habitat type. The areas surveyed also span a range of classifications for the shellfish beds as defined by the Food Standards Agency. The identification of survey beds provides a general area in which to sample, with the identification of suitable tow locations for each area made during the survey, due to its dependence on factors including weather, tide, obstructions to dredging etc. As such, if unforeseen circumstances dictate, tows may sometimes not fully overlap with the survey beds. The tow locations for each surveyed shellfish bed are shown in Figures 2 to 4.

Shellfish sampled were obtained using the following methodology:

- Three dredge tows, timed at two minutes, were conducted within each survey bed of the wider BMA.
- After two minutes the dredge was brought inboard and any bivalves within it were retained.
- The presence of difference sediment types and other habitat identifiers including weed and Slipper limpet (*Crepidula fornicata*) were recorded, with abundance scored on a scale of 1 – 5, 5 being most abundant.
- Bivalves were identified to species level and the first 50 individuals of each species were measured along the widest axis (length) to the nearest millimetre.

Figure 1 Box dredge used during the Solent Bivalve survey.

- Manila clams and Common cockles were separated into equal to/above or below their Minimum Conservation Reference Size (MCRS), 35mm and 23.8mm respectively, and then weighed.
- All sampled were returned to the sea in the same BMA in areas with the same shellfish classification as that from which they had been taken.

2.1. Statistical Analysis

- The sets of collected weight and length data were analysed first with a Kruskal-Wallis test to determine whether a difference in the averages of groups (e.g., the weight of Manila clam in each BMA) was present.
- If such a difference was found, the data set was then analysed using a Dunn's post-hoc test, which determines whether the difference in average was greater between the groups than the difference found within the groups.
    - E.g., whether there was a greater difference between the average weight of Manila clam between surveys than there was difference within the average weight of Manila clam sampled at sites within one specific year.
- Statistically significant results from the Dunn's post-hoc tests indicate changes in weight or length that may be beyond the population's natural size/growth variation, and could be linked to a range of external factors, such as environmental conditions, recruitment success, or population exploitation.
- Significant results are expressed as either $p < 0.05$ or $p < 0.01$, an indication as to the strength of the significant change, with $p < 0.01$ indicating a stronger change.

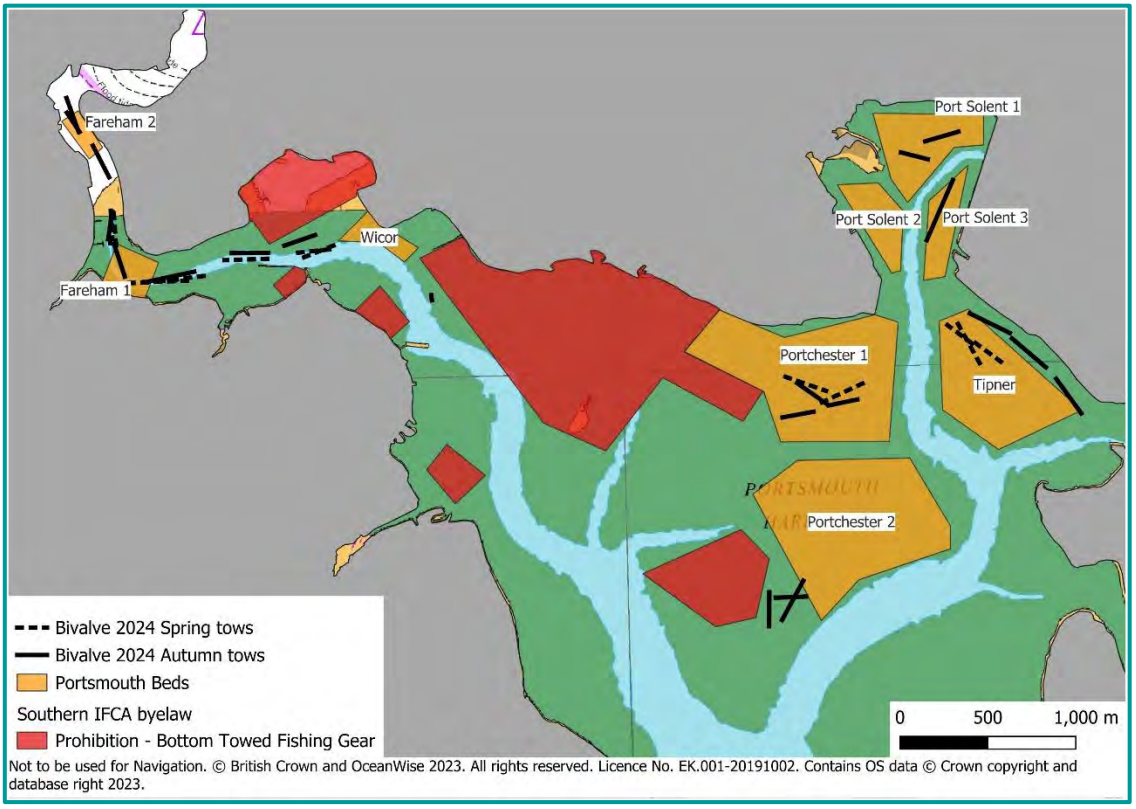


Figure 2: The tow paths undertaken during both the Spring and Autumn 2024 surveys within Portsmouth Harbour.

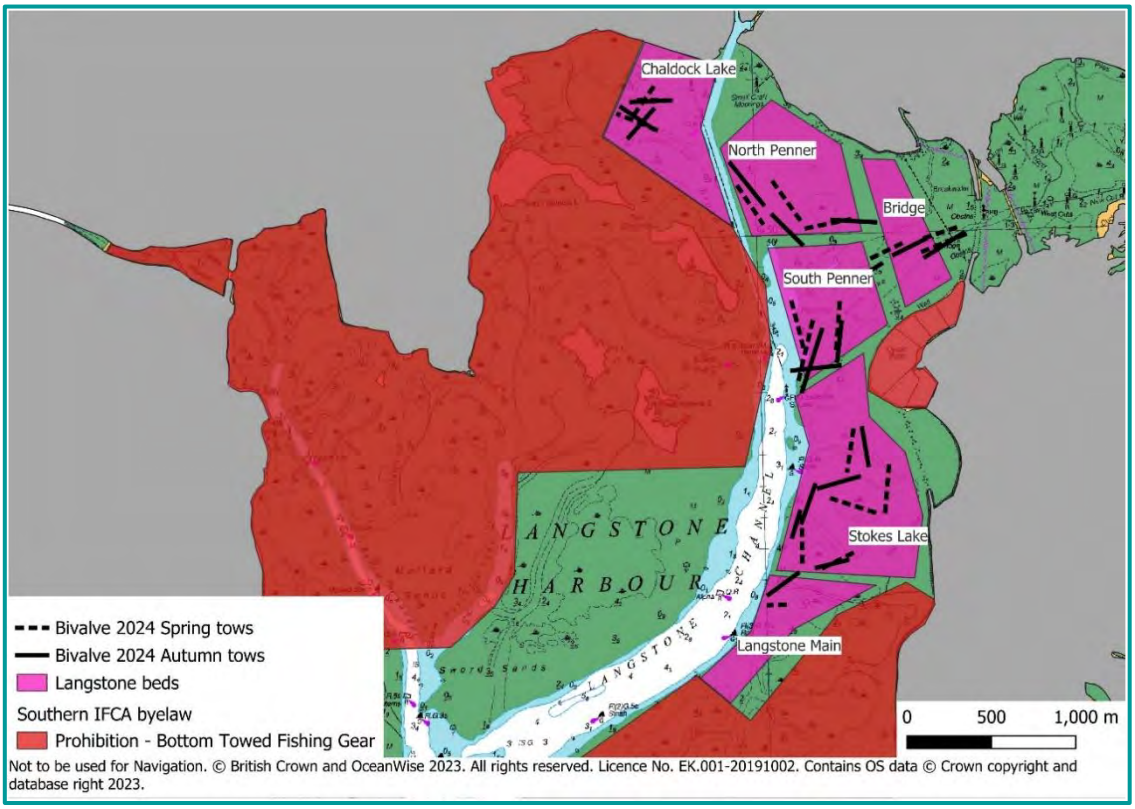


Figure 3: The tow paths undertaken during both the Spring and Autumn 2024 surveys within Langstone Harbour.

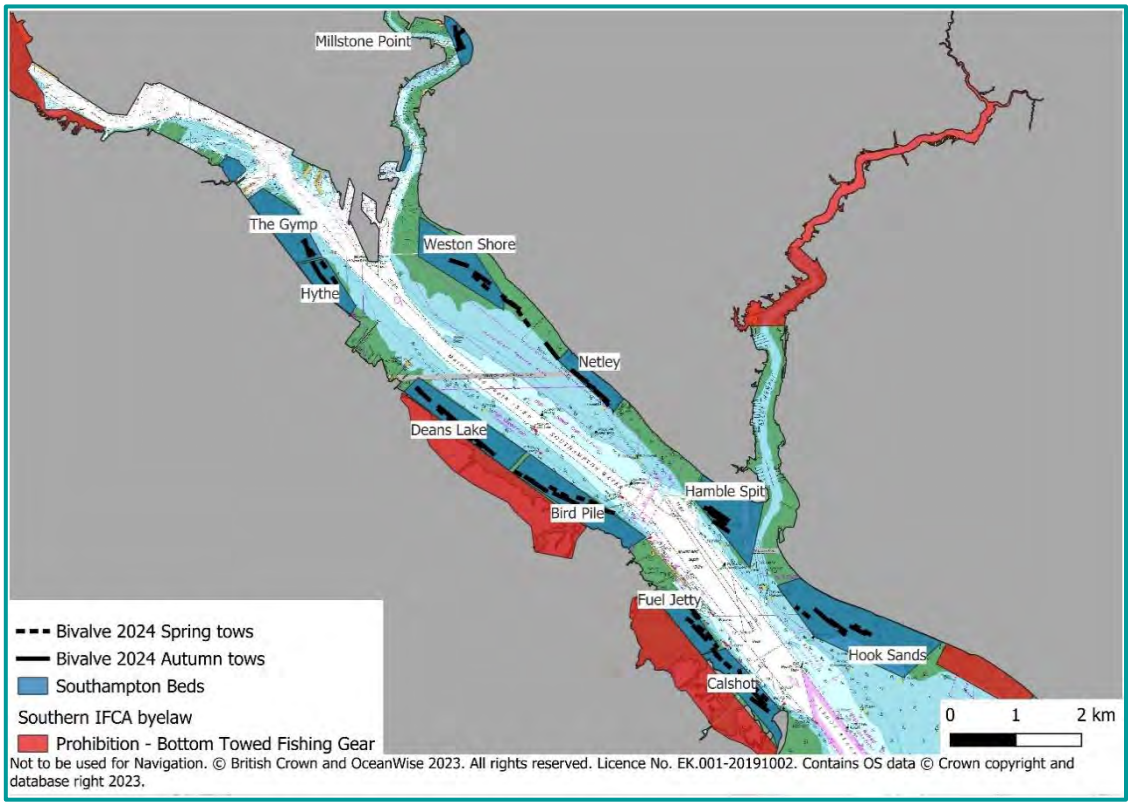


Figure 4: The tow paths undertaken during both the Spring and Autumn 2024 surveys within Southampton Water.

3. Results

The results of the survey focus on the two main commercial species, the Manila clam and the Common cockle.

Other species found during the survey in smaller quantities included the Pacific oyster (*Magallana gigas*), American Hard-Shelled clam (*Mercenaria mercenaria*), the Spiny cockle (*Acanthocardia aculeata*), and the Native oyster (*Ostrea edulis*).

3.1. Catch Per Unit Effort

Data on the abundance and distribution of Manila clam and Common cockle is presented as Catch Per Unit Effort (CPUE), defined as kg of shellfish per metre of dredge per hour. CPUE is provided for the species both equal to/above and below MCRS. The use of CPUE consistently between surveys allows for statistical comparisons to identify if there are any significant changes to the stock. CPUE results are provided for four key time periods through the year:

- Pre- and post- the fishing season (Autumn to Spring),
- Pre- and post- the closed season (Spring to Autumn),
- Between the Spring (post-season) surveys in the timeseries, and
- Between the Autumn (pre-season) surveys in the timeseries.

It should be noted that, given that the sampling method is size selective due to the spacing of bars on the box dredge, data for stock below MCRS will not be representative of the full composition of stock in these size classes, however consistency in survey methodology between years allows for comparisons.

The average CPUE values presented are the median value (the middle value in a range of sequential values), as this is the metric compared within Kruskal-Wallis tests (used when data is non-normally distributed).

3.1.1. Pre- and Post- the 23/24 Fishing Season Comparisons

CPUE data from Autumn 2023, and Spring 2024 has been compared to analyse changes to population levels during the fishery **open season or 'fishing period'.**

Manila Clam (From Autumn 2023 to Spring 2024)

- In **Southampton Water,** there was a **significant ($p < 0.05$) increase** from Autumn 2023 (4.17 kg m^{-1} hr^{-1}) to Spring 2024 (16.50 kg m^{-1} hr^{-11}) in CPUE for the population equal to/above MCRS. There was **no significant change** in CPUE for the population below MCRS (Figure 5).
- In **Portsmouth Harbour**, there was **no significant change** in CPUE for the population equal to/above or below MCRS.
- In **Langstone Harbour**, there was **no significant change** in CPUE for the population equal to/above or below MCRS.

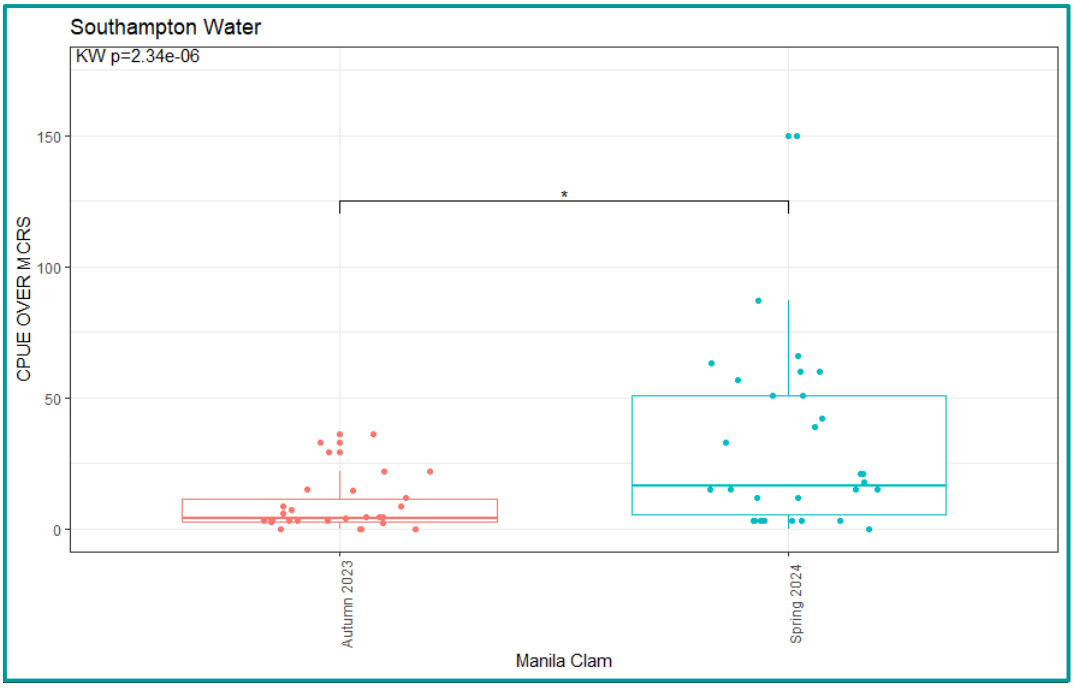


Figure 5: CPUE for the Manila Clam population equal to/above MCRS in Southampton Water on either side of the 2023/24 fishing season, which were found to be statistically significantly different ($p < 0.05$).

Common Cockle (From Autumn 2023 to Spring 2024)

- There was **no significant change** in CPUE for the population equal to/above or below MCRS in **Southampton Water, Portsmouth or Langstone Harbours.**

3.1.2. Pre- and Post- the 2024 Closed Season Comparisons

CPUE data from Spring 2024 and Autumn 2024 was compared to analyse changes to population levels during the fishery **closed season.**

Manila Clam (From Spring 2024 to Autumn 2024)

- There was **no significant change** in CPUE for the population equal to/above or below MCRS in **Southampton Water, Portsmouth or Langstone Harbours.**

Common Cockle (From Spring 2024 to Autumn 2024)

- There was **no significant change** in CPUE for the population equal to/above or below MCRS in **Southampton Water, Portsmouth or Langstone Harbours.**

3.1.3. Spring Survey (post-season) Comparisons

CPUE data for surveys carried out in the Spring, representing post-season conditions, has been compared between the survey years in order to monitor and compare the state of the population at the end of each fishing season.

For Manila clam CPUE data is available from 2018 to 2020 and 2022 to 2024, however data from Spring 2018 has been removed as no weight measurements were taken that year. For Common cockle CPUE data is available

from 2020 and 2022 to 2024, as weight data was not collected for Common cockle prior to 2020. Please note that there is no survey data available from Spring 2021 due to the Covid-19 pandemic.

Manila Clam (Between Spring Surveys)

- In **Southampton Water**, a **significant increase ($p < 0.05$)** in CPUE was found between:
  - The population equal to/above MCRS from Spring 2023 (6.00 kg m^{-1} hr^{-1}) to Spring 2024 (16.50 kg m^{-1} hr^{-1}) (Figure 6),
  - The population below MCRS from Spring 2023 (3.00 kg m^{-1} hr^{-1}) to Spring 2024 (21.00 kg m^{-1} hr^{-1}) (Figure 7).
- In **Portsmouth Harbour**, there was **no significant change** in CPUE for the population equal to/above or below MCRS for any Spring survey in comparison to Spring 2024.
- In **Langstone Harbour**, there was n**o significant change** in CPUE for the population equal to/above or below MCRS for any Spring survey in comparison to Spring 2024.

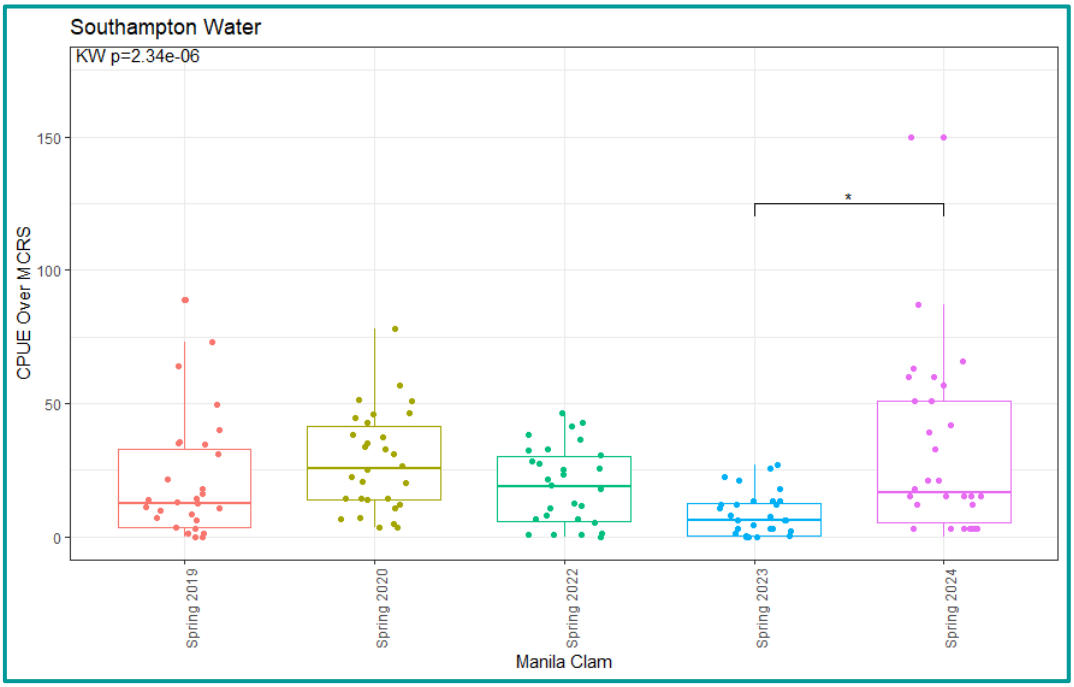


Figure 6: CPUE of the Manila Clam population equal to/above MCRS in Southampton Water for the spring surveys with available weight data from 2019 to 2024, where a statistically significant increase was found between 2023 and 2024 ($p < 0.05$).

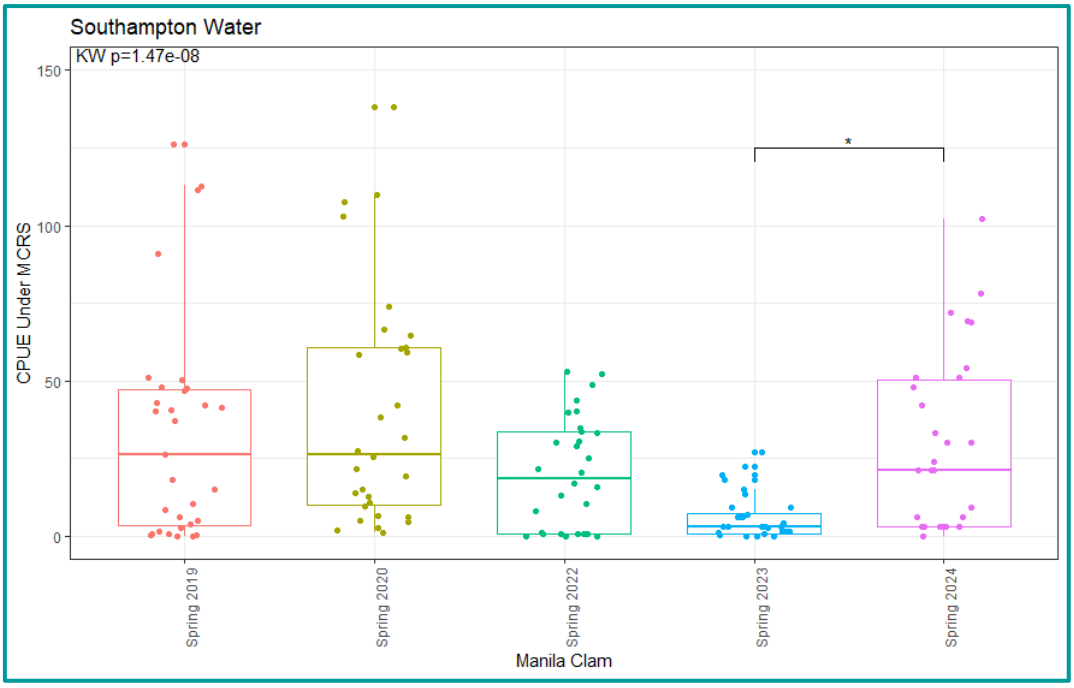


Figure 7: CPUE of the Manila Clam population below MCRS in Southampton Water for the spring surveys with available weight data from 2019 to 2024, where a statistically significant increase was found between 2023 and 2024 ($p < 0.05$).

Common Cockle (Between Spring Surveys)

- In **Southampton Water**, there was **no significant change** in CPUE for the population equal to/above or below MCRS for any of the Spring surveys in comparison to Spring 2024.
- In **Portsmouth Harbour**, there were **significant ($p < 0.05$) decreases** in CPUE between:
    - The population equal to/above MCRS between Spring 2020 (18.90 kg m^{-1} hr^{-1}) and Spring 2024 (1.50 kg m^{-1} hr^{-1}) (Figure 8),
    - The population equal to/above MCRS between Spring 2022 (41.40 kg m^{-1} hr^{-1}) and Spring 2024 (1.50 kg m^{-1} hr^{-1}) (Figure 8),
    - The population below MCRS between the Spring 2020 (4.07 kg m^{-1} hr^{-1}) and Spring 2024 (0.00 kg m^{-1} h^{-1}) (Figure 9),
    - The population below MCRS between the Spring 2022 (1.80 kg m^{-1} hr^{-1}) and Spring 2024 (0.00 kg m^{-1} hr^{-1}) (Figure 9),
    - The population below MCRS between the Spring 2023 (4.50 kg m^{-1} hr^{-1}) and Spring 2024 (0.00 kg m^{-1} hr^{-1}) (Figure 9).
    - For Spring 2024, the median value in Portsmouth Harbour of 0.00 kg m^{-1} hr^{-1} is informed by a data range from 0.00 kg m^{-1} hr^{-1} to 1.5 kg m^{-1} hr^{-1}.
- In **Langstone Harbour**, there was a **significant ($p < 0.01$) decrease** in average CPUE for the population equal to/above MCRS from Spring 2022 (9.00 kg m^{-1} hr^{-1}) to Spring 2024 (0.00 kg m^{-1} hr^{-1}) (Figure 10).
    - For Spring 2024, the median value in Langstone Harbour of 0.00 kg m^{-1} hr^{-1} is informed by a data range from 0.00 kg m^{-1} hr^{-1} to 3.00 kg m^{-1} hr^{-1}.

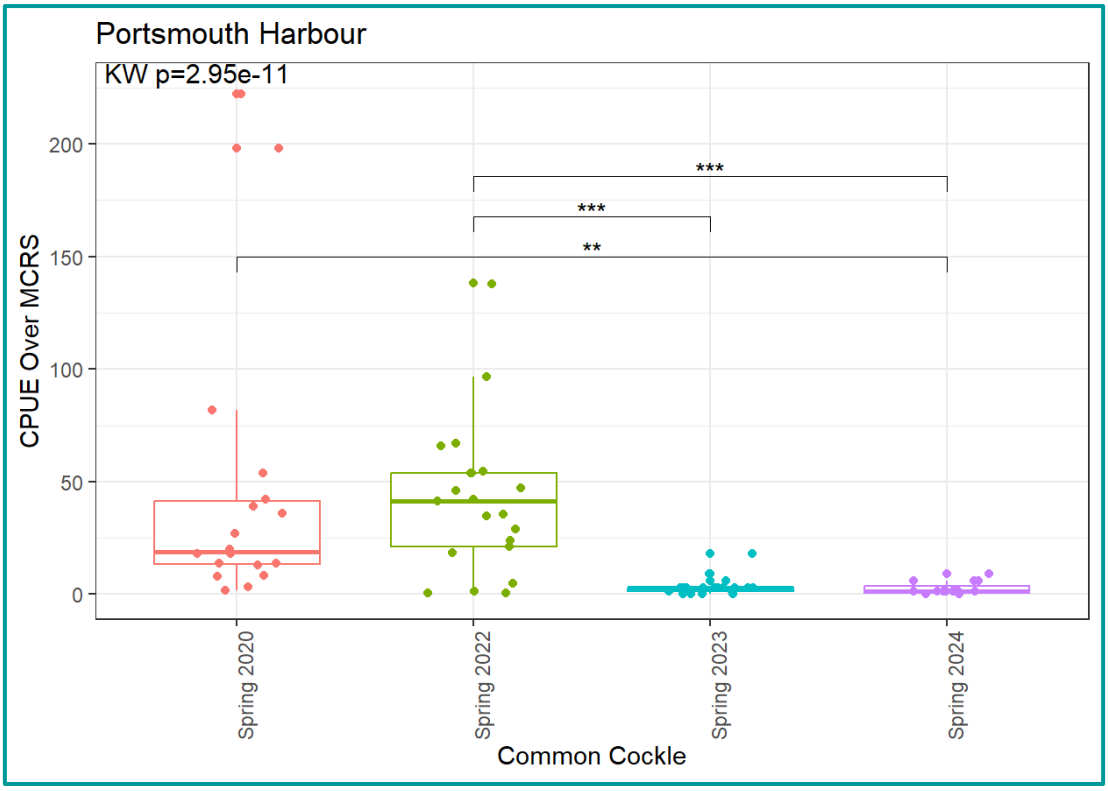


Figure 8: CPUE of the Common Cocke population equal to/above MCRS in Portsmouth Harbour for the spring surveys with available weight data from 2020 to 2024.

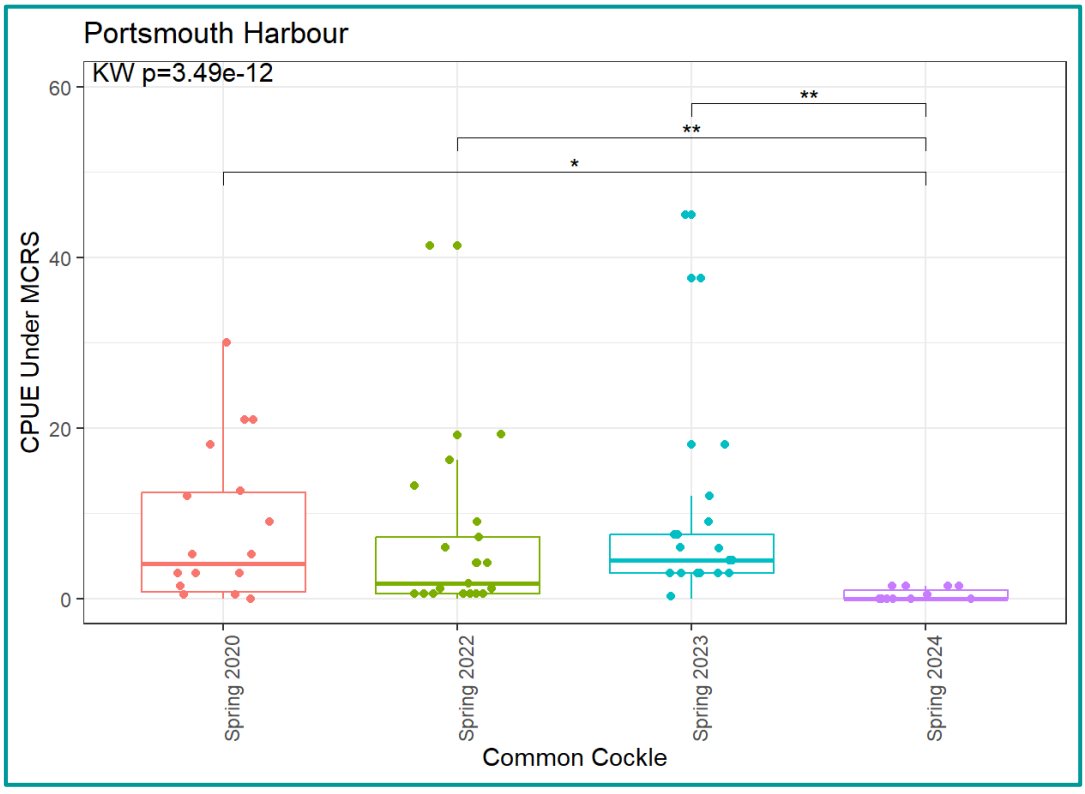


Figure 9: CPUE of the Common Cockle population below MCRS in Portsmouth Harbour for the spring surveys with available weight data from 2020 to 2024.

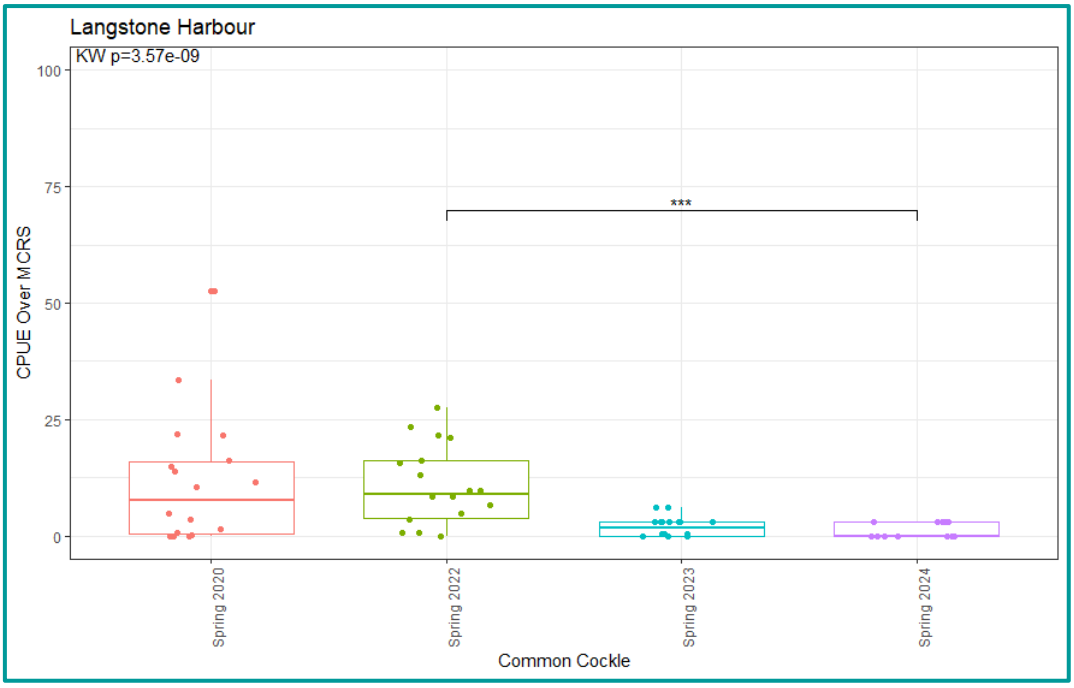


Figure 10: CPUE of the Common Cockle population equal to/above MCRS in Langstone Harbour for the spring surveys with available weight data from 2020 to 2024, where a statistically significant decrease was found between 2022 and 2024 ($p < 0.01$).

3.1.4. Autumn Survey (pre-season) Comparisons

CPUE for surveys carried out in the Autumn, representing pre-season conditions, has been compared between the survey years.

For Manila clam CPUE data is available from 2018 to 2019 and 2021 to 2024. For Common cockles CPUE data is available for 2021 to 2024, as weight data was not collected for Common cockle prior to 2020. Please note that there is no survey data available from Autumn 2020 due to the Covid-19 pandemic.

Manila Clam (Between Autumn Surveys)

- There was **no significant change** in CPUE for the population equal to/above or below MCRS between any Autumn surveys and the Autumn 2024 survey in **Southampton Water, Portsmouth or Langstone Harbours**.

Common Cockle (Between Autumn Surveys)

- In **Southampton Water**, there was **no significant change** in CPUE for the population equal to/above or below MCRS for any of the Autumn surveys in comparison to Autumn 2024.
- In **Portsmouth Harbour**, there was a **significant ($p < 0.01$) decrease** in average CPUE for the population equal to/above MCRS between the Autumn 2021 (22.80 kg m^{-1} hr^{-1}) and Autumn 2024 (1.57 kg m^{-1} h^{-1}) surveys (Figure 11).
- In **Langstone Harbour**, there was a **significant ($p < 0.01$) decrease** in average CPUE for the population equal to/above MCRS between the Autumn 2021 (4.50 kg m^{-1} hr^{-1}) and the Autumn 2024 (0.00 kg m^{-1} hr^{-1}) surveys (Figure 12).

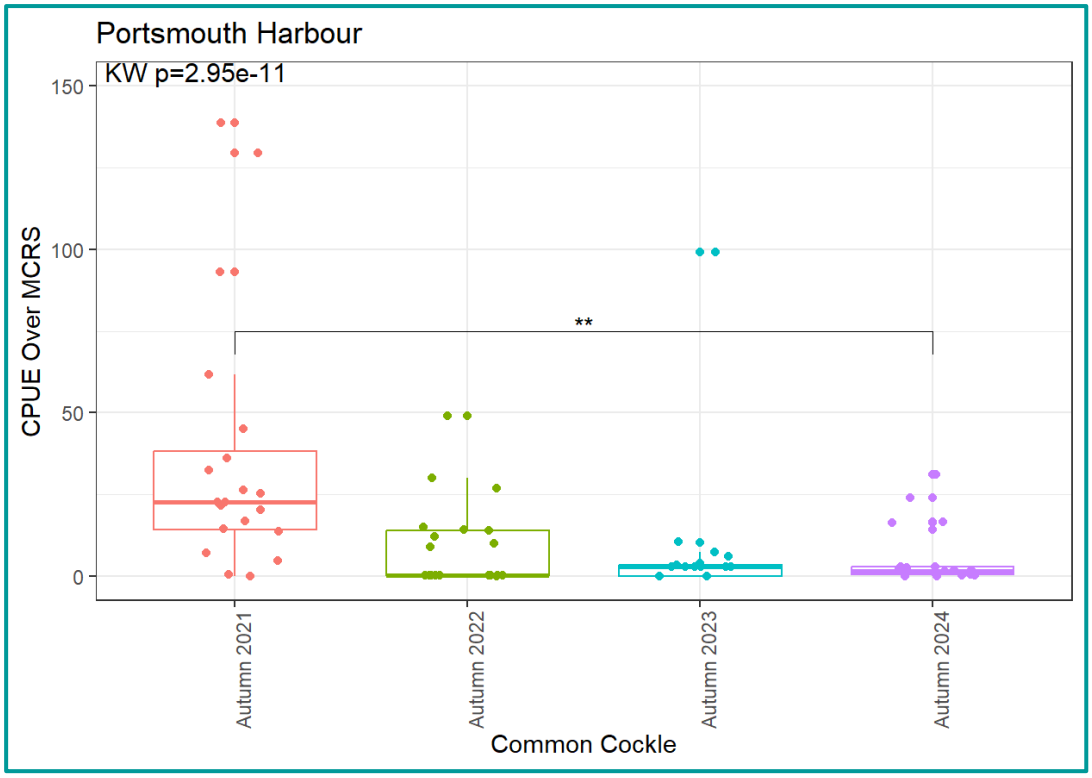


Figure 11: CPUE of the Common Cockle population equal to/above MCRS in Portsmouth Harbour for the autumn surveys with available weight data from 2020 to 2024, where a statistically significant decrease was found between 2021 and 2024 ($p < 0.01$).

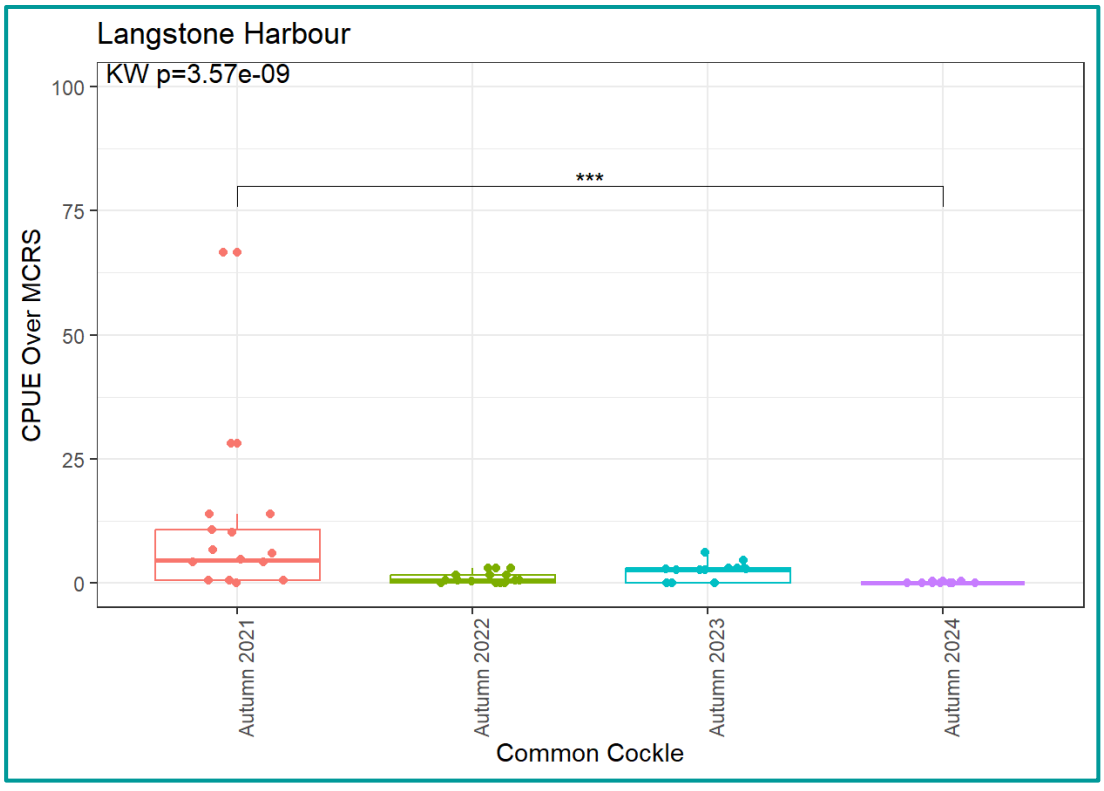


Figure 12: CPUE of the Common Cockle population below MCRS in Portsmouth Harbour for the autumn surveys with available weight data from 2020 to 2024, where a statistically significant decrease was found between 2021 and 2024 ($p < 0.01$).

3.2. Average Length

An analysis of the length trends within the data collected in 2024 and the data collected within the survey timeseries was undertaken. Given the lack of general trend observed within the results of this analysis, the following section presents the occurrence of average length equal to/above or below MCRS within each BMA. The full comparative results for analysis of length data between key time periods within the year are available within Annex 1.

The average length values presented are the median value (the middle value in a range of sequential values), as this is the metric compared within Kruskal-Wallis tests (used when data is non-normally distributed).

3.2.1. Pre- and Post- the 23/24 Fishing Season

Table 1: Average length of all Manila clam and Common cockle sampled the Autumn 2023 and Spring 2024 surveys as an indication of population structure in relation to the MCRS of each species. Red shading indicates an average length that falls below the species' MCRS, green shading that the average length is above the species' MCRS. An * indicates a significant change in average length between the two surveys.

	BMA		
Manila Clam (MCRS = 35mm)	**Southampton Water**	**Portsmouth Harbour**	**Langstone Harbour**
Autumn 2023	34mm	35mm	37mm
Spring 2024	33mm	37mm*	37mm
Common Cockle (MCRS = 23.8mm)			
Autumn 2023	26mm	29mm	26.5mm
Spring 2024	27mm	28mm	26mm

3.2.2. Pre- and Post- the 2024 Closed Season Comparisons

Table 2: Average length of all Manila clam and Common cockle sampled during the Spring 2024 and Autumn 2024 surveys as an indication of population structure in relation to the MCRS of each species. Red shading indicates an average length that falls below the species' MCRS, green shading that the average length is above the species' MCRS.

	BMA		
Manila Clam (MCRS = 35mm)	**Southampton Water**	**Portsmouth Harbour**	**Langstone Harbour**
Spring 2024	33mm	37mm	37mm
Autumn 2024	34mm	35mm	37mm
Common Cockle (MCRS = 23.8mm)			
Spring 2024	27mm	28mm	26mm
Autumn 2024	27mm	27mm	27mm

3.2.3. Spring Survey (post-season) Comparisons

Table 3: Average length of all Manila clam and Common cockle sampled during the Spring 2023 and 2024 surveys as an indication of population structure in relation to the MCRS of each species. Red shading indicates an average length that falls below the species' MCRS, green shading that the average length is above the species' MCRS. An * indicates a significant change in average length between the two surveys.

	BMA		
Manila Clam (MCRS = 35mm)	**Southampton Water**	**Portsmouth Harbour**	**Langstone Harbour**
Spring 2023	34mm	36mm	37mm
Spring 2024	33mm*	37mm*	37mm*
Common Cockle (MCRS = 23.8mm)			
Spring 2023	27mm	27mm	26mm
Spring 2024	27mm	28mm	26mm

3.2.4. Autumn Survey (pre-season) Comparisons

Table 4: Average length of all Manila clam and Common cockle sampled during the Autumn 2023 and 2024 surveys as an indication of population structure in relation to the MCRS of each species. Red shading indicates an average length that falls below the species' MCRS, green shading that the average length is above the species' MCRS. An * indicates a significant change in average length between the two surveys.

	BMA		
Manila Clam (MCRS = 35mm)	**Southampton Water**	**Portsmouth Harbour**	**Langstone Harbour**
Autumn 2023	34mm	35mm	37mm
Autumn 2024	34mm	35mm*	37mm
Common Cockle (MCRS = 23.8mm)			
Autumn 2023	26mm	29mm	26.5mm
Autumn 2024	27mm*	27mm*	27mm

4. Catch Data

The total kg of Manila clam caught across all vessels during the 23/24 season was 59.6 tonne, an increase from the 22/23 season at 41.1 tonne and from the 21/22 season at 57.9 tonne (Figure 13). There was no common cockle recorded as being landed by the fishery for the 23/24 season.

To date there are three years of catch data available for the Solent Bivalve fishery, with data first collected in November 2021 when the Solent Dredge Permit Byelaw came into effect. As such there is not yet sufficient years of catch data to establish patterns or to relate catch data to patterns seen in the CPUE results. The lack of significant negative results between Autumn 2023 and Spring 2024 survey results suggest that catch levels are not having a negative influence on the stock and that there are other factors which may be influencing changes in the stock levels between years.

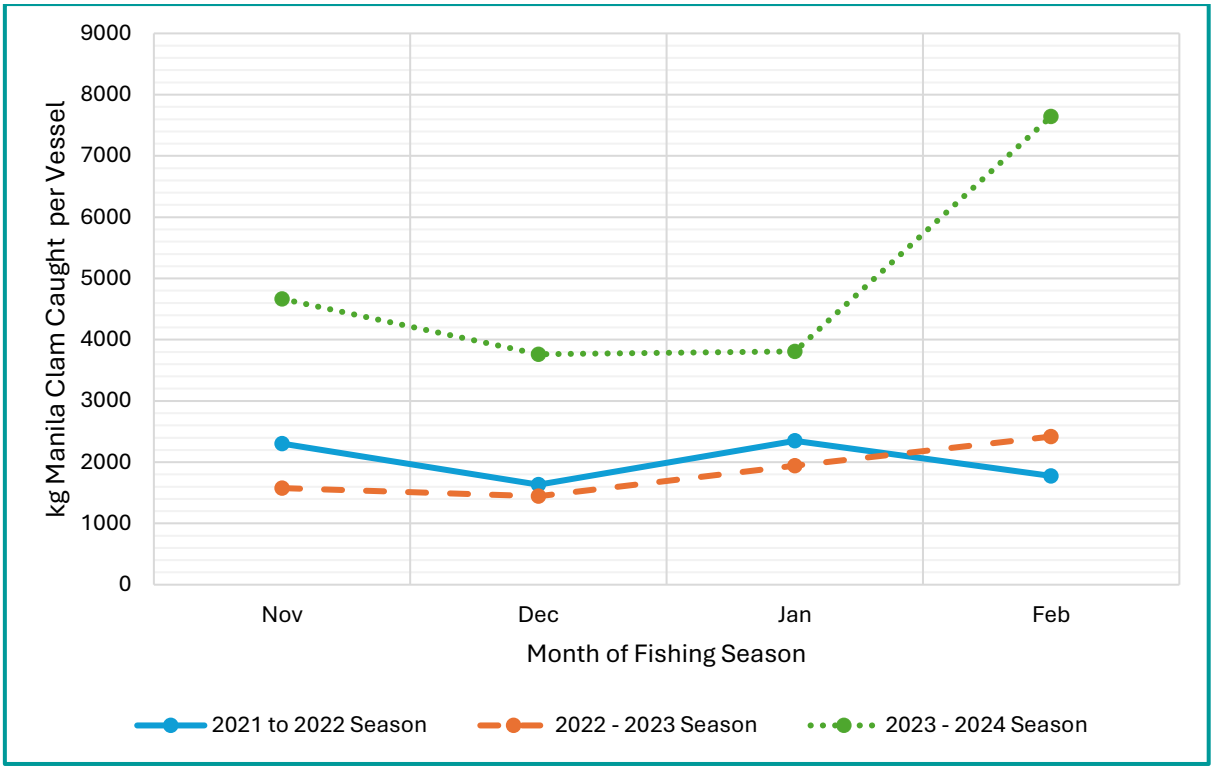


Figure 13: Kg of Manila Clam recorded by fishers within the Solent Bivalve fishery over the three seasons for which Southern IFCA hold data.

5. Discussion

5.1. CPUE

Between the Autumn 2023 and Spring 2024 surveys, the only significant result was a statistically significant increase in CPUE for Manila clams equal to/above the Minimum Conservation Reference Size (MCRS) in Southampton Water (Figure 5). For all other comparisons no significant difference was found, suggesting that the current fishing pressure is not having a significant effect on the populations of the three sampled BMAs for this species. Catches of Manila clam within the Solent Bivalve fishery increased during the 2023/24 fishing season in comparison to the previous two seasons (Figure 13), however a lack of consistent trends across all populations sampled and only limited catch data to date (3 years) prevent clear conclusions from being drawn in terms of catch data relating to stock data and does not preclude that results could instead be a factor of population changes during the year and the influence of environmental variables.

No statistically significant change in average CPUE was found for either Manila clam or common cockle between the Spring 2024 and Autumn 2024 surveys. This continues a trend observed in previous years of no significant change being seen during the Bivalve fishery closed season.

Significant positive changes in average CPUE were seen for both portions of the Manila clam population in Southampton water between Spring 2023 and Spring 2024 (Figures 6 & 7). For common cockle, a significant decrease is noted for equal to/above MCRS in Spring 2024 compared to two previous years and for below MCRS compared to three previous years in Portsmouth Harbour, as well as for equal to/above MCRS compared to 2022 for Langstone Harbour. In addition, significant decreases were seen between Autumn surveys for this species in Portsmouth Harbour and Langstone Harbour in 2024 compared to 2021. The decrease in common cockle CPUE has occurred in the last 1-2 years, however there is inconsistency in a defined trend, with increases observed

(although not significant) between 2022 and 2023 in certain portions of the stock in different BMAs. The observed decrease in common cockle stock occurs alongside no harvesting of common cockle in the 23/24 season and no recorded landings of this species in any year since the permit fishery was established. It is therefore more likely that the stock variation is due to natural factors or environmental influence. It is noted in other populations of common cockle, such as in Poole Harbour, that cockle stocks can be cyclical over periods of 3-4 years. The trends will continue to be monitored through analysis of survey data, and the lack of targeting of this species does not suggest further action beyond monitoring is required at this stage.

No statistically significant change in average CPUE was found for either portion of the Manila clam populations of the BMAs among the Autumn survey timeseries. This suggests that the condition of the populations within the Solent Bivalve fishery at the end of the closed season have remained statistically stable through the timeseries.

5.2. Average Length

Between Autumn 2023 and Spring 2024 (the fishery open season) only Manila clam within Portsmouth Harbour saw a statistically significant change in average length, an increase. This population was also the only one to see a statistically significant change during the fishery closed season (Spring 2024 to Autumn 2024), a decrease. Given these trends are the opposite to those that would be expected to be seen (a decrease in length during the fishing season, and an increase in length during the closed season), it suggests there are a number of influencing factors outside fishing activity that are acting on the species size distribution.

The significant results found between the Spring surveys of each year and between the Autumn surveys of each year (Table 3 & 4) are mixed and as such difficult to attribute to specific factors.

6. Summary

- The Manila clam population equal to/above the MCRS in Southampton Water was the only group sampled to display a significant trend in average CPUE during the 2023/24 fishing season, an increase.
- In addition, no significant trends were seen for either species in any BMA during the 2024 fishery closed season.
- In comparisons between years for the same survey period, Manila clam displayed either an increase (CPUE equal to/above MCRS Spring 23 to 24) or no significant difference.
- The results from this CPUE analysis suggest that fishing pressure is not having a significant impact on this fishery, and that trends could be related to the influence of environmental variables.
- For common cockle, there is a trend in decreasing stock levels between years for spring and autumn surveys, however, there has been no recorded landings for this species under the Solent Dredge Permit Byelaw, suggesting that fishing is not the influencing factor on the stock trend. Trends are therefore likely to be natural variation or environmentally driven. Continued monitoring through stock surveys is recommended.
- The average length of Manila clam sampled in the Spring 2024 and Autumn 2024 surveys was above the MCRS of 35mm in Langstone Harbour and Portsmouth Harbour, but below the MCRS in Southampton Water.
- The average length of Common cockle sampled in the Spring 2024 and Autumn 2023 surveys remained above the MCRS of 23.8mm for all three BMAs.
- The total kg of Manila clam caught during the season and the kg of Manila clam caught per vessel were higher for the 2023/24 season than for the previous two seasons. There were no recorded landings for common cockle.

Annex 1

Average Length Analysis

The average length of Manila clam and Common cockle within the three BMAs was compared for four key time periods: pre- and post- the 23/24 Fishing Season; pre- and post- the 2024 Closed Season; Spring 2024 with previous spring surveys; and Autumn 2024 with previous autumn surveys. The significant results found for these comparisons of average length are listed in Tables 5 and 6. Histograms for each species in each of the BMAs are provided below.

Table 5: The significant results of comparisons of average length over four time periods for Manila clam within the three BMAs sampled in the Solent Bivalve survey.

Manila Clam	Southampton Water	Portsmouth Harbour	Langstone Harbour
Pre- and Post- 23/24 Fishing Season		Increase	
Pre- and Post- 2024 Closed Season		Decrease	
Spring Surveys	Decrease 2024 in comparison to 2022	Increase 2024 in comparison to 2022	Decrease 2024 in comparison to 2022
	Decrease 2024 in comparison to 2023		
Autumn Surveys		Increase 2024 in comparison to 2022	

Table 6: The significant results of comparisons of average length over four time periods for Common cockle within the three BMAs sampled in the Solent Bivalve survey.

Common Cockle	Southampton Water	Portsmouth Harbour	Langstone Harbour
Pre- and Post- 23/24 Fishing Season			
Pre- and Post- 2024 Closed Season			
Spring Surveys			
Autumn Surveys	Increase 2024 in comparison to 2023	Increase 2024 in comparison to 2022	
		Decrease 2024 in comparison to 2023	

Spring surveys (Post-season) Comparisons

Manila Clam

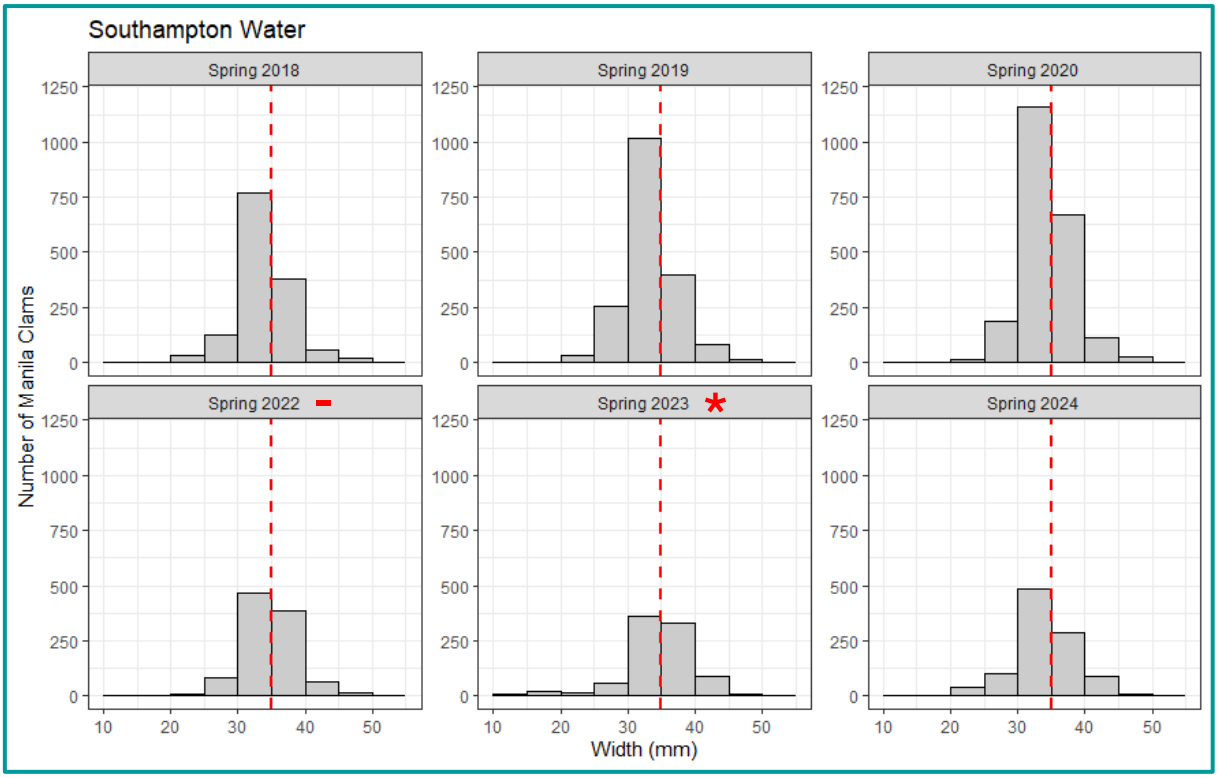


Figure 14: Length histograms for Manila Clam sampled in Southampton Water during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm). Red symbols (*, -) indicate a significant decrease in average length from the survey to 2024.

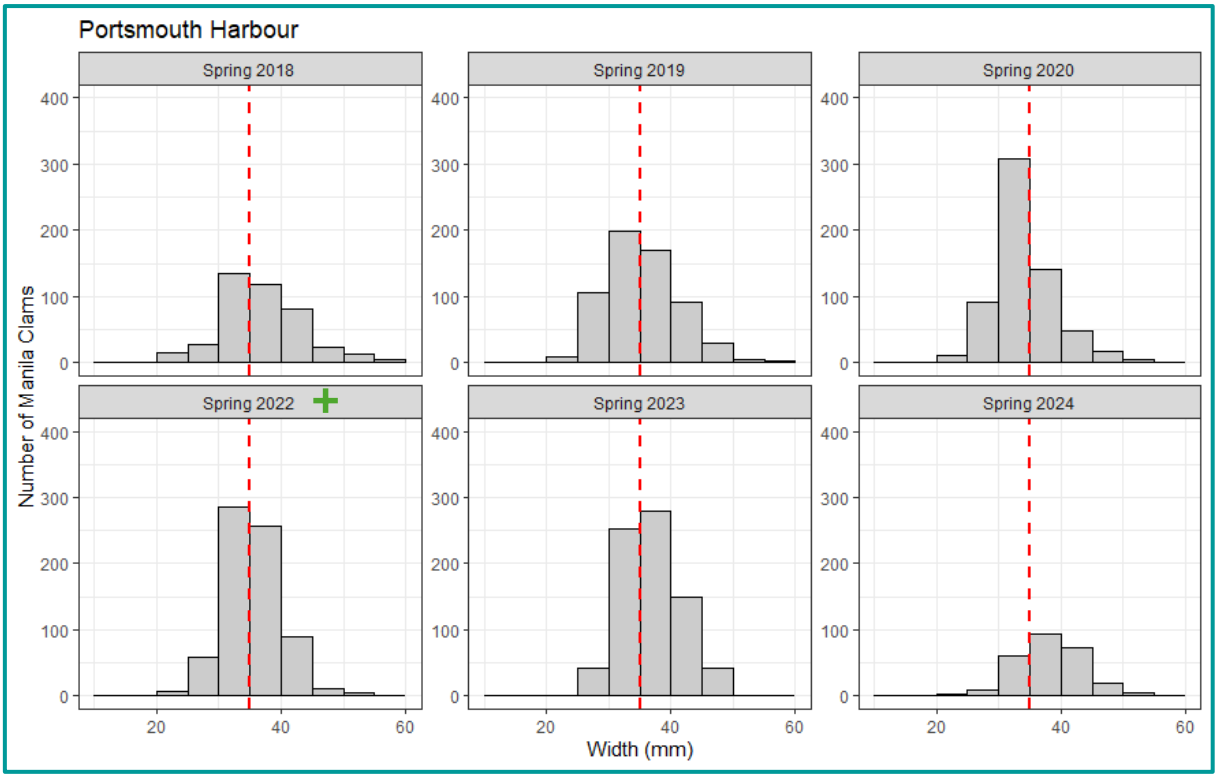


Figure 15: Length histograms for Manila clam sampled in Portsmouth Harbour during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm). Green symbol (+) indicated a significant increase in average length from that survey to 2024.

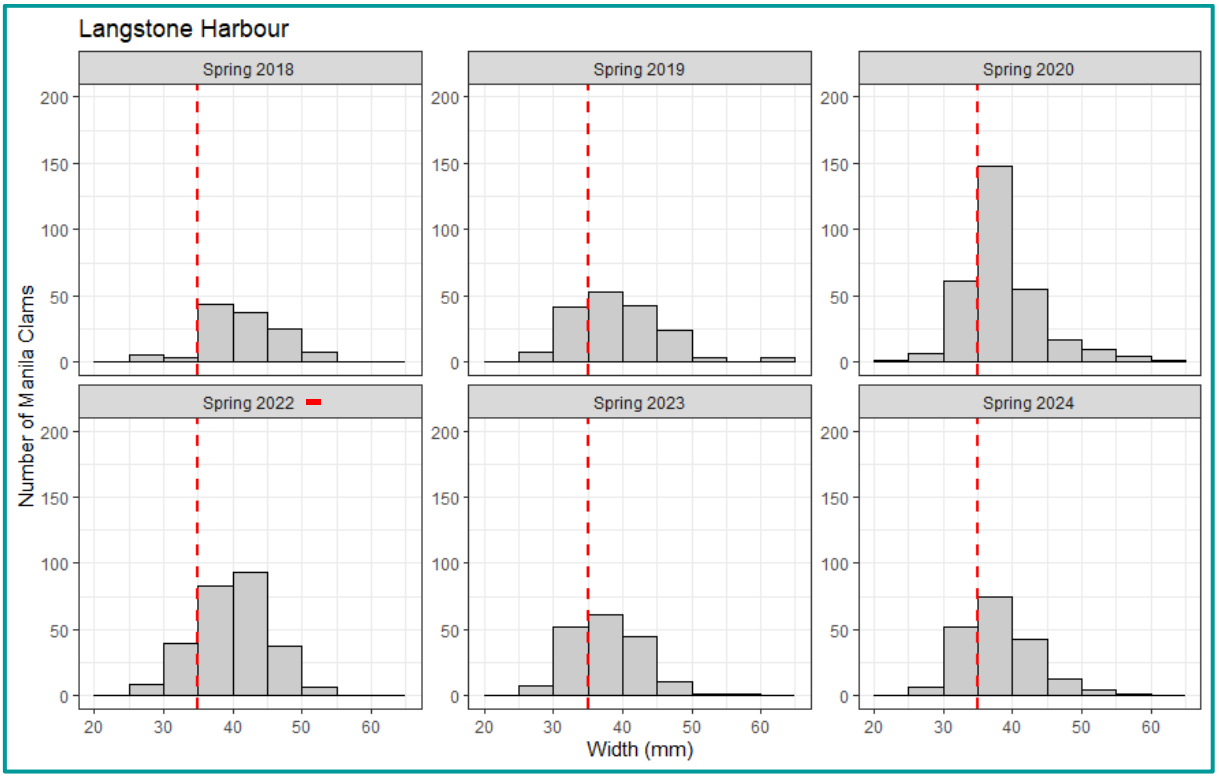


Figure 16: Length histograms for Manila clam sampled in Langstone Harbour during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm). Red symbol (-) indicates a significant decrease in average length from that survey to 2024.

Common Cockle

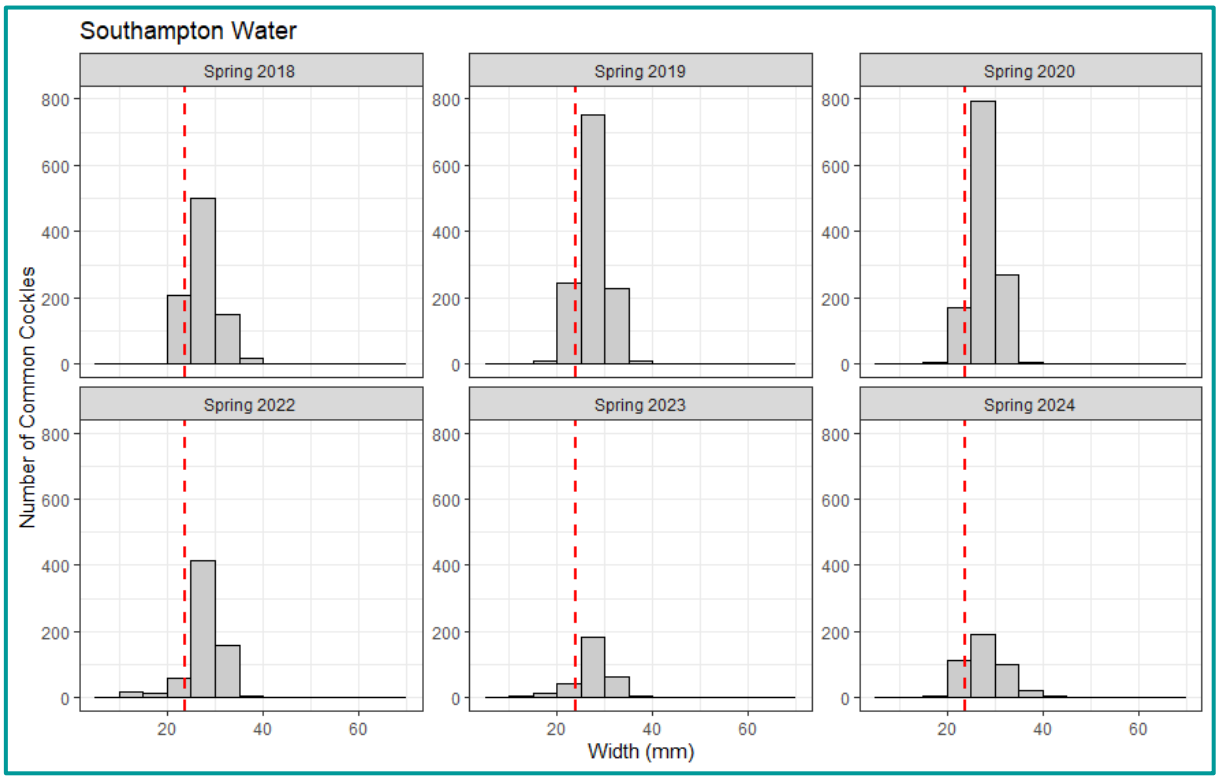


Figure 17: Length histograms for Common cockle sampled in Southampton Water during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm).

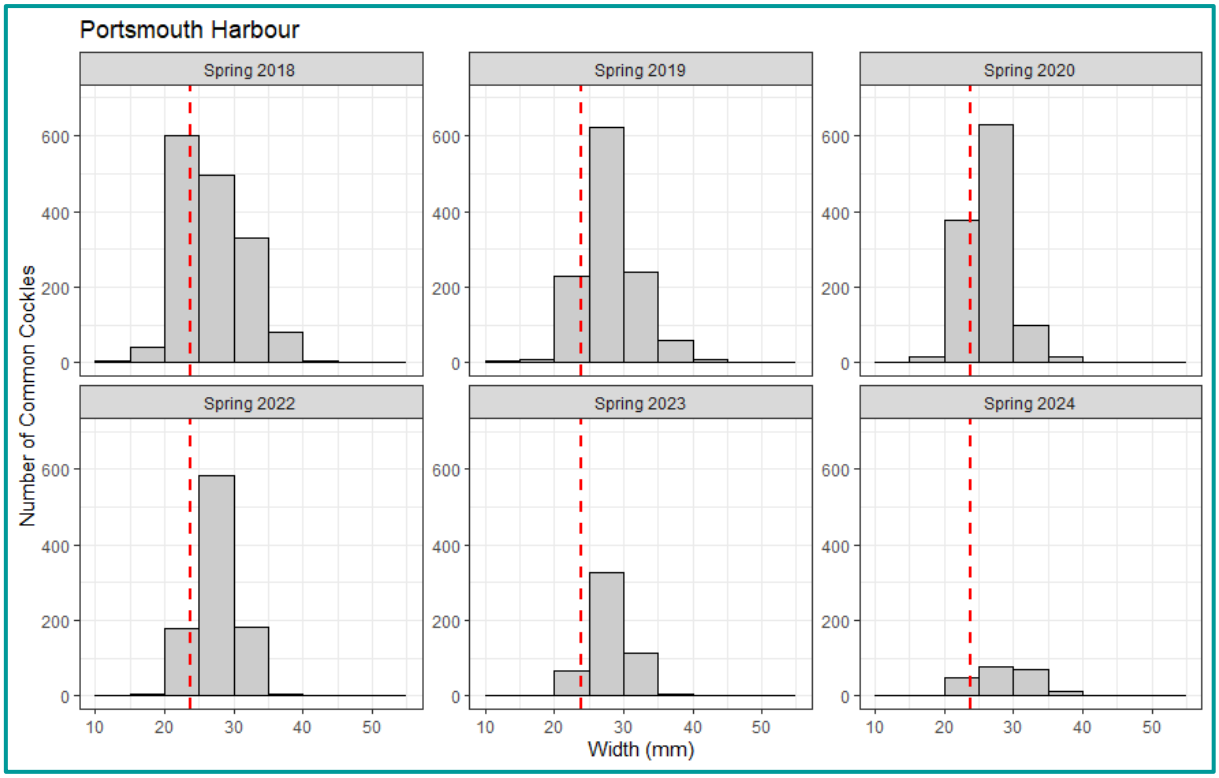


Figure 18: Length histograms for Common cockle sampled in Portsmouth Harbour during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm).

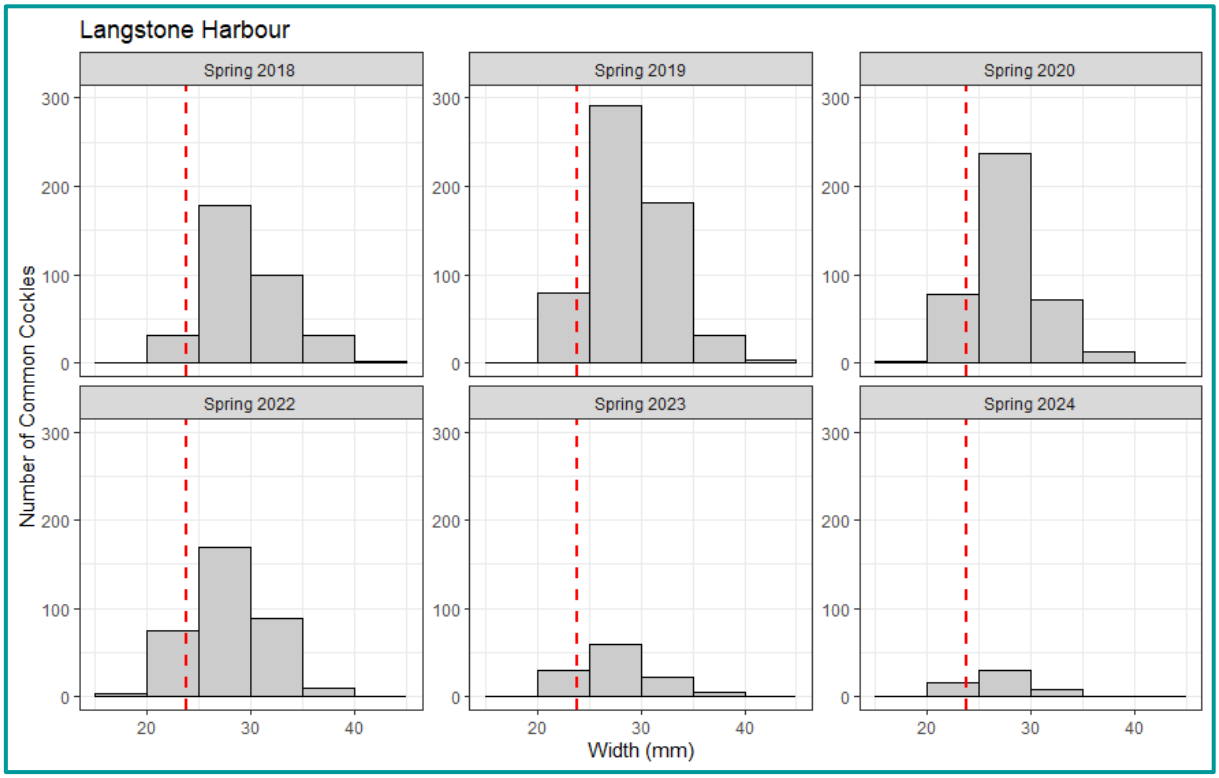


Figure 19: Length histograms for Common Cockle sampled in Langstone Harbour during the spring surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm).

Autumn Survey (pre-season) Comparisons

Manila Clam

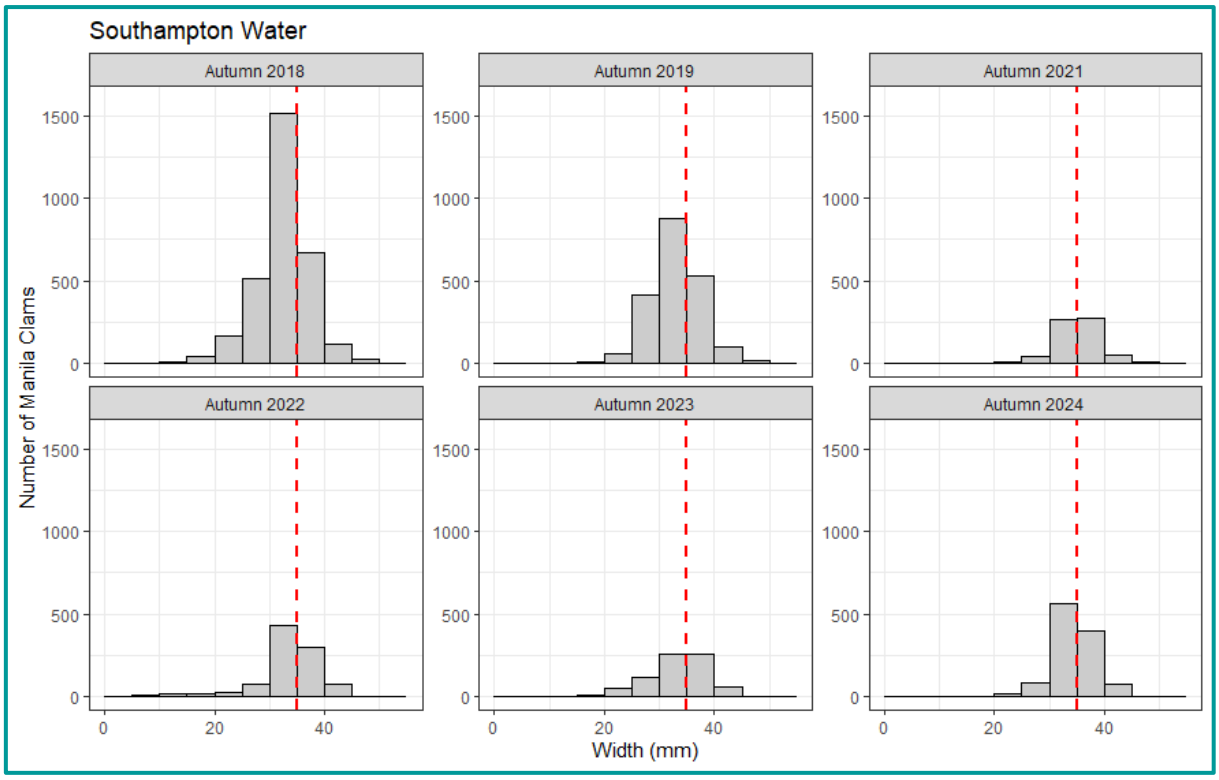


Figure 20: Length histograms for Manila Clam sampled in Portsmouth Harbour during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm).

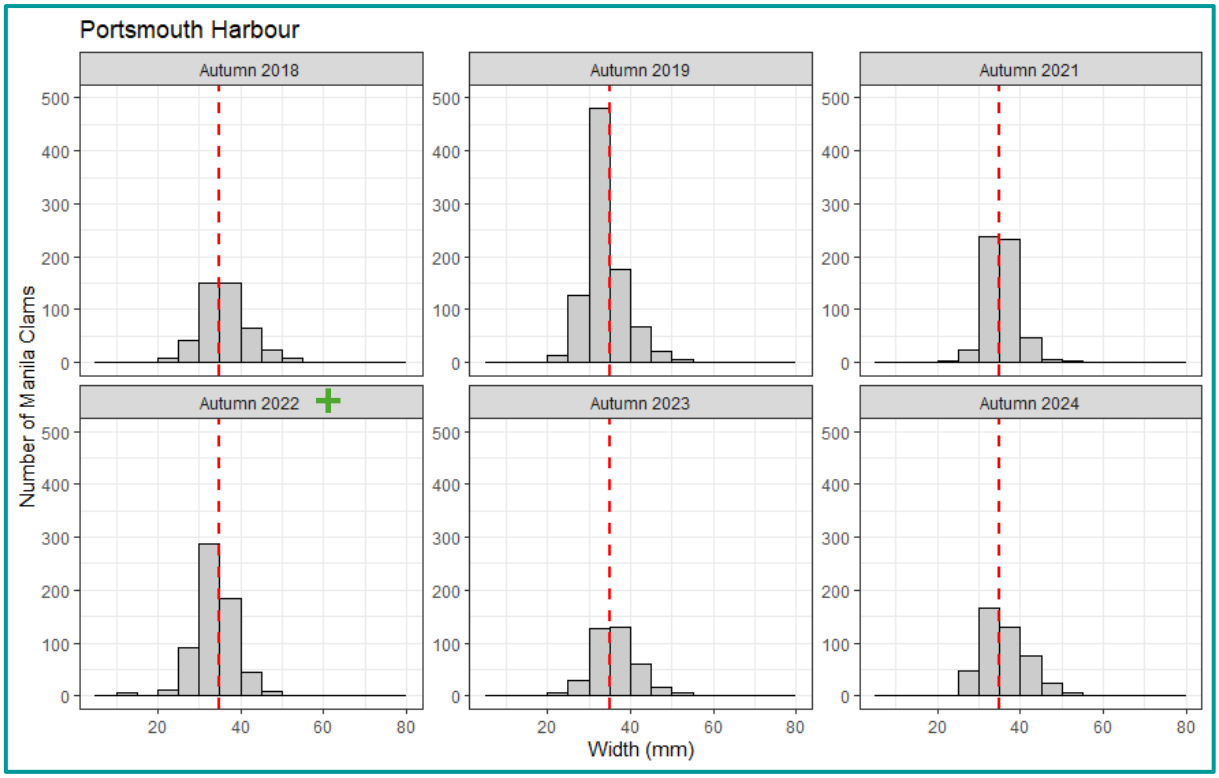


Figure 21: Length histograms for Manila clam sampled in Portsmouth Harbour during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm). Green symbol (+) indicates a significant increase in average length from that survey to 2024.

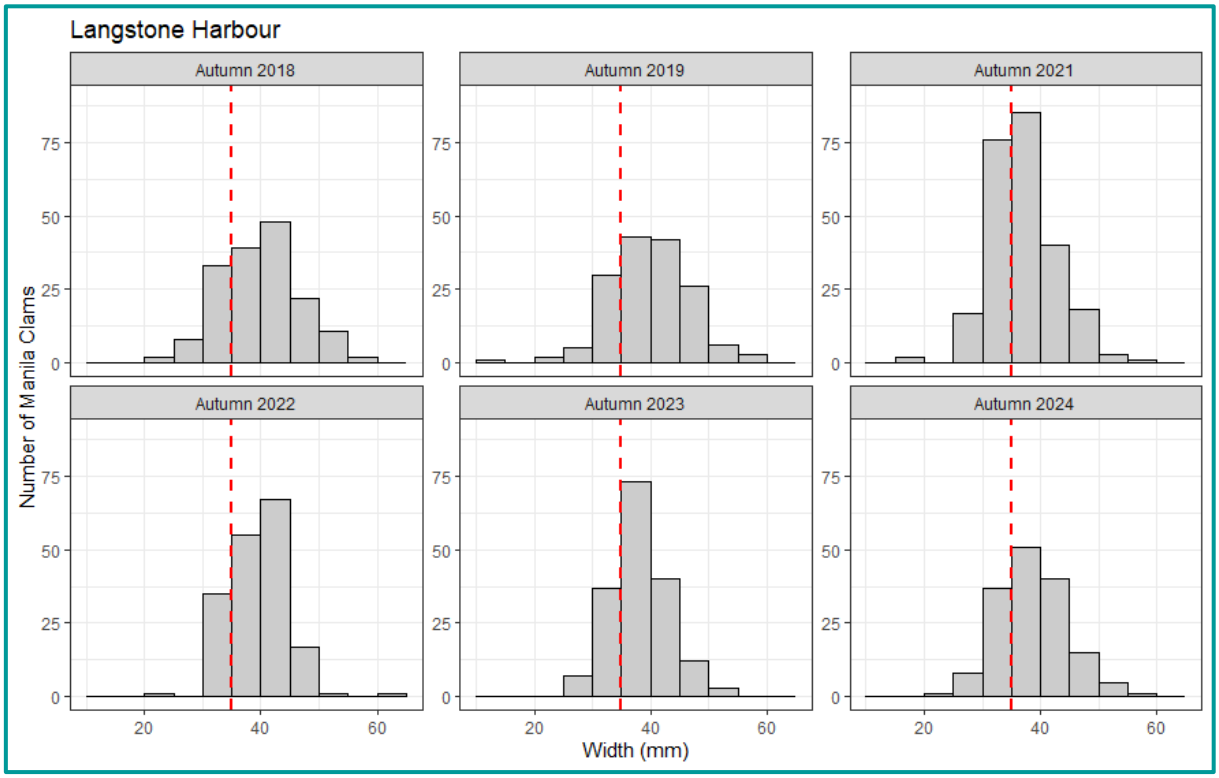


Figure 22: Length histograms for Manila clam sampled in Langstone Harbour during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (35mm).

Common Cockle

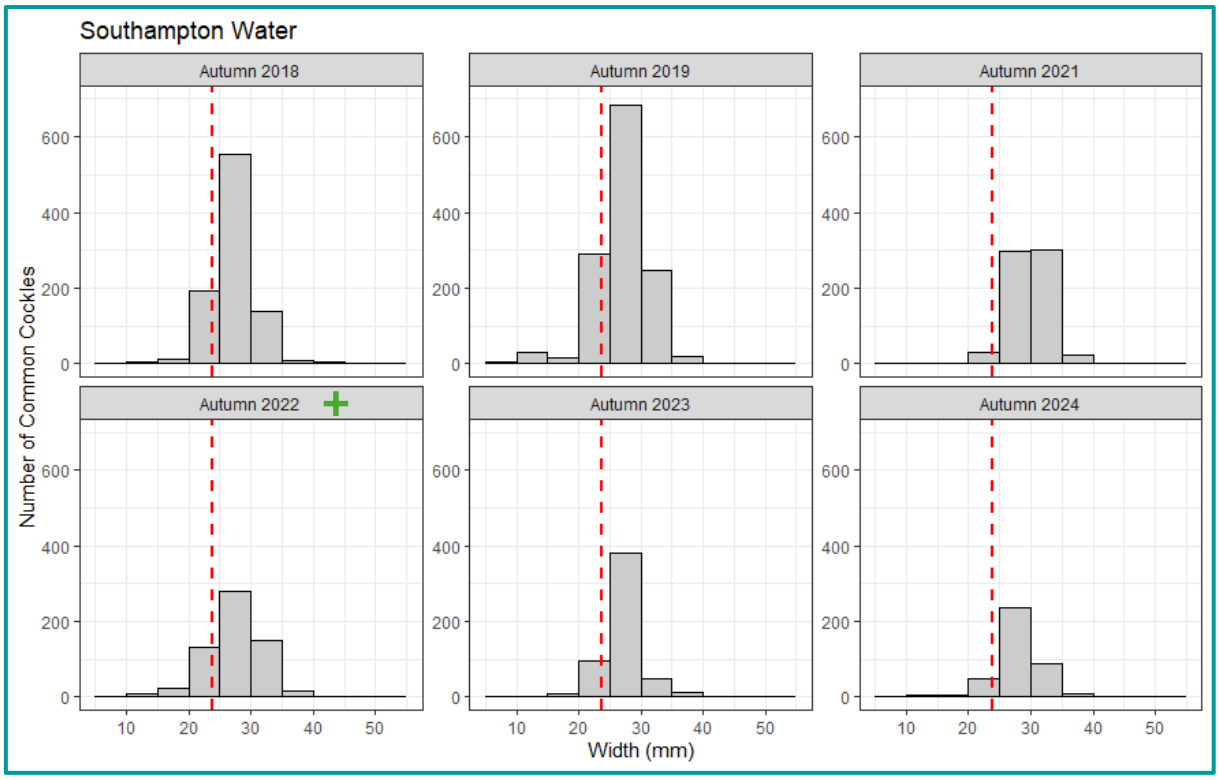


Figure 23: Length histograms for Common cockle sampled in Southampton Water during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm). Green symbol (+) indicates a significant increase in average length from that survey to 2024.

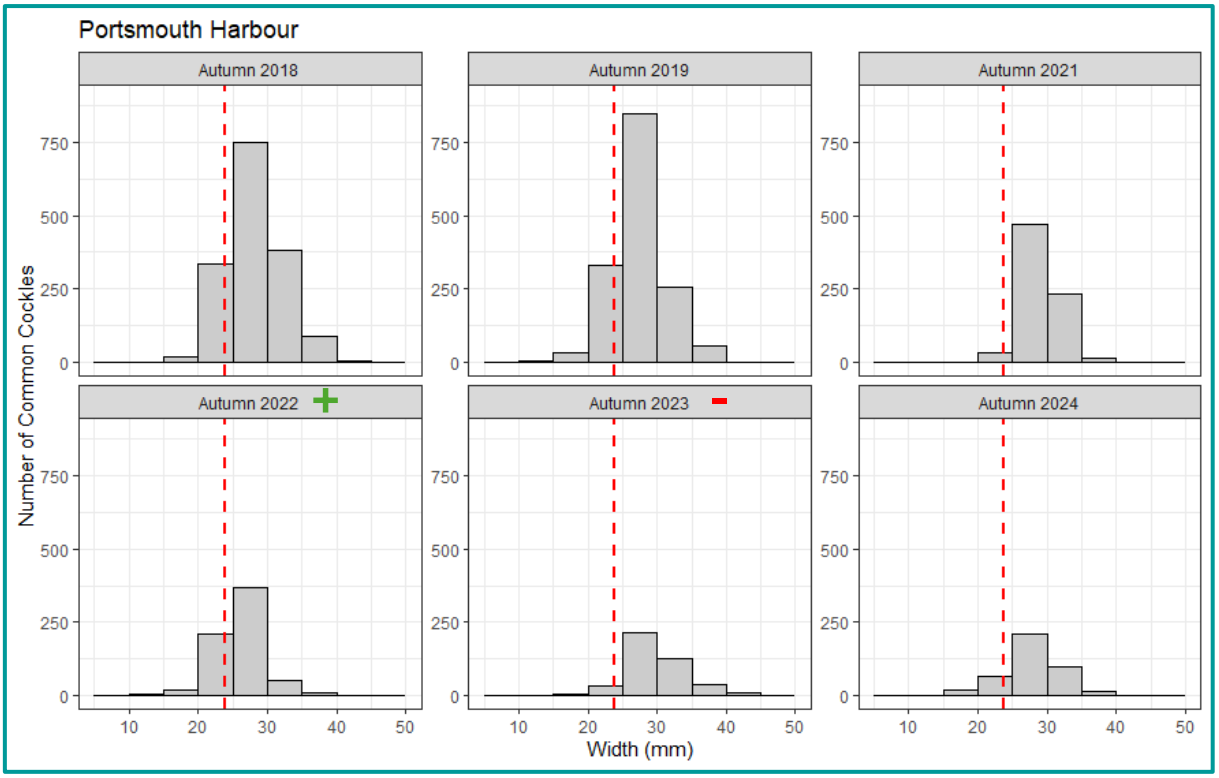


Figure 24: Length histograms for Common cockle sampled in Portsmouth Harbour during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm). Symbols (-, +) indicate significant changes in average length from the survey to 2024.

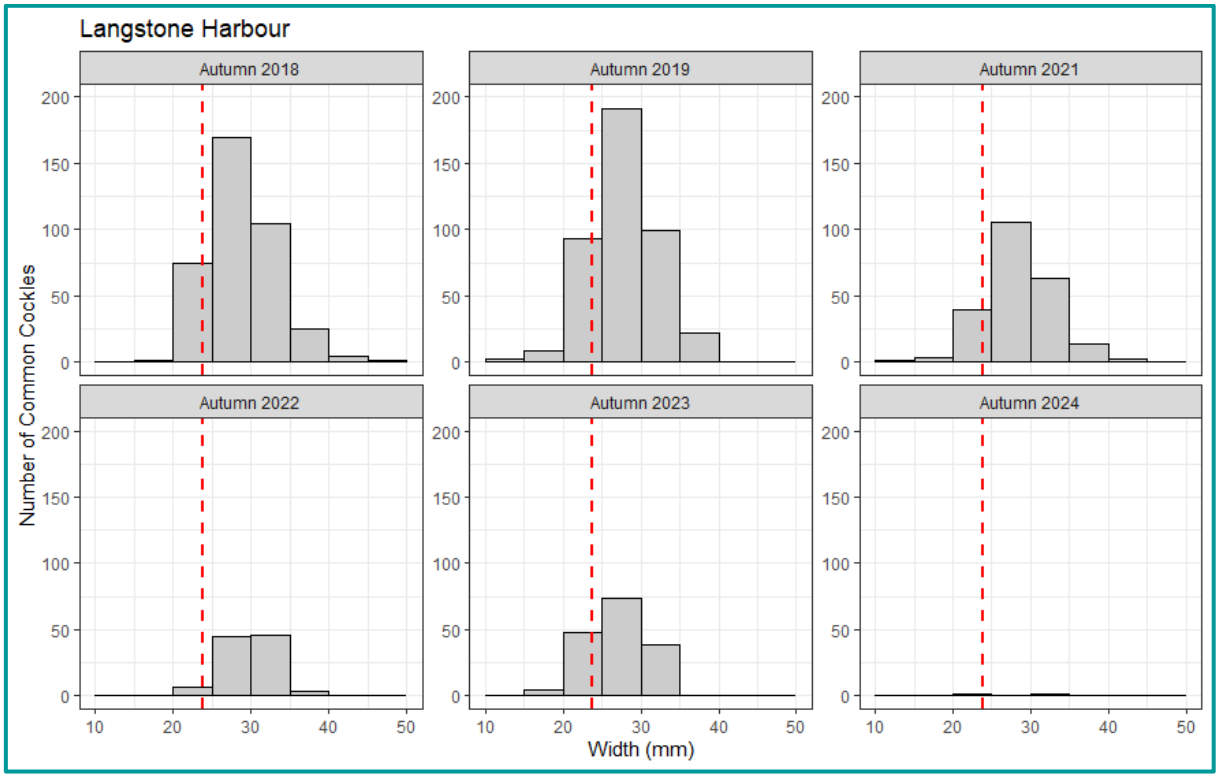


Figure 25: Length histograms for Common cockle sampled in Langstone Harbour during the autumn surveys within the Solent Bivalve survey timeseries (2018 to 2024). The red dashed line displays the Minimum Conservation Reference Size (23.8mm).

EXECUTIVE SUMMARY

Marked H

Juvenile Fish Surveys – A data summary from 2017 to 2024
Paper For Information

Report by PO Perrins.

A. Purpose

To provide members with a summary of data obtained from the biannual juvenile fish surveys from 2017 to the most recent survey in Autumn 2024.

B. Annex

Southern IFCA Juvenile Fish Survey: Data Summary to Autumn 2024

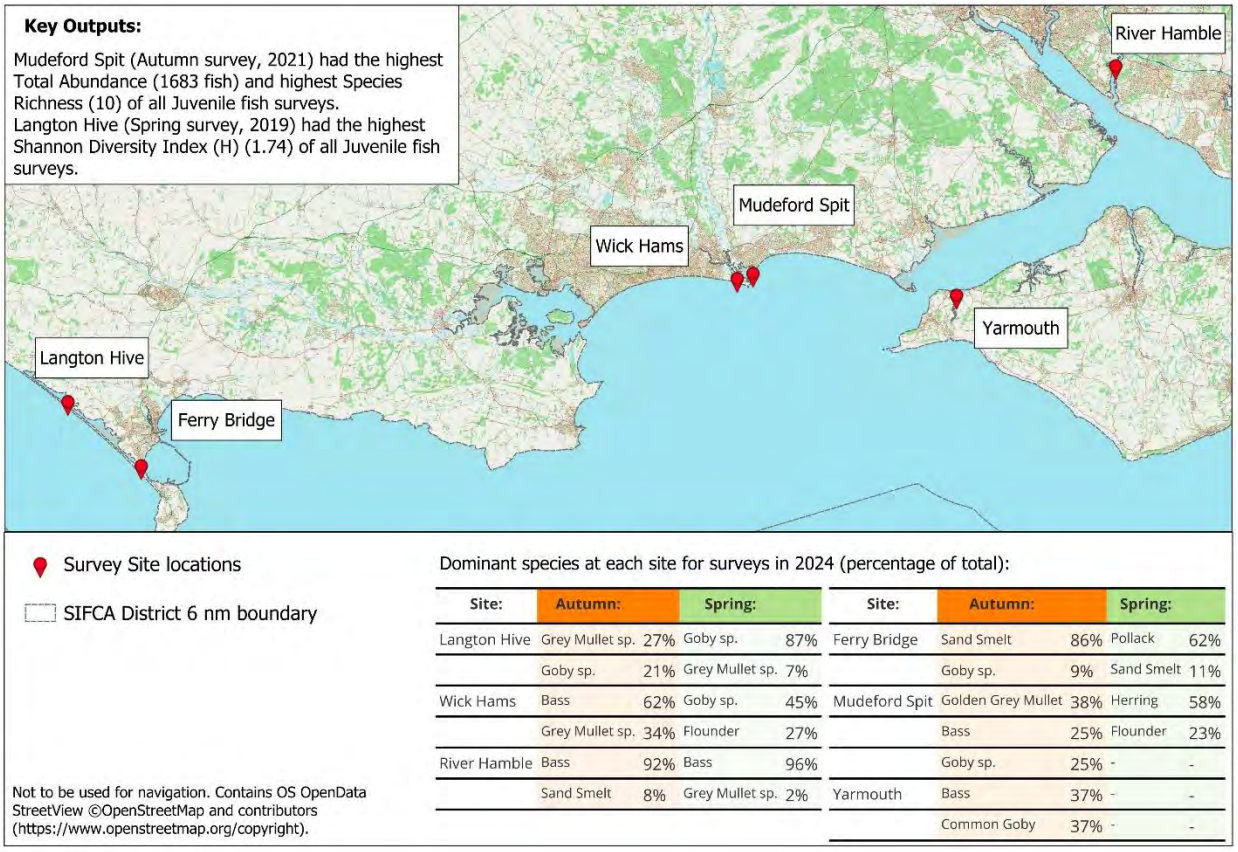
1.0 Introduction

- As part of the Southern IFCA Inshore Netting Review, Southern IFCA determined to enhance the environmental, socio-economic and sustainability of fisheries within the District by supporting the use of harbours and estuaries by fish populations, collectively referring to the areas as **Essential Fish Habitats (EFH)**. These sites contain examples of habitats which provide nursery areas for juvenile fish as well as for fish species throughout their lifecycle for feeding, spawning and refuge.
- Collecting data through the Juvenile Fish Surveys allows Southern IFCA to improve understanding of the use of **EFH** by commercial and recreational fish species. Building a time-series dataset will allow any changes in fish communities to be observed to help in developing this understanding, contributing to a database that can then be used in conjunction with other evidence, when reviewing fisheries management and determining suitable management interventions.
- Southern IFCA's Juvenile Fish Survey, forming part of the Southern IFCA Monitoring Program, has records dating back to Spring 2017. As time has progressed, the sites surveyed have changed and the number reduced to focus on key sites related to Southern IFCA management of relevant fisheries.
- Since 2017, surveys have been conducted in The Fleet (Langton Hive and Ferry Bridge), Christchurch Harbour (Wick Hams and Mudeford Spit), and Yarmouth (River Yar). With the focus of key survey sites in recent years, the River Hamble has been surveyed since Autumn 2021 (locations in Figure A).
- The Juvenile Fish Surveys occur in Spring and Autumn each year. A 43-metre seine net is deployed in an arc adjacent to the shoreline. The net is hauled in, and the fish are transferred to aerated buckets where a length measurement (head to tail, mm) is taken for the first fifty individuals of each species (a count is taken for species over 50 individuals). The net is shot twice at each location, and fish returned to the sea as quickly as possible.
- Data collected in 2024 was added to the time-series database and analysis was conducted to summarise the total species abundance, relative species abundance, species richness and Shannon Diversity Indices for each survey.

2.0 Summary of Key Points

- Analysis determined no statistically significant difference between surveys in Autumn or Spring across the dataset time range (2017-2024).

- There was also no statistically significant difference between the species richness, total abundance or Shannon Diversity Index between Spring and Autumn Surveys.
- **From the 2024 surveys:**
    - Wick Hams had the greatest **Total Abundance** for Spring (336 fish), Autumn (729 fish) and the entire year (729 fish).
    - Langton Hive had the greatest **Species Richness** for Autumn (8) and the entire year (8), whereas Langton Hive and Ferry Bridge equally had the highest **Species Richness** for Spring (7).
    - Wick Hams had the highest **Shannon Diversity Index (H)** for Spring (1.628893) and the entire year, whereas Langton Hive had the highest for Autumn (1.550242).
    - The most common fish species was **Bass** which was found in eight surveys (5 locations in Autumn, and 3 locations in Spring). This was closely followed by **Sand Smelt** which was found in seven surveys (4 locations in Autumn and 3 locations in Spring). As well as being found across multiple sites, these species were also amongst the most dominant (see Figure A).



Dominant species at each site for surveys in 2024 (percentage of total):

Site:	Autumn:		Spring:	
Langton Hive	Grey Mullet sp.	27%	Goby sp.	87%
	Goby sp.	21%	Grey Mullet sp.	7%
Wick Hams	Bass	62%	Goby sp.	45%
	Grey Mullet sp.	34%	Flounder	27%
River Hamble	Bass	92%	Bass	96%
	Sand Smelt	8%	Grey Mullet sp.	2%

Site:	Autumn:		Spring:	
Ferry Bridge	Sand Smelt	86%	Pollack	62%
	Goby sp.	9%	Sand Smelt	11%
Mudeford Spit	Golden Grey Mullet	38%	Herring	58%
	Bass	25%	Flounder	23%
	Goby sp.	25%	-	-
Yarmouth	Bass	37%	-	-
	Common Goby	37%	-	-

Figure A: *Map showing the location of the sites surveyed in 2024 (and previous years). Includes the key outputs for highest* ***Total Abundance****, highest* ***Species Richness****, and highest* ***Shannon Diversity Index (H)*** *values from all surveys across all locations (2017-2024). This map also includes a table of the dominant species found at each site during the Autumn and Spring surveys in 2024. These values were taken from the Relative Abundance calculations.*

3.0 Next Steps

Officers will be undertaking the next round of Juvenile Fish Surveys in Spring 2025, aiming to maintain and expand the partnership working and offer a platform for continued research and networking. Each round of surveys will contribute to the time-series database with the aim of reporting annually on results.

Marked H - Annex 1

Juvenile Fish Survey Data Summary to Autumn 2024

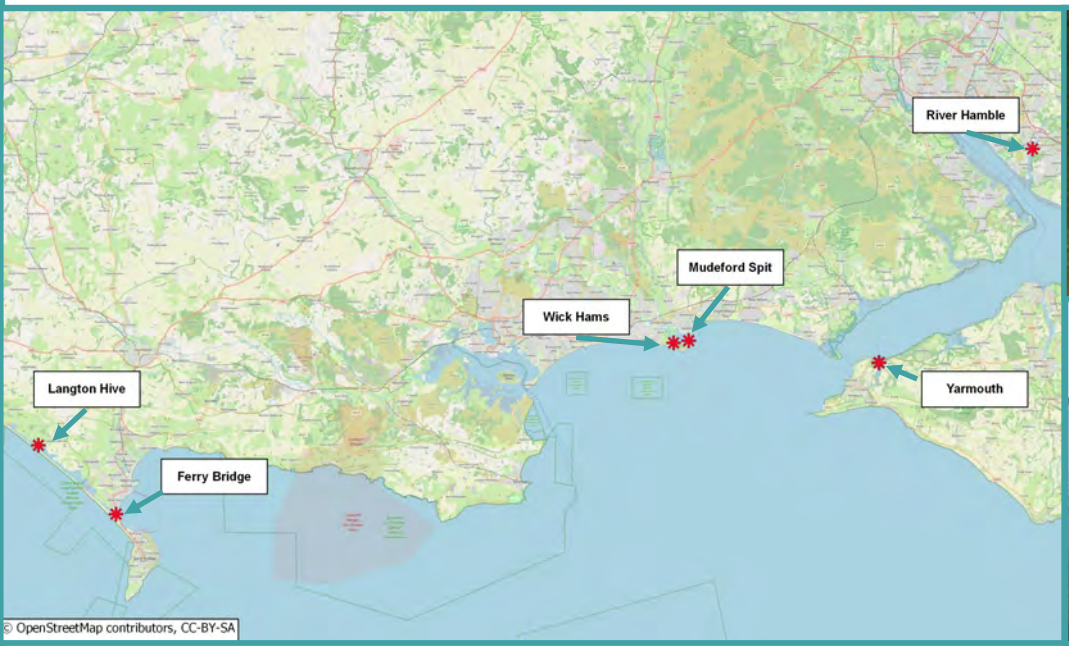
Purpose

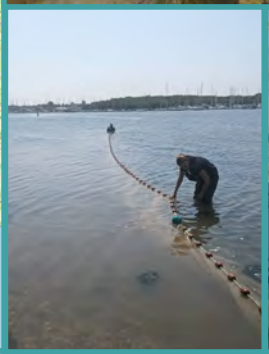
Estuaries and sheltered coastal habitats provide a range of ecosystem services and are known for their high productivity and biodiversity. They offer suitable habitats for juvenile fish as nursery areas as well as species throughout their lifecycle for feeding, spawning and refuge. As part of the Southern IFCA Inshore Netting Review, Southern IFCA determined to enhance the environmental, socio-economic and sustainability of fisheries within the District by supporting the use of harbours and estuaries by fish populations for these purposes, collectively referring to the areas as Essential Fish Habitats (EFH).

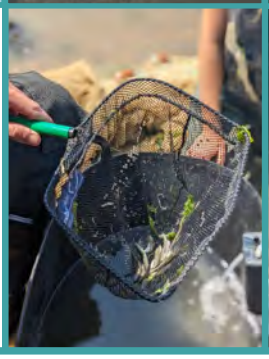
As part of the Southern IFCA's Fish Monitoring Programme, surveys are carried out at a range of sites across the District in order to understand the use of these EFH by commercial and recreational fish species. Building a time-series dataset will allow any changes in fish communities to be observed to help understanding of EFH, contributing to a database that can be used for reviewing fisheries management.

Method

1. Southern IFCA Carry out Juvenile Fish Surveys in Spring and Autumn each year.
2. A 43 meter seine net is used to sample fish, deployed either by hand or using a vessel depending on location.
3. The net is set in a semi-circle from the shore and is recovered to the shore with any fish retained placed in aerated buckets.
4. The length of the first 50 fish of each species are measured (head-to-tail length) and carefully returned to the sea as quickly as possible.
5. Any remaining fish of each species are counted and returned to the sea.
6. The net is shot and hauled twice at each survey site.





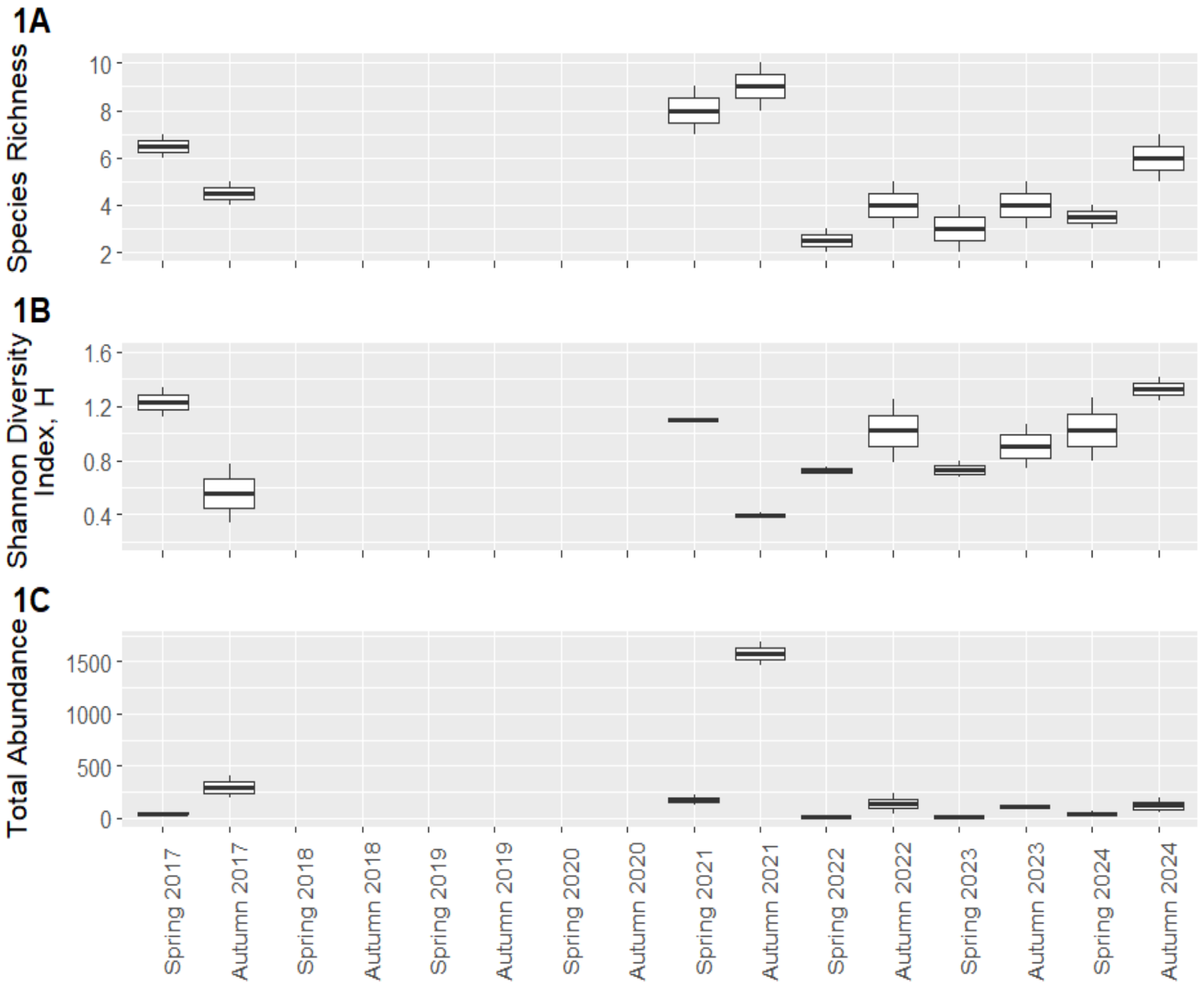


- Data was used to calculate the total species abundance, relative species abundance, species richness and Shannon Diversity Index (H).
- It should be noted that for species richness and H; where difficulties in identifying species occurred, all variations were combined as one species. Therefore, the species richness and H should be viewed as conservative.
- H considers both the abundance of each species and the balance of abundance between all species, also known as the species evenness. A larger H represents a more diverse community.

Partnership Working

Southern IFCA's juvenile fish surveys would not be possible without the help, permissions, resources and knowledge of multiple organisations. Thank you to the representatives of the following organisations for their help with the 2024 surveys.

Mudeford Spit



- Figures 1A, 1B and 1C display the Species Richness, Shannon Diversity Index (H) and total abundance in each survey carried out between Spring 2017 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.

- **Species richness** was highest in Autumn 2021 (9) and Spring 2021 (8), and lowest in Spring 2022 (2.5) and Autumn 2022 and 2023 (4). No survey has a significantly different species richness to another ($p > 0.05$).

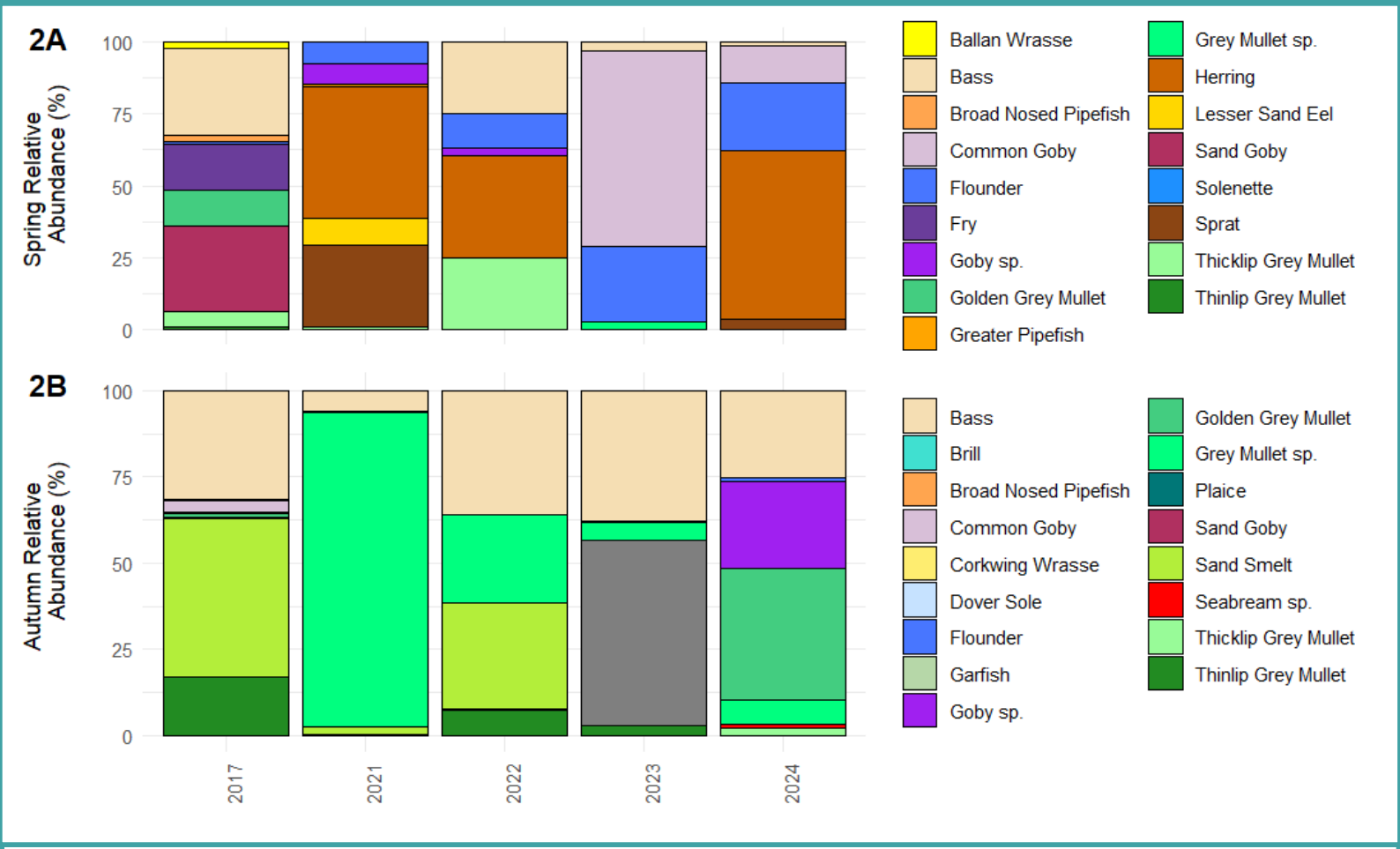
- Spring 2024 displayed a lower **Shannon Diversity Index (H)** than Autumn 2024 due to the high dominance of Herring (58%, Figures 2A & 2B). No survey has a significantly different H to another ($p > 0.05$).

- Of the Spring surveys, 2021 had the highest **total abundance** of fish (173) and 2022 the lowest (11). Of the Autumn surveys, 2021 had the highest total abundance of fish (1575) and 2023 the lowest (110). No survey has a significantly different total abundance to another ($p > 0.05$).

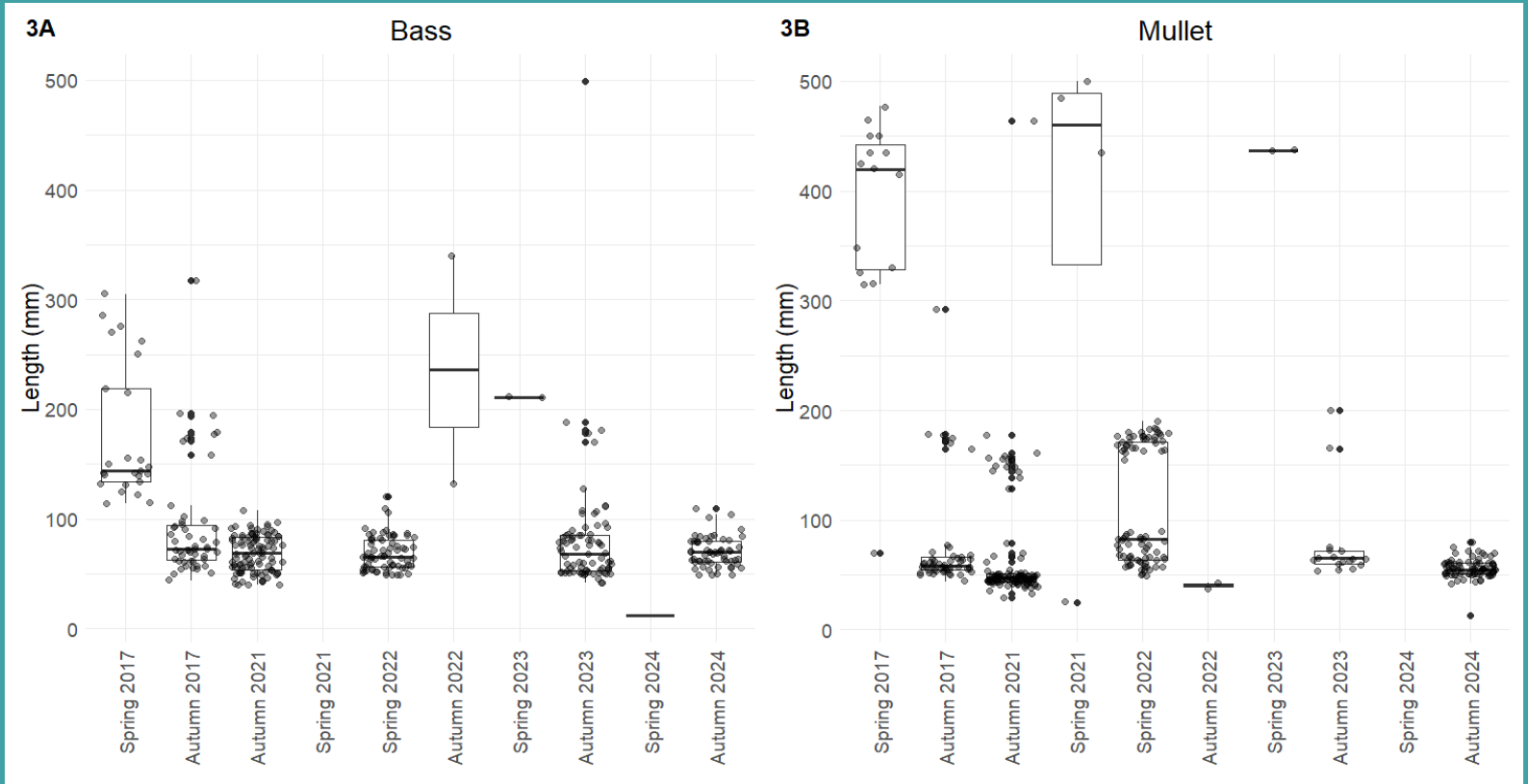
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between Spring and Autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	2.94	3.44	No
Mean Shannon Diversity Index (H)	0.64	0.53	No
Mean Total Abundance	35	280	No

Mudeford Spit

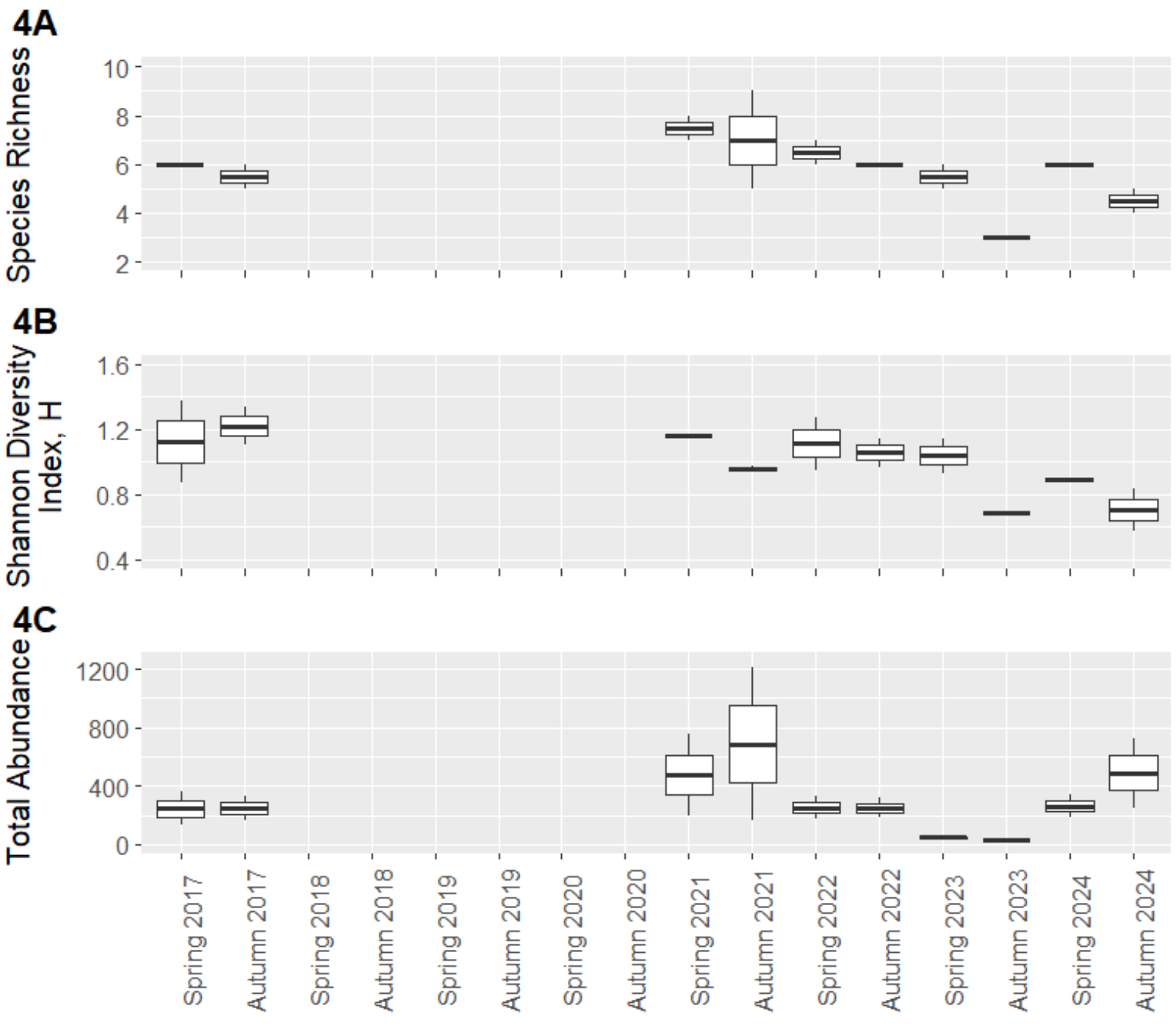


- Figures 2A (Spring) and 2B (Autumn) display the percentage relative abundance of each species during each survey.
- In Spring 2024 Herring were the most abundant species (58%) followed by Flounder (23%). Whereas in Autumn 2024 Golden Grey Mullet were the most abundant species (38%) followed by Bass (25%) and Goby sp. (25%).



- Figures 3A and 3B display the measured length (mm) of Bass and all Mullet species. Only Bass and Mullet are displayed due to their commercial importance within the Southern IFCA district.
- All Grey Mullet sp. have been combined for Figure 3B due to difficulties in identifying the species as juveniles, however 3B displays distinct groups of sizes, likely related to the presence of the different species.

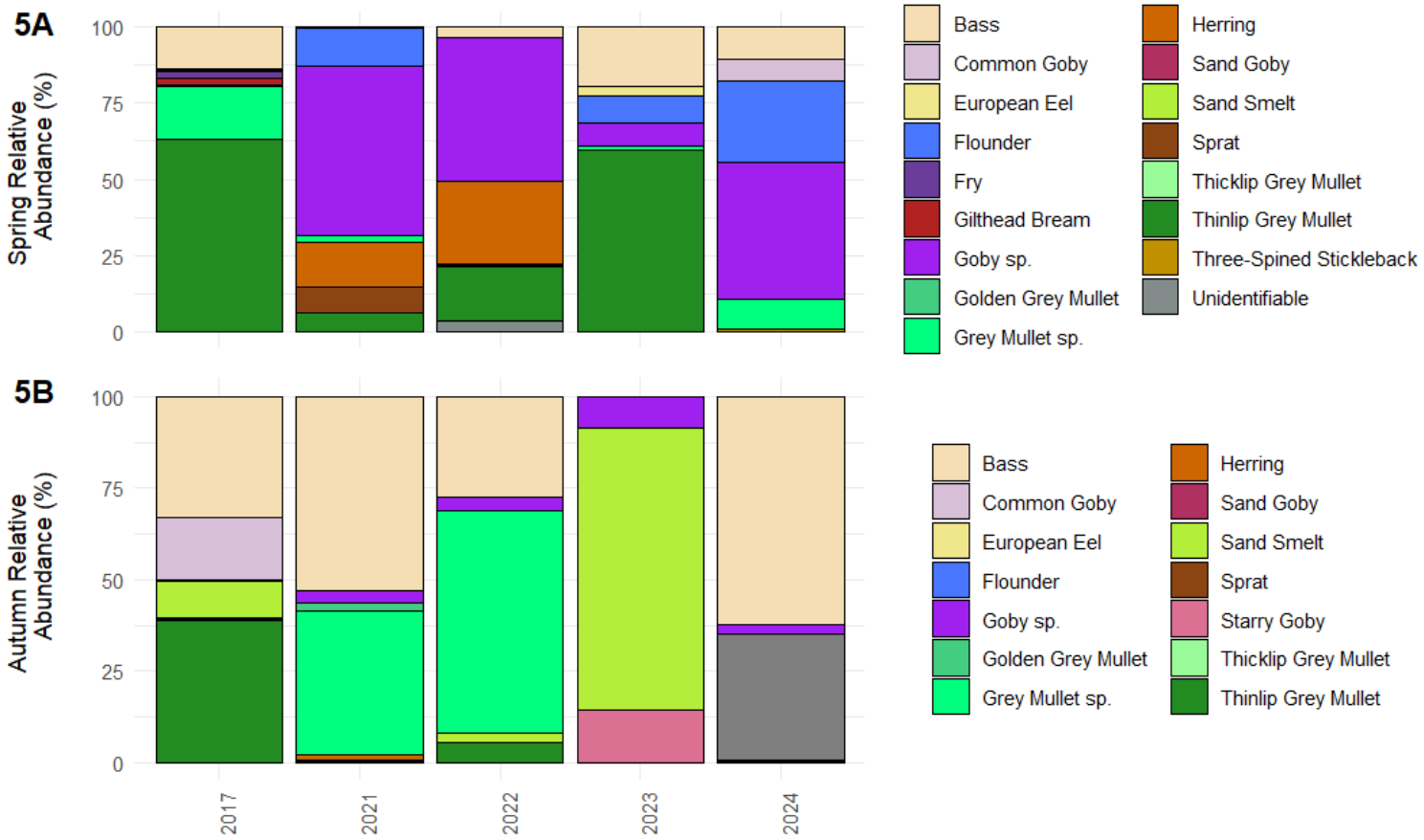
Wick Hams



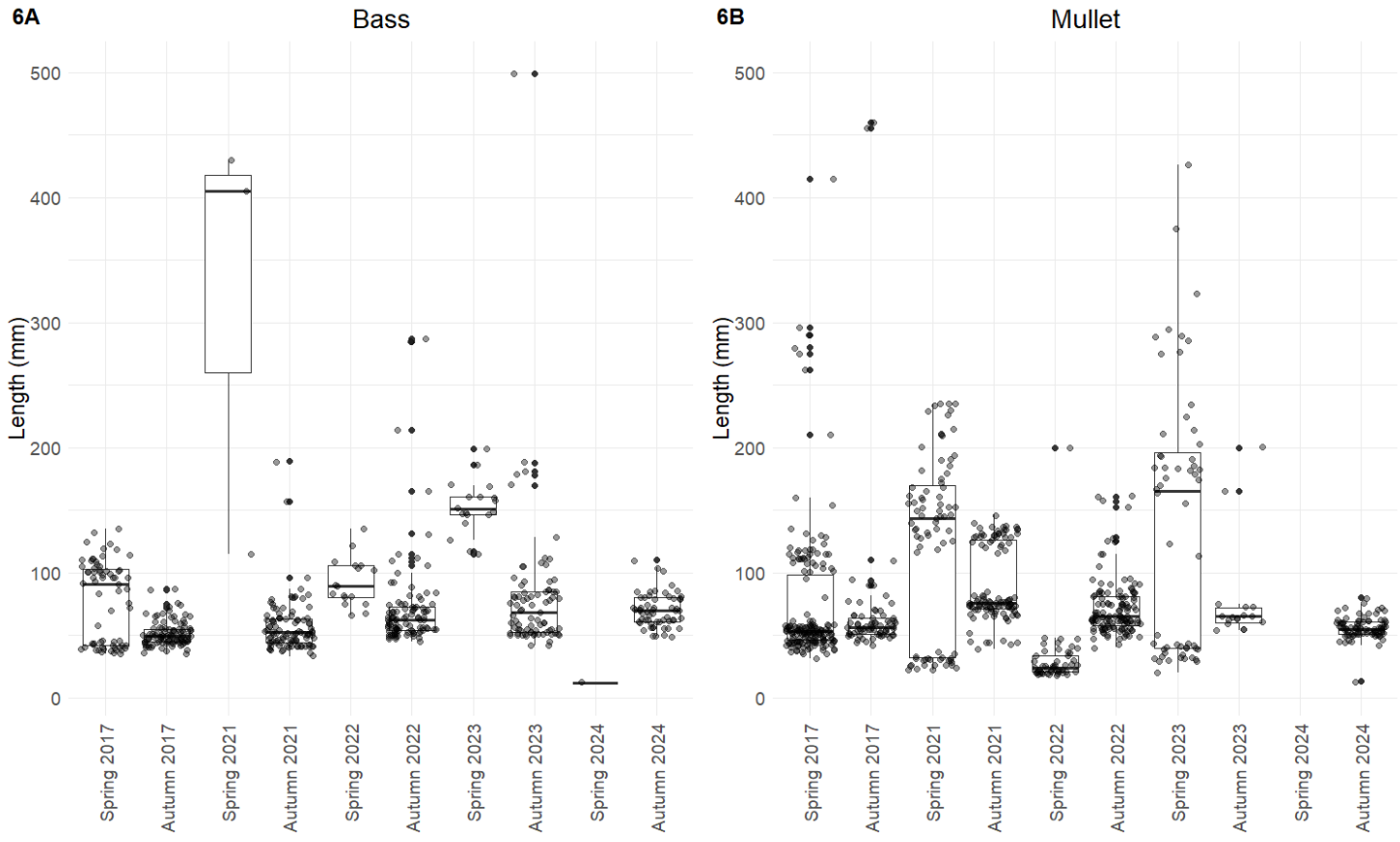
- Figures 4A, 4B and 4C display the Species Richness, Shannon Diversity Index (H) and total abundance in each survey carried out between Spring 2017 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.
- **Species richness** was highest in Autumn 2021 (7) and Spring 2021 (7.5), and lowest in Autumn 2023 (1.5) and Autumn 2024 (4.5). No survey has a significantly different species richness to another ($p > 0.05$).
- Spring 2024 (1.26) displayed a higher **Shannon Diversity Index (H)** than Autumn 2024 (0.71) due to the high dominance of Bass (62%, Figures 5A & 5B). No survey has a significantly different H to another ($p > 0.05$).
- Of the Spring surveys, 2021 had the highest mean **total abundance** of fish (476) and 2023 the lowest (46). Of the Autumn surveys, 2021 had the highest total abundance of fish (687) with 2023 the lowest (46). No survey has a significantly different total abundance to another ($p > 0.05$).
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between Spring and Autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	3.94	3.06	No
Mean Shannon Diversity Index (H)	0.74	0.54	No
Mean Total Abundance	160	212	No

Wick Hams

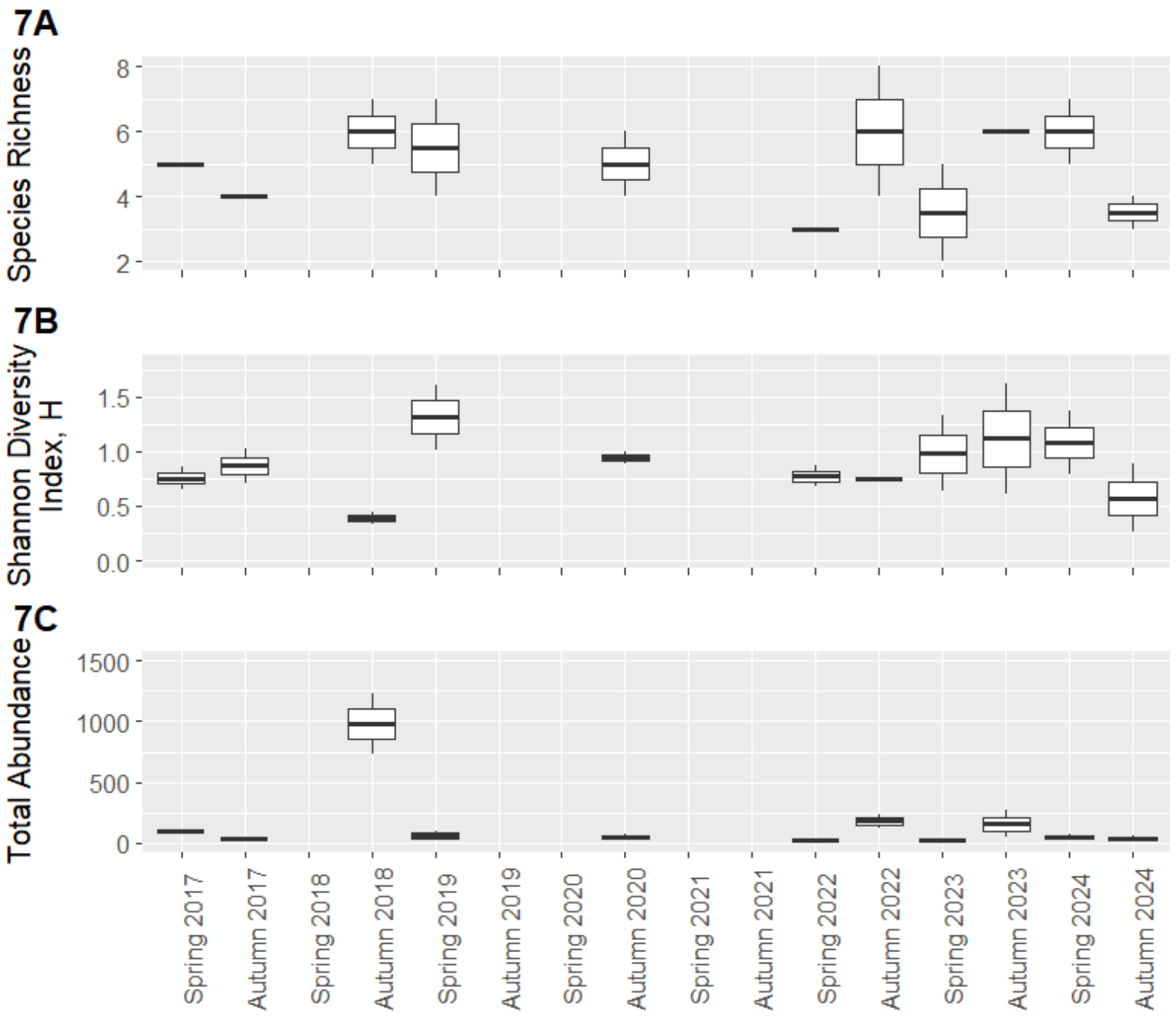


- Figures 5A (Spring) and 5B (Autumn) display the percentage relative abundance of each species during each survey.
- In Spring 2024 Goby sp. were the most abundant species (45%) followed by Flounder (26%). Whereas in Autumn 2024, Bass were the most abundant species (62%) followed by Grey Mullet sp. (34%).



- Figure 6A and 6B display the measured length (mm) of Bass and all Mullet species. Only Bass and Mullet are displayed due to their commercial importance within the Southern IFCA district.
- All Grey Mullet sp. have been combined for Figure 6B due to difficulties in identifying the species as juveniles, however 6B displays distinct groups of sizes, likely related to the presence of the different species.

Ferry Bridge

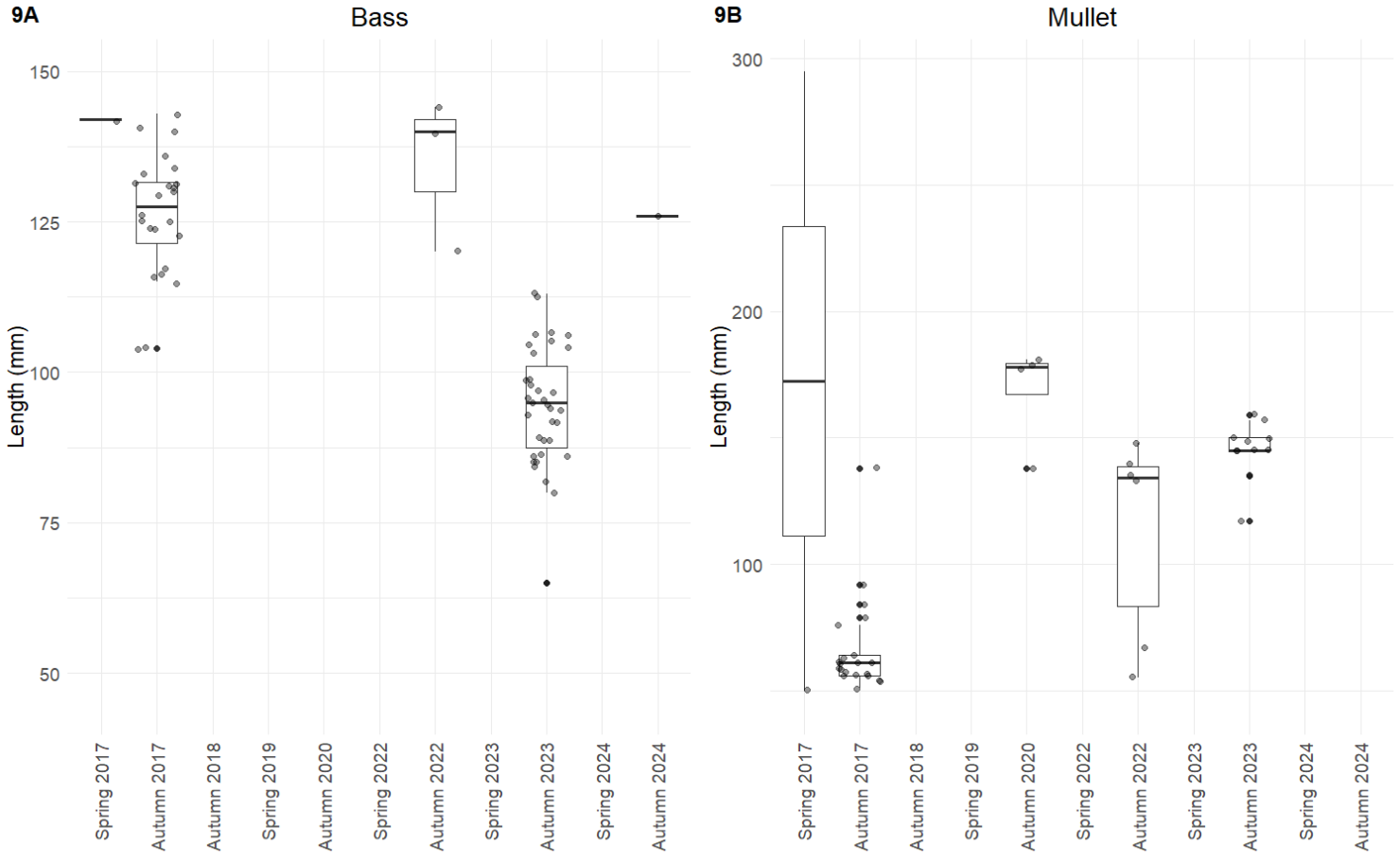


- Figures 7A, 7B and 7C display the Species Richness, Shannon Diversity Index (H) and total abundance in each survey carried out between Spring 2017 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.
- **Species richness** was equal highest in Autumn 2018, 2022, 2023 and Spring 2024 (6), and lowest in Autumn 2024 (3.5) and Spring 2022 (3). No survey has a significantly different species richness to another ($p > 0.05$).
- Spring 2024 (1.08) had a higher mean **Shannon Diversity Index (H)** than the Autumn 2024 survey (0.57) due to the high dominance of Sand Smelt in the Autumn survey (86%, Figures 8A & 8B). No survey has a significantly different H to another ($p > 0.05$).
- Of the Spring surveys, 2017 had the highest **total abundance** of fish (98) and 2023 the lowest (11). Of the Autumn surveys, 2018 had the highest total abundance of fish (980) and 2024 the lowest (37). No survey has a significantly different total abundance to another ($p > 0.05$).
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between Spring and Autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	2.88	3.81	No
Mean Shannon Diversity Index (H)	0.61	0.58	No
Mean Total Abundance	29	180	No

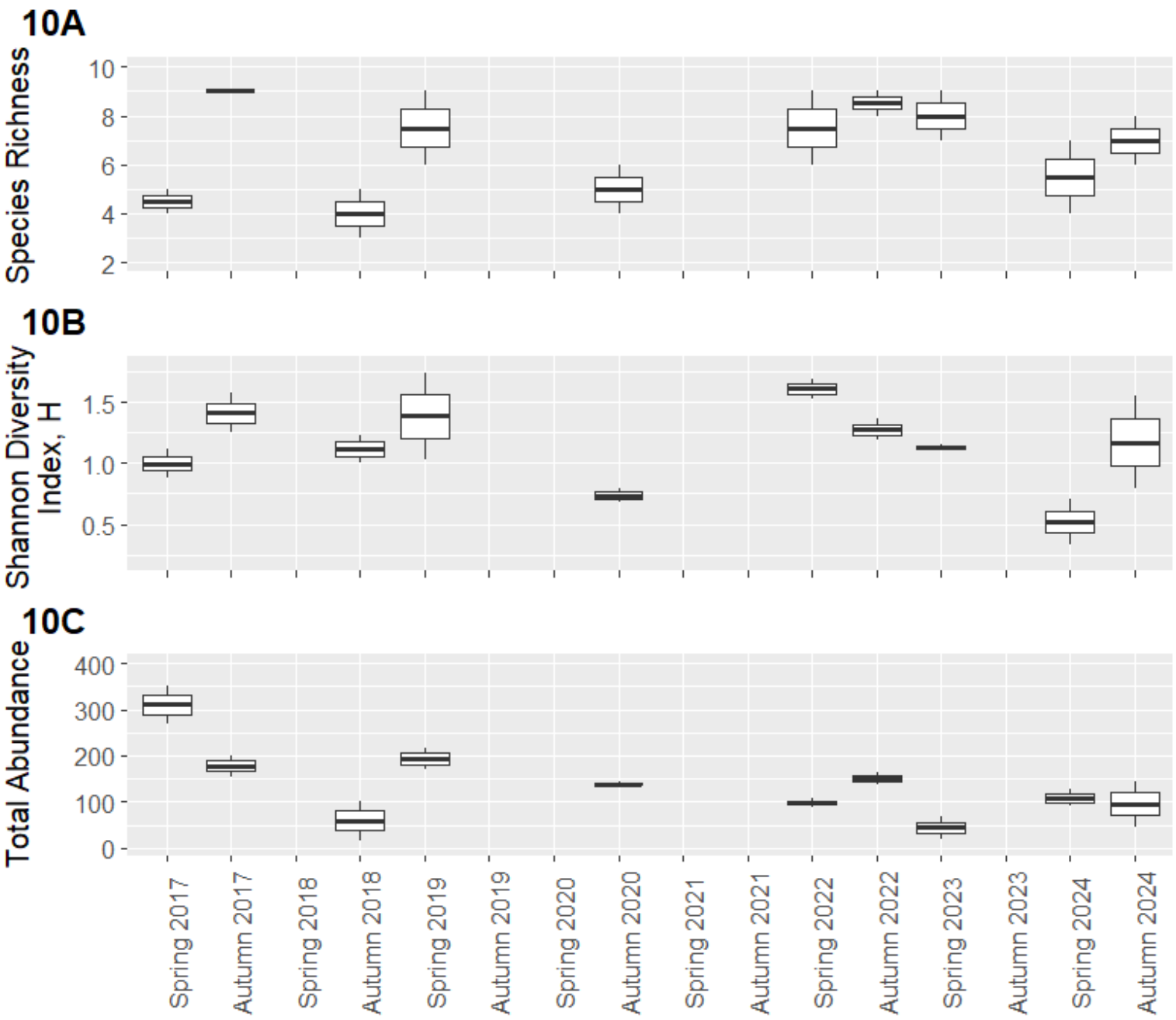
Ferry Bridge

- Figures 8A (Spring) and 8B (Autumn) display the percentage relative abundance of each species during each survey.
- In Spring 2024 Pollack were the most abundant species (62%) followed by Sand Smelt (11%). Whereas in Autumn 2024, Sand Smelt were the most abundant species (86%) followed by Goby sp. (9%).



- Figures 9A and 9B display the measured length (mm) of Bass and all Mullet species. Only Bass and Mullet are displayed due to their commercial importance within the Southern IFCA district.
- All Grey Mullet sp. have been combined for Figure 9B due to difficulties in identifying the species as juveniles.

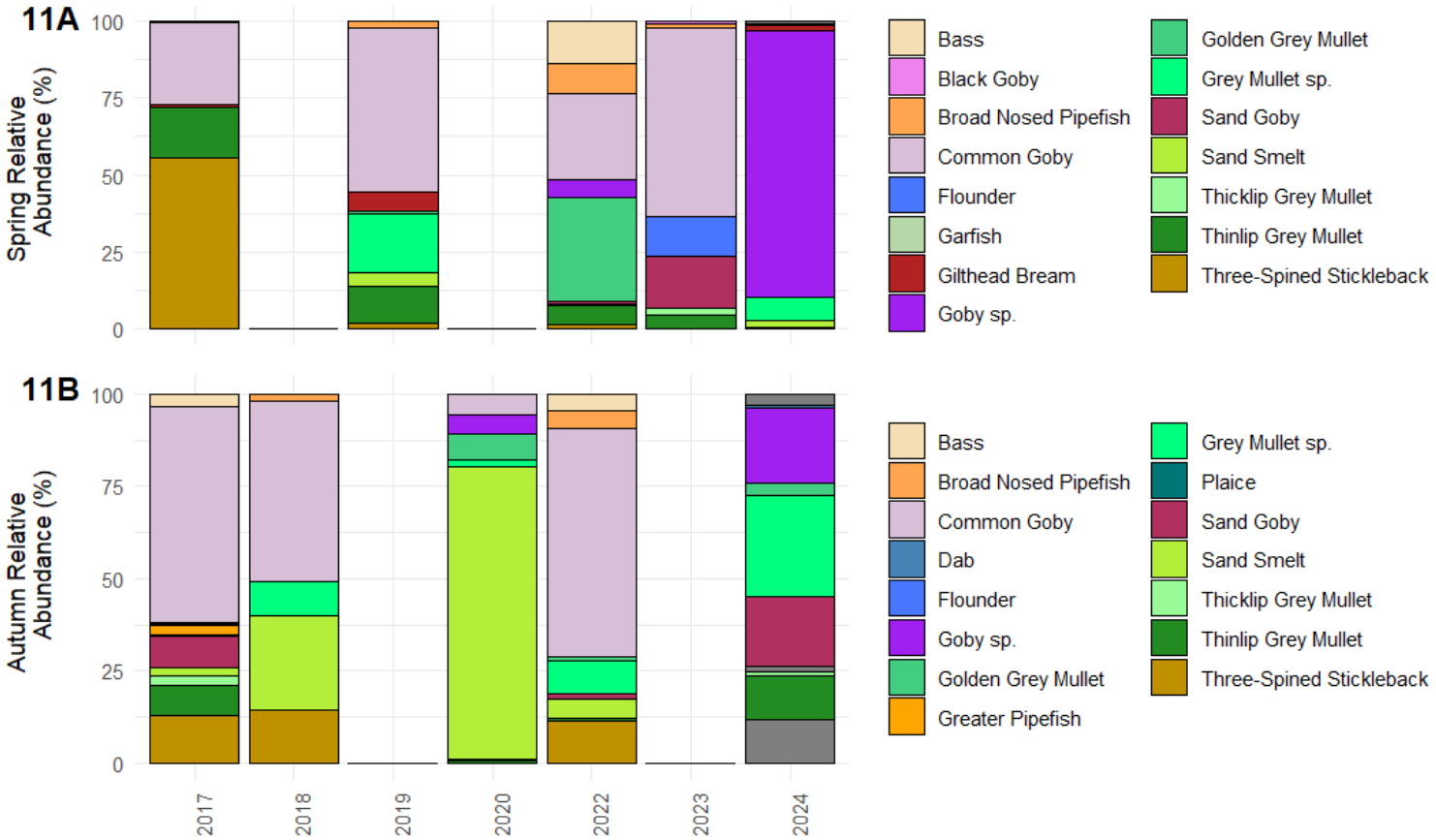
Langton Hive



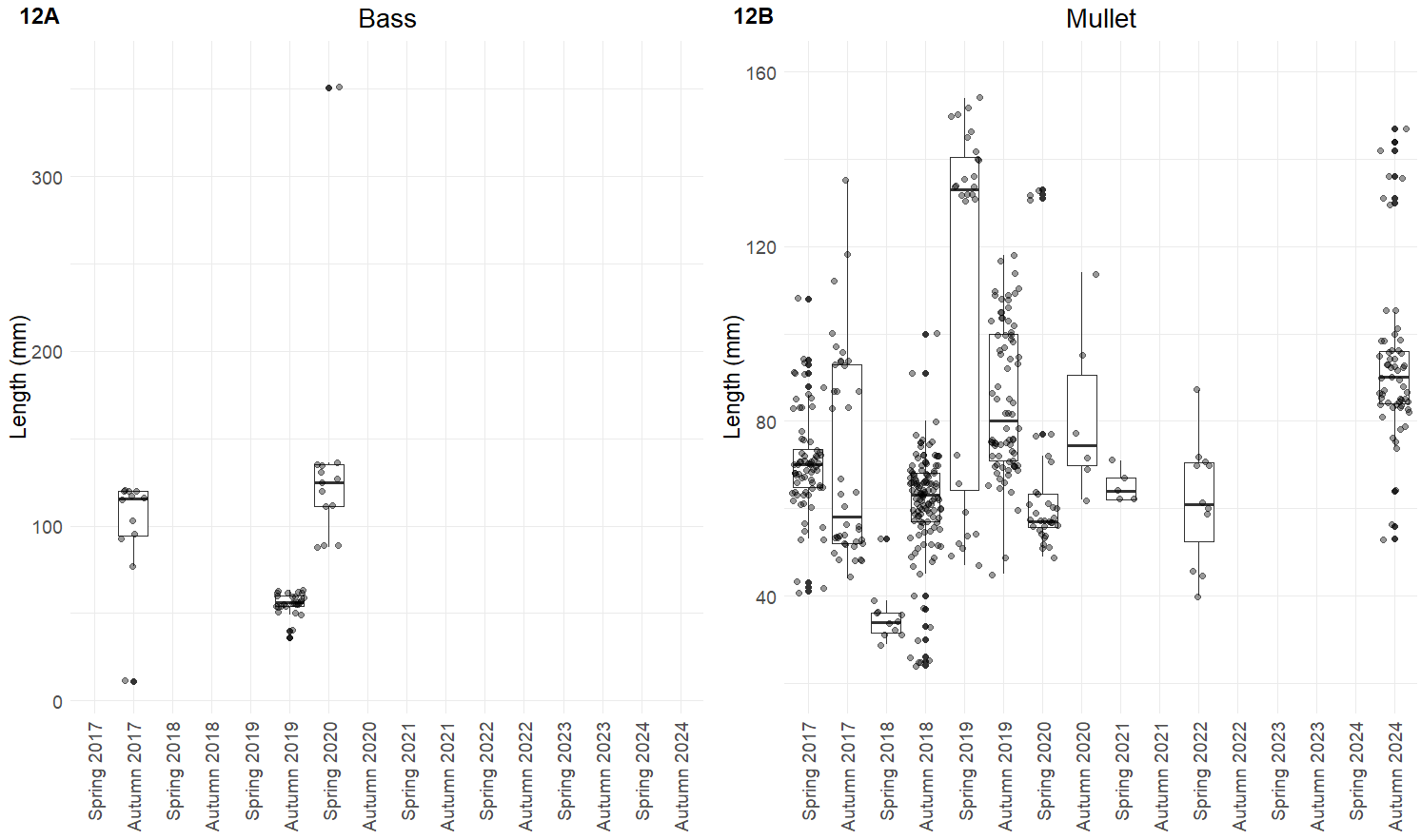
- Figures 10A, 10B and 10C display the Species Richness, Shannon Diversity Index (H), and total abundance in each survey carried out between Spring 2017 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.
- **Species richness** was highest in Autumn 2017 (9) and lowest in Autumn 2018 (4). Of the Spring surveys, species richness was highest in 2023 (8) and lowest in 2017 (4.5). No survey has a significantly different species richness to another ($p > 0.05$).
- Spring 2024 (0.52) had a lower mean **Shannon Diversity Index (H)** than the Autumn 2024 survey (1.17) due to the dominance of Goby sp. (87%, Figures 11A & 11B). No survey has a significantly different H to another ($p > 0.05$).
- Of the Spring surveys, 2017 had the highest mean **total abundance** of fish (311) and 2023 the lowest (44). Of the Autumn surveys, 2017 had the highest total abundance of fish (178) and 2018 the lowest (59). There is no significant difference ($p > 0.0.5$) in total abundance between any surveys.
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between Spring and Autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	4.13	4.19	No
Mean Shannon Diversity Index (H)	0.70	0.71	No
Mean Total Abundance	94	78	No

Langton Hive

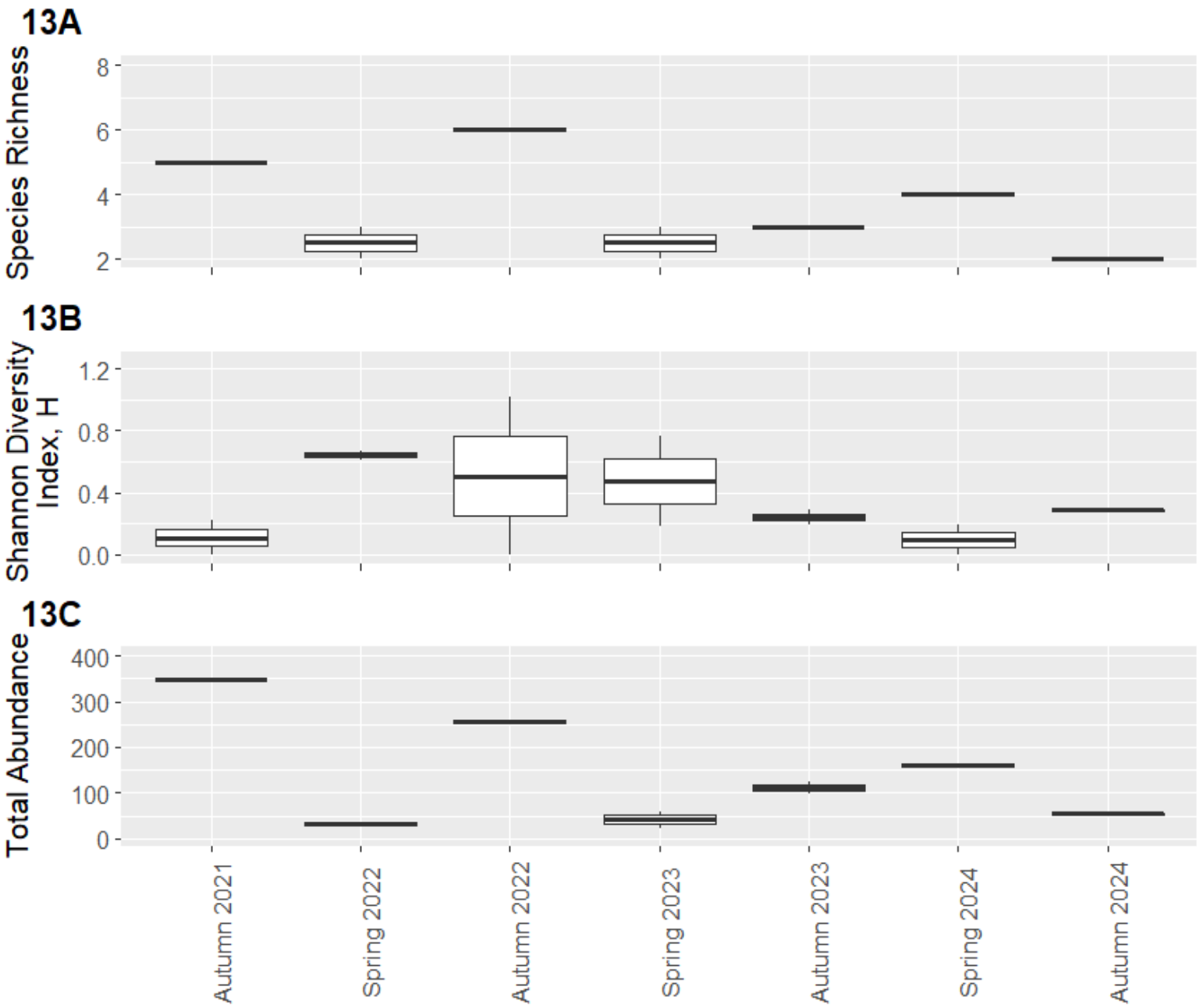


- Figures 11A (Spring) and 11B (Autumn) display the percentage relative abundance of each species during each survey.
- In Spring 2024 Goby sp. were the most abundant species (87%) followed by Grey Mullet sp. (7%). Whereas in Autumn 2024, Grey Mullet sp. were the most abundant species (27%) followed by Sand Goby (19%).



- Figure 12A and 12B display the measured length of Bass and all Mullet species; only Bass and Mullet are displayed due to their commercial importance within the Southern IFCA district.
- All Grey Mullet sp. have been combined for Figure 12B due to difficulties in identifying the species as juveniles.

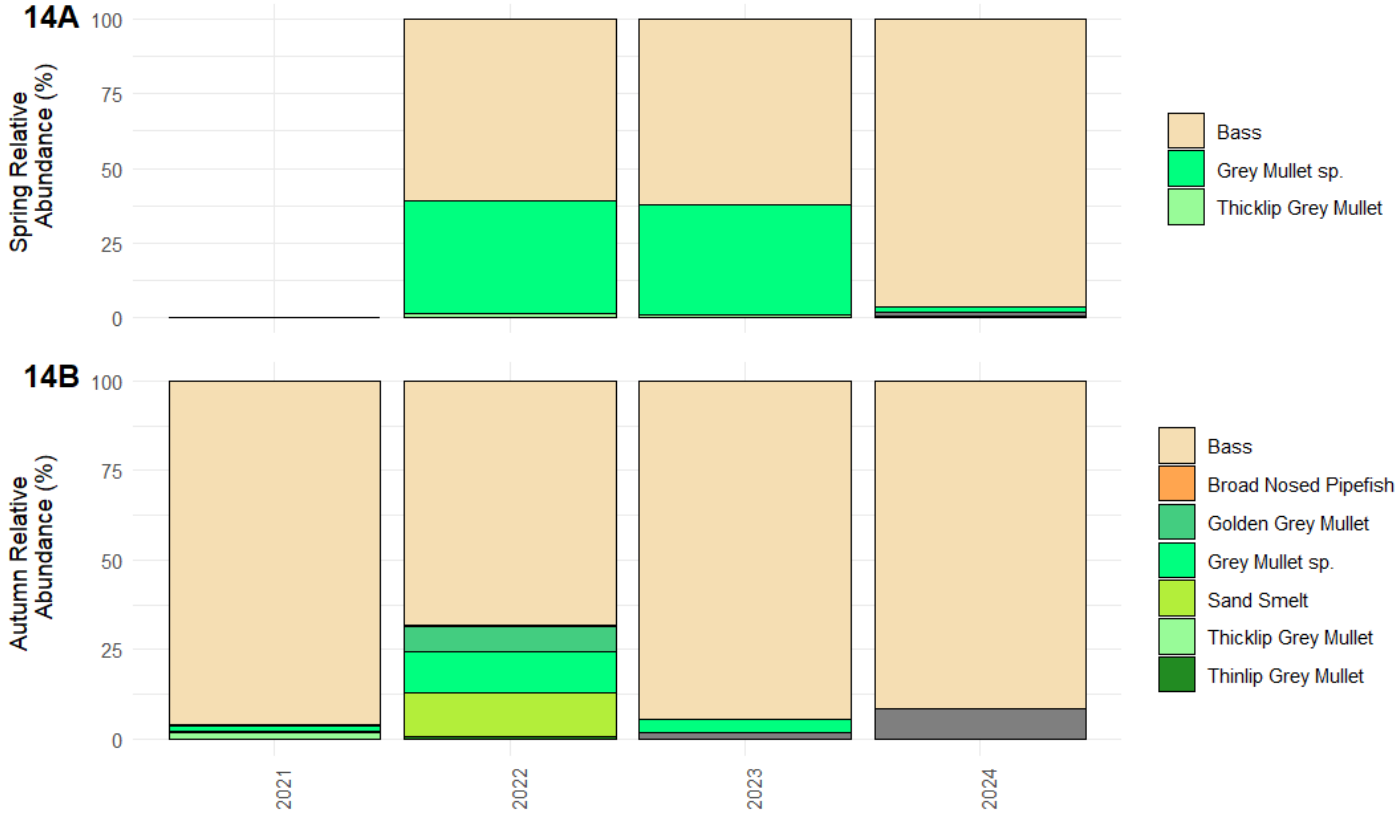
River Hamble



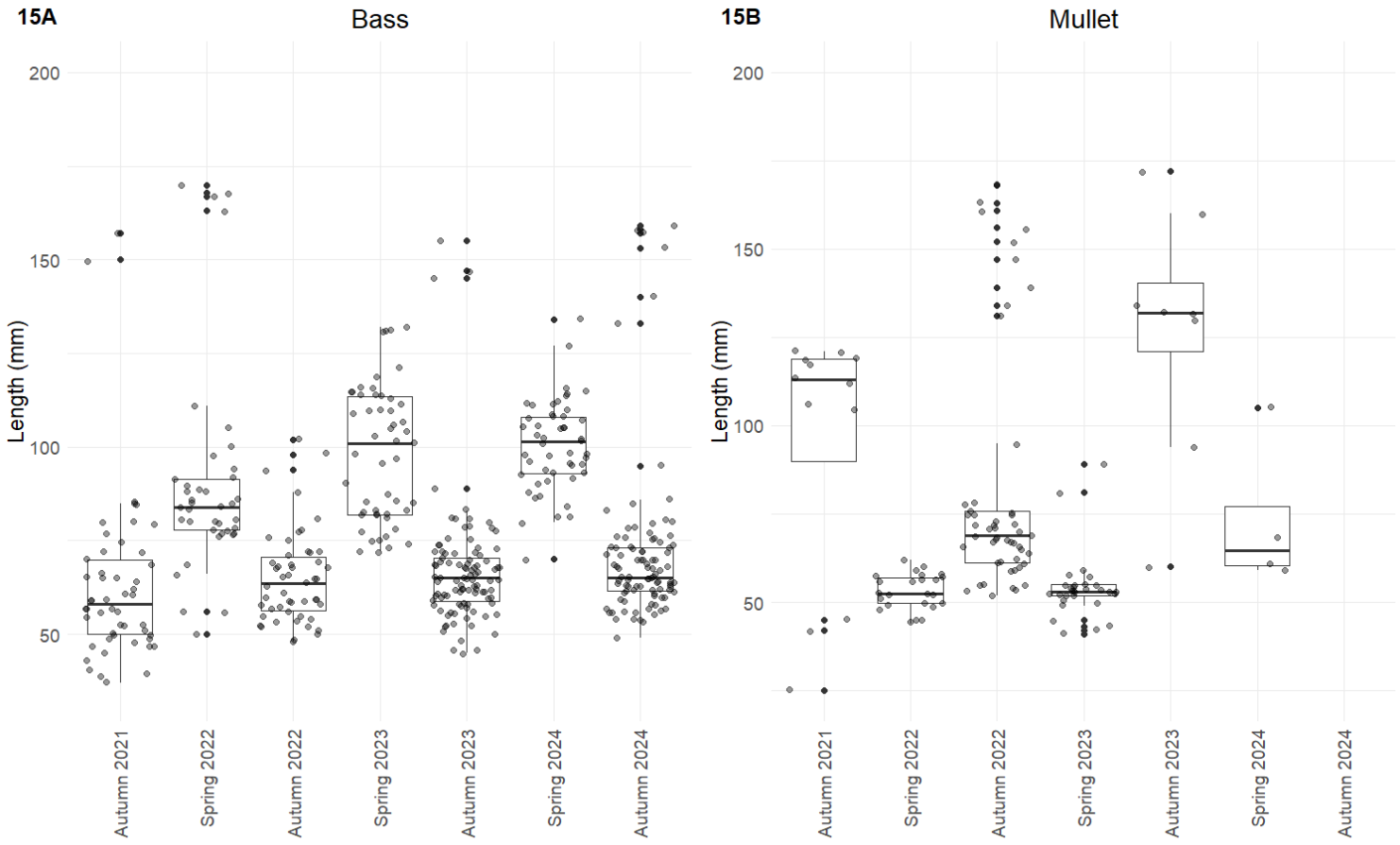
- Figures 13A, 13B and 13C display the Species Richness, Shannon Diversity Index (H) and total abundance in each survey carried out between Autumn 2021 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.
- **Species richness** was highest in Autumn 2022 (3) and lowest in Autumn 2024 (2). Of the Spring surveys species richness was highest in 2022 and 2023 (2.5) and lowest in 2024 (2). No survey has a significantly different species richness to another ($p > 0.05$).
- Spring 2024 (0.10) had a lower mean **Shannon Diversity Index (H)** than the Autumn 2024 (0.28) survey due to the dominance of Bass in the Spring survey (96%, Figures 11A & 11B). No survey has a significantly different H to another ($p > 0.05$).
- Of the Spring surveys, 2024 had the highest mean **total abundance** of fish (81) and 2022 the lowest (32). Of the Autumn surveys, 2021 had the highest mean total abundance of fish (175) and 2024 the lowest (55). No survey has a significantly different total abundance to another ($p > 0.05$).
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between Spring and Autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	2.33	2.63	No
Mean Shannon Diversity Index (H)	0.41	0.28	No
Mean Total Abundance	51	117	No

River Hamble

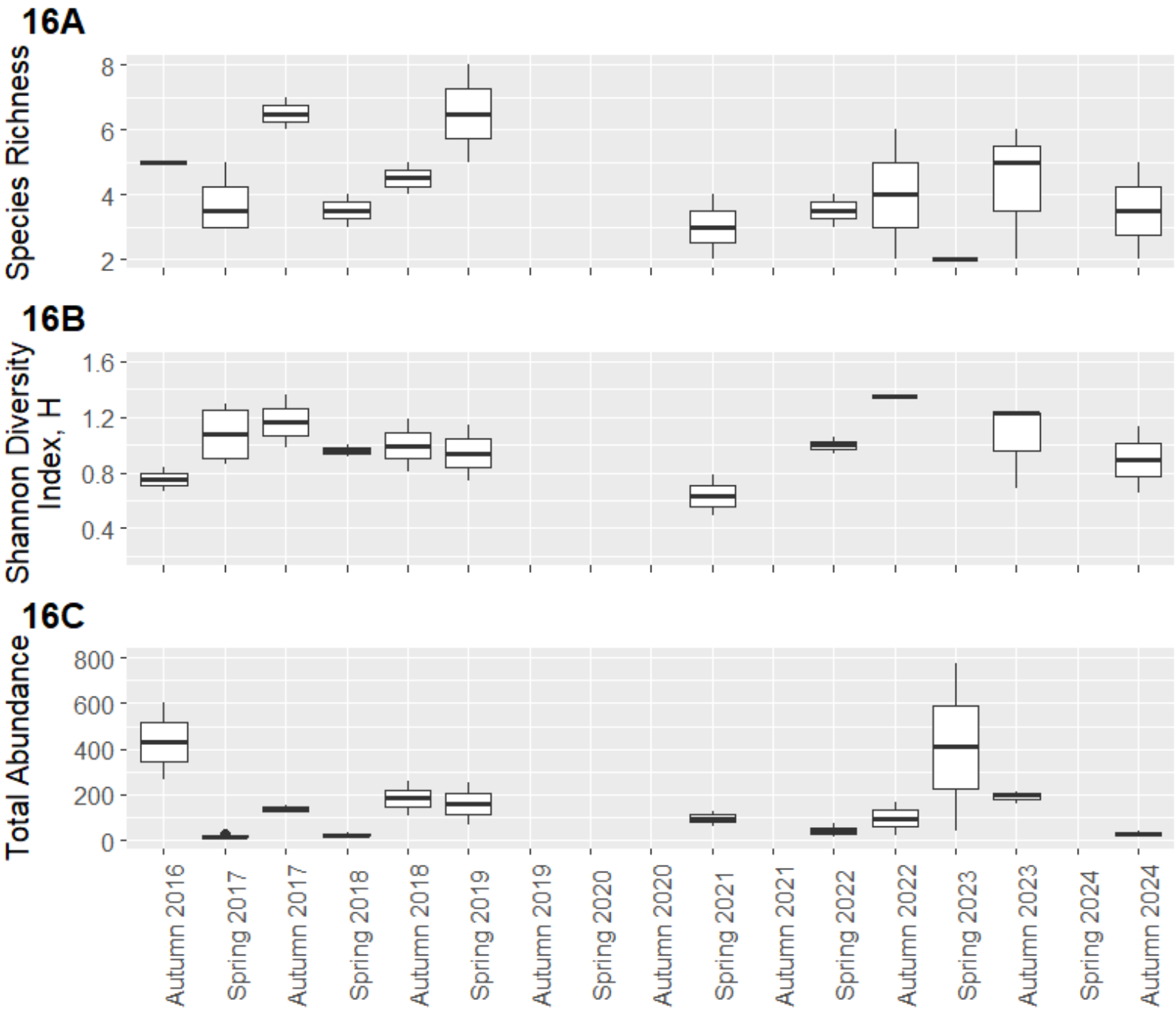


- Figures 14A (spring) and 14B (autumn) display the percentage relative abundance of each species during each survey.
- In Spring 2024 Bass were the most abundant species (96%), there was a similar dominance of the survey in Autumn (Bass 92%).



- Figure 15A and 15B display the measured length of Bass and all Mullet species; only Bass and Mullet are displayed due to their commercial importance within the Southern IFCA district.
- All Grey Mullet sp. have been combined for Figure 15B due to difficulties in identifying the species as juveniles.

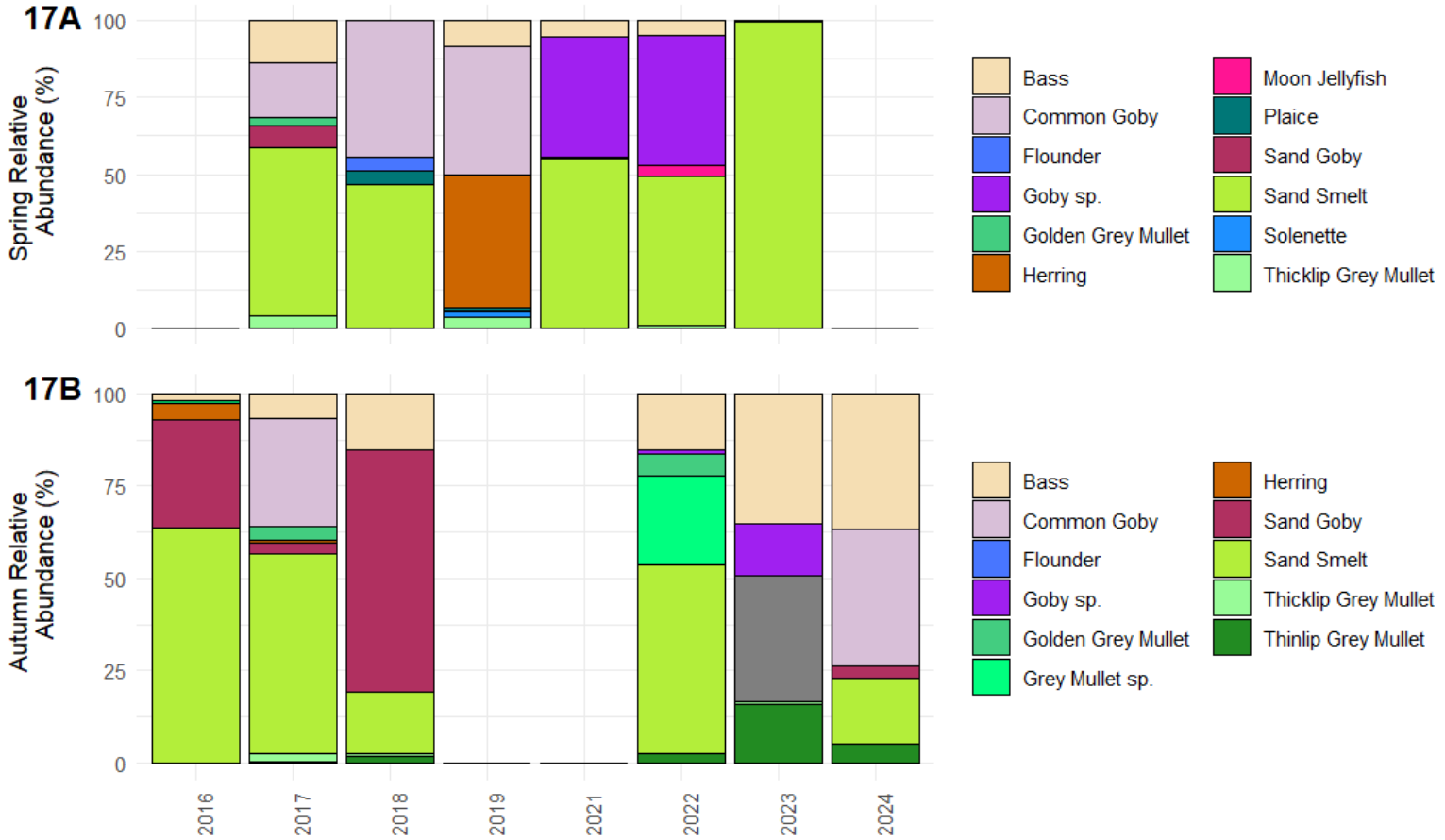
Yarmouth



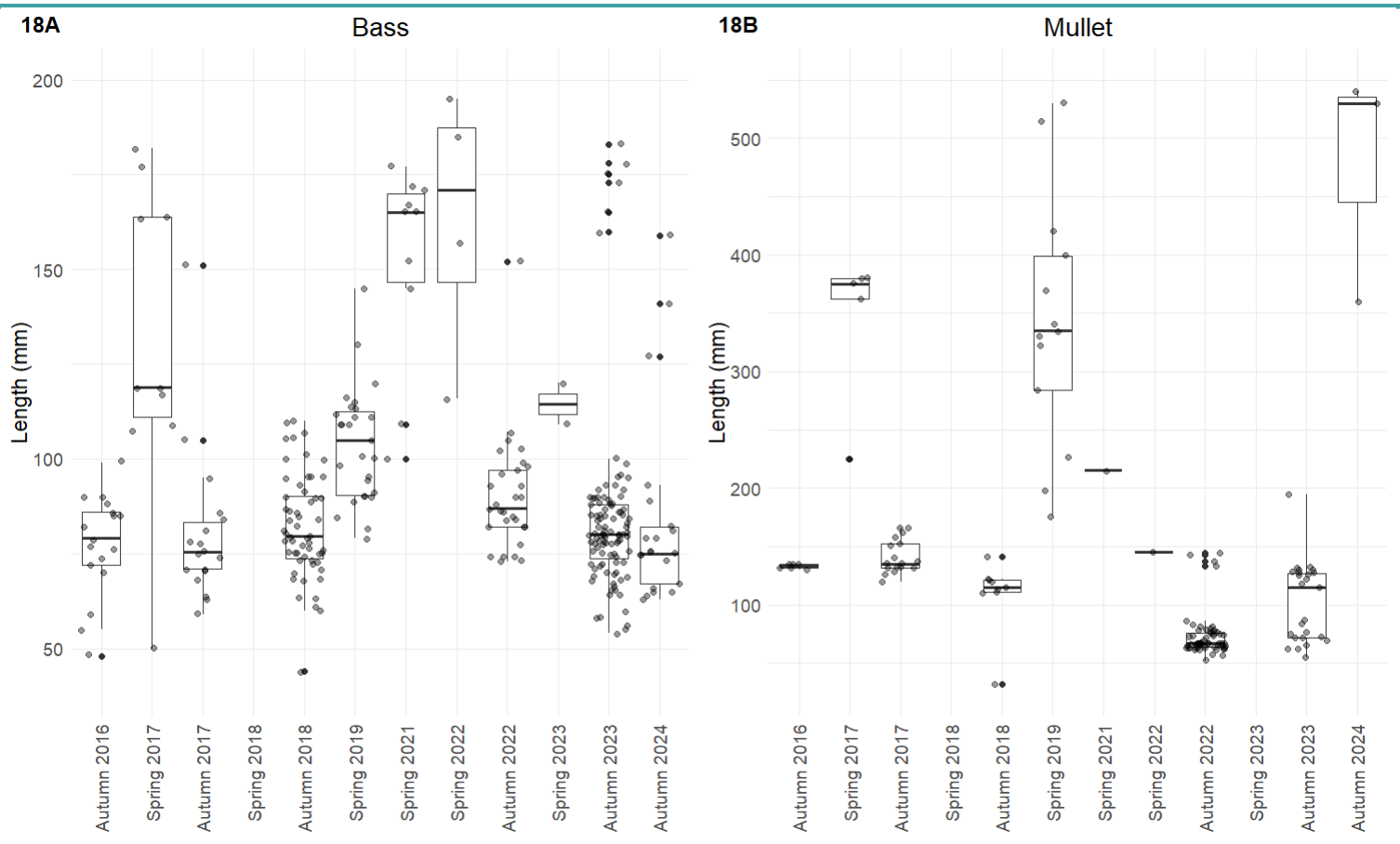
- Figures 16A, 16B and 16C display the Species Richness, Shannon Diversity Index (H) and total abundance in each survey carried out between Autumn 2016 and Autumn 2024. Where no data is shown, there was no surveys conducted at that site.
- **Species richness** was highest in Autumn 2017 (6.5) and lowest in Autumn 2024 (3.5). Of the Spring surveys mean species richness was highest in 2019 (6.5) and lowest in 2023 (2). No survey has a significantly different species richness to another ($p > 0.05$).
- Spring 2017 (1.27) had the highest mean **Shannon Diversity Index (H)** and 2023 the lowest (0.11). Of the Autumn surveys, 2023 had the highest mean H (1.23) and 2022 the lowest (0.77). There was no significant difference between H of any of the surveys ($p > 0.05$).
- Of the Spring surveys, 2023 had the highest mean **total abundance** of fish (408) with 2017 and 2018 the lowest (22.5). Of the Autumn surveys, 2016 had the highest mean total abundance of fish (432) and 2024 the lowest (29). No survey has a significantly different total abundance to another ($p > 0.05$).
- There is no statistical difference between the species richness, Shannon Diversity Index or total abundance between spring and autumn (table to the right).

	All Spring surveys	All Autumn surveys	P<0.05
Mean Species Richness	2.89	3.16	No
Mean Shannon Diversity Index (H)	0.64	0.65	No
Mean Total Abundance	85	122	No

Yarmouth



- Figures 17A (spring) and 17B (autumn) display the percentage relative abundance of each species during each survey.
- In Autumn 2024 Bass and Common Goby were the most abundant species (both at 37%). No survey in Spring 2024.



- Figure 18A and 18B display the measured length of Bass and all Mullet species.
- All Grey Mullet sp. have been combined for Figure 18B due to difficulties in identifying the species as juveniles. Figure 18B shows distinct groups of sizes for Mullet sp., which could be related to the presence of the different species.

EXECUTIVE SUMMARY

Marked I

Wrasse Fishery Report 2024
Paper for Information

Report by IFCO Condie

A. Purpose

- For the Members to receive a report on the Live Wrasse Fishery describing the outcomes of the data analysis for the 2024 fishing season.

B. Annexes

1. Wrasse Fishery Report 2024

1.0 Introduction

- The Southern IFCA wrasse fishery supplies live wrasse to UK salmon farms for use as natural sea lice control. In the District, wrasses are removed from the Weymouth and Portland area, in and around the Studland to Portland Special Area of Conservation (SAC).
- Species removed include Ballan (*Labris bergylta*), Corkwing (*Symphodus melops*), Goldsinny (*Ctenolabrus rupestris*), Rock Cook (*Centrolabrus exoletus*) and Baillon Wrasse (*Symphodus bailloni*).
- The fishery is managed through the Studland to Portland SAC – Monitoring and Control Plan – Wrasse Fishing[1] (MCP), Voluntary Fishery Guidance[2] and the Minimum Conservation Reference Size Byelaw[3].
- Data is collected for the fishery each season through the provision of count data from buyers on the number of wrasse landed and through Catch Return Forms (CRF) submitted voluntarily by fishers engaged in the fishery. These forms include the ability to provide information on fishing location, effort and catch.
- The data is analysed each year following the end of the fishing season and analysed to consider which variables best describe the variation in 'Landings per Unit Effort' (LPUE).
- The data from this report is used to help inform monitoring of the fishery under the MCP.
- Southern IFCA maintain communication with buyers and fishers throughout the season to work towards effective co-management of the fishery. Fishers and buyers are invested in the fishery and take an active approach to engaging with Southern IFCA.

2.0 Summary of Key Points

General Overview

- In 2024 the number of fishing vessels remained at 5 from the 2023 season although the vessels involved did change. Similar to 2023, the vessels caught wrasse in pots with no vessels undertaking rod and line activity.
- Due to the home ports of vessels participating in 2024, no wrasse fishing trips occurred within the Studland to Portland SAC.
- The 2024 season concluded after 8.5 weeks as a result of the 1 operating buyer fulfilling all orders.

Compliance

- During the season a total of 15 inspections were conducted over 4 patrols. Each participating vessel was inspected 3 times. During each inspection, 20 of the visibly smallest fish were measured. A total of 2 undersized fish were found across all fishery participants for the whole

[1] Monitoring and Control Plan
[2] Wrasse Fishery Guidance
[3] Minimum Conservation Reference Size

2024 season.

- Fishers are requested to submit monthly catch returns by the 14th of the following month. During the 2024 season, 12 of the expected 15 catch returns were submitted. Weekly landings data was also received from the buyer within 5 days of the landing day, allowing up to date monitoring of the total landings of Wrasse.
- This frequent communication allows Southern IFCA to proactively identify potential patterns in landings and model predicted scenarios for when the landings could reach a certain level in relation to MCP Variable 1 (trigger related to number of wrasse landed). This allows for targeted communication with fishers and buyers and should it be required, allows the request to stop fishing to be communicated in advance of the trigger threshold being reached.

Analysis Outcomes

- A total of 32,220 wrasse were removed during the 2024 season. This is lower than MCP Variable 1 threshold of 41,031 wrasse.
- During the 2024 season, no other MCP variable trigger thresholds were exceeded.
- Data analysis carried out on catch return data showed that the predicted effects of Total $LPUE_{pot}$ were best explained by the variables Year, Area Fished and Month.
- Total $LPUE_{pot}$ reduced in 2024 from 2023 and 2022. However, this was not a significant reduction. The average LPUE value for 2024 (1.67 fish per pot) remains above the 2018 baseline LPUE (1.36 fish per pot).
- The stability in LPUE suggests the fishery continues to operate at a sustainable level.
- Total $LPUE_{pot}$ is highest in areas 4&5 (Portland Harbour and Weymouth Bay) followed by area 3 (Balaclava Bay), all of which are areas outside of the SAC. This is thought to be related to the area of suitable habitat for corkwing wrasse.
- Similar to previous years, Total $LPUE_{pot}$ rises from July to August before declining. This is potentially linked to the presence of nest building wrasse species and/or the relationship between temperature and the presence of corkwing wrasse.

3.0 Next Steps

- Due to no trigger being reached, operating in line with the Assessment Feedback Process detailed in the MCP, Southern IFCA will continue to undertake monitoring activities for the 2025 season.
- Southern IFCA will continue to monitor the fishery through the use of Wrasse Fishery Guidance, the Monitoring and Control Plan and the Minimum Conservation Reference Size Byelaw for the coming season with data collected from participant fishers and analysed following the completion of the season.
- Southern IFCA will continue to actively engage with fishery participants to ensure that effective communication continues to lead to high levels of compliance with Fishery Guidance and the MCP.
- In line with the current Habitats Regulations Assessment for the fishery, undertaken prior to the 2023 season, Southern IFCA will continue to keep up to date with any new external evidence which becomes available which may help inform future management of the fishery and associated monitoring.
- Southern IFCA have and will continue to support the development of the Wrasses Complex FMP through the provision of data on the Dorset Live Wrasse Fishery.

Southern IFCA
Inshore Fisheries and Conservation Authority

Live Wrasse Fishery

Monitoring and Control Report 2024

A fishery for live Wrasse to supply Scottish salmon farms was developed in the Southern IFCA District in 2015. Wrasse are purchased as a natural pesticide, to remove sea lice from salmon cages. The species removed from the district include Ballan (*Labris bergylta*), Corkwing (*Symphodus melops*), Goldsinny (*Ctenolabrus rupestris*), Rock Cook (*Centrolabrus exoletus*) and Baillon wrasse (*Symphodus bailloni*). Target species have shifted between Ballan or mixed species and only mixed species throughout the years. The fishery has been managed with a Monitoring and Control Plan (MCP) and Fishery Guidance Measures alongside the Minimum Conservation Reference Size Byelaw since its implementation in 2021.

Monitoring and Control

Since 2018, further measures have been developed such as a statutory minimum conservation reference size for all previously mentioned species' aside from Baillon Wrasse. A voluntary maximum size is also employed to protect the male constituents as protogynous hermaphrodites. As the Wrasse mature, they turn from female to male. Employing a maximum size ensures that all sexually mature males remain in the ecosystem with the possibility of reproducing.

The Fishery Guidance Measures were developed with industry in 2017 to address concerns surrounding the sustainability of the fishery and wrasse populations. The first draft of the MCP was completed and implemented in 2018 and introduced trigger levels for a series of variables to be monitored during the season. The guidance includes a series of no potting and no take zones, pot limits as well as a closed season for effort limitation (Figure 1).

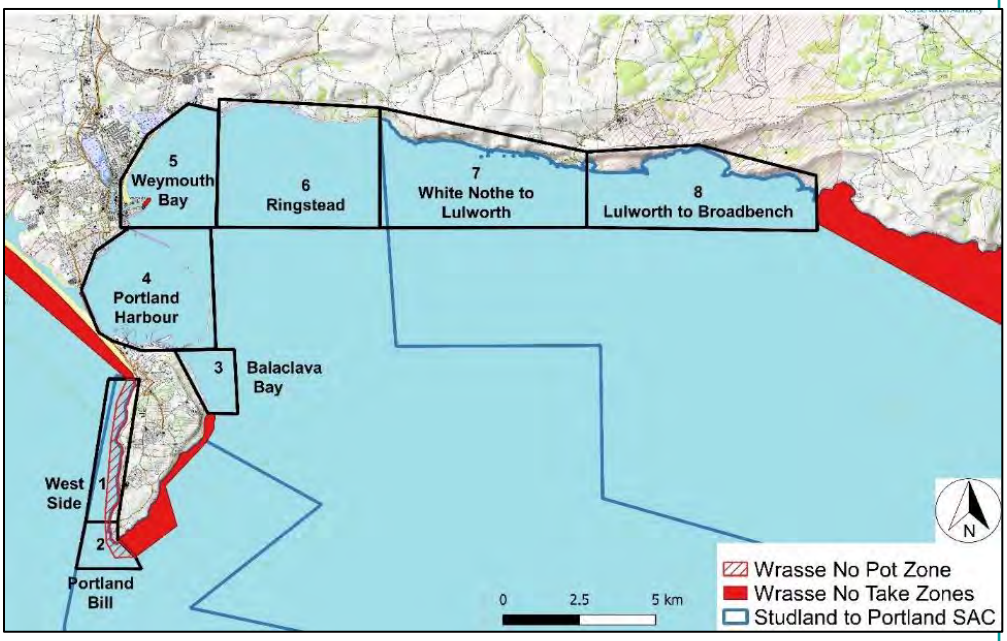


Figure 1 *The Wrasse fishing areas provided to participants in the Dorset Wrasse Fishery including no potting zones and no take zone.*

The monitoring and control plan and Wrasse fishery guidance can be viewed on the Southern IFCA website at www.southern-ifca.gov.uk/district-live-wrasse.

2024 Season Summary

Southern IFCA began engaging with wrasse fishers and buyers in May 2024 to understand the demand and scope of participants for the 2024 season. In 2024, there was only one buyer committed to purchasing wrasse from the fishery. In 2023, only one buyer operated however there was initially a historical buyer unsure as to their level of participation prior to the season. The total number of fishers participating remained at 5 from the 2023 to 2024 however the vessels and skippers operating changed.

In 2023 there was one vessel operating from Lulworth and fishing in the Studland to Portland SAC, however in 2024 all vessels operated from Weymouth or Portland and no trips occurred in the SAC.

Live Wrasse Fishery

Monitoring and Control Report 2024

Fishing during the 2023 and 2024 seasons consisted of pot fishing only. Rod and line fishing is used to target Ballan wrasse however due to the feasibility and cost of arranging separate transports for Ballan and mixed species, there was a focus on mixed species only. As a result, fishers who had previously participated in the fishery solely with rod and line have not participated in the fishery since 2022.

Throughout the 8.5 week season, Southern IFCA deployed 4 patrols that coincided with wrasse collection days. A total of 15 inspections were conducted over the 4 patrols, with each participating vessel inspected 3 times. During each inspection, 20 of the smallest fish were measured, a total of 2 undersized fish were found across all fishery participants for the whole of the 2024 season.

Fishers are requested to submit monthly catch returns by the 14th of the following month. During the 2024 season, 12 of the expected 15 catch returns were submitted. Weekly landings data was also received from the buyer within approximately 5 days of the landing day, allowing up to date monitoring of the total landings of Wrasse. This frequent communication allowed Southern IFCA to proactively identify potential patterns in landings and model predicted scenarios for when the landings could reach a certain level in relation to MCP Variable 1 (trigger related to number of wrasses landed throughout the season).

The season ended in the first week of September due to the buyer sourcing the required number of wrasse to fulfil demand. The total number of wrasse landed in the 2024 season equals 32,220. The MCP Variable 1 trigger (41,031 wrasse) was not exceeded, and no other triggers under the MCP were exceeded during the 2024 season.

2024 Data Analysis

Method

Southern IFCA receives count data on the number of Wrasses landed to buyers. The buyer data is used to monitor the removal from the fishery during and at the end of the fishing season.

All fishers voluntarily submit Wrasse Catch Return Forms (CRF) throughout the season which details their daily fishing location, effort and catch. CRF data is used to calculate Landings Per Unit Effort (LPUE) for either 'pot' or 'rod and line' fishing methods. This data is used to compare fishing effort to the MCP variables.

Generalised Linear Models (GLM), run in the programming software 'R' are used to consider which variables (Year, Month, Day of Year or Area Fished) best describe the variation in LPUE.

Fishing Effort and Location

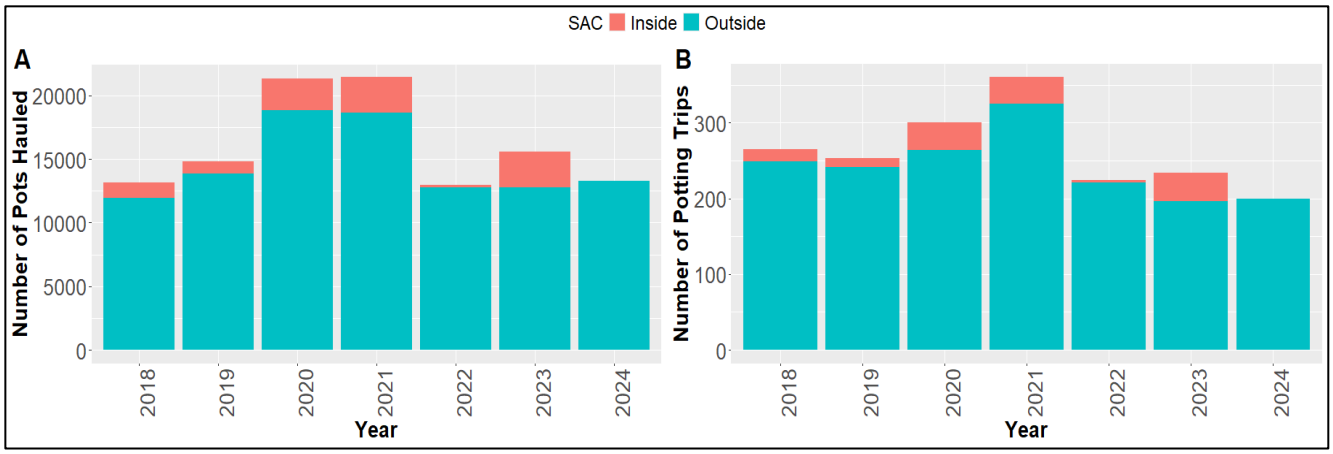


Figure 2 *The pot fishing effort from 2018 to 2024 within and outside of the Studland to Portland SAC. There was no significant increase from the baseline and the trigger threshold was not reached during the 2024 season.*

Figure 2A and B display the number of pot hauls inside vs outside the SAC (2A) as well as the number of pot fishing trips that occurred inside vs outside the SAC (2B). The number of pots hauled outside the SAC has remained stable since 2022. There has been a reduction in pot fishing trips inside the SAC from 2023 as the one fisher working in this area did not participate in the 2024 fishery.

Figure 3 displays the trends in landings for the baseline year (2018) and the most recent three years as per buyer provided records. The dashed black line displays the trigger level for MCP Variable 1. The solid red line displays the landings for 2024, landings remained under the trigger value and the fishery ceased at a total of 32,220 landed wrasse.

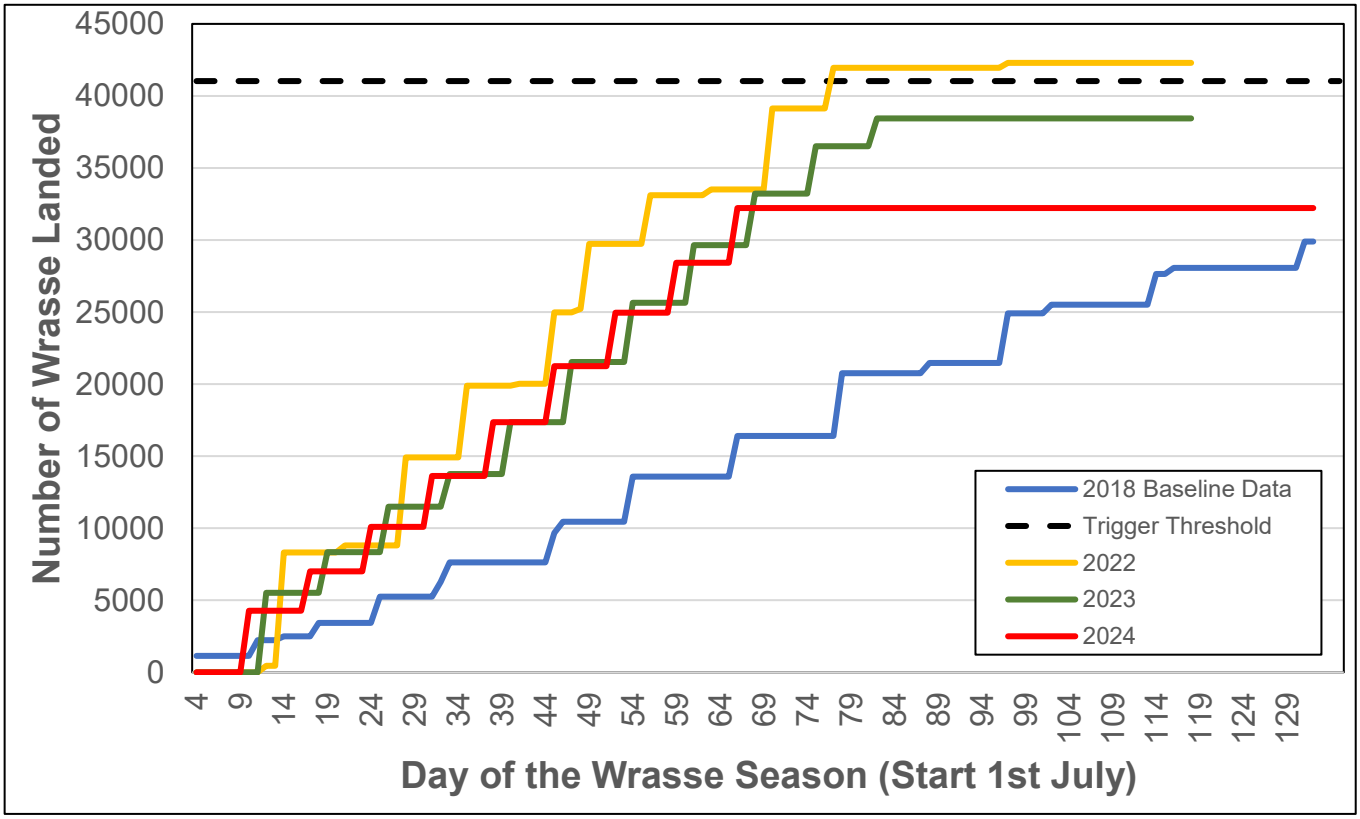


Figure 3 *The number of Wrasse landed each year in 2018 and the most recent three years of the fishery, 2022 to 2024. The dashed black line displays the 25% increase in Wrasse landings from the 2018 baseline (MCP Variable 1 trigger). The solid red line displays the trend in Wrasse landings during the 2024 season. The trigger threshold was not reached during the 2024 season.*

Landings Per Unit Effort

Landings per unit effort were subject to a generalised linear model (GLM) analysis. In previous years, the categories have been split into ballan per pot and mixed species excluding ballan per pot. Due to the addition of a separate column for Baillon midway through the 2023 season, confidence in the identification of each species remains lower for the 2024 season, therefore Total Wrasse per pot for all years has been analysed. Interspecies analyses could be recommenced following further data collection in future seasons. The following figures show the variables that best explain the variation in $LPUE_{pot}$ and the corresponding significance levels for each variable.

The predicted effects Total $LPUE_{pot}$ for 2024 is 1.63 fish per pot (Figure 4A). This is a reduction compared to 2022 and 2023; however, it is not a significant reduction and remains above the 2018 baseline of 1.36 fish per pot.

Live Wrasse Fishery

Monitoring and Control Report 2024

Total $LPUE_{pot}$ is highest in areas 4&5 (Portland Harbour and Weymouth Bay) followed by area 3 (Balaclava Bay), these are all areas outside of the SAC (Figure 4B). It is important to note that areas 1 and 2 are voluntary no potting zones, hence the low number of data points.

Figure 4C displays trends in data throughout the season. Fish per pot increases from July to August before decreasing until the end of the season. The expected reasons for this are discussed below.

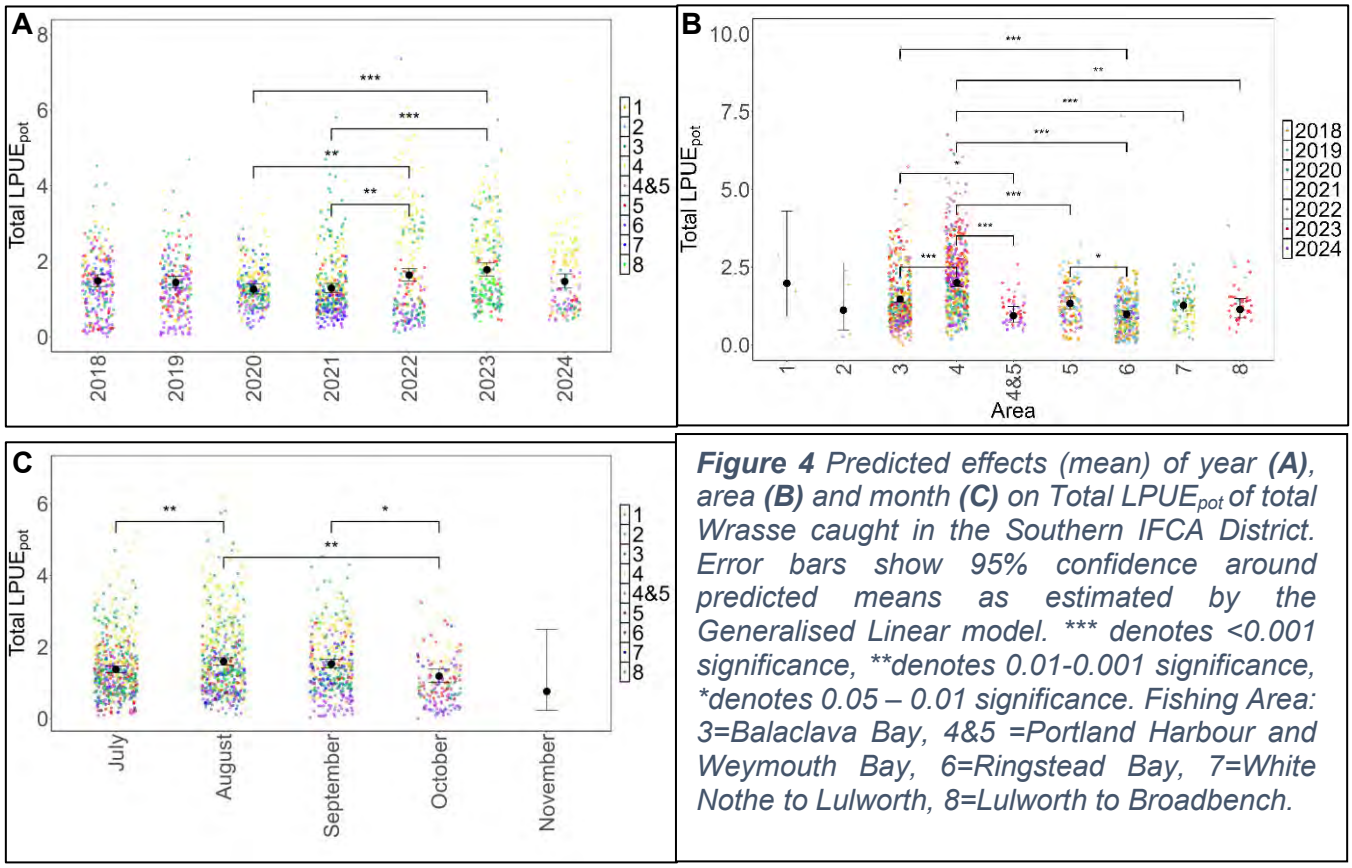


Figure 4 *Predicted effects (mean) of year* ***(A)****, area* ***(B)*** *and month* ***(C)*** *on Total $LPUE_{pot}$ of total Wrasse caught in the Southern IFCA District. Error bars show 95% confidence around predicted means as estimated by the Generalised Linear model. *** denotes <0.001 significance, **denotes 0.01-0.001 significance, *denotes 0.05 – 0.01 significance. Fishing Area: 3=Balaclava Bay, 4&5 =Portland Harbour and Weymouth Bay, 6=Ringstead Bay, 7=White Nothe to Lulworth, 8=Lulworth to Broadbench.*

Discussion

In previous years, the pot caught Wrasse have been predominantly Corkwing, anecdotally this is not thought to have differed in 2024. However, due to the large number of Baillon Wrasse witnessed in 2023, fishers were asked to add in a column for Baillon midway through the 2023 season which affected confidence in species identification for that year and the 2024 year. SIFCA will consider analysis into changes in community structure on receipt of at least one more year of data encapsulating Baillon abundance.

Due to the low confidence in identification on catch returns it is difficult to consider the species-specific impacts on the Total $LPUE_{pot}$ in the results above. However, trends in area fished and trends throughout the season do not vary from previous years.

Corkwing Wrasse are more abundant at shallower depths (Henly et al, 2021). Portland Harbour and Weymouth Bay provide a large fishing area (>5.4km^2 each) with depths of less than 10m. Other potential ground within the SAC such as areas 7 and 8, White Nothe to Broadbench have only a narrow band of shallow (<10m) depth. Therefore, it is thought that areas 4&5, Portland Harbour and Weymouth Bay have more area providing more suitable habitat for Corkwing Wrasse which, as the dominant pot fished species, may indicate why Total $LPUE_{pot}$ is highest for these sites.

Live Wrasse Fishery

Monitoring and Control Report 2024

Similar to previous years, Total $LPUE_{pot}$ rises from July to August before declining. It may be that Ballan Wrasse are responsible for the rise until August, along with other nest building species, Corkwing and Rockcook (Darwell et al.,1992). However, this could also be explained by the relationship of Corkwing LPUE with temperature (Henly et al., 2021). As previously discussed, and observed in previous years, Corkwing account for the majority of pot caught species. As sea temperatures increase throughout July and August, Corkwing may become more active and enter the fishery. Halvorsen et al. (2020) found that CPUE of Corkwing and Ballan Wrasse increased between June and September, before declining in October, similar to the pattern displayed in Figure 4C.

Summary

- During the 2024 season, effective communication was maintained between Southern IFCA and fishery participants leading to high levels of compliance with Fishery Guidance and the Monitoring and Control Plan.
- The 2024 Wrasse Fishery did not exceed any of the trigger levels for variables defined in the Monitoring and Control Plan.
- A Generalized Linear Model was used to analyse the data submitted by fishers on monthly catch returns. The predicted effects of the Total $LPUE_{pot}$ were best explained by the variables Year, Area Fished and Month.
- Total $LPUE_{pot}$ has reduced from 2023, however results were not found to be significantly different to the previous year and remain above the 2018 baseline data.
- All wrasse fishing in 2024 occurred outside of the Studland to Portland SAC.
- Southern IFCA will continue to manage the fishery through the Wrasse Fishery Guidance, the Monitoring and Control Plan and the Minimum Conservation Reference Size Byelaw.
- In line with the current Habitats Regulations Assessment for the fishery, undertaken prior to the 2023 season, Southern IFCA will continue to keep up to date with any new external evidence which becomes available which may help inform future management of the fishery and associated monitoring.
- Southern IFCA have and will continue to support the development of the Wrasses complex FMP through the provision of data on the Dorset Live Wrasse Fishery.

References

- Darwall W. R. T., Costello M. J., Donnelly R., Lysaght S. 1992. Implications of life-history strategies for a new wrasse fishery. Journal of Fish Biology, 41: 111–123
- Halvorsen K. T., Sørdalen T. K., Larsen T., Browman H. I., Rafoss T., Albretsen J., Skiftesvik A. B. 2020. Mind the Depth: The Vertical Dimension of a Small-Scale Coastal Fishery Shapes Selection on Species, Size, and Sex in Wrasses. Marine and Coastal Fisheries, 12: 404–422
- Henley, L., Stewart, J. E. and Simpson, S. D. 2021. Drivers and implications of change in an inshore multi-species fishery. ICES Journal of Marine Science, 78(5): 1815-1825