Workshop 2 Report

Solent - Sea the Value Workshop 2

Tuesday 28th November 2023 10am

Burnaby Building, University of Portsmouth

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The Sea the Value project aims to understand the different values communities hold towards their local marine environment, the diverse benefits it provides, and how nature-based solutions can support and integrate with community development. The project is focussing on two case studies in the UK, the Solent on the south coast of England and the Cromarty Firth in Scotland. The project outputs will be used to inform the wider management and planning of marine biodiversity across the UK.

The University of Portsmouth facilitated a second workshop, with support from Plymouth Marine Laboratory, with the aim of reviewing the outputs from the first participatory mapping workshop held in Portsmouth (19th July 2023) and to investigate trade-offs under two future scenarios in Langstone and Chichester Harbours. The second workshop was held at the Burnaby Building in Portsmouth and was attended by 16 stakeholders representing a range of organisations (see Table 1). A full list of participants and their contact details is provided in Annex 1.

Table 1: **Workshop attendees organisations** (*organisation also represented at Workshop 1)**.**

Organisation	
Hampshire County Council*	Locks Sailing Club
Chichester Harbour Conservancy*	Hampshire and Isle of Wight Wildlife Trust*
Langstone Harbour Office*	Natural England*
Langstone Harbour Advisory Committee	Royal Society for the Protection of Birds*
Environment Agency*	Capitals Coalition
Crown Estate*	University of Portsmouth*

Welcome, Introduction and Reviews 10:00-11:00

Andy van der Schatte Olivier (University of Portsmouth) welcomed the attendees and thanked them for attending the event (Image 1). Andy introduced the Sea the Value project team (see Table 2 below), the project and outlined the aims and objectives of the workshop. All slides presented on the day are included in Annex 2.

Image 1: Andy van der Schatte Olivier introducing participants to the Sea the Value project.

Table 2: The Solent Workshop Team.

Name	Organisation	Role
Andrew van der Schatte Olivier	University of Portsmouth	Convener of the workshop, Presenter, Facilitator
Gordon Watson	University of Portsmouth	Co- convener of the workshop, Presenter, Participant
Joanne Preston	University of Portsmouth	Co- convener of the workshop, Cofacilitator, Participant
Anthony Ndah	Plymouth Marine Laboratory	Cofacilitator, GIS Mapping
Stephen Watson	Plymouth Marine Laboratory	Facilitator

Activity 1: Review of Features Mapping

The first activity was to review the features maps which were produced during the features mapping exercises in Workshop 1. The two hand-drawn maps of features of Langstone Harbour and Chichester Harbour, produced by the participants in Workshop 1, have been digitised, combined and standardised into one features map for the two harbours. Each table was provided with an A1 print out of the features map (see Figure 1) and were asked to comment on: (1) the features categories as per the legend; and (2) the location and extent of each feature.

The stakeholders were given 20 minutes to complete this task. Notes were taken from each table and the map will be revised accordingly following stakeholder feedback. Once completed, the map will be shared with all of the workshop attendees and the wider community for use within their organisations.

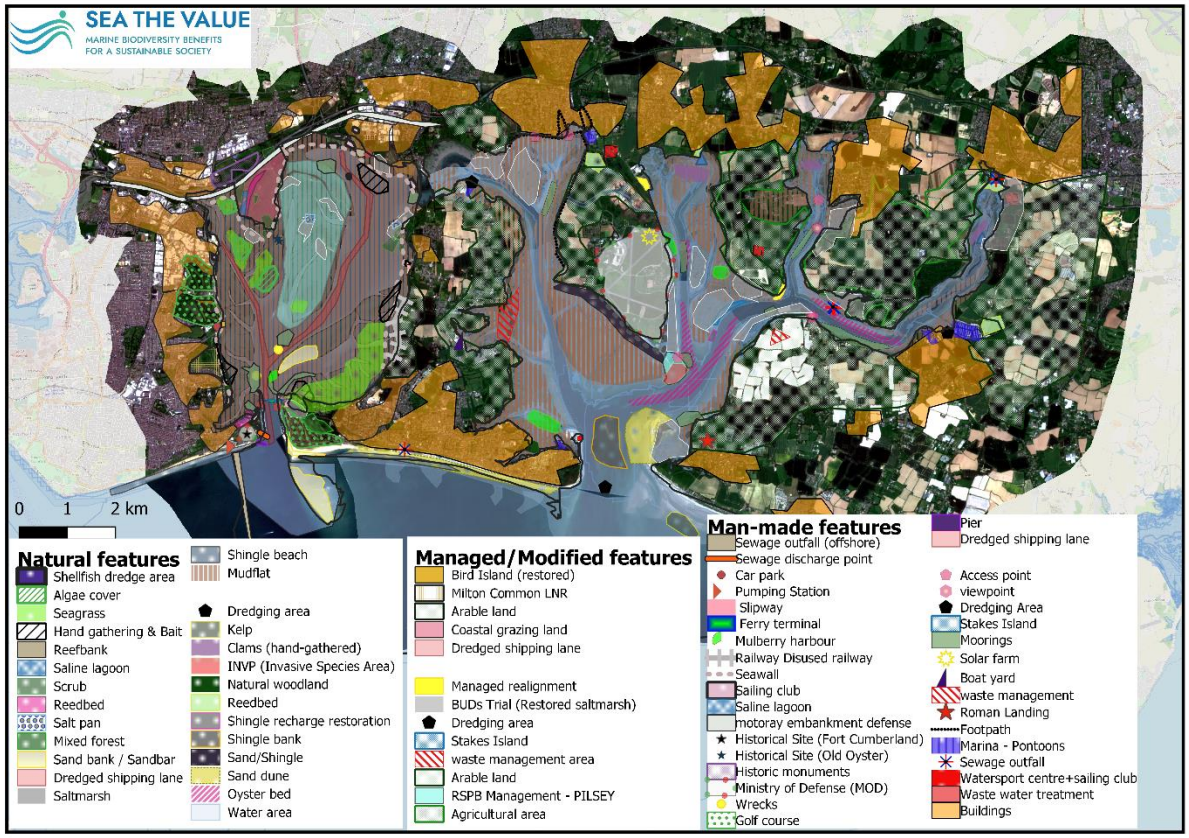


Figure 1: Digitised map of features produced from the hand-drawn maps in Workshop 1.

Activity 2 – Review of Features vs Benefits Matrix

The second activity asked the workshop participants to review the relationships between the features and their associated benefits, as identified in Workshop 1. In order to facilitate this activity, the features and benefits were presented in a matrix format and the participants were asked to review and edit the matrix. There were 30 minutes allocated to this activity and therefore the overall matrix was split across the three tables, with each table reviewing a sub-set of the natural, modified/managed and man-made features. The combined results of the activity are presented in

Figures 2-4 – green shaded cells represent the relationships identified in Workshop 1, a cross represents a missing relationship identified in Workshop 2 and a yellow cell represents an incorrect relationship which was identified in Workshop 1 but which needs to be removed from the matrix. The results from this activity will be used to update the GIS files and will be incorporated into the mapping outputs of the project.

	Societal Benefits (SB)														Economic Benefits (EB)			Other Benefits (OB)			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	SB1	SB5	SB6	SB7	SB8	SB9	SB10	SB11	SB12	SB13	SB14	SB15	AB2	AB3	EB1	EB2	EB3	OB1	OB2	OB3	OB4
	Food (wild, farmed) / Drink	Medicines and blue biotechnology	Healthy climate (Carbon Sequestration)	Prevention of coastal erosion	Sea defence	Waste burial / removal / neutralisation	Tourism / Nature Watching	Spiritual and cultural well-being	Aesthetic benefits	Education, research	Physical health benefits	Psychological health benefits	Water resources (quality and quantity)	transport	Place to live	Place to work	Industry	Connectivity	Biodiversity	Sense of space	Intrinsic Value
Natural Features																					
Saltmarsh												X	X		X	X	X				
Seagrass meadow/Zostera marina												X	X			X	X				
Sand dunes			X														X				
Sandbank/Sand spit (Billy Line)	X		X				X	X	X	X	X	X					X				
Saline lagoons			X				X	X	X	X	X	X					X				
Sandflats	X		X												X	X	X				
Shellfish beds/Shellfish dredge													X			X	X	X			
Mudflats	X	X					X	X	X	X	X	X	X		X	X	X	X			
Vegetated Shingle						X									X	X		X			
Gravel and shell beach						X	X	X	X	X	X	X			X	X		X			
Sub tidal mixed sediments	X	X								X					X	X	X	X			
Scrub																		X			
Fresh water input			X	X				X	X	X		X	X					X	X		X
Oysters		X											X		X	X	X	X			
Reed bed		X											X		X			X			
Algal cover				X					X							X	X				
Woodland/Mixed Woodland/Ancient woodland															X	X	X	X			
salt pans			X		X	X	X	X		X		X				X	X	X			
Shingle banks								X	X	X		X				X		X			
Kelp													X			X	X	X			
Invasive plant species (R. cugosa)																X	X	X			
Clams/cockles (Hand gathered)													X			X	X	X	X	X	X
Shingle beach/Shingle and Sand/Shingle and Shell							X	X	X	X	X	X					X	X	X	X	X

KEY

Original relationships identified in WS1

X New relationships identified in WS2

X Original relationships identified in WS1 which need to be deleted

Figure 2: Edited Natural Features vs Benefit matrix for the Solent.

	Societal Benefits (SB)														Economic Benefits (EB)			Other Benefits (OB)			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	SB1	SB5	SB6	SB7	SB8	SB9	SB10	SB11	SB12	SB13	SB14	SB15	AB2	AB3	EB1	EB2	EB3	OB1	OB2	OB3	OB4
	Food (wild, farmed) / Drink	Medicines and blue biotechnology	Healthy climate (Carbon Sequestration)	Prevention of coastal erosion	Sea defence	Waste burial / removal / neutralisation	Tourism / Nature Watching	Spiritual and cultural well-being	Aesthetic benefits	Education, research	Physical health benefits	Psychological health benefits	Water resources (quality and quantity)	transport	Place to live	Place to work	Industry	Connectivity	Biodiversity	Sense of space	Intrinsic Value
Managed/Modified Features																					
Grazing land		X											X			X	X	X			
Arable land																X	X	X			
Shipping channel			X	X	X	X				X	X	X			X	X	X		X	X	X
Bird Island (Restored)	X	X																X			
Seagrass restoration area (Hampshire and Isle of Wight Trust)													X			X	X	X			
Milton Common LNR (grassland, scrub and wetland habitats)													X					X			
BUDs trial (Restored saltmarsh)	X		X		X	X	X		X	X		X	X					X	X		X
Agriculture	X	X	X					X	X	X			X		X	X	X		X	X	
Shingle recharge restoration				X			X	X	X			X				X	X				
Managed Realignment			X	X		X	X	X	X	X	X	X	X			X	X	X	X		X

KEY

Original relationships identified in WS1

X New relationships identified in WS2

X Original relationships identified in WS1 which need to be deleted

Figure 3: Edited Modified / Managed Features vs Benefit matrix for the Solent.

	Societal Benefits (SB)														Economic Benefits (EB)			Other Benefits (OB)			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	SB1	SB5	SB6	SB7	SB8	SB9	SB10	SB11	SB12	SB13	SB14	SB15	AB2	AB3	EB1	EB2	EB3	OB1	OB2	OB3	OB4
	Food (wild, farmed) / Drink	Medicines and blue biotechnology	Healthy climate (Carbon Sequestration)	Prevention of coastal erosion	Sea defence	Waste burial / removal / neutralisation	Tourism / Nature Watching	Spiritual and cultural well-being	Aesthetic benefits	Education, research	Physical health benefits	Psychological health benefits	Water resources (quality and quantity)	transport	Place to live	Place to work	Industry	Connectivity	Biodiversity	Sense of space	Intrinsic Value
Man-made features																					
Bridges	X								X						X						
Marina/Pontoons/Ferry terminal (Hayling)/Pier	X						X		X	X					X			X			
Mulberry Harbour	X						X		X	X											
Railway Track	X		X																		
Public Access footpath	X						X		X	X											
Seawall/Hard defences				X						X											
Sewage treatment works	X		X							X						X			X	X	X
Outdoor water sports centre							X									X	X				
Aggregate industry																X		X			
Golf course	X															X	X				
Sailing Club/Boat storage											X			X		X	X				
Car parks																					
Historic monument								X	X												
Slipways/Access points							X			X	X			X			X				
sewage discharge point		X																			
Motorway embankments																	X				
Wrecks	X								X		X			X		X		X			X
Moorings/ UoP research raft/Anchoring area																					
Solar farm																					
Housing																					

KEY

Original relationships identified in WS1

X New relationships identified in WS2

X Original relationships identified in WS1 which need to be deleted

Figure 4: Edited Man-made Features vs Benefit matrix for the Solent.

Introductory Presentations 11:00-11:30

Two introductory presentations were given in this session: Andy van der Schatte Olivier (University of Portsmouth) presented an introduction to the matrix approach and future scenarios assessments; and Gordon Watson (University of Portsmouth, Solent Seascape Restoration Project) provided an introduction to Native oyster restoration on behalf of Joanne Preston who was unable to stay for this part of the day. The slides from these presentations are included in Annex 2.

The Matrix Approach and Future Scenarios (Daryl Burdon)

The Matrix Approach[1] is a structured assessment of the relative importance of marine features (habitats and species) in delivering ecosystem services and societal benefits and is based on literature review and expert opinion. Outputs from the Matrix Approach, shown as radar plots (see for example Figure 7 below), are a valuable tool to support trade-off assessments as the benefits provided under different scenarios can be assessed.

Scenarios assessments can be used to investigate whether policy measures are robust and to aid future management. It is recognised that scenarios are best created through a collaborative process that takes into account the necessary expertise across disciplines and knowledge. Scenarios assessments provide a valuable tool to enable new ways of thinking and to model changes in society. Scenarios must be plausible and credible, thus requiring local knowledge gained through stakeholder engagement. Future scenarios in the Solent were used to identify where natural capital is changing in response to natural or anthropogenic drivers and assessed the loss or gain in the delivery of benefits and the potential impact on stakeholders. The scenarios assessments undertaken with the Solent workshop will compare the delivery of benefits under contrasting future scenarios against the 'Business as Usual'.

Following discussions with some of the stakeholder groups within the Solent before the workshop, it was agreed that the scenarios to be investigated within this workshop relate to Native oyster restoration and saltmarsh restoration. Both of these future scenarios are currently being carried out in the Solent.

Scenario 1: Oyster Restoration 11:30-12:30

Solent Native oyster restoration and wider Solent Seascape Restoration Project (Gordon Watson on behalf of Joanne Preston, University of Portsmouth)

To start this session, Gordon Watson (Portsmouth University) provided an insight into the history, development and current state of Native oyster restoration in the Solent. With the use of a range of images (see Annex 2), Gordon demonstrated some of the key aspects and challenges that are involved in Native oyster restoration. Gordon also included in the presentation the reasons why Native oyster restoration was undertaken: Restoration of a keystone species, to help restore a functioning population, which provide additional benefits (nutrient remediation; improved water clarity; sediment stabilisation; reduce sea wall maintenance costs; provide fish nursery habitats). The slides from the presentation are provided in Annex 2.

[1] Potts, T., Burdon, D., Jackson, E., Atkins, J.P., Saunders, J., Hastings, E. & Langmead, O., 2014. Do marine protected areas deliver flows of ecosystem services to support human welfare? *Marine Policy*, 44, pp. 139–148.

Introduction

Nature-based solutions use the power of nature, and the services and benefits nature provides, to help tackle major challenges. One of the two focusses of the Sea The Value project is on bioremediation of waste. Bioremediation of waste can be defined as the "*The presence of coastal and marine biota which have the potential to remove anthropogenic contaminants and organic inputs*"[2]. Bioremediation is undertaken by a range of features (habitats and species) in the Solent, such as European blue mussels (*Mytilus edulis*) and other filter feeding bivalves. Our focus in this scenario is solely on the restoration of Native oysters (*Ostrea edulis*) in the Solent. Native oyster restoration work has been ongoing in the Solent since 2014 with 120,000 oysters added to the Solent, the development of a restoration hatchery and the use of both restored reefs and suspended broodstock cages. Both Langstone Harbour and Chichester Harbour have been identified as suitable areas for the restoration of this species.

Native oysters naturally live in shallow, subtidal coastal and estuarine habitats, in areas dominated by mixed sediments[3]. Native oysters filter algae and organic matter from the water column, which form their food source, and in doing so can significantly improve surrounding water quality by decreasing the turbidity. Native oysters also have the ability to remove excess nutrients from water, particularly nitrogen, which at high levels can be detrimental to the environment by promoting harmful algal blooms. For example, it is reported that one adult oyster can filter more than 200 litres of water in a single day[4]. In addition, Native oysters also provide a range of other ecosystem services and societal benefits which will be explored in this scenario, such as providing a 3-dimensional structure which can support higher biodiversity than surrounding sediments, a protected nursery ground for fish and other invertebrates, and in the longer term the potential to develop into a sustainable fishery providing both provisioning (food) and cultural benefits.

The aim of Native oyster restoration is to establish a self-sustaining reef, but the critical mass required to achieve this continues to be subject to debate and will ultimately depend on site characteristics such as hydrodynamics and seabed structure. this scenario aims to create a self-sustaining reef of 4 million oysters covering an area of 40 ha. This would turn areas of subtidal mixed sediment (the 'Business As Usual' scenario) into a self-sustaining 3-dimensional Native oyster bed. It is recognised that this would take a number of years to develop (10+).

It must be strongly emphasised here that this is a hypothetical future scenario, and there are no formal plans to undertake this restoration work as part of the Sea the Value Project. It is also assumed that all relevant Habitats Regulation, environmental assessments and permissions would be followed for any intervention. These scenarios are for demonstration purposes only.

Methodology

The assessment was undertaken in three groups, each containing 5 or 6 participants. The change in benefit provision was assessed using a 5-point Likert scale (-2 = large decrease; -1 = small decrease; 0 = no change; +1 = small increase; +2 = large increase; ? = unknown) and was captured using a pre-produced template on each table (Figure 5). An additional template was also provided in case participants wished to assess the impacts on Tourism/Nature Watching (general) in further detail (Figure 6). The assessment included: a change in benefits under the future scenario; a description of

[2] https://doi.org/10.1007/978-3-319-17214-9
[3] https://nativeoysternetwork.org/
[4] https://nativeoysternetwork.org/

why this change may occur; the confidence in their decision; and a description of which stakeholders may be affected. To aid trade-off discussions, outputs from the Matrix Approach[5] can be used to assess the relative importance of the different features in delivering societal benefits (Figure 8). The radar plots have been amended to reflect the benefits which were identified by stakeholders in the Solent. The concentric circles in the radar plots reflect the relative importance (inner = low, middle = moderate, outer = high) in that feature delivering the benefit based on literature review and expert opinion. For this scenario, we are interested in trade-offs between the benefits delivered by subtidal mixed sediments versus Native oyster beds.

Scenario 1 - Native Oyster Restoration **Facilitators Initials** _____ **Table Number** _____

Key: ++ large increase in delivery; + small increase in deliver; 0 = no change; - small decrease in delivery; -- large decrease in delivery; ? = unknown'

	Benefits	Change in Benefits ++, +, 0, -, --,?	Explanation of change	Confidence H, M, L	Stakeholders Impacted
1	Food (Wild, farmed)				
2	Medicines and blue biotechnology				
3	Healthy Climate/Carbon Sequestration				
4	Prevention of coastal erosion				
5	Sea defence				
6	Waste burial/ removal/ neutralisation				
7	Tourism/ Nature Watching				
8	Spiritual and cultural wellbeing				
9	Aesthetic benefits				
10	Education, research				
11	Physical health benefits				
12	Psychological health benefits				
13	Water resources (quality and quantity)				
14	Place to live				
15	Place to work				
16	Industry				
17	Connectivity				
18	Biodiversity				
19	Sense of space				
20	Intrinsic Value				
21	Dark Skies				

Figure 5: Template used to capture trade-off assessment scores for the Native Oyster restoration scenario.

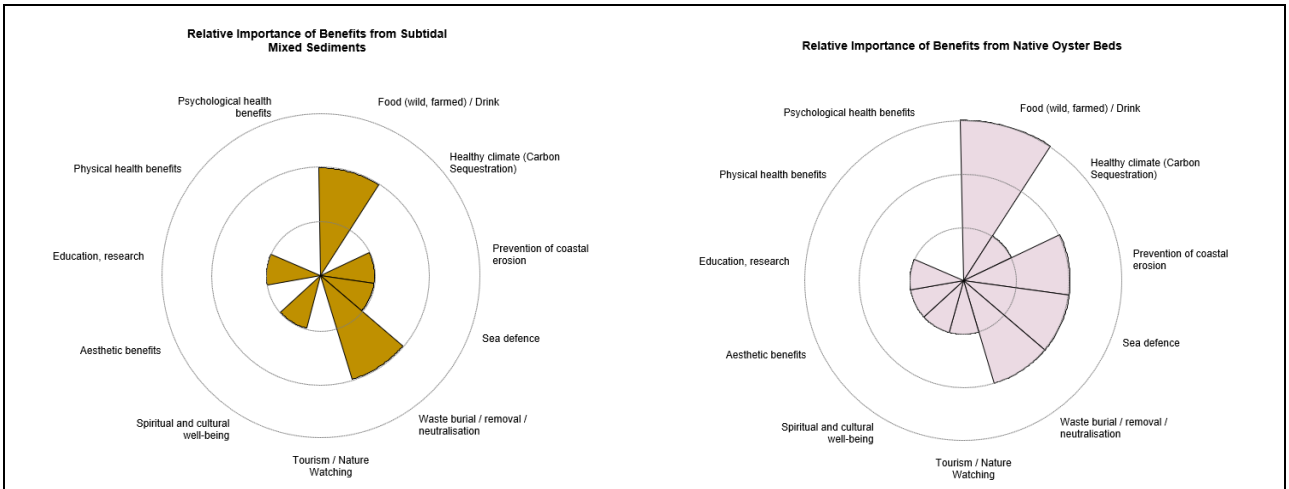
[5] https://doi.org/10.1016/j.marpol.2013.08.011

Scenario 1- Native Oyster Restoration **Facilitators Initials** _____ **Table Number** _____

Key: ++ large increase in delivery; + small increase in deliver; 0 = no change; - small decrease in delivery; -- large decrease in delivery; ? = unknown'

	Benefits	Change in Benefits ++, +, 0, -, --,?	Explanation of change	Confidence H, M, L	Stakeholders Impacted
7a	Tourism and nature watching (Birdwatching)				
7b	Tourism and nature watching (Kayaking/Paddleboarding)				
7c	Tourism and nature watching (Boat trips/Recreational boating/mooring/anchoring)				
7d	Tourism and nature watching (Recreational fishing)				
7e	Tourism and nature watching (Windsurfing)				
7f	Tourism and nature watching (Swimming)				
7g	Tourism and nature watching (Wild fowling)				
7h	Tourism and nature watching (Walking)				
7i	Tourism and nature watching (Diving)				

Figure 6: Template used to capture trade-off assessment scores for the Native Oyster restoration scenario specifically with respect to Tourism and Nature Watching.



Business As Usual Scenario: Relative importance of subtidal mixed sediments in delivering societal benefits.

Scenario 2 - Native Oyster Restoration: Relative importance of Native oyster reefs in delivering societal benefits.

Figure 7: Radar plots illustrating the outputs from the matrix approach for subtidal mixed sediments (Business as usual) and the development of Native oyster beds (future scenario).

Results

Under the Native oyster restoration scenario, the participants identified a large positive increase (+2) in the food provisioning benefit, although it is noted that one table identified a small positive change (+1) in this benefit reflected by the dashed arrow in Figure 8. Given the aim of this scenario was to develop a self-sustaining Native oyster reef then this could potentially result in a commercial fishery, thus an increase in food production for human consumption would be expected, it was also felt that native oyster reefs would provide a nursery habitat for commercial species of fish. For medicines and biotechnology (SB5) it was felt there would be no change with this scenario, although there was some discussion highlighting the potential of medicines from shell reflected by the dashed arrow.

With respect to the regulating services, large positive increases (+2) were expected for carbon sequestration (SB6), prevention of coastal erosion (SB7) and waste burial/removal/neutralisation (SB9) although some participants felt that these benefits may show a smaller positive increase (+1) reflected by the dashed arrow. Participants felt there would be a small increased benefit in regard to sea defences, with the oyster beds dissipating wave energy, although one table felt this could be greater (+2), indicated with the dashed arrow. Small positive increases in a range of cultural benefits were identified, including spiritual and cultural wellbeing (SB11) and physical health benefits (SB14). Large positive increases were identified in tourism/nature watching (SB10) as well as education and research (SB13) associated with the scenario. Psychological health benefits were not included in the sheet on the day, and so scores for this will be collected at the third workshop. With respect to the abiotic benefits, a large positive increase (+2) in water resources (AB2) was identified but there was one table that felt this should only be a small increase (+1). Given that bioremediation of waste is one of the key benefits from the restoration of Native oyster reefs then this will likely have influenced the score here in relation to water quality; this benefit is closely linked to waste burial / removal / neutralisation (SB9) identified above which also scored a strong positive increase (+2). Transport was not included in the sheet on the day, and so scores for this will be collected at the third workshop. There was consensus across all three tables that there would be a large positive increase (+2) in places to work (EB2). Although the tables felt there would be an increase in industry (EB3) but there was a lot of discussion around this and it was felt the positive increase would be dependent on which industry as to how positive the effect would be, this was indicated by the dashed line. It was deemed that this scenario would have no impact on places to live (EB1). With regard to the 'Other Benefits', in general strong positive increases (+2) were identified for connectivity (OB1), species biodiversity (OB2) given that Native oyster reefs provide habitat for a range of species, for sense of space (OB3) it was felt there would be no change as it was out of sight below the water. For intrinsic value (OB4) it was felt there would be a small positive increase (+1) due to this sort of restoration already being in the public mindset.

With respect to Tourism / Nature watching, the analysis identified a small positive increase (+1) in bird watching (SB10a) and swimming (SB10f) (Figure 9). It was also recorded that there would be large increases (+2) in recreational fishing (SB10d) and diving (SB10i). It is likely that these changes were identified given the role of Native oyster reefs in providing habitat for a wide range of marine organisms, thus supporting local bird and fish populations, and also due to improvements in water quality which would have a positive effect on swimming within the vicinity of the Native oyster reef. rowing / kayaking / paddleboarding (SB10c), windsurfing (sb10e), wildfowling (SB10g) and walking (SB10h) indicated there would be no change, although there one table identified potential negative

changes due to changes of access to the coastal habitat due to the reefs. The variation between tables has been reflected by dashed arrows.

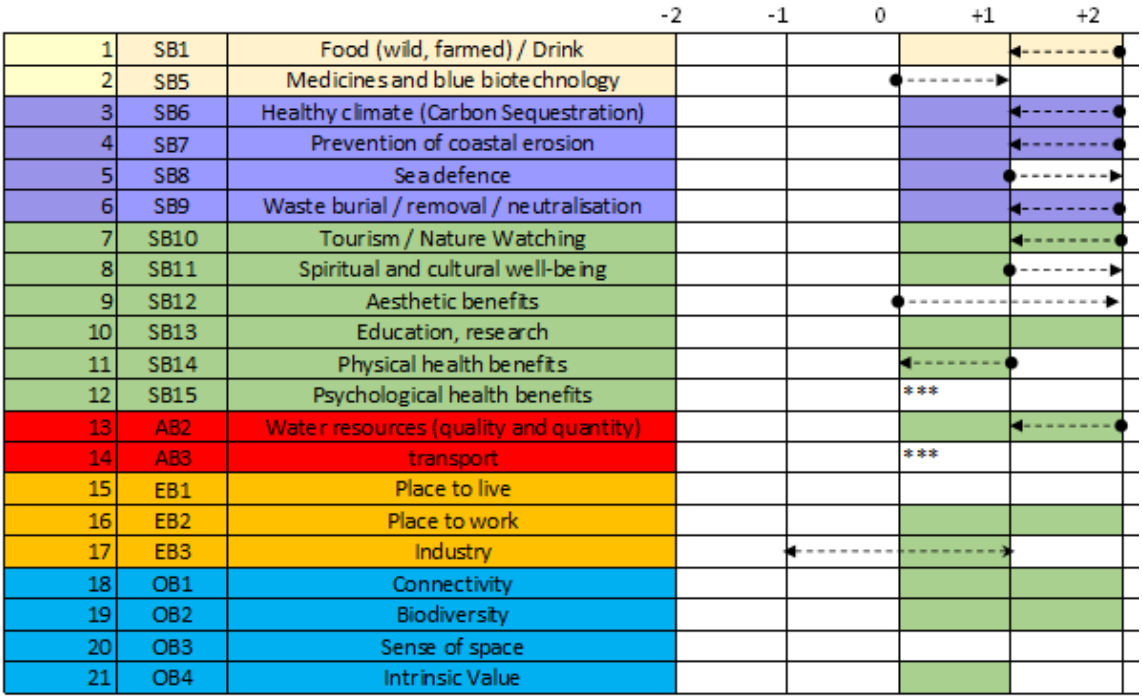


Figure 8: Output from the trade-off assessment for the 'Oyster Restoration scenario (combined results from 3 tables of 5 or 6 stakeholders). The shaded bars with black dot represent the combined change from the 'Business as Usual' scenario (represented as 0), with the variance of responses across the three tables represented by the dashed line. * were missed at the workshop, but will be completed at workshop 3.**

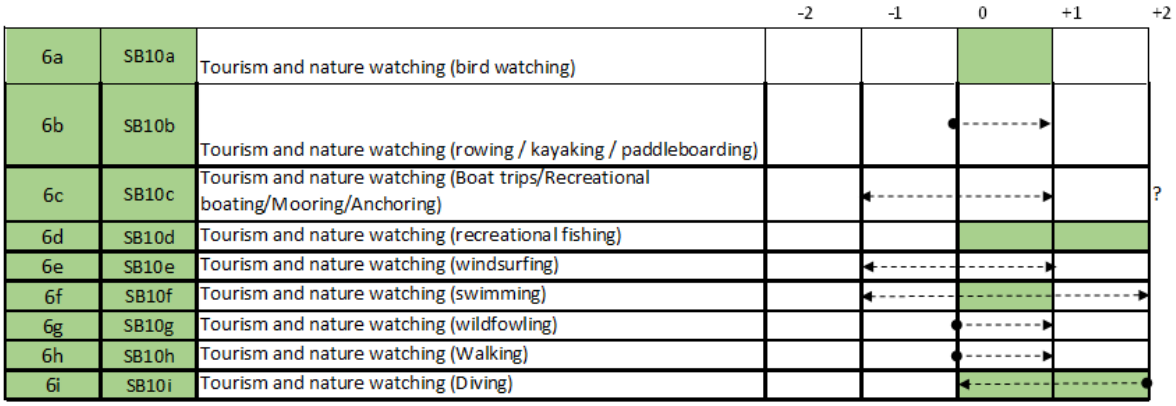


Figure 9: Outputs from the trade-off assessment for the 'Oyster Restoration' scenario focussing on tourism / nature watching activities (combined results from 3 tables of 5 or 6 stakeholders). The shaded bars with black dot represent the combined change from the 'Business as Usual' scenario (represented as 0), with the variance of responses across the three tables represented by the dashed line). A question mark reflects where scores were unknown by one (?), two (??) or three (???) tables.

Scenario 2: Saltmarsh Restoration 11:30-12:30

Peter Hughes (Chichester Harbour Conservancy) provided an excellent insight into the development and construction of the restored saltmarsh at Itchenor, created using the dragbox. With the use of a range of images (see Annex 2), Peter demonstrated some of the key concepts of the restoration and the success so far using this innovative method.

Introduction

Nature-based solutions use the power of nature, and the services and benefits nature provides, to help tackle major challenges such as delivering Net Zero and enabling us to adapt to the impacts of climate change[6]. Saltmarsh restoration, is a nature-based intervention usually whereby existing sea walls are breached to allow tidal inundation on to terrestrial land, resulting in the formation of coastal habitats (mudflats and saltmarsh). This type of restoration can be seen as a triple-win solution[7], as the intervention has the potential to mitigate against some impacts of climate change (by providing a natural form of sea defence and erosion prevention), results in an increase in saltmarsh, which sequesters carbon (a blue carbon habitat), and provides additional habitat for juvenile fish and invertebrates species and functional waterbird assemblages[8]; which in turn provides recreational opportunities for society. Managed realignment is therefore a cost-effective technique to deal with the consequences of sea level rise when compared to installation and maintenance of hard engineering solutions. However, it is recognised that to gain these benefits, other benefits may be lost as a result of the change in land-use. Managed realignment isa sensitive matter for landowners; their interests must be taken into account and handled with care. As an alternative in this scenario, we are instead examining the scenario where like at Itchenor, using the dragbox we create saltmarsh habitat on intertidal mudflats instead. Future scenario assessments allow us to identify potential gains and losses and to identify which stakeholders may be impacted under such interventions.

This scenario, proposes that an additional series of saltmarsh restoration sites could be created in the two harbours using the dragbox method to achieve the multiple benefits listed above. Proposing a series of dragbox sites, rather than just an individual site, would be in-keeping with the recent Biodiversity net gain Strategy[6] which states "*bigger, better and joined up' green and blue networks to deliver priorities for nature set out in Local Nature Recovery Strategies" and multiple restoration points "creates and connects habitats in which species can thrive and in doing so can help wildlife adapt to climate change"*).

One of the primary focusses of the Sea the Value project, is on carbon sequestration within coastal systems. Carbon sequestration can be defined as the "*net capture of carbon dioxide by coastal and marine biota*"[9]. Saltmarsh is a very good habitat for sequestering carbon, and it is reported within the literature that sequestration rates range from 0.86-2.1 tC/ha/yr. A range of sequestration values is reported, as the exact rate depends on the condition of the saltmarsh and the environmental conditions within individual sites. It must also be remembered that other habitats within the Solent (e.g. seagrass, intertidal and subtidal sediments) also provide a carbon sequestration function, however our focus in this scenario is on saltmarsh only.

[6] https://www.gov.uk/government/collections/biodiversity-net-gain
[7] https://doi.org/10.1016/j.marpolbul.2005.09.012
[8] https://doi.org/10.1016/j.ecss.2007.04.028
[9] https://doi.org/10.1007/978-3-319-17214-9

For the purposes of this scenario, we are proposing that an additional 20 ha of saltmarsh could be created within a series of dragbox sites around Langstone and Chichester Harbour. This scenario will look at the trade-offs in societal benefits with a change in land-use. No site-specific locations have been identified, and therefore for the purposes of this exercise we will assume that there will be a land-use change from intertidal mixed sediment to coastal saltmarsh.

It must be strongly emphasised here that this is a hypothetical future scenario, and there are no formal plans to undertake such interventions. Any replacement of land, as part of any future salt marsh restoration project, would only be considered with the full consultation and willing participation of landowners. These scenarios are for demonstration purposes only.

To aid trade-off discussions, outputs from the Matrix Approach[10] can be used to assess the relative importance of the different features in delivering societal benefits. The concentric circles in the radar plots (Figure 10) reflect the relative importance (inner = low, middle = moderate, outer = high) of that feature delivering the benefit based on literature review and expert opinion. In the case of this first scenario, we are interested in trade-offs between the benefits delivered by intertidal mixed sediment versus saltmarsh.

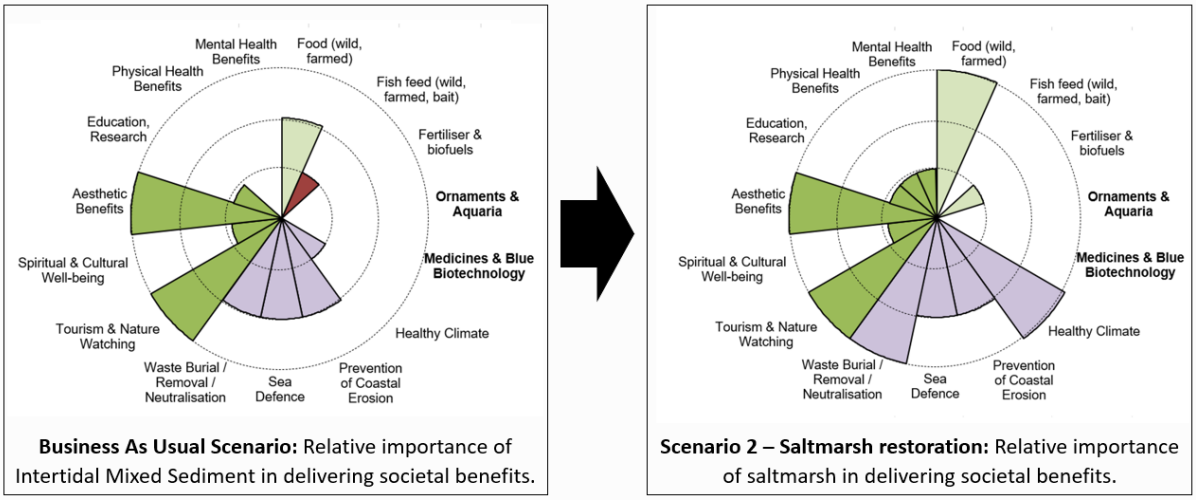


Figure 10: Radar plots illustrating the outputs from the matrix approach for Intertidal mixed sediment (Business as usual) and the development of saltmarsh through dragbox (future scenario).

Methodology

The assessment was undertaken in three groups, each containing 5 or 6 participants. The change in benefit provision was assessed using a 5-point Likert scale (-2 = large decrease; -1 = small decrease; 0 = no change; +1 = small increase; +2 = large increase; ? = unknown) and was captured using a pre-produced template on each table (Figure 11). An additional template was also provided in case participants wished to assess the impacts on Tourism/Nature Watching (general) in further detail (Figure 12). The assessment included: a change in benefits under the future scenario; a description of why this change may occur; the confidence in their decision; and a description of which stakeholders may be affected. Workshop participants used the relationships between features and benefits, as illustrated using the Matrix Approach to support their trade-off discussions.

[10] https://doi.org/10.1016/j.marpol.2013.08.011

Scenario 2 - Saltmarsh Restoration **Facilitators Initials** _____ **Table Number** _____

Key: ++ large increase in delivery; + small increase in deliver; 0 = no change; - small decrease in delivery; -- large decrease in delivery; ? = unknown'

	Benefits	Change in Benefits ++, +, 0, -, --,?	Explanation of change	Confidence H, M, L	Stakeholders Impacted
1	Food (Wild, farmed)				
2	Medicines and blue biotechnology				
3	Healthy Climate/Carbon Sequestration				
4	Prevention of coastal erosion				
5	Sea defence				
6	Waste burial/ removal/ neutralisation				
7	Tourism/ Nature Watching				
8	Spiritual and cultural wellbeing				
9	Aesthetic benefits				
10	Education, research				
11	Physical health benefits				
12	Psychological health benefits				
13	Water resources (quality and quantity)				
14	Place to live				
15	Place to work				
16	Industry				
17	Connectivity				
18	Biodiversity				
19	Sense of space				
20	Intrinsic Value				
21	Dark Skies				

Figure 11: Template used to capture trade-off assessment scores for the Native Oyster restoration scenario.

Scenario 2 - Saltmarsh Restoration **Facilitators Initials** _____ **Table Number** _____

Key: ++ large increase in delivery; + small increase in deliver; 0 = no change; - small decrease in delivery; -- large decrease in delivery; ? = unknown'

	Benefits	Change in Benefits ++, +, 0, -, --,?	Explanation of change	Confidence H, M, L	Stakeholders Impacted
7a	Tourism and nature watching (Birdwatching)				
7b	Tourism and nature watching (Kayaking/Paddleboarding)				
7c	Tourism and nature watching (Boat trips/Recreational boating/mooring/anchoring)				
7d	Tourism and nature watching (Recreational fishing)				
7e	Tourism and nature watching (Windsurfing)				
7f	Tourism and nature watching (Swimming)				
7g	Tourism and nature watching (Wild fowling)				
7h	Tourism and nature watching (Walking)				
7i	Tourism and nature watching (Diving)				

Figure 12: Template used to capture trade-off assessment scores specifically with respect to Tourism and Nature Watching.

Results

The scores for the change in each benefit were analysed with the mean results across the three tables of participants, and the spread of data, presented in Figure 13. The shaded cells and black dots represent the mean score, whilst the dashed line represents the variation in scores across the three tables of participants. The shading reflects the type of benefit which is being assessed in each row: yellow = provisioning societal benefit; purple = regulating societal benefit; green = cultural societal benefit; red = abiotic benefit; orange = economic benefit; and blue = other benefit.

Under the saltmarsh restoration scenario, for provisioning services, the mean result was that there was a small positive increase in food production, although there was discussion across all three tables, and the results ranged from small negative decrease in benefit to a large positive in benefits, this was felt to be due to the increase in nursery habitats for juvenile commercial fish species, but would lose habitat for shellfish (Figure 13). For medicines and biotechnology, one table did not feel they were informed enough to say (denoted by a ?), one table felt there would be no change and one table highlighted usable extracts from *Salicornia* spp.

The stakeholders identified that there would be significant positive increases in a number of regulating benefits, given the role of saltmarsh in sequestering carbon (+2), prevention of coastal erosion (+2), sea defence (+2) and bioremediation of waste (+2) (Figure 13). Positive increases in these regulating benefits were consistent across the three tables however there was some debate as to whether they were large (+2) or small (+1) increases in these benefits in Figure 13. A similar trend was also identified for the cultural benefits with large increases (+2) identified for tourism/nature watching, Aesthetic benefits and education/research; although it is recognised that there was not agreement across all three tables whether it was +2 or +1. Participants identified a small increase (+1) in spiritual and cultural wellbeing although there was one table that suggested there would be no change in this. Psychological health benefits were not included in the sheet on the day, and so scores for this will be collected at the third workshop.

With regard to the abiotic benefits (AB2-AB3), a small positive increase (+1) in water resources (quality and quantity) was identified across the three tables, but transport benefits were not included in the sheet on the day, and so scores for this will be collected at the third workshop (Figure 13). Looking at the economic benefits (EB1-EB3), the consensus across the three tables was that there would not be any significant change in any of the benefits, of a place to live or a place to work, although although one table identified a small positive change (+1) for a place to work. It was felt that there would be a positive change in benefit (+1) in industry although one table felt there would be no change. This positive increase was identified as an increase in house building with associated nitrate neutrality, and an increase in fishing with increased fish stocks. The participants identified large positive increases in the connectivity (OB1), and biodiversity (OB2) with one table identifying biodiversity as a small increase. Overall there was a feeling that sense of space (OB3) would not change although one table felt it would (+1) and all the tables agreed there would be no change in intrinsic value (OB4).

When focussing specifically on the breakdown of tourism/nature watching categories (Figure 14), potential small positive increases were identified for bird watching (SB10a), recreational fishing (SB10d), wildfowling (SB10g) and walking (SB10h) activities which are closely associated with saltmarsh habitat or in the case of walking due to the increase in wildlife visible to walkers. No changes were identified with the other tourism / nature watching categories (SB10b, SB10c, SB10e, SB10f or SB10i), although there were some tables that felt they could have positive or negative changes in benefits.

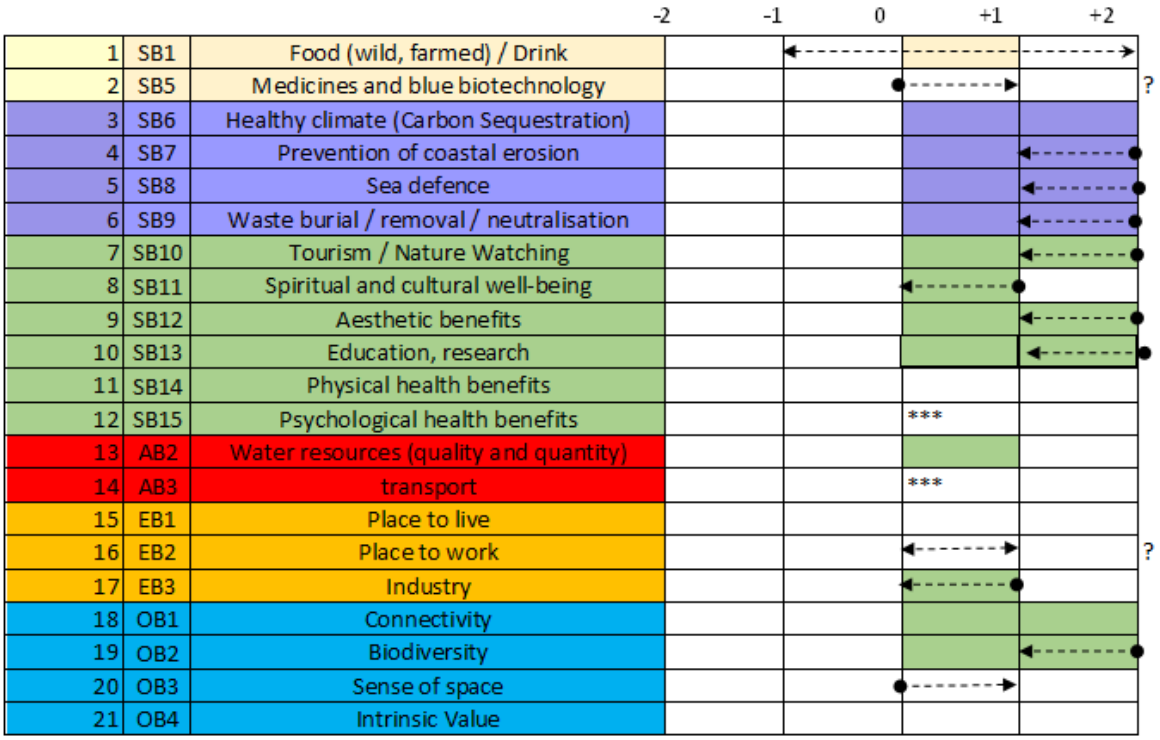


Figure 13: Output from the trade-off assessment for the 'Oyster Restoration scenario (combined results from 3 tables of 5 or 6 stakeholders). The shaded bars with black dot represent the combined change from the 'Business as Usual' scenario (represented as 0), with the variance of responses across the three tables represented by the dashed line. * were missed at the workshop, but will be completed at workshop 3.**

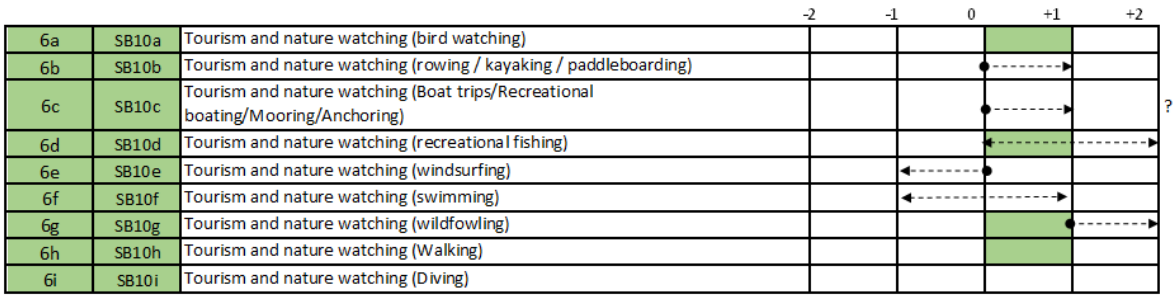


Figure 14: Outputs from the trade-off assessment for the 'Oyster Restoration' scenario focussing on tourism / nature watching activities (combined results from 3 tables of 5 or 6 stakeholders). The shaded bars with black dot represent the combined change from the 'Business as Usual' scenario (represented as 0), with the variance of responses across the three tables represented by the dashed line). A question mark reflects where scores were unknown by one (?), two (??) or three (???) tables.

Discussion, Feedback and Next Steps 14:30-15:00

The final session of the day provided an open platform for discussion of the Sea the Value workshops and their outputs. A number of participants identified mapping outputs which would be useful for their respective organisations. The project team assured participants that all outputs from the workshops will be freely available for all participants and the wider Solent community, and that we will work with individual organisations over the coming months to ensure that the outputs are fit for purpose. The consensus was that the interactive pdf would be the most useful, with shapefiles also being good for several organisations.

All participants were asked to complete a feedback form at the end of the workshop, with the results summarised in Annex 3. There was clear interest in the scenarios assessments with the majority of participants identifying the scenarios exercises as 'very useful' or 'extremely useful' and all participants stated that they wished to be invited to future workshops in the Solent.

The third and final workshop in this Sea the Value series will focus on mapping the beneficiaries in the Solent and will take place in April 2024. The date and venue for the third workshop will be circulated in January 2024.

Acknowledgements

The Sea The Value Project Team wishes to thank all of the attendees for their enthusiasm and valuable inputs to the workshop. The project team also wish to thank UKRI for funding the project./

Annex 2: Workshop Presentations

SEA THE VALUE
MARINE BIODIVERSITY BENEFITS FOR A SUSTAINABLE SOCIETY

Workshop Two – Solent

Tuesday 28 November 2023 at Burnaby Building, Portsmouth

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SEA THE VALUE
MARINE BIODIVERSITY BENEFITS FOR A SUSTAINABLE SOCIETY

Welcome and Introductions

Dr Andy van der Schatte Olivier, University of Portsmouth

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SEA THE VALUE

Housekeeping

- Fire Alarms
- Fire Exits
- Toilets
- Consent Forms
- Refreshments

SEA THE VALUE

The Solent Project Team


Professor Gordon Watson


Professor Joanne Preston


Dr Andy van der Schatte Olivier


Dr Stephen Watson


Dr Anthony Ndah

SEA THE VALUE

Workshop Two Structure

Welcome, introduction and Reviews 10:00-11:00
10:00 Welcome and Introductions (Gordon Watson)
10:10 Review of Features maps
10:30 Review of Features v Benefits Matrix

Introductory Presentations 11:00-11:30
11:00 Introduction to Scenarios and The Matrix Approach
11:15 Introduction to Native Oysters (Joanne Preston)

Scenario 1: Native Oyster Restoration (11:30-12:30)
11:30 Introduction to Scenario 1
11:45 Trade-off Assessments (Andrew van der Schatte Olivier /Stephen Watson/Anthony Ndah/Gordon Watson)

Lunch 12:30-13:15

Scenario 2: Managed Realignment Saltmarsh Restoration
13:15 Introduction to Drag Box Project (Peter Hughes, Chichester Harbour Conservancy)
13:30 Introduction to Scenario 2
13:45 Trade-off Assessment (Andrew van der Schatte Olivier /Stephen Watson/Anthony Ndah/Gordon Watson)

Discussion, Feedback and Next Steps 14:30-15:30

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The Sea the Value Project

- Explore the links between marine ecosystems (natural capital) and the wide range of benefits they provide, in the context of local communities.
- Exploring the trade-offs between benefit provision under different management interventions and scenarios.
- Understanding how communities can access, use and benefit from the natural capital and design future schemes that improve biodiversity and social welfare.

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The Solent Workshops

- **Workshop 1** (in person) – 19th July – to examine the broader benefits provided by local coastal ecosystems (features) in the Solent.
- **Workshop 2** (in person) – 28th November – to develop and explore potential scenarios and trade-offs around the wider benefits with Solent stakeholders.
- **Workshop 3** (in person) – March 2024 (TBC) – to identify how benefits are distributed amongst stakeholders and support local knowledge on how natural capital measures can be delivered in a local context.

This approach is driven by the stakeholders at every stage through the workshops.

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Activity 1: Review of Features Mapping

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Activity 1: Review of Feature Mappings

- Each table has A1 map of features and A1 map of polygons.
- Spend 5 minutes familiarising yourself with the map.
- Comment on Features Categories.
- Comment on the Extent of each feature.
- Write all comments on the A1 map.
- 20 minutes for Activity 1 (finish at 10:30).

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Activity 2: Review of Features vs Benefits

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Identification and Mapping of Benefits (WS1)

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Features vs Benefits Matrix (WS1)

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Activity 2: Review of Features vs Benefits

- Each table has part of the Features vs Benefits Matrix.
- Spend 5 minutes familiarising yourself with the matrix.
- Sense check each cell: Green = Benefit from that Feature.
- Facilitator to use an X if cell colour needs to change.
- If time allows comment on Modified/Managed & Man-made Features.
- 30 minutes for Activity 2 (finish at 11:00).

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The Matrix Approach and Future Scenarios

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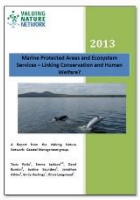
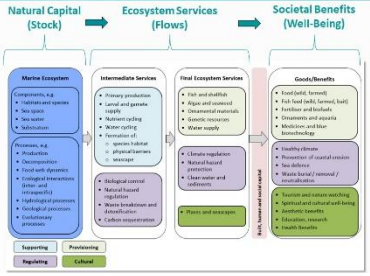
Matrix Approach





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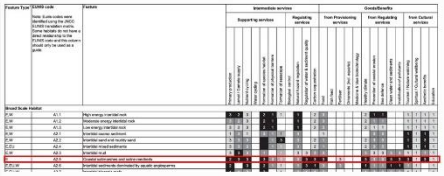

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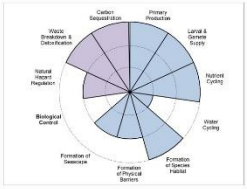
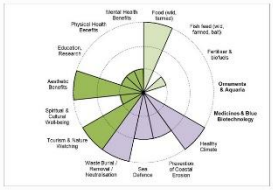
Radar Plots for Saltmarsh



Relative importance of saltmarsh in providing intermediate ecosystem services



Relative importance of saltmarsh in providing benefits

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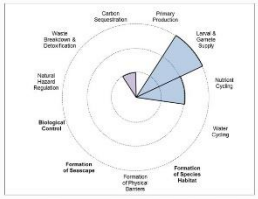
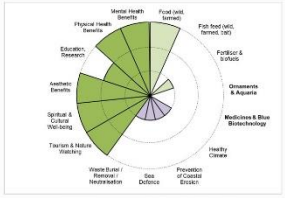
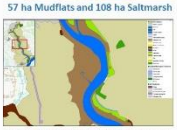
Radar Plots for Atlantic Salmon

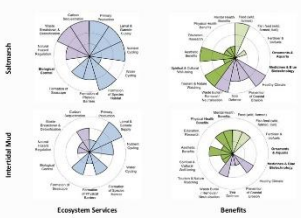


Relative importance of Atlantic Salmon in providing intermediate ecosystem services

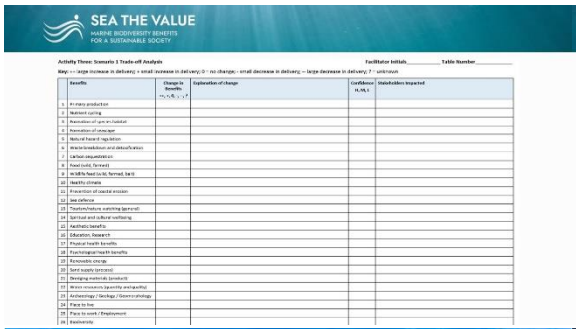


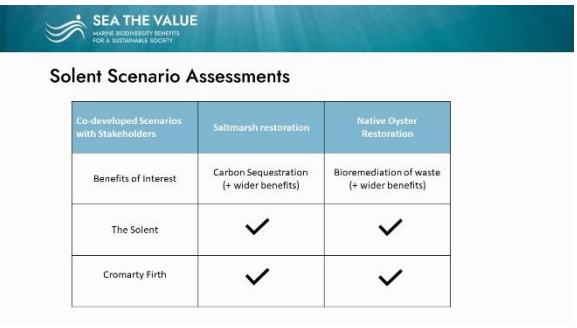
Relative importance of Atlantic Salmon in providing benefits

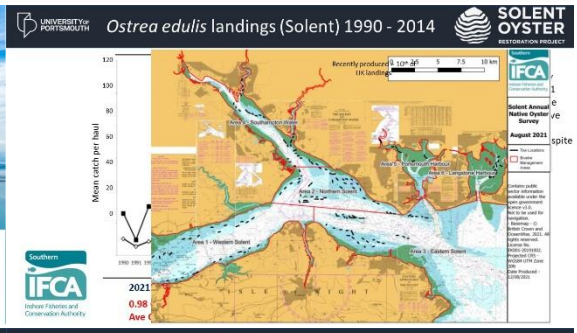




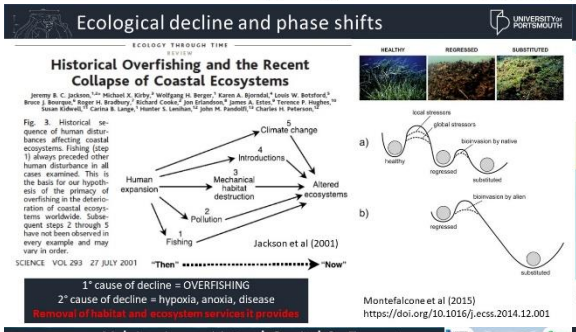
"Sea Level Rise Scenario"

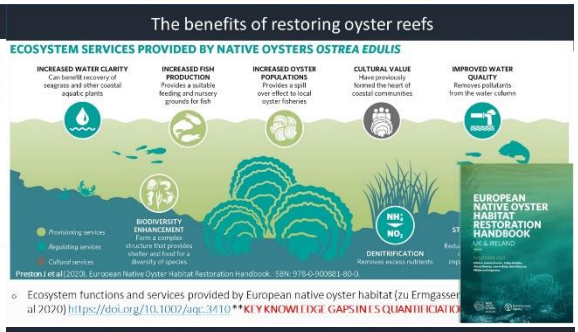


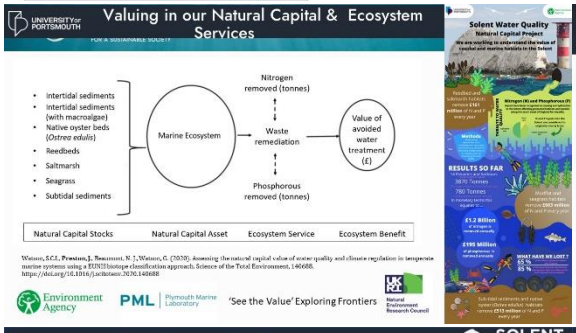


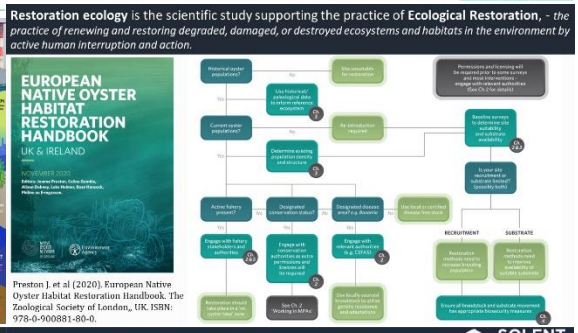


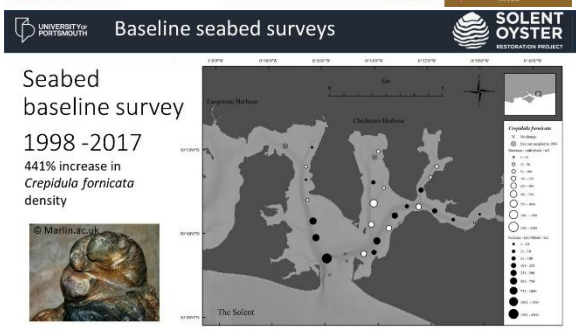
Prof Joanne Preston
Institute of Marine Sciences
University of Portsmouth
Joanne.preston@port.ac.uk
Twitter: @jprestondiggles

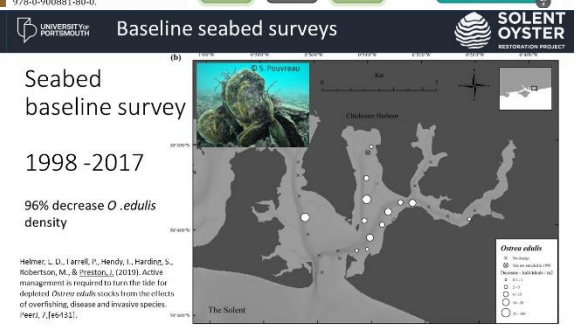


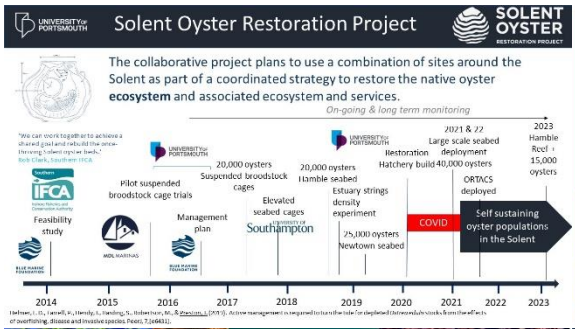


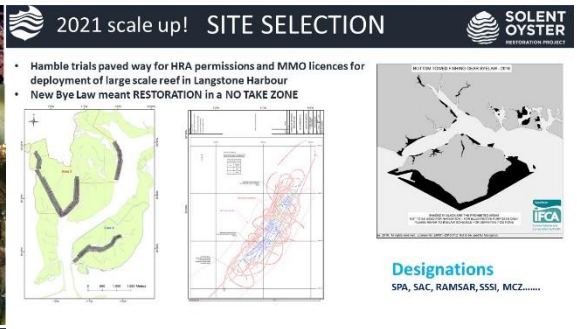


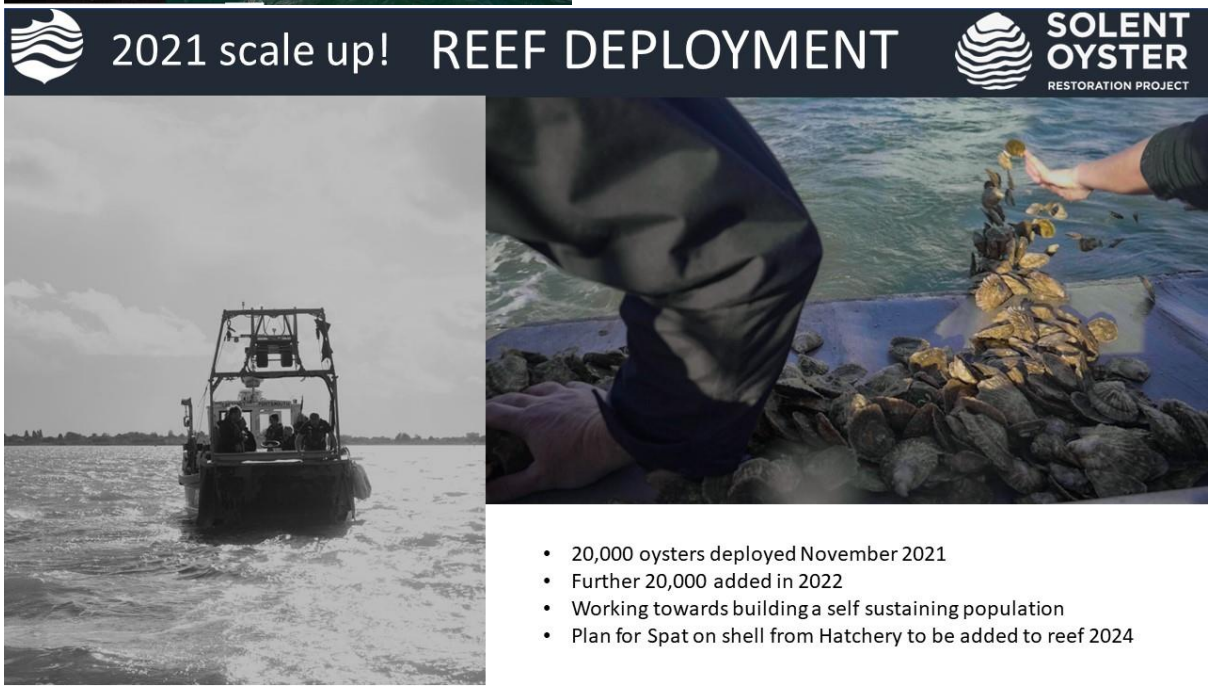




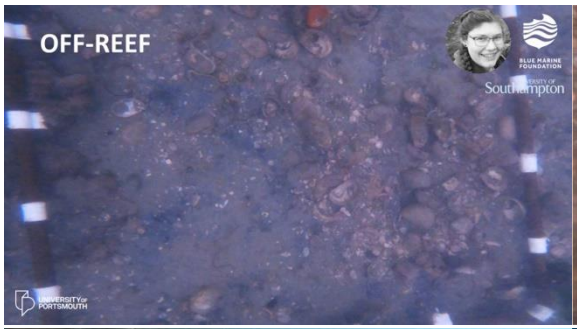


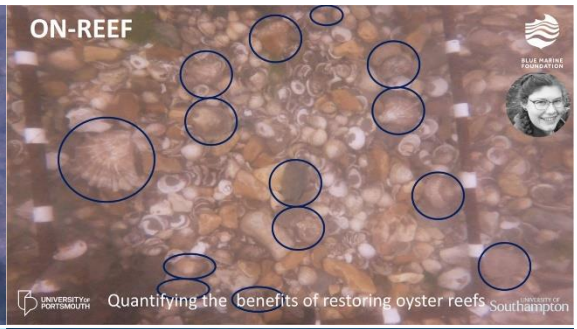


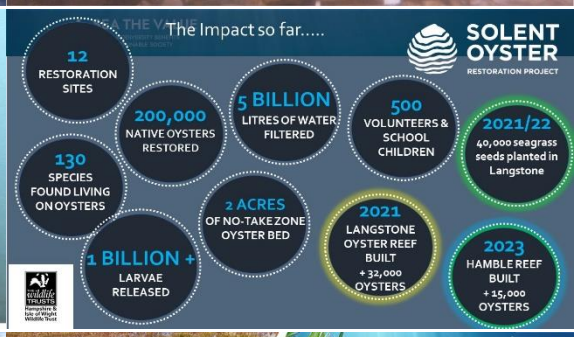




- 20,000 oysters deployed November 2021
- Further 20,000 added in 2022
- Working towards building a self sustaining population
- Plan for Spat on shell from Hatchery to be added to reef 2024


OFF-REEF

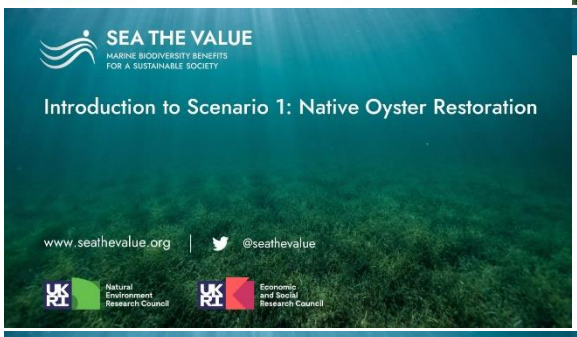

ON-REEF
Quantifying the benefits of restoring oyster reefs


The Impact so far.....
SOLENT OYSTER
RESTORATION PROJECT
12 RESTORATION SITES
200,000 NATIVE OYSTERS RESTORED
5 BILLION LITRES OF WATER FILTERED
500 VOLUNTEERS & SCHOOL CHILDREN
2021/22 40,000 seagrass seeds planted in Langstone
130 SPECIES FOUND LIVING ON OYSTERS
2 ACRES OF NO-TAKE ZONE OYSTER BED
2021 LANGSTONE OYSTER REEF BUILT +32,000 OYSTERS
1 BILLION + LARVAE RELEASED
2023 HAMBLE REEF BUILT +15,000 OYSTERS


The Solent Seascape Project
5 years 2022 – 2027
Our long-term vision is to protect and restore at least 30% of the Solent seascape, based on historical records. We will tip the balance of the Solent seascape from a degraded state to a naturally expanding, connected and productive ecosystem.
SOLENT SEASCAPE PROJECT
10 Partners


Saltmarsh
Seagrass
8ha of saltmarsh
7ha of seagrass
4ha of oysters
10 breeding seabird

Seabird habitat
Oysters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Introduction to Scenario 1: Native Oyster Restoration
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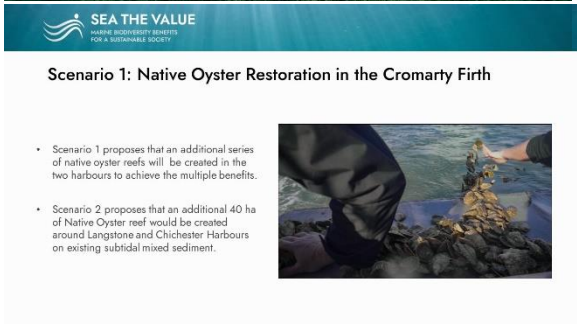
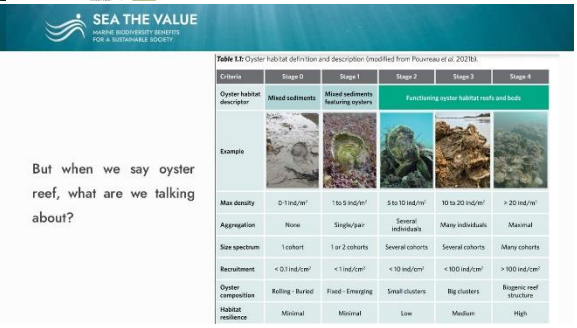
Scenario 1: Native Oyster Restoration in the Solent
ECOSYSTEM SERVICES PROVIDED BY NATIVE OYSTERS OSTREA EDULIS
INCREASED WATER CLARITY
INCREASED FISH PRODUCTION
INCREASED OYSTER POPULATIONS
CULTURAL VALUE
IMPROVED WATER QUALITY
BIODIVERSITY ENHANCEMENT
DENITRIFICATION
STABILISATION OF SEDIMENTS


SEA THE VALUE
Scenario 1: Native Oyster Restoration in the Cromarty Firth
Scenario 1 proposes that an additional series of native oyster reefs will be created in the two harbours to achieve the multiple benefits.
Scenario 2 proposes that an additional 40 ha of Native Oyster reef would be created around Langstone and Chichester Harbours on existing subtidal mixed sediment.


SEA THE VALUE
But when we say oyster reef, what are we talking about?
Table 1.1: Oyster habitat definition and description (modified from Poureau et al. 2021b).
Criteria
Stage 0
Stage 1
Stage 2
Stage 3
Stage 4
Oyster habitat descriptor
Mixed sediments
Mixed sediments featuring oysters
Functioning oyster habitat reefs and beds
Example
Max density
Aggregation
None
Single/pair
Several individuals
Many individuals
Maximal
Size spectrum
1 cohort
1 or 2 cohorts
Several cohorts
Several cohorts
Many cohorts
Recruitment
Oyster composition
Rolling - Buried
Fixed - Emerging
Small clusters
Big clusters
Biogenic reef structure
Habitat resilience
Minimal
Minimal
Low
Medium
High

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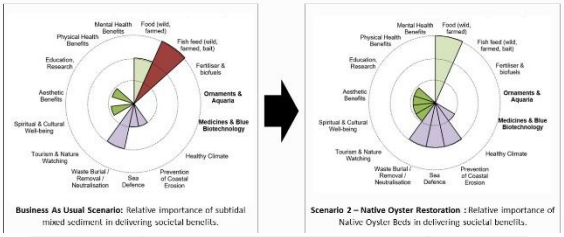
Scenario 1: Trade-off Assessment



Business As Usual Scenario: Relative importance of subtidal mixed sediment in delivering societal benefits.

Scenario 2 – Native Oyster Restoration : Relative importance of Native Oyster Beds in delivering societal benefits.

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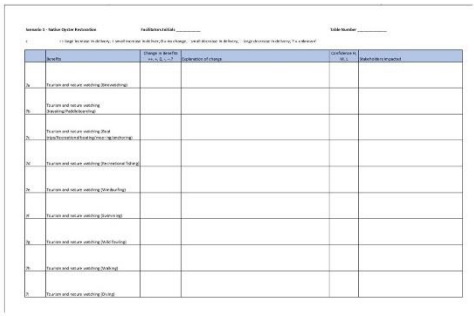
Scenario 1: Native Oyster Restoration in the Cromarty Firth

- It must be strongly emphasised here that this is a hypothetical future scenario.
- There are no formal plans to undertake such interventions based on this workshop.
- Any replacement of subtidal mixed sediment, as part of any native oyster restoration, would only be considered with the full consultation and willing participation of landowners.
- These scenarios are for demonstration purposes only.



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Activity 3: Trade-off Assessment

- Spend a few mins discussing the scenario and the template.
- The Business As Usual scenario is that the seabed remains as subtidal mixed sediment and benefit delivery remains the same.
- The future scenario is a change from subtidal mixed sediment to Native oyster beds.
- For each benefit, assess how the benefit would change under the future scenario (++, +, 0, -, –, ?).
- Facilitators will take notes and assess confidence in the response.
- Finally, think about which stakeholders may be impacted due to the change in benefits.
- You have 45 minutes to complete this activity.

Lunch 12:30-13:15

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Beneficial Use of Dredged Sediment (BuDs)

Peter Hughes

Chichester Harbour Conservancy

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Beneficial Use of Dredged Sediment (BuDs)

[1] What is it?

The use of sediment from routine maintenance dredging operations for environmental benefits and habitat restoration initiatives

[2] What currently happens to dredged material within Chichester Harbour?

Most of the dredged material from marinas is deposited outside the Harbour at a licenced location east of the Isle of Wight – Nabs Tower

[3] Why use BuDs?

To increase the supply of sediment within the harbour to help feed and stabilise saltmarsh habitat and use the sediment to restore saltmarsh where historic saltmarsh once grew

[4] Why has it not be used before?

There are many financial, technical, regulatory and environmental reasons why dredged sediment has not been used to 'recharge' saltmarshes in the past. Our project seeks to resolve some of these challenges.

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Itchenor West - BuDs Trial

Working in Partnership with Land & Water/Earth Change

Trial the Saltmarsh Restoration Drag Box - an innovative & novel technique to place the dredged sediment on the upper intertidal area

Create an area of 0.7ha of saltmarsh using approx. 4,500m³ of dredged sediment

Funded in partnership with Land & Water and the Solent Seascape Project

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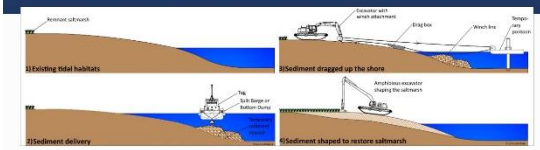
How will the process work?



- Thorough analysis and baseline data been carried out at site and with marina sediment sources
- 2x split hopper barges, bottom opening, used to transport sediment and deposit sediment
- Sediment deposited at HT as high up the shore as possible
- Once deposited the SRDB will bring material up the shore to the higher intertidal area
- The sediment will then be shaped using the amphibious excavator with GPS guidance, into a predetermined digital terrain map

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Project Information:

- Provisional Project commencement date (subject to licences and permissions): **15 February 2023**
- Project estimated to take 3-4 weeks
- Dredged material from Northney or Chichester Marina
- Pioneer saltmarsh species are likely to start colonising the site within the first year
- There will be on-going monitoring to assess the success of the project including:
  - Topography of site
  - Accretion rate
  - Colonisation of plants & area of new saltmarsh
  - Water clarity
  - Nitrogen uptake by habitat
  - Bird usage
- The learning from the project will be used to inform future restoration initiatives. If the trial is deemed a success, the project will be repeated and the site gradually expanded.

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Costs and Funding for the BuDs Trial

Total project costs:	£257,650
Land & Water contribution:	£127,425
CHaPRoN contribution:	£130,225

CHaPRoN funding to come from the Solent Seascape Project ELP funding and match funding

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Introduction to Scenario 2: Saltmarsh restoration

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Saltmarsh restoration

- Saltmarsh restoration, is a nature-based intervention usually whereby existing sea walls are breached to allow tidal inundation on to terrestrial land, resulting in the formation of coastal habitats (mudflats and saltmarsh).
- It can be seen as a triple-win for the environment, society and the economy.
- Managed realignment is, however, a sensitive matter for landowners; their interests must be taken into account and handled with care. we are instead examining the scenario where like at Itchenor, using the dragbox we create saltmarsh habitat on intertidal mudflats instead.

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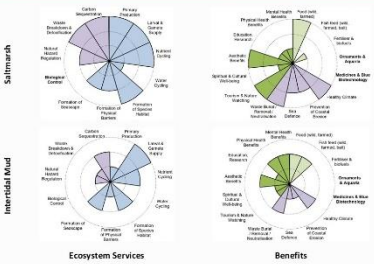

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Scenario 2: Saltmarsh restoration in Langstone and Chichester harbours

- Scenario 2 proposes that an additional series of saltmarsh restoration sites could be created in the two harbours to achieve the multiple benefits.
- Proposing a series of dragbox sites, rather than just an individual site, would be in-keeping with the recent Biodiversity net gain Strategy which states:
  - *"bigger, better and joined up' green and blue networks and deliver priorities for nature set out in Local Nature Recovery Strategies or other strategic plans"*
  - *"creates and connects habitats in which species can thrive and in doing so can help wildlife adapt to climate change"*

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Scenario 2: Saltmarsh restoration in Langstone and Chichester harbours

- Scenario 2 proposes that an additional 20 ha of saltmarsh could be created within a series of restoration sites around Langstone and Chichester Harbours
- This could result in 32 - 84 tC/ha/yr being sequestered, in addition to providing a wide range of other benefits for society which we will also explore within this scenario.

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Scenario 2: Saltmarsh restoration in Langstone and Chichester harbours

- This scenario will therefore look at the trade-offs in societal benefits with a change in land-use.
- No site-specific locations have been identified, and therefore for the purposes of this exercise we will assume that there will be a land-use change from intertidal mixed sediment to coastal saltmarsh
- NOTE: It is recognised that managed realignment may be undertaken on intertidal mixed sediment which is currently used for other purposes.

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Scenario 2: Saltmarsh restoration in Langstone and Chichester harbours

- It must be strongly emphasised here that this is a hypothetical future scenario.
- There are no formal plans to undertake such interventions based on this workshop.
- Any replacement of land, as part of any future saltmarsh restoration, would only be considered with the full consultation and willing participation of landowners.
- These scenarios are for demonstration purposes only.

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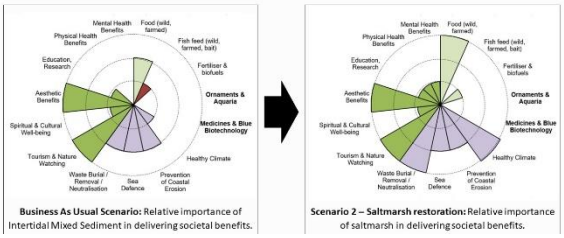
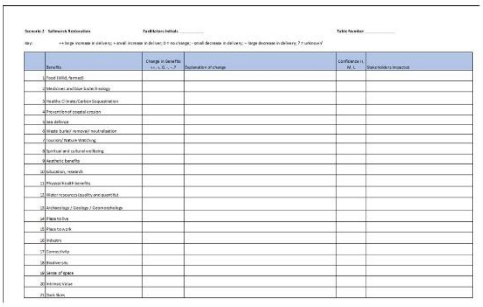
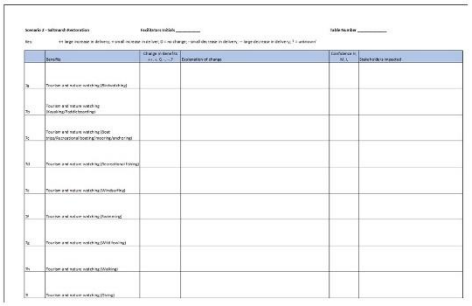
Scenario 2: Trade-off Assessment



Business As Usual Scenario: Relative importance of Intertidal Mixed Sediment in delivering societal benefits.

Scenario 2 – Saltmarsh restoration: Relative importance of saltmarsh in delivering societal benefits.





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Activity 4: Trade-off Assessment

- Spend a few mins discussing the scenario and the template.
- The Business As Usual scenario is that the land remains as intertidal mixed sediment and benefit delivery remains the same.
- The future scenario is a change from intertidal mixed sediment to saltmarsh.
- For each benefit, assess how the benefit would change under the future scenario (++, +, 0, -, –, ?).
- Facilitators will take notes and assess confidence in the response.
- Finally, think about which stakeholders may be impacted due to the change in benefits.
- You have 45 minutes to complete this activity.

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Discussion, Feedback and Next Steps

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Discussion...

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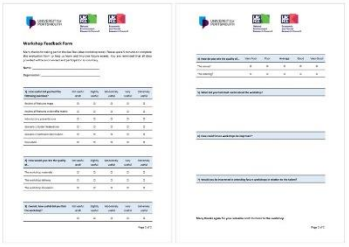
Feedback...



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Next Steps...

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Project Contact Details:

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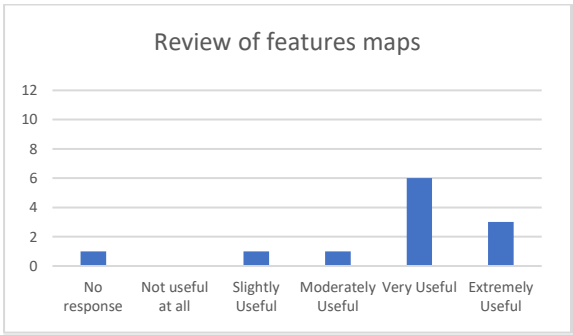
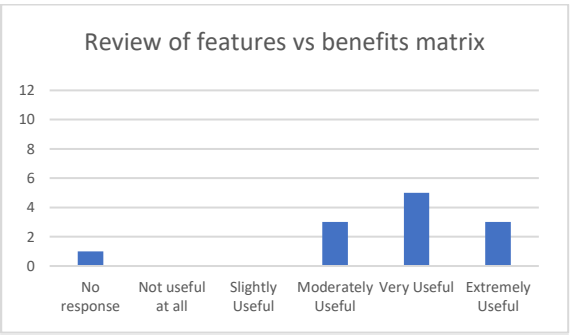
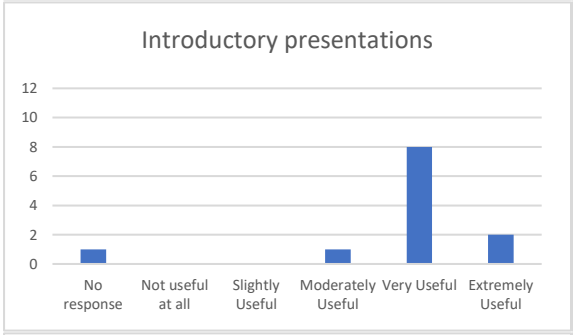
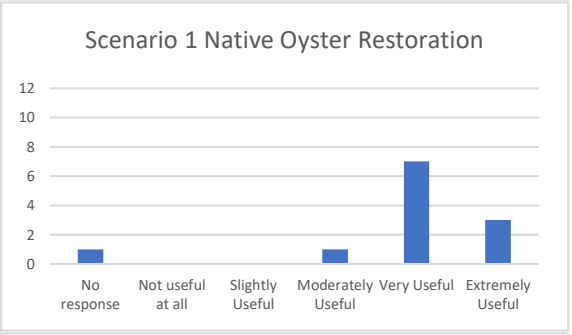
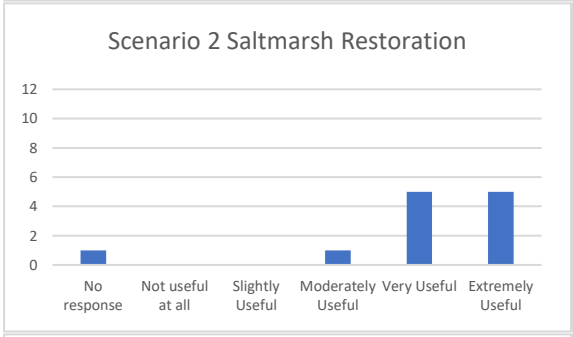
Annex 3: Summary of Workshop Feedback

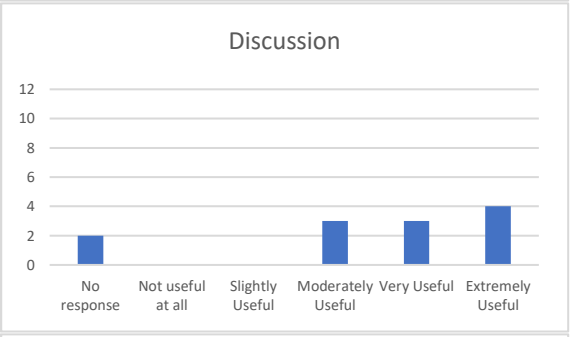


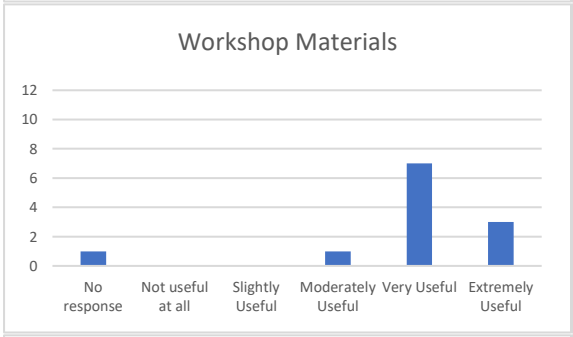


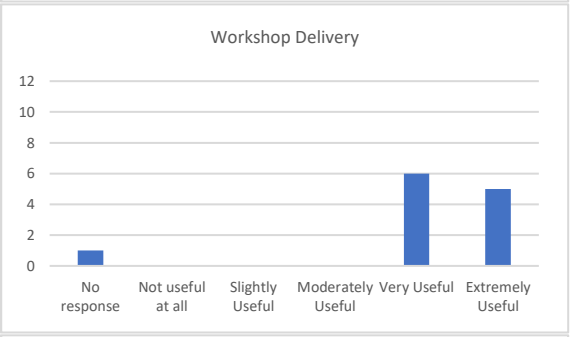


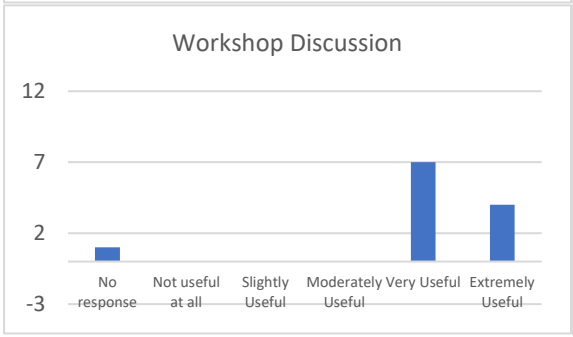


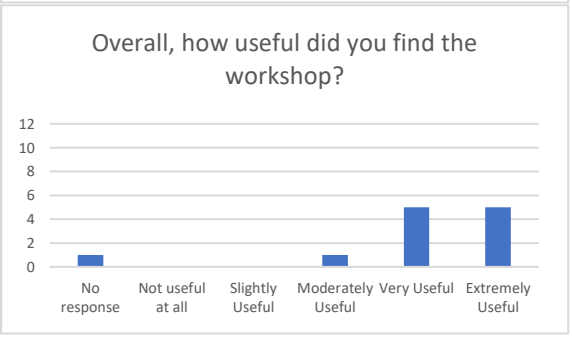


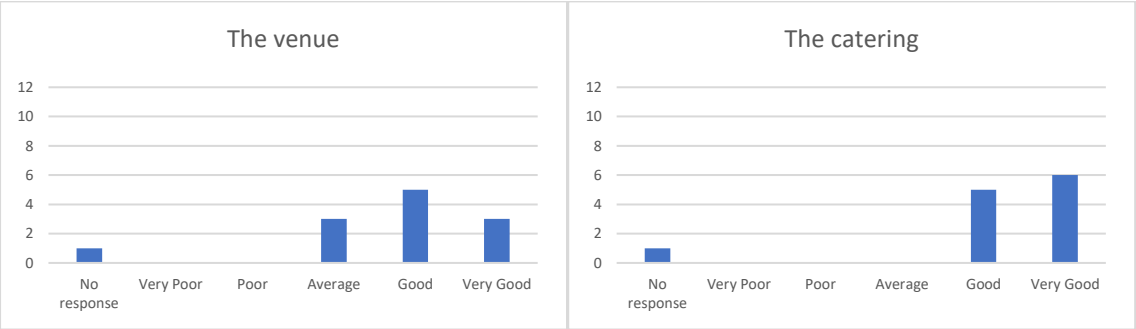












Sample comments on what was most useful about the workshop:

- Trade offs were very interesting. Great maps, would be good to play with the layers.
- Collection of data from huge number of sources
- Discussion of views and ideas around the Solent
- Dragbox method and discussion of different habitat trade-offs
- Multi uses of stakeholders for the sites was very useful. The feature maps will be very useful.
- Benefits matrix, table discussions, oyster restoration scenario
- Understanding the basic methodologies
- Modus operandi of the work

Sample comments on how the workshop could be improved in the future:

- Wider stakeholder involvement
- Look at scenarios for +/- 5% realignment coastal grazing marshes.
- Workshop for all Isle of Wight. Workshop for Lindisfarne.
- Potential site visit?
- Mixing up tables perhaps halfway through