Marine Management Organisation

MMO Stage 3 Site Assessment: North West of Lundy MPA (DRAFT)






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Title: MMO Stage 3 Site Assessment: North West of Lundy MPA DRAFT

Contents

Executive summary

This assessment analyses the impact of bottom towed gear, anchored nets and lines and traps on the designated feature subtidal coarse sediment in North West of Lundy Marine Protected Area (MPA) to determine whether a significant risk of hindering the conservation objectives of the site can be excluded. The assessment sets out the evidence considered and analyses the quality of that evidence.

The assessment finds that ongoing fishing activities by bottom towed gear occurring in the site on the designated feature subtidal coarse sediment poses a significant risk of hindering the achievement of the conservation objectives of North West of Lundy MPA. As such, the Marine Management Organisation (MMO) concludes that management measures are required.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of North West of Lundy MPA.

This site is designated as a marine conservation zone (MCZ). This assessment uses the best available evidence to review site characteristics and fishing activity and determine if there is a significant risk of fishing activities hindering the conservation objectives of the site. If so, MMO will develop and introduce suitable management measures, such as MMO byelaws. If MMO byelaws are required, then these will be subject to public consultation and will require confirmation from the Secretary of State to come into effect.

2 Site information

2.1 Overview

The following Natural England conservation advice package and Department for Environment, Food and Rural Affairs (Defra) factsheet were used for background on site geography, designations, features, conservation objectives and general management approaches in this assessment:

- Natural England Conservation Advice for Marine Protected Areas – North West of Lundy MCZ[1]
- Defra Factsheet – North West of Lundy MCZ[2]

North West of Lundy MPA is an offshore site located in the Western Channel and Celtic Sea region. The site extends in an arc between the 6 nautical mile (nm) and 12 nm limits, 15 km northwest of Lundy, and covers an area of 173 km^2 **(Figure 1).**

North West of Lundy MPA was designated as a MCZ in 2019.

This MPA contains a large area of the designated feature: subtidal coarse sediment. Coarse sediments include coarse sand, gravel, pebble and shingle. The sediment provides a habitat that supports a variety of infaunal species such as segmented bristle worms, Venus clams, small crustaceans (such as crabs and barnacles) and the pea urchin. Organisms such as tubeworms, echinoderms and amphipods can be found on the surface of the sediment, which is often unstable due to tidal currents and/or wave action. The designated feature and its general management approach is shown in **Table 1.**

[1] North West of Lundy Conservation Advice Package: designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0064 (last accessed 09 November 2023)

[2] North West of Lundy Defra factsheet: www.gov.uk/government/uploads/system/uploads/attachment_data/file/915653/mcz-north-west-lundy-2019.pdf (last accessed 09 November 2023)

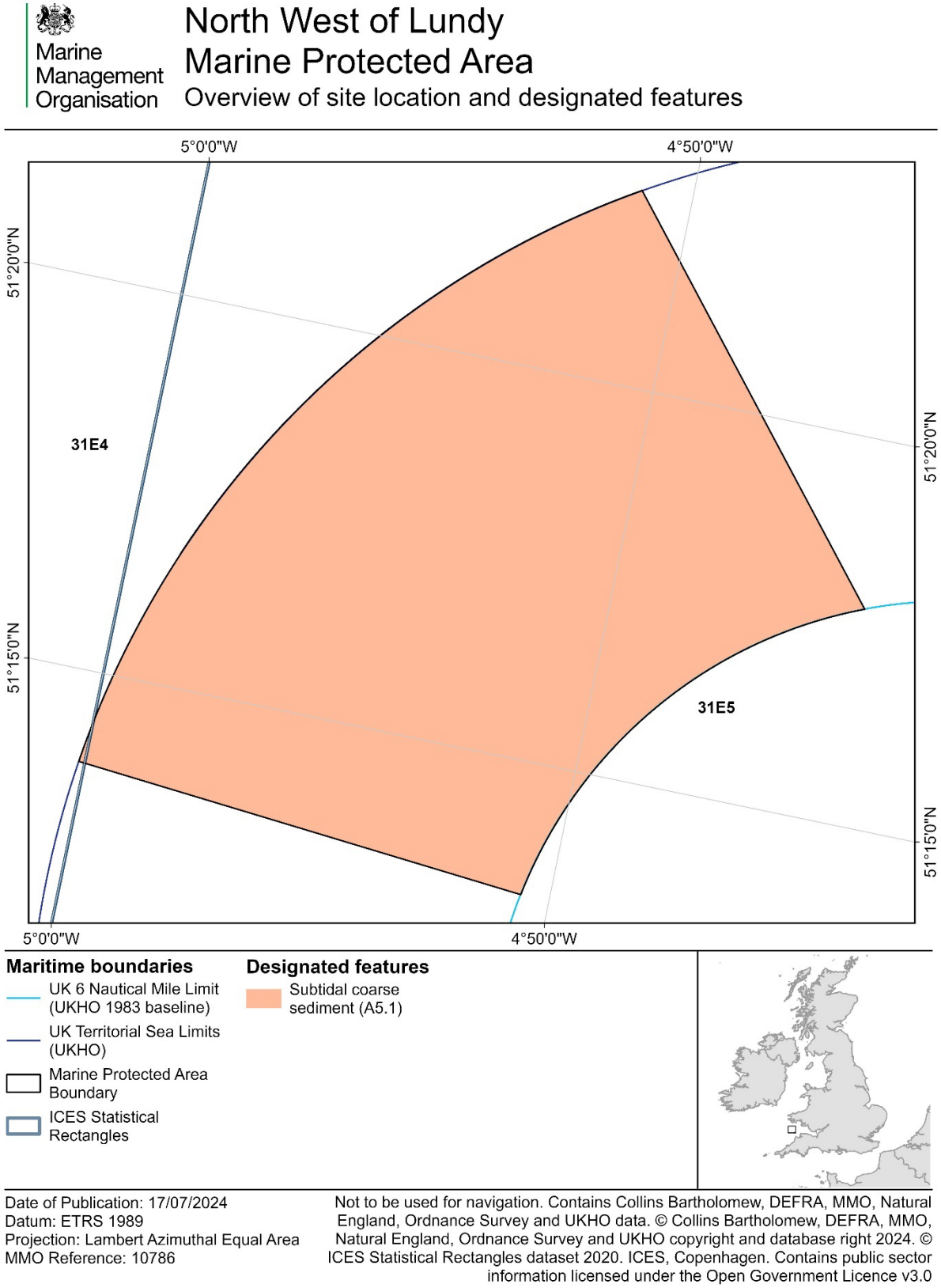

Figure 1: Site overview map.

There is no direct feature condition assessment available for this site; in its absence a vulnerability assessment, which includes sensitivity and exposure information for features and activities in a site, is used as a proxy for condition. Based on the vulnerability assessment, the general management approach for the feature of North West of Lundy MPA has been set as 'recover', due to the risk of impacts from bottom towed gear fishing.

More information on this can be found in Natural England's supplementary advice on conservation objectives[3].

Table 1: Designated feature and general management approach.

Designated feature	General Management Approach
Subtidal coarse sediment	Recover to a favourable condition

2.2 Scope of this assessment

The scope of this assessment covers fishing activities alone, and relevant activities in combination with fishing. This assessment covers the whole of North West of Lundy MPA **Figure 1**.

[3] Natural England's Supplementary Advice on Conservation Objectives: designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UKMCZ0064 (last accessed 18 September 2024)

3 Part A - Identified pressures on the MPA

Part A of this assessment was carried out in a manner that is consistent with the 'capable of affecting (other than insignificantly)' test required by section 126 of the Marine and Coastal Access Act 2009[4].

Part A assesses the interactions between pressures from fishing gears and the designated features of this site, screening for interactions that require further consideration. Assessment of interactions not screened out in Part A will form Part B of the assessment. For each activity assessed in Part A, there are two possible outcomes for each identified pressure-feature interaction:

1. The pressure-feature interactions **are not** included for assessment in Part B and screened out:
    a. if the feature is not exposed to the pressure, and is not likely to be in the future;
    b. if the pressure is not capable of affecting the feature, other than insignificantly; or
    c. if MMO has information that the activity or pressure is not occurring in the site and/or does not need to be considered further.

2. The pressure-feature interactions **are** included for assessment in Part B:
    a. if the feature is exposed to the pressure, or is likely to be in the future;
    b. if the pressure is capable of affecting the feature, other than insignificantly;
    c. if it is not possible to determine whether the pressure is capable of affecting the feature, other than insignificantly; or
    d. if MMO has information that the activity or pressure is occurring in the site and/or does need to be considered further.

Consideration of a pressure on a protected feature in an MPA includes consideration of the pressure's exposure to, or effect on, any ecological or geomorphological process on which the conservation of the protected feature is wholly or in part dependent.

3.1 Activities taking place

Table 2 lists all commercial fishing gears included for assessment. All other gears have been screened out of further assessment as they do not take place and are not likely to take place in the future, as there are no vessel monitoring system (VMS) records present within the site linked to these gear codes, nor do they appear in landings data for International Council for the Exploration of the Sea (ICES) statistical rectangles that overlap the site.

[4] Marine and Coastal Access Act 2009: www.legislation.gov.uk/ukpga/2009/23/section/126.

To determine fishing activity occurring within the site, the following evidence sources were used:

- VMS data;
- fisheries landings data (logbooks and sales records);
- ICES rectangle level fishing effort data in days (reference: MMO1264);
- swept area ratio (SAR) data.

For more information about the above evidence sources, please see the Stage 3 MPA Site Assessment Methodology document[5], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

Table 2: Fishing activities covered by this assessment present in VMS and landings data for North West of Lundy MPA, 2016 to 2021.

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Gill nets (not specified)	GN	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Gillnets and entangling nets	GEN	
	Longline (unspecified)	LL	
	Set gillnet (anchored)	GNS	
Bottom towed gear	Beam trawl	TBB	Present in VMS data
	Bottom otter trawl	OTB	Present in VMS records and in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Otter trawls (unspecified)	OT	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Towed dredge	DRB	Present in VMS records and in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Twin bottom otter trawl	OTT	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
Midwater gear	Drift gillnet	GND	
	Hand-operated pole-and-line	LHP	
	Hook and line (unspecified)	LX	
	Midwater otter trawl	OTM	
Traps	Pot/Creel	FPO	Present in VMS records and in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.

[5] Stage 3 MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (last accessed 18 September 2024).

3.2 Pressures, features and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for North West of Lundy MPA.

The gear types and pressures screened out on this basis are listed below with justification:

- **Midwater gears:** although the use of midwater gears does occur within North West of Lundy MPA, there is no feasible pathway for gears of this type to interact with benthic designated features under normal operation. These gears are not designed to operate on or near the seabed and are deployed entirely within the water column. Therefore, the use of midwater gear within North West of Lundy MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.

3.3 Pressures to be taken forward to Part B

The Stage 3 Fishing Gear MPA Impacts Evidence documents detail all pressures created by fishing activity on features of interest. The documents justify which pressures should be taken forward for consideration for each feature. This is documented in Table A1.2 in anchored nets and lines, bottom towed gear and traps Impacts Evidence documents:

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines[6];
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[7]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[8].

To determine whether a pressure should be taken forward for this particular site, **Table 3** uses the information from the Impacts Evidence documents, alongside site level information, including sensitivity assessments, risk profiling of pressures from

[6] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 18 September 2024)

[7] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 18 September 2024)

[8] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 18 September 2024)

conservation advice packages, and Natural England advice to assess the sensitivities of pressures on the designated features of the site.

Table 3 details the pressures for each gear type - anchored nets and lines (A), bottom towed gear (B) and traps (T) - to be assessed in Part B, taking into account the pressures screened out in **sections 3.1** and **3.2.**

Key	
	Dark blue highlighting indicates that the feature is sensitive to this pressure from the gear type in this site, and that the interaction should be taken forward for consideration.
	Light blue highlighting indicates that feature is sensitive to the pressure in general, but the gear type is unlikely to exert this pressure to an extent where impacts are of concern in the site.
	Grey highlighting indicates that there is insufficient evidence to make sensitivity conclusions, or that a sensitivity assessment has not been made for this feature to this pressure from the gear type.
	If there is no highlighting within a cell, this indicates that the pressure from the gear type is not relevant to the feature, or that the feature is not sensitive to the pressure.

Table 3: Summary of pressures on designated feature of North West of Lundy MPA to be taken forward to Part B.

Potential pressures	Designated Feature		
	Subtidal coarse sediment		
	A	B	T
Abrasion or disturbance of the substrate on the surface of the seabed			
Changes in suspended solids (water clarity)			
Deoxygenation			
Hydrocarbon and polycyclic aromatic hydrocarbon (PAH) contamination			
Introduction of microbial pathogens			
Introduction or spread of invasive non-indigenous species			
Litter			
Organic enrichment			
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			
Physical change (to another sediment type)			
Removal of non-target species			
Removal of target species			
Smothering and siltation rate changes			
Synthetic compound contamination			
Transition elements and organo-metal contamination			

4 Part B - Fishing activity assessment

Part B of this assessment was carried out in a manner that is consistent with the 'significant risk of hindering the achievement of the conservation objectives' test required by section 126 of the Marine and Coastal Access Act 2009[4].

Table 3 shows the fishing activities and pressures identified in Part A which have been included for assessment in Part B. The most relevant attributes of the designated features that could be compromised by fishing pressures were identified using the North West of Lundy MPA conservation advice package and are shown in **Table 4**.

Table 4: Relevant favourable condition targets for identified pressures.

Attribute	Target	Relevant pressures
Distribution: presence and spatial distribution of biological communities	Recover the presence and spatial distribution of subtidal coarse sediment communities	Relevant to: • Abrasion or disturbance of the substrate on the surface of the seabed • Penetration and/or disturbance of the substrate below the surface of the seabed
Structure: sediment composition and distribution	Maintain the distribution of sediment composition types across the feature.	
Structure and function: presence and abundance of key structural and influential species	[Maintain OR Recover OR Restore] the abundance of listed species, to enable each of them to be a viable component of the habitat.	• Abrasion or disturbance of the substrate on the surface of the seabed • Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion • Removal of non-target species • Removal of target species • Changes in suspended solids (water clarity) • Smothering and siltation rate changes (light)
Structure: species composition of component communities	Recover the species composition of component communities	

4.1 Fisheries access and existing management

As North West of Lundy MPA lies entirely within the 6 to 12 nm zone, the only non-UK vessels that can operate within the site are those from France and Belgium licensed by the UK to do so. VMS records indicate that UK and French vessels are most prevalent.

More information on non-UK vessel access to UK waters can be found on MMO's Single Issuing Authority page[9].

There are no management measures currently in place for the site.

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 7** in **Annex 1** display a detailed breakdown of fishing activity within North West of Lundy MPA. VMS record counts and fishing effort data were available from 2016 to 2021, and landings data and SAR values were available from 2016 to 2020. When discussing weights from landings in this section, figures used are a total of weights from UK and EU member states. Of the fishing activities not screened out in Part A of this assessment, the most prevalent gears operating within the site are traps, demersal trawls and dredges.

Static gear

Traps

Traps are the most prevalent type of fishing activity in the site, with all activity recorded from UK vessels using pots/creels. Between 2016 and 2021 there were 76 VMS records on average of this type per year. Vessels over 12 m in length using traps landed on average 27 tonnes (t) per year, and vessels under 12 m in length landed on average 57 t per year in the same period. For under 12 m vessels there was an annual average of 56.69 fishing effort days per year between 2016 and 2021 for traps. VMS data shows that activity from traps occurred throughout the site but was less common in the northern part.

Anchored Nets and Lines

For UK and EU vessels over 12 m there are no VMS records or landings data that indicates the use of anchored nets and lines. Landings data for UK vessels under 12 m, which is recorded at ICES rectangle level and has been attributed to the MPA based on the proportion of the ICES rectangles it overlays, shows an annual average of 0.42 t landed per year using anchored nets and lines. The number of landings from this gear type has decreased each year from 2016 to 2020, with a total of 0.14 t

[9] The UK Single Issuing Authority: www.gov.uk/guidance/united-kingdom-single-issuing-authority-uksia (last accessed on: 26 July 2023).

landed in 2020. The average amount landed using anchored nets and lines from 2016 to 2020 is just under 1 % of the average amount landed by traps in the site in the same time period. For under 12 m vessels using anchored nets and lines, there was an annual average of 5.3 fishing effort days per year between 2016 and 2021.

Bottom towed gear
Dredges:

Dredges are the second most frequently deployed gear type in North West of Lundy MPA according to VMS data. Between 2016 and 2021 there were an average of 68 dredge VMS records per year, however all of this activity occurred in the years 2016 and 2017, and there are no records of dredging activity from 2018 to 2021. Between 2016 and 2020, on average 3 t were landed annually from UK vessels over 12 m using dredges. Landings by UK vessels under 12 m using dredges varied year by year between 0.05 to 0.12 t per year, with an annual average of 0.08 t per year. For under 12 m vessels using dredges, there was an annual average of 0.23 fishing effort days per year between 2016 and 2021.

Swept area ratio (SAR) analysis indicates that despite dredges being the second most frequently deployed gear, the average level of activity throughout the whole site is relatively low for the period 2016 to 2020. Surface and subsurface SAR values for C-squares intersecting North West of Lundy MPA range between 0.01 and 0.02. A SAR value of 1 means that each area C-square experiences a pass of fishing gear on average once a year. VMS activity shows that dredging activity was concentrated in the southeast area of the site.

Demersal Trawls:

Demersal trawls averaged 15 VMS records per year, with the most amount of activity occurring in 2020 (35 records). SAR analysis indicates that between 2016 and 2020 demersal trawl activity was relatively high in comparison to the SAR of dredges. Surface SAR values for C-squares intersecting North West of Lundy MPA range between 0.17 and 0.39, and subsurface values between 0.16 and 0.39. VMS activity shows that demersal trawling activity is only occurring along the 12 nm limit of the site, mostly by Belgian vessels using a beam trawl, which accounted for 77 out of the total of 88 VMS records from the period of 2016 to 2021. For under 12 m vessels using demersal trawls, there was an annual average of 12.46 fishing effort days per year between 2016 and 2021.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines[6], bottom towed gear[7] and traps[8] collate and analyse the best available evidence on the impacts of different fishing gears on MPA features. This section summarises the analyses and conclusions of those documents, and considers these alongside site level information, including the nature and condition of the habitats

and species present, the general management approaches, intensity of fishing activity taking place and exposure to natural disturbance.

In the context of MPA assessment, the pressures removal of target and non-target species refer to any damage, loss, or removal of species defined as a designated feature or integral to the integrity of a designated feature (for example key structural or influential species). This may occur through intentional or unintentional catch associated with the act of commercial fishing. For the purposes of benthic feature assessments, the physical effects of fishing gears on seabed communities are best addressed through the assessment of abrasion and penetration pressures. As there are no designated species features associated with North West of Lundy MPA, and the detail of key structural and influential species is yet to be fully defined, we conclude that impacts from target and non-target removal pressures can be scoped out from further assessment of this site. These pressures may require consideration as a result of any future evidence review, in conjunction with updated conservation advice from Joint Nature Conservation Committee (JNCC) and Natural England.

4.3.1 Anchored nets and lines

The relevant pressures on the subtidal coarse sediment features of North West of Lundy MPA from anchored nets and lines were identified in **Table 3** and are:

- abrasion or disturbance of the substrate on the surface of the seabed.

The subtidal coarse sediment feature of North West of Lundy MPA has been considered in relation to the abrasion or disturbance of the substrate on the surface of the seabed pressure from anchored nets and lines.

Section 4.2 describes fishing activity within North West of Lundy MPA, and notes that average annual landings from vessels under 12 m are less than 1 % of the amount that is landed from traps in the site and fishing intensity has decreased year on year between 2016 and 2020. The lack of VMS records for anchored net and line activity means it is not possible to know where the activity is happening in the site.

Impacts on sediment features relating to abrasion or disturbance of the substrate on the surface of the seabed occur primarily from the footrope and anchors during the hauling of the gear, and during movement along the seabed due to tides, currents, or storms.

Abrasion impacts are considered to be greatest on subtidal mixed and coarse sediments compared to subtidal sand as the coarser habitats often contain populations of sessile epifauna. However, as per section 9.3 of the anchored nets and lines Impacts Evidence document[6], abrasion impacts from this gear type are unlikely to negatively impact the extent or distribution of any sediment feature or structure and function of the ecosystem in a significant manner, as subtidal sediment habitats are considered resilient to all but intense fishing activity using anchored nets and lines on species rich sediment habitats or those with long-lived bivalves. As a result, there is currently little

interaction occurring between anchored net and line activity and the designated feature, so risk of abrasion and disturbance is limited.

Table A2. 1 to **Table A2. 3** in **Annex 2** identifies the four biotopes which could be found within the subtidal coarse sediment in North West of Lundy MPA, three have low sensitivity to abrasion and one is not sensitive.

Overall, given the likelihood that these biotopes already have some resilience to current levels of anchored nets and lines in the site, there is a low risk of impacts to subtidal coarse sediment at the levels described of activity relating to abrasion or disturbance of the substrate on the surface of the seabed. The site is also subject to moderate hydrodynamic energy of the Western Channel and Celtic Sea, so it is likely that these biological communities are acclimatised to some level of natural disturbance. It is unlikely that the ongoing use of anchored nets and lines will pose a significant risk of hindering the achievement of the conservation objectives of North West of Lundy MPA.

Therefore, MMO concludes that the ongoing use of anchored nets and lines does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.

4.3.2 Bottom towed gear

The relevant pressures on the subtidal coarse sediment feature of North West Lundy MPA from bottom towed gear were identified in **Table 3** and are:

- abrasion or disturbance of the substrate on the surface of the seabed$^{\Delta}$;
- changes in suspended solids (water clarity)*;
- penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion$^{\Delta}$;
- smothering and siltation rate changes*.

Pressures marked with matching superscript symbols (Δ and *) have been consolidated due to the similar nature of their impacts on the sediment features.

As per section 8.4 of the bottom towed gear Impacts Evidence document[7],the abrasion and penetration pressures caused by bottom towed gears have both biological and physical impacts to subtidal coarse sediment, varying based on levels of activity and fishing intensity. Physical impacts range from the creation of furrows and berms in the sediment, to the flattening of bottom features such as ripples and the homogenisation of sediments. Biological impacts include damage and mortality to flora and fauna on the seabed via surface and subsurface abrasion and penetration, as well as long term shifts in biological communities towards smaller, short-lived, opportunistic species that exhibit greater resilience to anthropogenic activity.

As described in **section 4.2**, the majority of bottom towed fishing activity in North West of Lundy MPA is dredging, which occurred in the southeast portion of the site. The swept area ratios across the whole site are low, however this is likely because the activity was concentrated in one part of the site, therefore giving an overall low ratio as 'swept area' is the cumulative area contacted by fishing gear within a grid cell (c-square) over one year, and 'swept area ratio' (also defined as fishing intensity) is the swept area divided by the surface area of one grid cell (c-square). It is possible that a part of the subtidal coarse sediment of North West of Lundy is experiencing regular exposure to abrasion and penetration pressures that would preclude recovery of the structure, distribution and function of the designated features. High levels of natural disturbance may mean that the effects of abrasion and penetration are limited on the physical structure of sedimentary habitats, however sufficient evidence is not available to rule out the possibility that relative resilience of biological communities on subtidal coarse sedimentary habitats is not a result of decades of trawling activity and shifting baselines for biological community structures towards more resilient endemic fauna. The impacts of dredging activity at the levels indicated in this assessment are not, therefore, compatible with the recover distribution, structure and function targets with regards to biological communities in this site.

Other bottom towed gears including demersal seines and demersal trawls also result in penetration, and although it is less than for dredging, the first pass of a trawl has the largest initial impact on biomass and production of sediments, so these gears still pose a risk to the recovery of the conservation objectives.

Coarse sediment is considered to be sensitive to fishing activity from bottom towed gear, as characterising species such as long-lived bivalves and sessile epifauna can be removed or damaged by the pass of the gear, reducing the diversity and abundance of these populations. **Table A2. 1** to **Table A2. 3** in **Annex 2** identify the four biotopes which could be found within the subtidal coarse sediment in North West of Lundy MPA. Three have low sensitivity to abrasion from bottom towed gears and one is not sensitive. Three biotopes also have low sensitivity to penetration pressures, while the biotope *'Neopentadactyla mixta* in circalittoral shell gravel or coarse sand' has medium sensitivity to penetration from bottom towed gears (**Table 5)**.

Table 5: Subtidal coarse sediment biotope which is found within the North West of Lundy MPA and its sensitivities to abrasion from bottom towed gear.

Biotope	Sensitivity to abrasion from bottom towed gear
Neopentadactyla mixta in circalittoral shell gravel or coarse sand (Tyler-Walters, Durkin and Watson, 2023)	Medium

With regards to the discussion above highlighting the abrasion and penetration impact on sensitive biotopes from bottom towed gear, and evidence available to suggest that fishing activity could hinder the ability to achieve the site's general management approach of 'recover to favourable condition'.

MMO concludes that impacts of abrasion or disturbance and penetration from ongoing use of bottom towed gear on the subtidal coarse sediment feature of North West of Lundy MPA may result in a significant risk of hindering the achievement of the conservation objectives of the MPA.

4.3.3 Traps

The relevant pressures on the subtidal coarse sediment features of North West of Lundy MPA from traps were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed.

As per section 9.4 of the traps Impacts Evidence document[8], abrasion impacts from this gear type are unlikely to be a concern unless they occur where particularly sensitive species are present or when fishing occurs at damaging levels of intensity. Traps, and associated lines and anchors, may cause abrasion of subtidal coarse sediment during setting and retrieval. The MPA is exposed and therefore incidences of abrasion from static gear could potentially be higher due to movement on the seabed while gear is set as a result of storms, tides or currents. There is little primary evidence of the impact of the physical impacts of traps on subtidal sediments, however the evidence that is available indicates that traps are not likely to be a concern unless used at particularly high levels of intensity, or if particularly sensitive species are present.

Section 4.2 describes the fishing activity within North West of Lundy MPA and estimates that an annual average of approximately 57 t were landed from within the MPA using traps.

Of the four biotopes which are likely to be within the subtidal coarse sediment in North West of Lundy MPA, three have low sensitivity to abrasion and one is not sensitive. Furthermore, these sensitivity assessments are largely based on studies on the impacts of bottom towed gear, and abrasion effects due to traps are likely to be significantly lower.

Therefore, MMO concludes that the ongoing use of traps does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gears and traps on the subtidal coarse sediment feature of North West of Lundy MPA has concluded that

the ongoing use of bottom towed gears may result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Management measures will therefore be implemented for bottom towed fishing to ensure that there is no significant risk of hindering the conservation objectives of the MPA. **Section 6** contains further details of these measures.

5 Part C - In-combination assessment

This section assesses the impacts of fishing activities in-combination with relevant activities taking place. This includes the following:

- fishing interactions assessed in Part B but which were not considered, alone, to pose a significant risk of hindering the achievement of the conservation objectives; and
- other activities: such as marine development infrastructure plans and projects that occur in the MPA.

ArcGIS software has been used to check relevant activities that occur within, or adjacent to, the assessed site where there could be a pathway for impact. To determine relevant activities to be included in this part of the assessment, a distance of 5 km was selected as suitable to capture any potential way in which the activity could impact the benthic features of the site in combination with effects of the fishing activities assessed. A 5 km buffer was therefore applied to the site boundary to identify relevant activities. This assessment considers the in-combination impacts of marine licensable activities that are ongoing or upcoming, with the same medium to high-risk pressure impact pathways as permitted fishing activity. As the models were run using ArcGIS in August 2023, any licences that ended before this date were screened out of the assessment.

The North Sea Transition Authority (NSTA) is responsible for regulating the oil, gas and carbon storage industries, and as such these activities fall outside of MMO's marine licensing remit. Oil, gas and carbon storage industry activities are not currently considered in this draft assessment, as information on the potential pressures exerted by associated activities is currently under review, and the likelihood of these activities resulting in an in-combination significant risk of hindering the achievement of the site's conservation objectives with fishing is expected to be very low. Following formal consultation, relevant oil, gas and carbon storage industry activities that could impact the site in-combination with the effects of assessed fishing activities will be included before finalising this assessment, alongside marine licence applications submitted after August 2023.

There may be active and historic submarine cables within this MPA, these cables are already in-situ and are unlikely to have any residual abrasion/removal pressure in-combination with the assessed fishing activity. Any abrasion/removal pressure from submarine cable operation and maintenance activity will be temporary with limited seabed impacts and is therefore unlikely to have significant in-combination effects with assessed fishing.

Bottom towed gears were identified in Part B as requiring management to avoid posing a significant risk of hindering the achievement of the site conservation objectives. Anchored nets and lines and traps are the only remaining fishing

activities occurring within North-West of Lundy MPA that interact with the seabed. In-combination effects of these fishing activities as well as these activities in-combination with other relevant activities will be assessed in this section.

In accordance with the methodology detailed above, ArcGIS identified no other relevant activities occurring within or adjacent to the North-West of Lundy MPA, within the 5 km buffer applied. Therefore, only fishing in-combination with other fishing activities are considered hereafter.

Table 3 from **section 3.3**, was used to identify medium to high-risk pressures exerted by fishing which require in-combination assessment (**Table 6**).

Table 6 summarises the pressures exerted by fishing and identifies those pressures exerted by all gears (Y: pressure exerted). Activity-pressure interactions are highlighted dark blue to indicate an in-combination effect. Only fishing activity with no proposed or current fisheries management in place are considered.

Table 6: Pressures exerted by fishing.

	Fishing activities	
Potential pressures	**Anchored nets and lines**	**Traps**
Abrasion or disturbance of the substrate on the surface of the seabed	Y	Y
Removal of non-target species	Y	Y

5.1 In-combination pressure sections

The fishing pressures exerted by anchored nets and lines and traps will be considered in this section.

5.2 Fishing vs Fishing in-combination pressures

5.2.1 Abrasion and disturbance of the substrate on the surface of the seabed and removal of target and non-target species.

As noted in Part B (**Section 4.3.1** nets and lines and **Section 4.3.3** traps), impacts from the removal of target and non-target species pressure is not being considered in detail in this assessment. In-combination impacts from the removal of target and non-target species pressures are more fully assessed under the pressure abrasion, as the detail of key structural and influential species is yet to be fully defined. Therefore, the removal pressures are not considered further in this in-combination assessment. The pressures may require further consideration as future evidence becomes available, in conjunction with updated conservation advice from JNCC and Natural England.

The annual average VMS records for over 12 m vessels within the MPA totalled 76 (traps). There were no VMS recordings or landings for vessels over 12 m using anchored nets and lines within the MPA. For under 12 m vessels, between 2016 and 2021, the annual average fishing effort estimated to have been derived from the MPA via traps and anchored nets and lines was 62.01 days (56.69 days for traps, 5.32 days for anchored nets and lines, Annex 1, calculated from **Table A1. 7**). For the same period (2016-2021), the total fishing effort (under 12s) estimated to have been derived from the MPA were 372.04 days (340.15 days for traps, 31.90 days for anchored nets and lines (Annex 1, calculated from **Table A1. 7**)). The fishing effort data is further supported by the estimated live weight landings for under 12 m vessels that equal an annual average of 57.42 tonnes, 57 tonnes for traps and 0.42 tonnes for anchored nets and lines, between 2016 and 2020 (**Section 4.2**).

The combined impacts from anchored nets and lines and traps could potentially increase the risk of negative effects from the pressure abrasion and disturbance of the substrate on the surface of the seabed. VMS data shows that trap activity occurs over much of the site, but more sparsely within the northern portion. There are no VMS records or landings for anchored nets and lines, indicating that there is no activity within the MPA for the over 12 m fleet. Consequently, there is no spatial overlap between traps and over 12 m vessels using anchored nets and lines. Fishing effort for anchored nets and lines by under 12 m vessels is low (5.32 days) but due to this data being collected at ICES rectangle level it cannot be determined where in the site this takes place. Any overlap of the gear types would occur over subtidal coarse sediment and this feature is considered resilient to all but intense fishing pressures. In addition, the four biotopes found within this sediment have either low or no sensitivity to abrasion. As such, considering the low sensitivity of the designated feature and biotopes present, the low annual average landings by anchored nets and lines (0.42 tonnes) as well as the lack of fishing by the over 12 m fleet, any in-combination impact is considered insignificant.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps will not result a significant risk of hindering the achievement of the conservation objectives for the North-West of Lundy MPA at the levels described.

5.3 Part C conclusion

MMO concludes that fishing interactions in-combination will not result in a significant risk of hindering the achievement of the conservation objectives for North-West of Lundy MPA.

Further management measures will not therefore be implemented for fishing activities currently occurring within the MPA.

6 Conclusion and proposed management

Part A of this assessment concluded that bottom towed gear, anchored nets and lines and traps are capable of affecting (other than insignificantly) the designated features of North West of Lundy MPA.

Part B of this assessment concluded that ongoing use of bottom towed gear on the designated feature subtidal coarse sediment of North West of Lundy MPA may hinder the achievement of the conservation objectives of the MPA as a result of the impacts of abrasion or disturbance, penetration and smothering, siltation rate and suspended solid changes.

Part C of this assessment concluded that the ongoing use of anchored nets and lines and traps, alone or in combination, does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.

To ensure that fishing activities do not result in a significant risk of hindering the conservation objectives of the MPA, MMO will implement a byelaw to prohibit the use of bottom towed gear throughout North West of Lundy MPA.

Figure 2 shows the proposed management area in line with the conclusions set out above.

The boundaries of the proposed management area include an appropriate buffer zone to prevent direct damaging physical interactions between fishing activities and the designated features to be protected. The rationale for determining buffer size can be found in in Annex 2 of the Stage 3 MPA Site Assessment Methodology document[5].

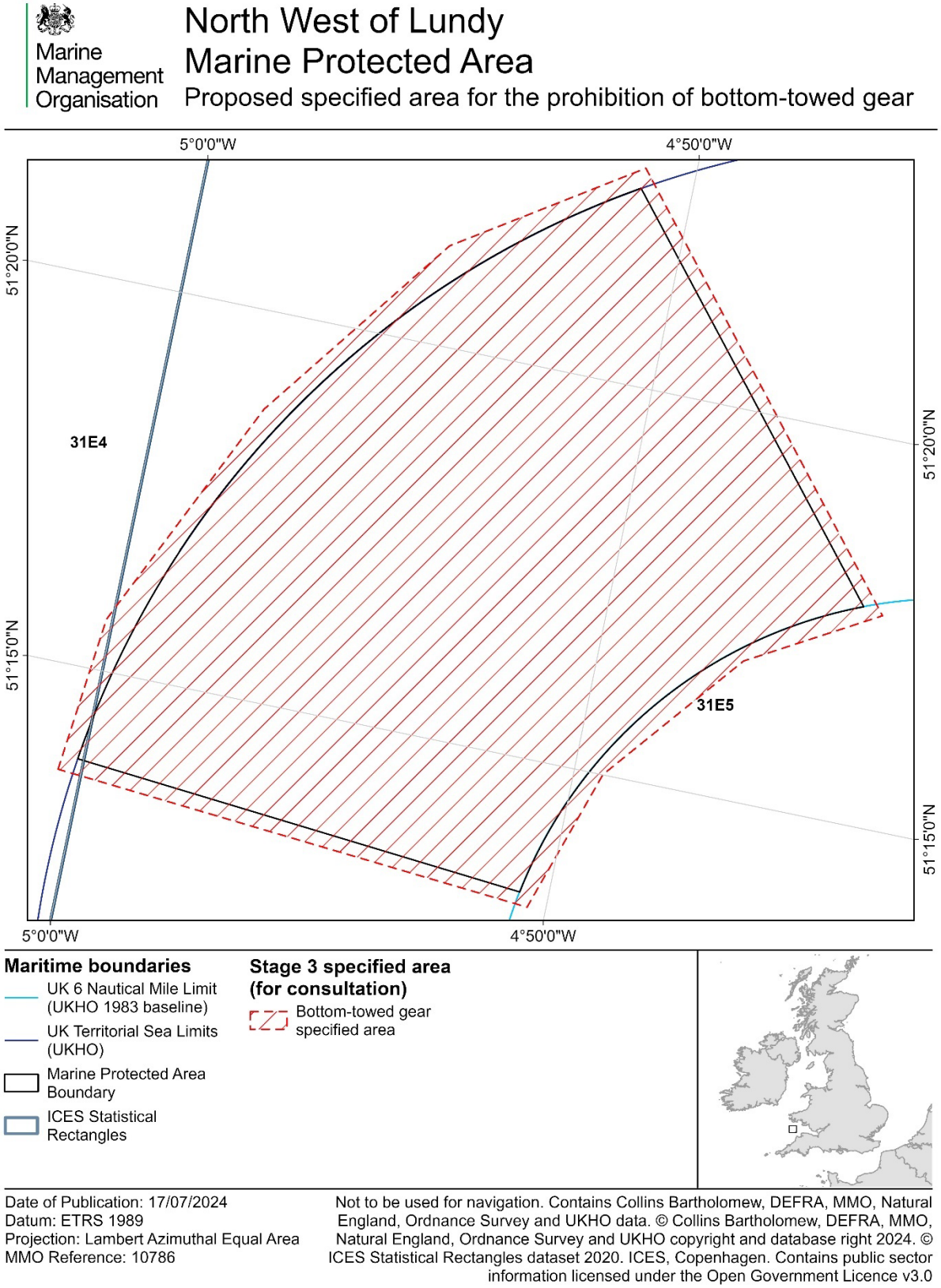

Figure 2: Map of proposed management.

7 Review of this assessment

MMO will review this assessment every five years, or earlier if significant new information is received. Such information could include:

- updated conservation advice;
- updated advice on the condition of the site's feature(s); and
- significant increase in activity levels.

To coordinate the collection and analysis of information regarding activity levels, and to ensure that any required management is implemented in a timely manner, a monitoring and control plan will be implemented for this site. This plan will be developed in line with MMO's Monitoring and Control Plan framework.

References

Tillin, H.M. and Watson, A. (2023a) ‘Glycera lapidum in impoverished infralittoral mobile gravel and sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1137.

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Tyler-Walters, H. and Tillin, H.M. (2023) ‘Spirobranchus triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/177.

Annexes

Annex 1: Fishing activity data

Table A1. 1: VMS record count per nation group (UK and EU Member State) and proportional activity (%), per gear, per gear group, per year (2016 to 2021), totals and annual average (2016 to 2021). All numbers are rounded to the nearest whole number.

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Demersal trawl	**OTB**	EU	1	100	0	0	0	0	0	0	0	0	0	0	1	100	0
	OTB Total		**1**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
	TBB	EU	9	100	6	100	22	100	6	100	25	71	9	100	77	89	13
	TBB	UK	0	0	0	0	0	0	0	0	10	29	0	0	10	11	2
	TBB Total		**9**	**90**	**6**	**100**	**22**	**100**	**6**	**100**	**35**	**100**	**9**	**100**	**87**	**99**	**15**
Demersal trawl Total			**10**	**3**	**6**	**1**	**22**	**16**	**6**	**15**	**35**	**100**	**9**	**100**	**88**	**9**	**15**
Dredge	**DRB**	UK	279	100	130	100	0	0	0	0	0	0	0	0	409	100	68
	DRB Total		**279**	**100**	**130**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**409**	**100**	**68**
Dredge Total			**279**	**91**	**130**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**409**	**43**	**68**
Traps	**FPO**	UK	16	100	289	100	113	100	35	100	0	0	0	0	453	100	76
	FPO Total		**16**	**100**	**289**	**100**	**113**	**100**	**35**	**100**	**0**	**0**	**0**	**0**	**453**	**100**	**76**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Traps Total			16	5	289	68	113	84	35	85	0	0	0	0	453	48	76
Grand Total			305	0	425	1	135	0	41	0	35	0	9	0	950	0	158

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of North West of Lundy MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Annual average (2016 to 2020)
Demersal trawl	TBB	0	0	0	0	0.84	0.84	0.17
Demersal trawl total		**0**	**0**	**0**	**0**	**0.84**	**0.84**	**0.17**
Dredge	DRB	9.20	5.77	0	0	0	14.96	2.99
Dredge total		**9.20**	**5.77**	**0**	**0**	**0**	**14.96**	**2.99**
Traps	FPO	7.35	59.62	46.40	3.48	0	116.85	23.37
Traps total		**7.35**	**59.62**	**46.40**	**3.48**	**0**	**116.85**	**23.37**
Grand total		**16.54**	**65.39**	**46.40**	**3.48**	**0.84**	**132.66**	**26.53**

Table A1. 3: EU27 live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of North West of Lundy MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Demersal Seine	SDN	2.34	0	0	0	0	2.34	0.47
	SSC	0.99	1.62	6.99	1.07	2.28	12.96	2.59
Demersal Seine Total		**3.33**	**1.62**	**6.99**	**1.07**	**2.28**	**15.29**	**3.06**
Grand Total	**OTB**	**3.33**	**1.62**	**6.99**	**1.07**	**2.28**	**15.29**	**3.06**

Table A1. 4: Percentage of each ICES rectangle intersected by the MMO section of North West of Lundy MPA.

ICES rectangle	Percentage overlap (%)
31E4	<0.01
31E5	4.96

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of North West of Lundy MPA (2016 to 2020). All numbers are rounded to the nearest two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored Net/Line	GEN	0.09	0.09	0	0	0	0.18	0.04
	GN	0.56	0.40	0.37	0.08	0.12	1.53	0.31
	GNS	0	0.13	0.06	0.11	0.02	0.33	0.07
	LL	0.01	0.02	0.02	0.01	0	0.05	0.01
Anchored Net/Line Total		**0.66**	**0.63**	**0.45**	**0.21**	**0.14**	**2.09**	**0.42**
Demersal trawl	OT	9.46	4.40	0	0	0	13.86	2.77
	OTB	0	3.25	4.16	10.82	14.75	32.98	6.60
	OTT	0	0.76	0	0	0	0.76	0.15
	TBB	0	0.01	7.57	5.00	0	12.58	2.52
Demersal trawl Total		**9.46**	**8.41**	**11.74**	**15.82**	**14.75**	**60.18**	**12.04**
Dredge	DRB	0.07	0.08	0.05	0.06	0.12	0.38	0.08
Dredge Total		**0.07**	**0.08**	**0.05**	**0.06**	**0.12**	**0.38**	**0.08**
Midwater Gill Drift	GND	<0.01	0.01	<0.01	<0.01	0	0.02	<0.01
Midwater Gill Drift Total		**<0.01**	**0.01**	**<0.01**	**<0.01**	**0**	**0.02**	**<0.01**
Midwater Hook/Lines	LHP	0.05	0.10	0.06	0.03	0.02	0.26	0.05
	LX	0.06	0.10	0.10	0.08	0.08	0.41	0.08
Midwater Hook/Lines Total		**0.11**	**0.20**	**0.16**	**0.11**	**0.09**	**0.67**	**0.13**
Midwater Trawl	OTM	0	0.02	0	0	0	0.02	<0.01
Midwater Trawl Total		**0**	**0.02**	**0**	**0**	**0**	**0.02**	**<0.01**
Traps	FPO	63.12	50.60	49.99	32.10	24.83	220.64	44.13
Traps Total		**63.12**	**50.60**	**49.99**	**32.10**	**24.83**	**220.64**	**44.13**
Grand Total		**73.43**	**59.95**	**62.38**	**48.30**	**39.94**	**284**	**56.80**

Table A1. 6: Mean annual surface and subsurface SAR values for C-squares intersecting the MMO section of North West of Lundy MPA (2016 to 2020).

Gear group	SAR category	2016	2017	2018	2019	2020
Demersal Seines	Surface	0	0	0	0	0
	Subsurface	0	0	0	0	0
Dredges	Surface	0.02	0.02	<0.01	<0.01	0.01
	Subsurface	0.02	0.02	<0.01	<0.01	0.01
Demersal Trawls	Surface	0.17	0.23	0.39	0.21	0.28
	Subsurface	0.16	0.23	0.39	0.21	0.26
Bottom Towed Gear	Surface	0.19	0.25	0.39	0.21	0.28
	Subsurface	0.18	0.25	0.39	0.21	0.26

Table A1. 7: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of North West of Lundy MPA that intersects the marine portion of ICES rectangles 31E4 and 31E5 (2016 to 2021). ICES rectangle level data has been apportioned to the MPA based on the percentage area of the ICES rectangle that intersects the MPA (see Table A1. 4).

Gear group	Fishing effort (days at sea)							
	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Annual average (2016 to 2021)
Demersal trawl	13.09	9.80	10.98	16.97	13.66	10.26	74.76	12.46
Dredge	0.15	0.05	0.05	0.05	0.50	0.59	1.39	0.23
Bottom towed gear total	**13.24**	**9.85**	**11.03**	**17.02**	**14.16**	**10.85**	**76.15**	**12.69**
Midwater gill drift	0.10	0.25	0.10	0.30	0	0	0.74	0.12
Midwater trawl	0	0.05	0	0	0	0	0.05	0.01
Midwater hooks and lines	5.33	4.52	5.55	3.20	2.38	4.34	25.32	4.22
Midwater gear total	**5.43**	**4.82**	**5.65**	**3.50**	**2.38**	**4.34**	**26.12**	**4.35**
Traps	74.54	60.01	68.18	55.36	40.81	41.25	340.15	56.69
Anchored nets and lines	9.30	4.53	4.76	2.75	4.96	5.60	31.90	5.32
Static gear total	**83.84**	**64.54**	**72.94**	**58.11**	**45.76**	**46.86**	**372.04**	**62.01**
MPA total	**102.51**	**79.21**	**89.62**	**78.63**	**62.30**	**62.05**	**474.31**	**79.05**

Annex 2: Biotope data

Table A2. 1: Subtidal coarse sediment biotopes which are found within the North West of Lundy MPA and the sensitivities to abrasion from anchored nets and lines.

Biotope	Sensitivity to abrasion from anchored nets and lines
Glycera lapidum in impoverished infralittoral mobile gravel and sand (Tillin and Watson, 2023a)	Low
Pomatoceros triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (Tyler-Walters, H., and Tillin, 2023)	Low
Mediomastus fragilis, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel (Tillin, H.M. and Watson, 2023)	Low
Neopentadactyla mixta in circalittoral shell gravel or coarse sand (Tyler-Walters, Durkin and Watson, 2023)	Not sensitive

Table A2. 2: Subtidal coarse sediment biotopes which are found within the North West of Lundy MPA and the sensitivities to abrasion from bottom towed gear.

Biotope	Sensitivity to abrasion from bottom towed gear
Glycera lapidum in impoverished infralittoral mobile gravel and sand (Tillin, H.M. and Watson, A., 2023)	Low
Pomatoceros triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (Tyler-Walters, H., and Tillin, 2023)	Low
Mediomastus fragilis, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel (Tillin, H.M. and Watson, 2023)	Low
Neopentadactyla mixta in circalittoral shell gravel or coarse sand (Tyler-Walters, Durkin and Watson, 2023)	Medium

Table A2. 3: Subtidal coarse sediment biotopes which are found within the North West of Lundy MPA and the sensitivities to abrasion from traps.

Biotope	Sensitivity to abrasion from Traps
Glycera lapidum in impoverished infralittoral mobile gravel and sand (Tillin, H.M. and Watson, A., 2023)	Low
Pomatoceros triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (Tyler-Walters, H., and Tillin, 2023)	Low
Mediomastus fragilis, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel (Tillin, H.M. and Watson, 2023)	Low
Neopentadactyla mixta in circalittoral shell gravel or coarse sand (Tyler-Walters, Durkin and Watson, 2023)	Not sensitive