

# Business Impact Assessment of the proposed Marine Protected Area network on the mobile gear fishing fleet

July 2024



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## Introduction

The draft Jersey Marine Spatial Plan (JMSP) was released for public consultation in October 2023. An instruction was given by the States Assembly for an expansion of Jersey's Marine Protected Area (MPA) network to be included in the JMSP. These MPAs are to be highly protected in that no mobile fishing gear (dredging or trawling) will be permitted within their boundaries. An evidence-based assessment identified 27% of Jersey's territorial waters as meeting the key conservation criteria required for inclusion within the MPA network (Chambers et al. 2023, and JMSP section 8.6.8). However, during the consultation process the commercial fishing sector raised concerns around the importance of parts of the proposed MPA network to vessels operating mobile fishing gear such as trawling and dredging. Concerns were also raised about the difficulty of navigating the MPA as many of the boundary lines were not straight or aligned to reference points at sea: please see the JMSP consultation summary report for more information, Marine Resources, 2024.

Amendments to the boundaries were made to take the above concerns into account and the new boundary consists of multiple zones (Figure 1):

- MPA (referred to as the 'initial MPA' in this report)
- Phased protection areas,
- Further survey work areas and
- Seasonal access areas (not included in this assessment).

The initial MPA is the area where mobile gear would be excluded at the earliest possible opportunity. The phased protection areas are areas with strong evidence regarding their habitat sensitivity, but they would be protected at a later date due to their high economic importance to mobile fishing. This phased approach is suggested to follow a timeline of five years or to close the areas to mobile gear by 2030, to allow time for those with an economic reliance on these areas to transition to new fishing areas. The survey areas are those that have been identified as having high economic importance and more work is required to refine the boundary, with further towed video surveys and benthic grab samples to determine hotspots and the overall distribution of sensitive habitat.

The seasonal access areas were highlighted as being important winter trawl fishery areas inshore around Jersey. Their original inclusion in the plan was for a) their shallow depth (identifying them as productive seabed) and b) for their proximity to the coast and therefore their increased conflict with other marine users (as the majority of coastal activities occur within 1 nautical mile of the coast). As coastal marine use is minimal in the winter (compared to summer), it was agreed that winter access would not conflict with the social use of these areas. Further, the benthic habitats are predominantly mobile sands (sand banks) which are thought to be tolerant to infrequent pressure from trawling that typically puts less pressure on the seabed than dredging (dredges consist of chain ring bags with metal teeth at the front, whereas trawls have rollers and a net/rope bag which drags over the surface of the seabed). Following these amendments, the MPA area is now proposed to cover 23.3% of Jersey waters.

Jersey licences both local and French vessels to fish in Jersey waters, employing a mix of mobile (dredging and trawling), static (pots, nets, and lines), diving and low water fishing. The make-up, operation and management differs between the two fleets based on economic, cultural and traditional factors. The Jersey fishing fleet is primarily a small inshore vessel fleet (all but two vessels are < 12 m in length and one had not started fishing at the time of writing) made up of static potting vessels targeting crab and lobster, a mix of dredge and dive vessels targeting scallop, and a small number of vessels employing nets, lines and low water fishing. Currently, there is little trawling activity carried out by the Jersey fleet but historically this was a more regular practice. The French fleet has a similar

proportion of vessels employing mobile gear compared to pots and there are a greater number of French vessels that are > 12 m in size (n~30) compared to the Jersey fleet. There are a number of French vessels employing trawls. For this assessment, it is only the mobile gear fishing activity in Jersey waters that has been assessed.

This assessment focusses on the proposed MPA network, covering both the initial and phased MPA areas. The initial MPA (including the No Take Zone equates to 22.3% of Jersey's territorial sea) will be designated at the earliest opportunity, whereas phased MPA areas (1%) will be designated at a later date. There are additional areas (3.7%) that require further survey work prior to deciding on their inclusion in the MPA network (Figure 1). The areas identified for further survey work have been included in the spatial loss section of this report, but economic analysis on these areas has not been carried out at this stage as the final areas for inclusion in the MPA network are undecided.

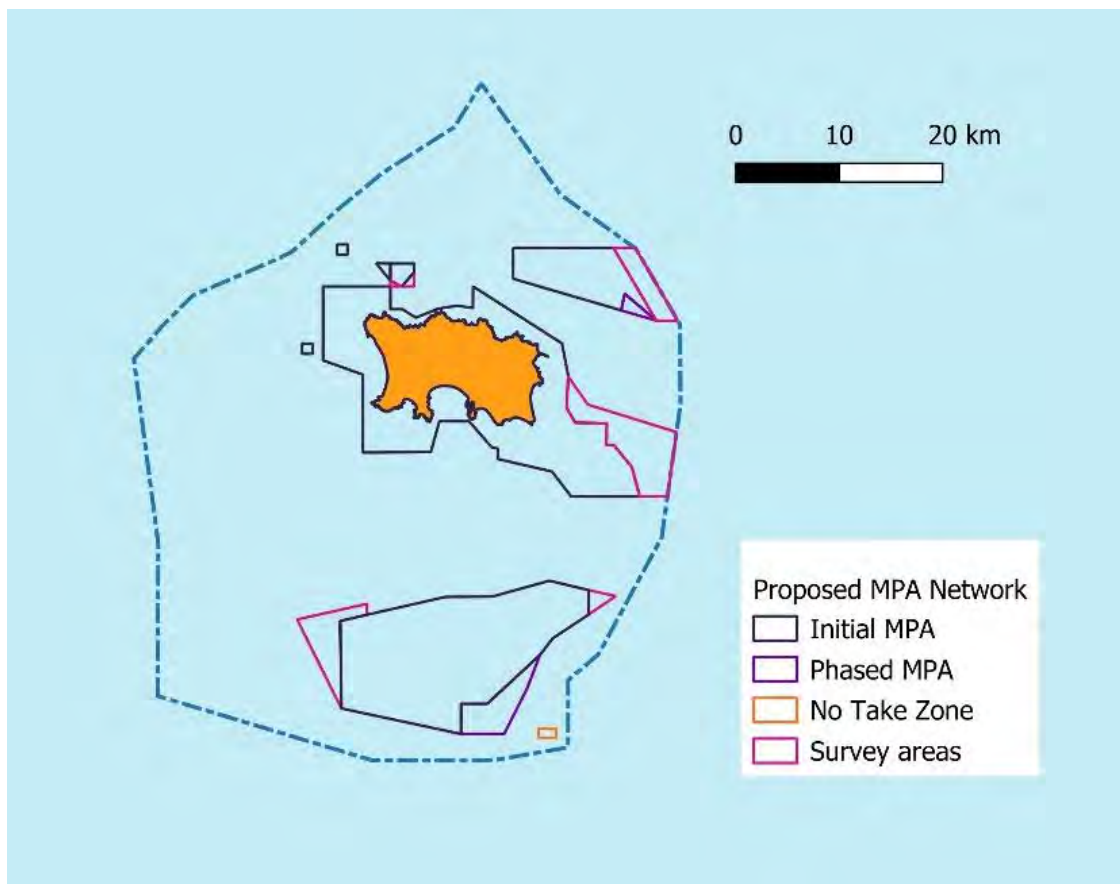


Figure 1. The initial, phased, No Take Zone, and survey areas of the proposed Marine Protected Area network. Note that the No Take Zone has been combined with the initial MPA area for this assessment.

The initial and phased MPA network will result in the displacement of some fishing effort from mobile gear. This report provides a high-level business impact assessment on the Jersey and French mobile gear vessels that are currently fishing within the proposed MPA network. This assessment has been carried out separately for Jersey and French vessels due to the different spatial and catch information available for each fleet.

### Objective

The purpose of this assessment is to quantify the effect of displacement on both Jersey and French mobile gear fishing fleets:

- 1) Loss of access. The area of fishable ground that will be lost to mobile fishing vessels (Jersey and French fleet);
- 2) Estimate weight (kg) of king scallop (*Pecten maximus*) caught inside the proposed MPA areas (Jersey fleet only);
- 3) Determine profit and loss scenarios where data are available (Jersey fleet only);
- 4) Determine days at sea spent within the proposed MPA areas (French fleet only)

## Methods

### Spatial area loss

The area of fishable substrate for scallop and clam dredging was calculated inside and outside the proposed MPA boundaries (initial and phased) for each reporting zone. Areas with seasonal mobile gear restrictions have not been included in this assessment as they still allow access to mobile gear at important times of year. Fishable substrate was calculated using a habitat map that was created as part of the JMSP process (Chambers et al. 2023). The habitats were filtered for areas that were: (a) suitable for scallop and clams; and (b) accessible by vessels operating mobile gear. The European Nature Information System (EUNIS) level categories of habitats included in the assessment are detailed in Table 1. The combined area of these six habitat categories inside and outside the proposed MPA areas were used to calculate the area that would be closed to mobile gear vessels. This has been analysed for the initial MPA area, the phased MPA area, and the survey areas.

Table 1. EUNIS habitat classification codes, the corresponding JNCC code and a description of the habitat.

EUNIS category	JNCC equivalent	Description
A5.14	SS.SCS.CCS	Circalittoral coarse sediment
A5.23	SS.SSa.IFiSa	Infralittoral fine sand
A5.24	SS.SSa.IMuSa	Infralittoral muddy sand
A5.43	SS.SMx.IMx	Infralittoral mixed sediments
A5.45	SS.SMx.CMx	Circalittoral mixed sediments
A5.51	SS.SMp.Mrl	Maerl beds

### Jersey mobile fleet assessment

There is limited information on spatial fishing for the current Jersey dredging fleet as only one vessel is over 12 m and therefore warrants having a VMS (Vessel Monitoring System) unit. There are currently eleven authorised Jersey based mobile gear vessels, nine of which were in operation as of 2024, but only six were active during the assessment period for the Jersey fleet (2019-2022). Jersey had two active trawlers, one of which was sold and now only dredges, the other of which was sadly lost at sea. A separate assessment on trawling can be carried out in the future of the Jersey fleet if required. It is important to highlight that changes in stock density and abundance may occur within and across years at a regional and localised scale. The changes may be due to natural (environmental and biological) fluctuation and anthropogenic means (fishing, pollution, habitat alteration, etc.). This produces good fishing and bad fishing years on a localised and regional basis. On top of this markets (and their prices) and running expense (fuel, crew, etc.) may be subject to sudden or long-term change. Therefore, caution needs to be exercised when using historical fishing data to model future stock density and economic return.

For each day fished, landed catch declarations are legally required to be submitted including data relating to the catch (species and landed weight), gear used, fishing effort and a geographic reporting zone (Figure 1). As the proposed MPA areas do not align to reporting zones and therefore do not



provide a resolution sufficient to understand the fishing activity inside the MPAs. However, a percentage loss has been calculated for each zone based on the fishable substrate and MPA area within each reporting zone. This can then be applied to submitted landings data to quantify the weight of scallop that was caught in the proposed MPA areas. This catch (by weight) will represent what the fishing industry in Jersey will have to catch elsewhere (displaced activity) to maintain the same level of catch, if the current proposed MPAs (initial and phased) are put into place. Note that this only provides an estimated weight (kg) of catch as Landings Per Unit Effort (LPUE) will vary across the reporting zones and also across the MPA areas.

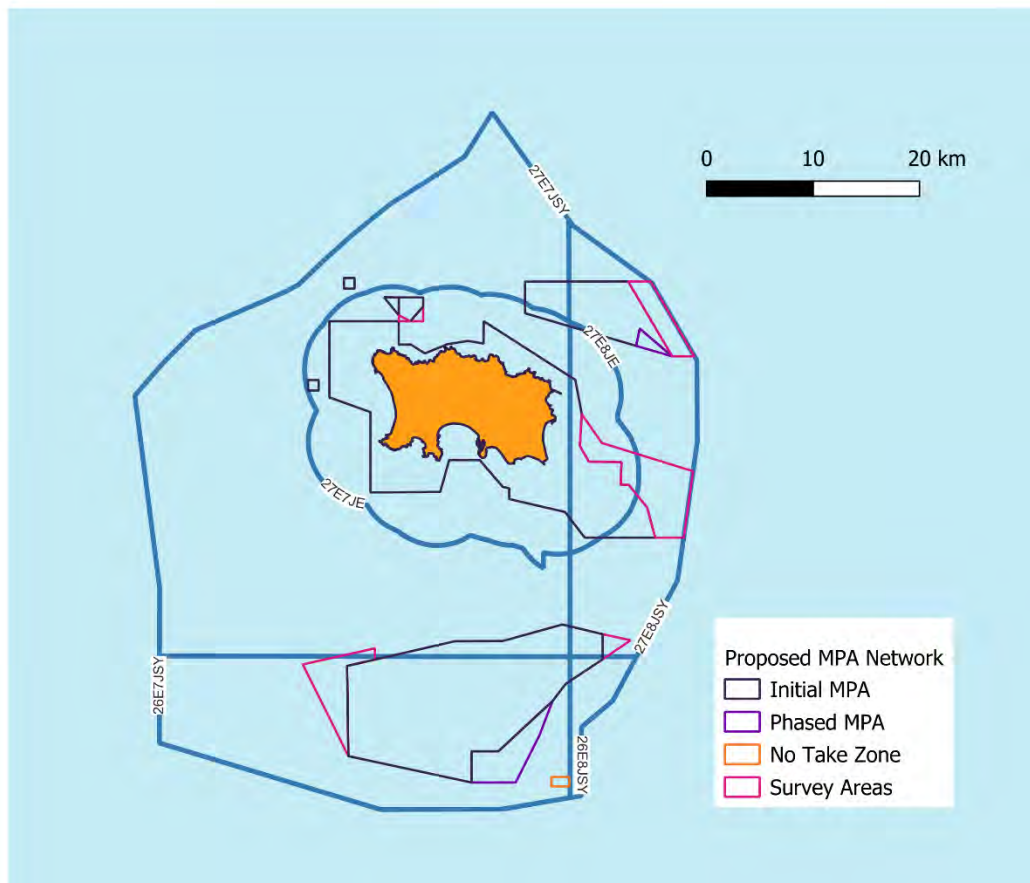


Figure 2. Reporting zones for fishing activities with the proposed MPA network overlaid. The Initial and No Take Zone are combined for this assessment as they will both have the same impact on mobile gear fisheries. The reporting zones are illustrated by the blue lines, with the reporting zone name labelled along its perimeter.

### Profit and loss analysis on the Jersey fleet

A profit and loss analysis was carried out by the consultancy Tautenay who have worked extensively in Jersey on marine economic issues over the last five years. This analysis was done on a vessel-by-vessel basis for the six scallop dredgers that were active during the assessment period (2019 and 2022). This analysis was carried out for the initial and phased MPA areas a whole. All profit and loss results are presented as an average for the above 11 m vessel size and below 11 m vessel size. This is because the above 11 m vessels have greater operating costs and therefore different profit and loss margins.

Vessel profitability was calculated with reference to the UK Economic Fleet Estimates produced annually by Seafish. These estimates are produced for each segment of the UK fishing industry, with comparable datasets available for UK scallop dredge vessels under 15m; and for UK pot and trap

vessels between 10–12 m. The UK estimates include all fishing costs (e.g. commission, bait and harbour dues, gear repair and insurance) as well as vessel ownership costs (finance, harbour fees, insurance, etc) and they allow for an estimate of the operating profit for individual vessels based on engine size and days at sea.

One adjustment was made to the UK data set so that it was applicable to Jersey. Fuel consumption for the current scallop dredging operation are estimated to be between 38-51% lower for the Jersey fleet than the comparable UK fleet; i.e. using 200-250 litres/day in Jersey compared to an average of 524 litres/day within the UK. These lower costs are due primarily to the close proximity of Jersey's scallop dredging grounds to the port of St Helier where the mobile gear fishing fleet are based. Crew costs for the current Jersey operation are estimated to be the same as in the comparable UK fleet e.g. two crew for a four-a-side dredge; three crew for a six-a-side dredge; and other operating and vessel ownership costs are assumed to be similar across the jurisdictions.

Jersey data for vessel length, power, fishing effort and fish caught were provided in anonymised form for the period 2018-2022. There were six scallop dredging vessels within the dataset, of which the two largest vessels were solely or predominantly dredgers and the remainder employed multiple fishing metiers.

Vessel costs (i.e. the fixed costs of vessel ownership, regardless of fishing effort) were calculated for the two largest and most active dredgers as the average vessel costs for 2018-2022 for scallop dredgers less than 15 m in length. For the remaining vessels, all of which were in the region of 10m in length, the average vessel costs for 2018-2022 for potting vessels 10-12 m in length were used.

Fishing income was calculated by reference to the published prices achieved at first sale in the fish market at Granville, which were cross-referenced with UK prices at first landing and through discussion with the JFA.

The two largest vessels and one of the smaller vessels were single-metier across one or more years, allowing simple analyses. For the remainder, estimates were made of the number of days dredging by reference to the record of dredges towed, with the assumption that a vessel would either dredge or use another metier on any one day at sea, but would not dredge and use another metier in the same day. The none-dredge days were assigned to pots and traps.

To estimate the economic impact on individual vessels, three scenarios were considered:

- A reduction in overall days of scallop fishing effort of either 15% or 25%;
- A shift of either 15% or 25% days of scallop fishing from the current scallop fishing grounds to alternative (hypothetical) grounds at a greater distance from Jersey's shore and yielding a lower catch per unit effort, so increasing fuel costs and decreasing catch volumes;
- For vessels operating more than one metier in 2022, a shift of either 15% or 25% days of scallop fishing to pots and traps. In this case we assume that vessels would increase the days spent on pots and traps in proportion to the decrease in days scallop dredging, and that the profitability of pots and traps is in proportion to current activity in this metier. This of course assumes that there is the capacity for additional pots and traps in the immediate vicinity.

Two figures were used to estimate the impact of a projected shift to fishing in waters that (i) are further from the Jersey coastline and (ii) are assumed to be less productive:

- For the four smaller vessels, for the proportion of days that are estimated as lost to scallop fishing in current grounds, fuel costs were increased by 20% and catch volumes were decreased by 20%;
- For the two larger vessels, for the proportion of days that are estimated as lost to scallop fishing in current grounds, fuel costs were increased by 10% and catch volumes were decreased by 20%.

### French mobile fleet assessment

The dataset available for licenced French vessels fishing in Jersey waters differs to that of the Jersey fleet. Spatial information is much more detailed as all French vessels fishing for scallops and clams must by law have Vessel Monitoring Systems (VMS) that track their position while at sea. The assessment years in this analysis are 2019-2023.

In accordance with analyses undertaken with the EU as part of the TCA implementation, fishing activity was identified from VMS data as being periods of time when the vessels moved at (or equal to) six knots in an areas where fishing activity was permitted. The use of metier specific permits by the Normandy and Brittany authorities and, since February 2022, the Jersey authorities, permit vessels to be categorised as either 'mobile' (the vessel exclusively holds dredging and trawling permits), 'static' (potting, netting or lining permits) or 'mixed' (mobile and static gear permits). Only vessels in the 'mobile' and 'mixed' categories are considered here as this assessment details loss relating to trawling and dredging. It should, however, be noted that the proposed No Take Zone (NTZ) at Les Sauvages could affect static gear vessels.

Licenced French fishing have been required to submit landed catch data to the Jersey authorities since May 2021. However, compliance with this requirement has taken time to achieve which means that catch submissions for French vessels operating in Jersey waters during 2021 was patchy and, while better in 2022 and 2023, still incomplete. Additionally, not all submitted logbooks from French vessels had corresponding VMS data for the same day. Logbooks without corresponding VMS data accounted for approximately 10% of the dataset. Due to having limited catch (kg) weight information for all vessels, it was not possible to calculate a reliable estimate of catch (kg) of scallop and clam from the proposed MPA area for French vessels.

A high-level assessment of trawling activity was carried out to determine the percentage of time spent in the proposed MPA network across the French fleet.

## Results

### Spatial area loss

The spatial area was assessed for the multiple types of MPA designation that have been recommended (initial, phased and survey). The initial and phased percentage are the areas that are both high priority areas for protection, whereas the survey areas are those that need further information before a decision to designate is made. Therefore, it is the initial and phased total in Table 2. Initial, phased and survey MPA areas as a percentage of each reporting zone. that will be used for this economic assessment but the survey areas have been included for transparency.

The overall area of fishable scallop and clam substrate that will be protected within the initial MPA area is 20.7%, with a further 1.2% to be protected within the phased MPA area. The area of initial protection will be greatest in zone 26E7JSY which includes the Minquiers reef, the initial proposed MPA in this zone covers 37.8% of the area, with a further 3.1% of the area to be protected once the phased MPA area is brought in, resulting in 40.9% protection, and therefore 40.9% spatial loss of mobile gear fishing ground (Table 2). Zones 27E8JE and 27E7JE have similarly high levels of initial protection at



33.4% and 33.5% respectively. Neither of these zones have phased protection recommended, but there is a large survey area for zone 27E8JE (18.5%). Zone 27E8JSY has 8.8% of its area recommended for initial protection and a further 1.4% of phased protection which totals 10.2%. The last two zones have relatively low initial MPA protection areas, Zone 26E8JSY at 9.7% and Zone 27E7JSY at only 1%, neither have phased protection recommended.

Table 2. Initial, phased and survey MPA areas as a percentage of each reporting zone.

Reporting zone	Initial MPA %	Phased MPA %	Total initial and phased %	Survey Area %	Total with survey area %
26E7JSY	37.73	5.70	43.43	3.10	46.64
26E8JSY	9.69	0	9.69	0.06	9.75
27E7JE	33.53	0	33.53	0.35	33.89
27E7JSY	1.02	0	1.02	0.07	1.1
27E8JE	33.35	0	33.35	18.45	51.81
27E8JSY	8.79	1.36	10.15	16.32	26.47

### Jersey mobile fleet assessment

Each vessel was assessed separately using their logbooks to calculate annual catch weight (kg) for each reporting zone. This was then adjusted based on the total percentage of initial and phased protection to calculate a loss of fishing (i.e. if 100 kg of scallop was caught annually in one of the zones and 20 % of that zone is proposed to be included in the MPA, this would equate to a loss of 20 kg per annum). To ensure anonymity in this report, this has been calculated as an average for each zone based on the data from all six scallop dredging vessels.

The average catch from within the proposed MPA areas across the four years was calculated to be 39,815 kg per year (18% of total catch), with 38,736 attributed to the initial MPA area and 1,079 to the phased MPA area (Table 3). However, 2019 and 2020 were considered to be poor for fishing in general due to effects from Brexit and covid. If only considering the latest two years of data (2021 and 2022) the average catch is 54,621 kg (52,709 kg from the initial MPA and 1912 kg from the phased MPA), which is 19% of the total catch for 2021 and 2022.

Table 3. Total annual catch from scallop dredging vessels from each reporting zone and an estimated potential loss of catch (kg) of scallops as a result of closure to scallop dredging inside the proposed MPAs (initial and phased).

Year	Zone	Annual kg	Displaced % initial MPA	Displaced % phased MPA	Displaced kg initial MPA	Displaced kg phased MPA	Total displaced kg
2019	26E7JSY	2,350	37.73	5.70	887	134	1,021
	26E8JSY	13,680	9.69	0	1,326	0	1,326
	27E7JE	49,105	33.53	0	16,465	0	16,465
	27E7JSY	88,026	1.02	0	898	0	898
	27E8JE	15,192	33.35	0	5,067	0	5,067
	27E8JSY	750	8.79	1.36	66	10	76
<b>2019 total</b>		<b>169,103</b>			<b>24,707</b>	<b>144</b>	<b>24,852</b>
2020	26E7JSY	2,515	37.73	5.70	949	143	1,092
	26E8JSY	38,590	9.69	0	3,739	0	3,739
	27E7JE	47,955	33.53	0	16,079	0	16,079
	27E7JSY	6,930	1.02	0	71	0	71
	27E8JE	7,970	33.35	0	2,658	0	2,658
	27E8JSY	15,020	8.79	1.36	1,320	204	1,525

<b>2020 total</b>		<b>118,980</b>			24,817	348	<b>25,164</b>
2021	26E7JSY	5,100	37.73	5.70	1,924	291	2,215
	26E8JSY	87,008	9.69	0	8,431	0	8,431
	27E7JE	48,285	33.53	0	16,190	0	16,190
	27E7JSY	31,233	1.02	0	319	0	319
	27E8JE	36,205	33.35	0	12,074	0	12,074
	27E8JSY	49,229	8.79	1.36	4327	670	4,997
<b>2021 total</b>		<b>257,060</b>			43,265	960	<b>44,226</b>
2022	26E7JSY	49,685	37.73	5.70	18,746	2,832	21,578
	26E8JSY	119,170	9.69	0	11,548	0	11,548
	27E7JE	63,195	33.53	0	21,189	0	21,189
	27E7JSY	45,725	1.02	0	466	0	466
	27E8JE	29,975	33.35	0	9,997	0	9,997
	27E8JSY	2,350	8.79	1.36	207	32	239
<b>2022 total</b>		<b>310,100</b>			62,153	2,864	<b>65,017</b>
<b>Annual average</b>		<b>213,811</b>			38,736	1,079	<b>39,815</b>

#### Profit and loss analysis on the Jersey fleet

The total landings of scallops by Jersey vessels (dredged and hand dived) is shown in Table 4, alongside the landings estimated by Marine Resources to be fished from the MPA areas from 2019-2022, and the proportion by which this might be subsequently reduced, estimated by Marine Resources based on vessel logbook data (see previous section).

Table 4. Scallop landings in Jersey (total and dredged) and estimates of catch from proposed MPA.

Year	Total landings	Of which from scallop dredgers (% of total)	Estimated reduction by MPA designation (% of dredged)
2019	293,514 kg	169,103 kg (58%)	24,851 kg (15%)
2020	240,124 kg	118,980 kg (50%)	25,164 kg (21%)
2021	346,566 kg	257,060 kg (74%)	44,225 kg (17%)
2022	473,138 kg	310,100 kg (66%)	65,016 kg (21%)

If we assume a consistent relationship between catch landed and days fished, then the proportion of days of scallop fishing effort that would be lost by designation of the proposed MPA ranges from 15% in 2019 to 21% in 2021. For the purpose of our subsequent analyses we have used 15% and 25% as the lower and upper estimates of days fishing lost.

Average baseline data for the above and below 11 m vessels operating in the year 2022 is presented in Table 5. Note that for 2022 there was a significant increase in fuel prices which impacted across all operating costs other than crew. Whilst the inflationary pressure has subsequently reduced, it remains the case that the 2022 figures are the nearest approximation that can be made to current costs.

Table 5. Averaged baseline operating profit per vessel for > 11 m and < 11 m vessels.

<b>Vessel ID</b>	<b>&lt; 11 m</b>	<b>&gt; 11 m</b>
Total days at sea	100	73
- Of which scallop dredging	58	73
Scallops – value at first landing	£73,714	£237,983
Other fish – value at first landing	£23,479	£258
<b>Total income</b>	<b>£97,192</b>	<b>£238,112</b>
Costs - dredging	£47,563	£98,672
Costs - potting	£31,616	-
<b>Profit before vessel costs</b>	<b>£25,918</b>	<b>£139,441</b>
Vessel ownership costs	£41,260	£70,340
<b>Operating profit</b>	<b>-£15,083</b>	<b>£69,141</b>

Looking at the data for 2022, there are two factors that should be borne in mind when looking at the economic impacts of reduced scallop dredging activity:

- a) When vessel ownership costs are taken into account the four < 11 m vessels in this study were loss making in 2022. Only the > 11 m (and predominantly scallop dredging) vessels were profitable.
- b) Potting was only marginally profitable or was loss making for the < 11 m vessels that were potting in 2022, whereas scallop dredging (before vessel ownership costs) was profitable across all six vessels (regardless of size of vessel).

Table 6 shows the impacts of scenarios for reduced dredging activity on vessel operating profit. The impact of reduced scallop fishing activity was to reduce profit for both size class of vessel. The impact was generally greatest when this was a straightforward drop in activity, e.g. for > 11 m vessels a straightforward 15% reduction in activity resulted in a 30% reduction in operating profit, whilst a transfer of this “lost activity” to more distant fishing grounds (with a commensurate reduction in catch) still resulted in a 11% drop in operating profit. A 25% reduction in effort is estimated to result in 50 % decrease in operating profit for > 12 m vessels.

Transferring effort from scallop dredging to potting slightly exacerbated the losses for the < 11 m vessels employing multi-metiers, with an extra loss of £1,888 on average. This reflects the marginal profitability of potting for these vessels.

*Table 6. Operating profit under different scenarios for reduced dredging activity.*

<b>Vessel ID</b>	<b>&lt; 11 m</b>	<b>&gt; 11 m</b>
Baseline profit (2022)	-15,083	69,141

15% reduction in activity	-18,983	48,244
15% transfer to alternative grounds	-17,600	61,684
15% transfer to potting	-20,871	-
25% reduction in activity	-21,620	34,313
25% transfer to alternative grounds	-19,278	56,713
25% transfer to potting	-23,449	-

## French mobile fleet assessment

### Days fished

Of the 131 French vessels currently licenced to fish in Jersey waters, the proposed MPA areas (initial and phased) have the potential to affect 50 vessels (41 operating mobile gear only and nine operating a mix of static and mobile gear). The proposed MPA network consists of the initial MPA area and the phased MPA area.

From the VMS data, the number of days fished was analysed and results can be seen in Table 3 below. Fishing that took place either inside the initial MPA area or inside the phased MPA area is expressed in the table below as a percentage of the total fishing activity observed across Jersey's territorial waters. The percentage of activity falling within each of the areas highlighted is less than 10% for each of the five years analysed, with the average percentage of activity being 7.82% within the initial MPA and 6.12% inside the phased MPA.

Table 3. Percentage of total fishing activity inside initial and phased MPA area

Year	Total days inside Initial MPA area	Total days inside Phased MPA area	Total days outside	Total days	% inside Initial MPA area	% inside Phased MPA area
2019	131	142	1358	1631	8.03	8.71
2020	51	23	910	984	5.18	2.34
2021	112	73	1341	1526	7.34	4.78
2022	186	127	1558	1871	9.94	6.79
2023	206	191	1994	2391	8.62	7.99

### Vessel usage inside the MPA areas

Further analysis of this data looked at the vessel level impacts and percentage usage within the two areas (initial and phased). It was important to do this to identify any heavy weightings or concentrated usage by any vessels. The data was analysed in two sections, firstly the usage by vessels between 1-50% of their time (Figure 3) and secondly those vessels who did not use the areas (Table 4.).

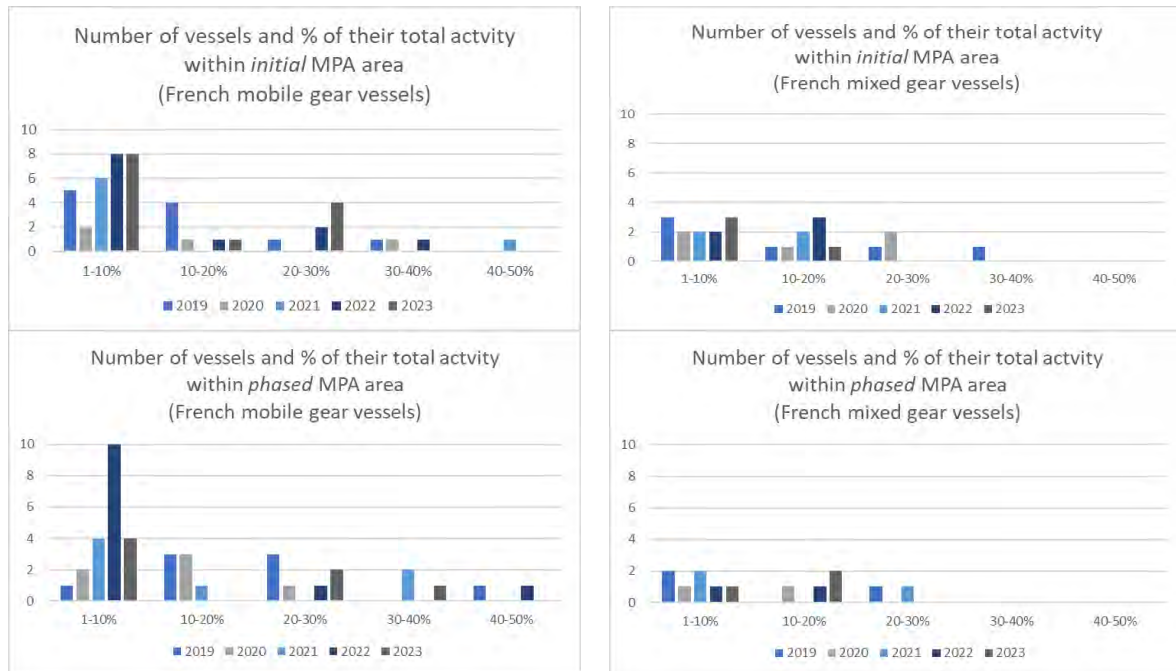
In general, for the vessels that utilised the initial and phased MPA areas for fishing, the majority used these areas between 1-10% of the time.

For the mobile gear vessels inside the initial MPA area in 2023, four vessels fished in the area for between 20-30% of their time, and no vessels spent more than 30% of time within the area. The last

time usage of 40-50% was seen was by one vessel back in 2021. For the mixed vessels inside the same area, less usage still can be observed, with no usage figures over 20% for the period 2021-2023. In 2023, one vessel used the area for 10-20% of their time and three vessels spent between 1-10% of their time.

For the mobile gear vessels within the phased MPA area in 2023, two vessels fished in the area for between 20-30% of their time, and one vessel for 30-40% of their time. For the mixed vessels inside the same area during 2023, only three vessels spent 1-20% of their time in the area

Figure 3. Fishing activity as a proportion of total activity in the initial MPA for a) mobile gear and b) mixed vessels and in the phased MPA area for c) mobile gear and c) mixed vessels



### Time not spent in the MPA areas

Of the French vessels that fished within Jersey waters between the years 2019-2023, in some years there were a number of vessels who did not spend any time fishing within either the initial MPA area or the phased MPA area (Table 7).

In 2023, 62% did not access the initial MPA area and 81% of mobile gear vessels did not access the phased MPA area. Overall, more mixed vessels entered the initial MPA in comparison to mobile vessels. This is assumed to be because mixed vessels will be spending a proportion of their time using static gear within the reef systems that primarily fall with the initial MPA areas. In respect of the phased MPA area, similar proportions of entry between mobile and mixed gear are seen. This is likely due to the phased MPA areas being predominantly sedimentary habitat which is typically targeted by mobile gears and therefore only affects mixed vessels when they are using mobile gear.

Table 7. Percentage of vessels that did not fish inside the initial MPA area or phased MPA area during each year

	Initial MPA		Phased MPA	
	Mobile gear	Mixed gear	Mobile gear	Mixed gear
2019	68%	33%	76%	67%



2020	83%	29%	79%	71%
2021	77%	50%	79%	63%
2022	59%	38%	61%	75%
2023	62%	56%	81%	67%

### Trawling assessment

Trawling (pair trawling and beam trawling) accounted for only nine fishing days from two vessels inside the proposed MPA zones in 2023. In terms of hours fished, 8 hours (0.7%) of trawling occurred inside the proposed initial MPA at the Ecrehous, and 20 hours (1.7%) inside the proposed phased MPA at the Ecrehous. Trawling did not occur in any other proposed MPA area.

### Summary of results

The potential impact of the proposed MPA network has been quantified for both the Jersey and French mobile fishing fleets. As a whole (initial and phased), the proposed MPA network would exclude mobile fishing from 20.7% of fishable scallop and clam substrate that is currently open to mobile gear fishing. The spatial loss, in terms of fishable scallop and clam seabed, varied across the six reporting zones (between 1 and 43 %).

The data available for Jersey and French fishing fleets were not consistent with one another, so different analyses were performed. For the Jersey fleet, the average annual catch (2019-2022) of scallop from the MPA areas was 39,814 kg, which was 18.6% of the annual average catch (213,811 kg). This translated into a greater loss of operating profit when operating costs were taken into account, with the larger vessels (> 11 m) would be likely to experience a 30% reduction in operating profit from a 15% reduction in fishing days. However, it is expected for both the Jersey and French mobile fishing gear vessels that it will be possible to displace some or all of their fishing to areas outside of the MPA network in the long-term.

For French vessels, a weight of catch from the zones could not be determined but as a percentage of French vessel fishing days they spent 13.9% of their time inside the proposed MPA areas (7.8% initial, 6.1% phased). There are a number of French vessels that operate both scallop and clam dredges. Scallop dredges target king scallop (*Pecten maximus*) and clam dredges target praire/warty venus (*Venus verrucosa*) and dog cockle/amande (*Glycymeris glycymeris*). It is not possible to determine which type of dredging occurred based on VMS data but the impact of the MPA network will differ between these two métiers as the species targeted hold different market values.

Due to there being a greater number of French vessels targeting scallop and clam in Jersey waters compared to Jersey vessels, there are a greater number of French vessels that will be impacted. However, a large portion of the MPA network falls within Jersey's three-mile exclusive fishing area where French vessels are not permitted. Therefore, it is expected that the proposed MPA network will have a greater impact on the Jersey mobile gear vessels on an individual basis.

In summary, the economic effect of a marine spatial plan will, in the short-term, be to increase costs of the fishing fleet that currently operates in the areas that will form the MPA network. This fleet won't be able to fish in the waters covered by the MPA network and so can be expected to incur additional costs (from having to travel further to other areas). The amount of catch may be affected, if for example, the LPUE from the seabed that the fleet moves to is lower than the catch from the areas they have been displaced from but no evidence is available for this yet. The effect on revenues is unclear but it is expected that prices should adjust to a change in catch. In the medium and longer term, the economic impact of the proposed MPA network is expected to be negligible. A review of 51

MPAs (Costello, 2024) suggested that marine protected areas lead to an increase in fish stocks and catch volumes which outweighs any short-term disruption.

This assessment has only focused on the impact to vessels that will be excluded from the proposed MPA network. While an assessment has not been carried out, it is necessary to highlight the potential gain to other fleets as a result of the proposed MPAs. Scallop diving and static gear vessels would gain fishing ground through removal of conflict from mobile gears. There is also an assumed benefit from the removal of mobile fishing gear in terms of improved ecosystem functioning which is likely to benefit both the biodiversity and fishery species inside and outside the MPAs. Results from a dive survey inside and outside the current MPAs has shown a greater density of scallops per m<sup>2</sup> inside the MPAs compared to outside the MPAs. It is expected that similar results will be seen for the proposed MPA network in time. A full economic assessment on value and impact of the MPAs is needed to quantify the changes to other fishing metiers, ecosystem service values and supply chains they result in.

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