Fisheries in EMS Habitats Regulations Assessment for Amber and Green risk categories

European Marine Site: Plymouth Sound & Estuaries

Fishing activities assessed: Static – pots/traps

Gear/feature interactions assessed:

D&S IFCA Interaction ID	Fishing Activity	Sub-feature(s)/ Supporting Habitat(s)/ Annex I Species
HRA_UK9010141_AO23	SPA Fishtraps	Avocet
		Little egret
HRA_UK9010141_D23		Intertidal seagrass beds
HRA_UK0013111_D23	SAC Fishtraps	Subtidal seagrass beds
		Intertidal seagrass beds

(V.5 Updated June 2021)

Contents

1. Introduction

1.1 Need for an HRA assessment

In 2012, the Department for Environment, Food and Rural Affairs (Defra) announced a revised approach to the management of commercial fisheries in European Marine Sites (EMS). The objective of this revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with Article 6 of the Habitats Directive.

This approach is being implemented using an evidence based, risk-prioritised, and phased basis. Risk prioritisation is informed by using a matrix of the generic sensitivity of the sub-features of EMS to a suite of fishing activities as a decision making tool. These sub-feature-activity combinations have been categorised according to specific definitions, as red, amber, green or blue.

Activity/feature interactions identified within the matrix as red risk have the highest priority for implementation of management measures by the end of 2013 in order to avoid the deterioration of Annex I features in line with obligations under Article 6(2) of the Habitats Directive.

Activity/feature interactions identified within the matrix as amber risk require a site-level assessment to determine whether management of an activity is required to conserve site features. Activity/feature interactions identified within the matrix as green also require a site level assessment if there are “in combination effects” with other plans or projects.

Site level assessments are being carried out in a manner that is consistent with the provisions of Article 6(3) of the Habitats Directive. The aim of this assessment is to determine whether additional management measures are required in order to ensure that fishing activity or activities will have no adverse effect on the integrity of the site.

The purpose of this site specific assessment document is to assess whether or not in the view of Devon & Severn Inshore Fisheries and Conservation Authority (D&S IFCA) the fishing activities fishtraps have a likely significant effect on the ‘intertidal seagrass beds’ and ‘subtidal seagrass beds’ of the Plymouth Sound & Estuaries EMS, and on the basis of this assessment whether or not it can be concluded that the fishtraps will not have an adverse effect on the integrity of this EMS.

This HRA represents a review of one of five HRAs, on the interaction of fish traps on features of the Plymouth Sound and Estuaries SAC, which were completed in January 2018 and sent to NE for their formal advice. As this was over two years ago and a Comprehensive Review of the Live Wrasse Fishery (a key pressure considered within the original HRA) has taken place, with changes in management of the fishery implemented over time, now is an appropriate time for a this HRA to be reviewed, and for formal advice to be requested from Natural England. To this effect, a resolution was passed by the D&S IFCA’s Byelaw and Permitting Subcommittee (B&PSC) on 18th June 2020 that the Habitat Regulation Assessments, relevant to the Live Wrasse Pot Fishery are reviewed by D&S IFCA Officers and submitted to Natural England for formal advice.

1.2 Documents reviewed to inform this assessment

- Natural England’s risk assessment Matrix of fishing activities and European habitat features and protected species[1]
- Reference list (Annex 1)

[1] See Fisheries in EMS matrix: http://www.marinemanagement.org.uk/protecting/conservation/documents/ems_fisheries/populated_matrix3.xls

- Previous fish trap vs seagrass HRA and Natural England's consultation advice (Annex 2)
- Site map(s) – sub-feature/feature location and extent (Annex 3)
- Fishing activity data (map(s), etc.) (Annex 4)
- Mobile fishing permit byelaw map (Annex 5)
- Pressures Audit Trail (Annex 6)
- Review of the Live Wrasse Fishery in Devon and Severn IFCA's District 2017–2020 (Annex 7)
- Paper provided to D&S IFCA's Byelaw and Permitting Sub-Committee, addressing concerns raised in the 2021 consultation on Amendments to the Permit Conditions to Manage the Live Wrasse Pot Fishery (Annex 8).
- South West Marine Plan

2. Information about the EMS

The Plymouth Sound & Estuaries EMS is made up of the Plymouth Sound & Estuaries SAC and the Tamar Estuaries Complex SPA (Figure 1, Annex 3). Plymouth Sound and its associated tributaries comprise a complex site of marine inlets. The ria systems entering Plymouth Sound (St John's Lake and parts of the Tavy, Tamar and Lynher), the large bay of the Sound itself, Wembury Bay, and the ria of the River Yealm are of international marine conservation importance because of their wide variety of salinity conditions and sedimentary and reef habitats. The high diversity of habitats and conditions gives rise to communities both representative of ria systems, and some very unusual features, including abundant southern Mediterranean-Atlantic species rarely found in Britain (English Nature, 2000). This site crosses the border between D&S IFCA and Cornwall IFCA.

2.1 Overview and qualifying features

Plymouth Sound and Estuaries qualifies as a SAC for the following Annex I habitats as listed in the EU Habitats Directive (Natural England, 2015a):

- Large shallow inlets and bays, the key sub-features are:
    - Intertidal rock
    - Circalittoral rock
    - Infralittoral rock
    - Subtidal mud
    - Subtidal sand
    - Subtidal seagrass beds
- Estuaries, the key sub-features are:
    - Circalittoral rock
    - Infralittoral rock
    - Intertidal mixed sediment
    - Intertidal mud
    - Intertidal rock
    - Intertidal seagrass beds
    - Lower-mid saltmarsh
    - Mid-upper saltmarsh
    - Pioneer saltmarsh
    - Subtidal mixed sediments
    - Subtidal mud
    - Subtidal sand
    - Subtidal seagrass beds
    - Transition & driftline saltmarsh
    - Upper saltmarsh
- Sandbanks which are slightly covered by seawater all the time, the key sub-features are:
    - Subtidal coarse sediment
    - Subtidal mixed sediment
    - Subtidal mud
    - Subtidal sand
    - Subtidal seagrass beds
- Atlantic salt meadows
- Mudflats & sandflats not covered by seawater at low tide, the key sub-features are:
    - Intertidal coarse sediment
    - Intertidal mixed sediments
    - Intertidal mud
    - Intertidal sand & muddy sand
    - Intertidal seagrass beds
- Reefs

- Circalittoral rock
- Infralittoral rock
- Intertidal rock

Plymouth Sound and Estuaries qualifies as a SAC for the following Annex II species as listed in the EU Habitats Directive (Natural England, 2015a):

- Allis shad (*Alosa alosa*)
- Shore dock (*Rumex rupestris*)

The Tamar Estuaries Complex qualifies as a SPA under the Birds Directive for (Natural England, 2015b):

- Nationally important populations of regularly occurring Annex 1 species, Avocets (*Recurvirostra avosetta*) and Little egrets (*Egretta garzetta*), the key supporting habitats are:
  - Annual vegetation of driftlines
  - Coastal reedbeds
  - Freshwater & coastal grazing marsh
  - Intertidal mixed sediments
  - Intertidal mud
  - Intertidal sand & muddy sand
  - Intertidal seagrass beds
  - Water column
  - Saltmarsh

2.2 Conservation Objectives

The site's conservation objectives which apply to the **Special Area of Conservation** and the natural habitat and/or species for which the site has been designated are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats and habitats of the qualifying species
- the structure and function (including typical species) of qualifying natural habitats
- the structure and function of the habitats of qualifying species
- the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

The site's conservation objectives which apply to the **Special Protection Area** and the individual species and/or assemblage of species for which the site has been classified are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

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

3. Interest feature(s) of the EMS categorised as 'red' risk and overview of management measure(s) (if applicable)

- Subtidal rock and reef communities were categorised as "red" risk against all demersal towed gear and towed dredges. In January 2014 D&S IFCA introduced the Mobile Fishing Permit Byelaw, which prohibits the use of towed gear within this EMS (Map Annex 5).
- Seagrass bed communities were categorised as "red" risk against towed demersal gear, dredges, intertidal handwork, crab tiling, and digging with forks. At that time, only subtidal seagrass beds were considered as a sub-feature of the site which would not be exposed to intertidal handwork, crab tiling or digging with forks. In January 2014 D&S IFCA introduced the Mobile Fishing Permit Byelaw, which prohibits the use of towed gear within this EMS (Map Annex 5).

4. Information about the fishing activities within the site

Fish traps are occurring in Plymouth Sound SAC. A pot fishery for wild wrasse has developed in the Plymouth Sound, the wrasse being trapped for use as cleaner fish in salmon aquaculture in Scotland. The species targeted are four out of the five that are common in the south west: Ballan (*Labrus bergylta*), Goldsinny (*Ctenolabrus rupestris*), Corkwing (*Symphodus melops*) and Rock Cook (*Centrolabrus exoletus*). The fishery is thought to have begun in Plymouth around March 2015 and Devon and Severn IFCA were informed of the fishery by Cornwall IFCA in September 2016. There are up to four known vessels each year that fish for wrasse in D&S IFCA's District; the fishery for 2021-22 is likely to comprise of two to three vessels. Whilst the fishery for wrasse could potentially take place all year fishers tend not to fish for wrasse in January and February each year, and the period May–mid-July is currently closed for fishing under D&S IFCA's Potting Permit Byelaw Conditions, amended in 2018 (see Section 4.2). Therefore the fishery typically operates between March–May and mid-July–December; this allows good time for a review of data and evidence collected on the wrasse fishery, with a window for adapting management via a review of Potting Permit Byelaw Conditions if required (as detailed in Section 4.1 – Section 4.3, below). The parlour pots used are specifically designed to catch wrasse (Figure 1). They are lightweight (3.7kg) and fitted with wrasse escape gaps. The traps measure 72Lx40Wx28H (cm).

Figure 1 – Wrasse pot used by fisherman ©D.Cresswell

In 2016 and the beginning of 2017 the four vessels had 120-200 pots each. The vessels' sizes ranged from 5m to up to 8m and work to depths of 12m maximum. They mostly worked within Plymouth Sound, south of the breakwater and along the shore from Mount Batten Breakwater down to the Mew Stone. Three of these vessels also fished within Cornwall IFCA's District from Fort

Picklecombe to Rame Head. Detailed information on the wrasse fishery can be seen in the PDFs attached at the end of Section 4 (Page 11).

D&S IFCA undertook a survey within the SAC in May 2016 (prior to the wrasse fishery becoming known to the Authority) to determine the level of activity occurring (Annex 4, Figure 1). A total of 24 buoys/bottles were unmarked and of this, seven located near Batten Bay were thought to be no longer active as were covered with seaweed and five were located outside the SAC. Commercial vessel three was seen potting within the SAC using similar unmarked bottles to those found in the area. However, the vessels fishing for wrasse did not have potting permits at the time and therefore the unmarked buoys may have belonged to them.

A literature review and desk top research of wrasse and live wrasse fisheries was undertaken in late 2016/early 2017 (see embedded document) and the findings were reported to the D&S IFCA Byelaw and Permitting Sub-Committee (B&PSC). Management of the Live Wrasse Fishery then proceeded as detailed in Section 4.1 – Section 4.3.

A review of wrasse ecology and fisheries

4.1 Management of the Live Wrasse Pot Fishery

Five initial management measures were established in July 2017, following a period of public consultation and consideration by D&S IFCA's B&PSC and the Full Authority. These management measures:

1. **To establish a Fully Documented Fishery**
   Under Paragraph 17 of the Potting Permit Byelaw, those permit holders who wish to engage in the Live Wrasse Pot Fishery are required to provide relevant fishery information to the Authority. The following information is required:
   1. The name and contact details of the Salmon Farm company, agent or associated company who the fishermen are supplying live wrasse to.
   2. Name and contact details of transport company.
   3. Transport documents for all those consignments sent to the Salmon Farm company.
   4. Number of pots actively being used in the Live Wrasse Fishery.
   5. Completion of weekly returns including information on the dates and times of hauling, location of strings, number of strings hauled, number of pots hauled, and the number of wrasse retained on board per day.

   Fishermen will also be required to allow D&S IFCA officers on board their vessels to collect catch data for the fishery.

2. **Pot Limitations**
   The maximum number of pots per permit holder shall not exceed 120.

3. **Marking of gear**
   a. Every pot used for the capture of live wrasse must be marked with a tag that is issued by D&S IFCA, to allow for identification of the wrasse pots and aid compliance of the effort restrictions.
   b. All strings of wrasse pots to be used to capture live wrasse must be marked with a buoy or dahn, and each buoy or dahn must be marked with WRA together with the vessels PLN. This is for identification purposes to differentiate wrasse pots from other potting gear used for the capture of Crustacea and Molluscs.
   c. Strings of pots used for the capture of live wrasse must be used solely for that purpose.

4. **Closed Season**
   The period between 1st April and 30th June will be closed to the live wrasse pot fishery.

5. **Minimum and maximum conservation reference sizes**
   To introduce Minimum and Maximum Conservation Reference Sizes for five species of wrasse:
   a. Ballan and cuckoo wrasse less than 150mm or greater than 230mm
   b. Corkwing, rock cook and goldsinny wrasse less than 120mm or greater than 230mm

4.2 Initial Management Review Process (2017-2018):

- The Authority decided that if there is an increase in the number of vessels entering the Live Wrasse Fishery this will trigger a review of the permit conditions for the Live Wrasse Fishery, and may lead to further changes to the permit conditions, which may include a reduction in the number of pots per vessel.
- The Authority decided that a review of the management of the Live Wrasse Fishery was to be undertaken in November 2017. Data collected from fishermen and on-board surveys informed the review of the permit conditions for the Live Wrasse Fishery, In November 2017 a report on the analysis of the wrasse fishery data collected from on-board surveys and returns data from the fishermen (see link to PDF below) was presented to the D&S IFCA's B&PSC. The B&PSC recommended proposed changes to management measures for the Live Wrasse Fishery, which were implemented in August 2018 following a period of public consultation and consideration by the B&PSC and the Full Authority. The implemented changes were:
  - **to amend the slot size for corkwing to 140mm to 180mm**
  - **to change the closed season to May 1st to 15th July.**

Guidance for the live wrasse fishery:
Further to the regulatory conditions, D&S IFCA has developed additional guidance to support these measures and the fishery. This guidance is in the form of voluntary measures to be adopted by those fishermen participating in the Live Wrasse Fishery.

1. A series of small closed zones to the Live Wrasse Pot Fishery or 'No Wrasse Pot Zones' have been identified through discussions with the fishermen. These areas lie within the fishery area in the Plymouth Sound and associated area and include reef habitat known to be favoured by the wrasse species fished. Figures 2 and 3 (Annex 4) show the areas closed to the Live Wrasse Fishery, which were updated in 2018, in consultation with the fishers. There is also an eastern limit to the fishery to prevent its spread along the coast from Plymouth Sound, containing the effort and allowing for robust repeat monitoring.
2. Mount Batten Breakwater is known to be a popular angling mark and in order to remove any conflict with anglers in this area, fishermen are requested to keep their pots 30m from the pier.

Failure to meet all conditions set out in this policy statement may also trigger a review of the permit conditions. In addition to formal management under the Potting Permit conditions, the Authority may introduce further voluntary measures to support the management of the Live Wrasse Fishery. Failure to adhere to these voluntary measures may lead to a review of the permit conditions.

4.3 Further Live Wrasse Pot Fishery Management Review Processes (2018 – 2021)

In November 2018, the D&S IFCA B&PSC was presented with the Live Wrasse Data Analysis Nov 2018 report (embedded below), a report on the Formal Review of the Live Wrasse Pot Fishery (embedded below), and a summary paper titled Current Research relating to the Live Wrasse Fisheries in the South West (embedded below). Members recommended that (subject to the findings of further evidence presented by D&S IFCA Officers) there should be no changes to the

current management of the Live Wrasse Pot Fishery. Management includes both the Potting Permit Conditions and separate Policy & Guidance. Subsequently, in February 2019, the B&PSC was presented with an addendum to the Live Wrasse Data Analysis (Nov 18) report. Members endorsed the findings of this report and recommended that existing management measures for the Live Wrasse Pot Fishery be maintained, and that a Comprehensive Review of the Live Wrasse Pot Fishery be undertaken at the end of 2019, reflecting the three years of data collected by that point.

Data collection for the Live Wrasse Pot Fishery in 2019 ended in December 2019, allowing for production of the Three Year Comprehensive Review of the Live Wrasse Fishery in D&S IFCA's District (embedded below), which was presented to the B&PSC in February 2020. The Three Year Comprehensive Review showed that while Landings Per Unit Effort (LPUE) and Catch Per Unit Effort (CPUE) appeared to be stable or increasing for most species, these measures showed a decline in rock cook over the 2017–2019 period. On this basis D&S IFCA B&PSC recommended the prohibition of removal of rock cook from a fishery by all Potting Permit holders, including those prosecuting the Live Wrasse fishery. This change to the Potting Permit Byelaw Conditions was confirmed at the Byelaw and Permitting Sub-Committee meeting on 18th June 2020.

Data collection continued in 2020 and despite the difficulties posed by the COVID-19 pandemic D&S IFCA's Environment Officers completed observer surveys on approximately 6.3% of total fishing trips in 2020. The data were analysed in early 2021 for the Annual Review of the Live Wrasse Fishery in D&S IFCA's District (2017–2020) (Annex 7). This review used updated methods, adapted from Henly *et al.* (2021), which standardised monitoring data from D&S IFCA's fishery observer surveys using fishing locations and environmental data obtained from external sources. In doing so, the Annual Review identified the main drivers of variation in CPUE and LPUE for the four target species of wrasse, and highlighted considerations for management of the fishery.

The main drivers of variation in CPUE and LPUE differed between species. There was evidence of a decline in ballan wrasse CPUE and LPUE during the 2017–2020 period, particularly on the landward side of the breakwater and between 2017–2018. This decline was likely driven by the relatively high retention rate of ballan wrasse in combination with specific life history and behavioural characteristics that leave the species vulnerable to overfishing. There was no evidence of a decline in rock cook CPUE or LPUE across the 2017–2020 period. However, the updated methods used in the most recent report showed that rock cook CPUE and LPUE varied significantly between broad-scale fishing areas (significantly lower in the more sheltered areas). The spatial distribution of fishing and survey effort has varied markedly over the 2017–2020 period, and in 2019 and 2020 the majority of the observer surveys were conducted in more sheltered locations. Previous reports by D&S IFCA were unable to account for this geographic variation in CPUE and LPUE, which was therefore interpreted in precautionary terms as a decline in rock cook over the 2017–2019 period. Goldsinny wrasse showed seasonal and geographical variation in CPUE and LPUE that supports previous observations of goldsinny, and there was no evidence that these measures declined during the 2017–2020 period. Finally, there was a significant increase in corkwing wrasse CPUE across the 2017–2020 period. The change in corkwing CRS limits in 2018 has likely benefitted the species as a lower proportion of caught corkwing are being landed (lower retention rate, higher rate of return to sea) and mature individuals of each sex are likely being protected. There was also evidence of seasonal variation in corkwing CPUE and LPUE which may reflect the species' spawning season and associated activity levels. The report also highlighted that robust monitoring of the fishery relies on high quality observer surveys, which provide information that cannot be gained from fishers' returns forms.

The report was presented to the D&S IFCA's B&PSC with the following recommendations for management:

1. Continue to manage the fishery as outlined in the D&S IFCA's Policy Statement and Potting Permit Conditions for the Live Wrasse Fishery (24th June 2020), except in the case of rock cook (2, below) and ballan wrasse (3, below), and except with regards to fishers returns forms (4, below).
2. Lift the prohibition on removal of rock cook from the fishery and reintroduce previous conservation reference size (CRS) limits of 12-23 cm.
3. Change the ballan wrasse CRS range from 15–23 cm to 18–26 cm.
4. Remove the requirement for wrasse fishers to submit returns forms.

The B&PSC reviewed the evidence and recommended the following proposed changes to management measures for the Live Wrasse Fishery:

That D&S IFCA will continue to manage the fishery for 12 months as outlined in the D&S IFCA's Policy Statement and Potting Permit Conditions for the Live Wrasse Fishery (24th June 2020), except:

- **To change the ballan wrasse CRS range from 15 – 23cm to 18 – 26cm.**
- **To remove the requirement for wrasse fishers to submit returns forms.**

The change to ballan wrasse CRS range was subject to public consultation for a period of four weeks (14th April – 12th May). Removal of a requirement to submit returns forms does not affect the Potting Permit Conditions so was not subject to consultation. In July 2021, the B&PSC reviewed the available evidence alongside the results of the consultation on the Potting Permit Conditions, and approved the proposed changes to ballan wrasse CRS range. The change to the ballan wrasse CRS range is a precautionary measure in case of future increases in fishing effort: the decline in ballan CPUE and LPUE identified in Henly *et al.* (2021) occurred between 2017 – 2018, following a period of high fishing pressure. As outlined elsewhere, including in Henly *et al.* (2021), the fishing effort in Plymouth Sound has declined substantially since then. D&S IFCA suggest that the proposed ballan CRS range would help to safeguard the ballan population should fishing effort increase (though there are currently only two permit holders for the 2021 season, compared to four in 2017).

To date, fishing has largely taken place outside of the voluntary closed areas which were implemented in April 2018 (Annex 4). However, over the course of 2019 and 2020 a total of six incursions into a closed area in the south of Jennycliff Bay are known to have occurred (cell M12). These incursions occurred on days that an observer was monitoring the vessel, though it was not possible to determine the location of fishing relative to the closed area until after the fact. The fisher involved typically used six strings of pots in areas along the eastern coast of Plymouth Sound, from Batten Bay to Renney Rocks, and regularly re-shot his gear in locations near to the site of hauling; it is therefore possible that the fisher was also fishing in the closed area on other days. The fisher was informed of their non-compliance and strings were then moved accordingly. Given the general compliance of the voluntary closed areas it would undermine the fishers to make the closed areas mandatory. Having voluntary closed areas allows D&S IFCA to involve the stakeholders resulting in a valued co-management approach that is thought to improve compliance over entirely top-down imposition of management measures.

Conversely, compliance with the returns forms aspect of the Fully Documented Fishery is relatively low, which prevents thorough examination of the returns data. The main advantage to accurate returns data would be the availability of fine-scale information on wrasse landings over time. Fortunately, this information is available on transport documents provided by the salmon farm agent, though admittedly at a coarser temporal resolution (approximately every week or fortnight, sometimes monthly), rather than daily (though fishers do not always report daily totals). Given the issues of low compliance and inaccurate reporting, the primary value of these returns forms has been in aiding D&S IFCA's understanding of the spatial distribution of fishing effort in each year.

D&S IFCA's officers have reviewed the requirement to submit returns forms, and have identified two further constraints associated with these data, which apply even to fully-completed returns data: (i) the spatial scale of reporting of wrasse catches means that it is not possible to estimate the numbers of wrasse caught in each grid cell (since total wrasse retained are reported for the trip, not for each string) and, critically, (ii) recent analyses have demonstrated that robust monitoring and management of this fishery requires species-specific data on catch and landings per unit effort, which are not available from these fishers' returns forms. Species-specific data are only available from the observer surveys carried out by D&S IFCA's officers, which have provided a four-year dataset collected with standardised methods that is therefore comparable with future data collected by observers.

In 2020 D&S IFCA developed a method of observing catch using D&S IFCA's enforcement vessel. This method proved more efficient than in previous years and allowed observer surveys to continue despite the complications caused by the Covid 19 pandemic. The requirement for fishers to submit returns forms has been removed, which will reduce the associated administrative and time cost of monitoring, and allow greater focus on monitoring via observer surveys. The observer surveys provide much richer and more reliable data, and are especially efficient when carried out from D&S IFCA's RIB; using the RIB as an observer platform reduces the time taken to conduct each survey, is seen as safer than surveys on board fishing vessels, and can be effectively combined with other patrol and enforcement work.


Wrasse Data Analysis 2017.pdf


November 2018 Live Wrasse Fishery Data


Addendum to 2018 Wrasse Report


Wrasse formal review supplement (


Curtin, Henly and Stewart (2020). Three


The Live Wrasse Fishery 2017-2020 v1


SummaryReport_WrasseReview2017-202

Other fishing activities within the Plymouth Sound and Estuaries EMS are described in the Fishing Activity Report (Gray, 2015).

5. Test for Likely Significant Effect (LSE)

Table 1: Assessment of LSE

1. Is the activity/activities directly connected with or necessary to the management of the site for nature conservation?	**No**
2. What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s)	**SAC** • Abrasion/disturbance of the substrate on the surface of the seabed • Removal of non-target species • Removal of target species **SPA** • Above water noise • Abrasion/disturbance of the substrate on the surface of the seabed • Removal of non-target species • Removal of target species • Visual disturbance **See Annex 6 for pressures audit trail**
3. Is the feature potentially exposed to the pressure(s)?	**Yes,** D&S IFCA has a Potting Permit Byelaw and through this can gauge where any future changes or developments in this activity occur within Plymouth Sound and Estuaries EMS. D&S IFCA has brought in management measures for the wrasse fishery (see section 4). The Dockyard Port of Plymouth Order 1999 prohibits fishing in some areas of the SAC.
4. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level?	Up to four commercial vessels annually are known to pot for wrasse within the SAC. This year (2021-22) the fishery will comprise of 2–3 vessels. Potting for wrasse generally occurs on rocky reef and seaweed covered areas. Disturbance and abrasion of the substrate could occur from landing of deployed pots on the seabed and movement/recovery of the pots (Coleman *et al.*, 2013). Although one string can be seen to be overlapping the seagrass beds at Drakes Island (Annex 4, Figure 4) this is the only instance of wrasse pots occurring on seagrass within the last three years. Consequently, disturbance to birds and impact on supporting habitats is thought to be negligible. Effects of wrasse removal on the seagrass features with which they are associated is unclear as their ecological importance has not been quantified. D&S IFCA is liaising with a PhD student at the University of Exeter whose research seeks to fill some key knowledge gaps. Given these knowledge gaps, D&S IFCA is taking a precautionary approach to managing the wrasse fishery, by acknowledging that maintaining wrasse stocks within the SAC could be important to the ecological function of the rocky reef ecosystem, despite the current lack of an evidence base to confirm that this is the case.

5. Is the potential scale or magnitude of any effect likely to be significant?	**Alone**	**No, only one** interaction is present for pots and intertidal seagrass beds **Unsure,** pots have the potential to impact subtidal seagrass beds.
	In-combination	**See section 8 for more information.**
6. Have NE been consulted on this LSE test? If yes, what was NE's advice?	D&S IFCA received formal advice from NE on a TLSE and HRA in 2016, then again in 2020 for a revised version. The formal advice supported the outcome of those assessments. NE's comments on the 2020 revised HRA are available in Annex 2. This iteration has not yet been consulted on.	

6. Appropriate Assessment

Potential risks to features

The potential pressures, impacts and exposure by gear type(s) for each feature/sub-feature are summarised in Table 2.

Table 2: Summary of Impacts

Feature/ Sub feature(s)	Target Attributes/ Conservation Objectives (Natural England, 2015a)	Potential pressure exerted by gear type(s)	Potential ecological impacts of pressure exerted by the activity/activities on the feature	Level of exposure of feature to pressure	Mitigation measures
Estuaries; Large shallow inlets and bays; Mudflats and sandflats; Sandbanks • Subtidal seagrass beds	**Target Attribute:** **1.** Maintain the total extent of seagrass beds at 34.6 ha and spatial distribution as defined. **Conservation Objective:** **1.** Maintain or restore the extent and distribution of qualifying natural habitats of the qualifying species. **Target Attribute:** **2.** Maintain the leaf/ shoot density, length, percentage cover, and rhizome mat across the feature at natural levels (as far as possible), to ensure a healthy, resilient habitat. **Conservation Objective:**	• Abrasion/ disturbance of the substrate on the surface of the seabed	Benthic communities are thought to be relatively unaffected by static gear due to the footprint of the gear and the small area of the seabed in direct contact (Eno *et al.*, 2001). Disturbance and abrasion of the substrate could occur from landing of deployed pots on the seabed and movement/recovery of the pots (Coleman *et al.*, 2013). Walmsley et al (2015) reviewed literature of potting impacts and found there is currently no primary literature on the impact of potting on seagrass beds. However, studies have been conducted on the impacts of anchoring and mooring on seagrass beds. An anchor landing on a patch of seagrass can bend, damage and break shoots (Montefalcone *et al.*, 2008). Collins *et al.* (2010) studied the impacts of anchoring on *Zostera marina* in Studland Bay, Dorset. Sediment in bare patches from anchoring and mooring chain damage was less cohesive and more mobile. It contained less organic material and had a lower silt fraction (Collins *et al.*, 2010). Collins *et al.* (2010) stated that when an anchor and chain is pulled up and dragged over the bottom following the movement of the boat it cuts leaves and pulls the rhizomes from the seabed. It cuts into the seagrass rhizome mat, tearing a hole in its fabric. This forms an anchor scar and damage is elevated by	Up to four commercial vessels are known to pot for wrasse within the SAC in D&S IFCA's District each year. Wrasse are generally targeted on the infralittoral rock sub-feature. Annex 4 Figure 4 shows the location of fish traps in relation to the seagrass beds. Only one string is seen to be overlapping onto the seagrass beds around Drakes island. The fishery usually operates between March and November (except in bad weather and during the closed season May 1st – July 15th inclusive, implemented to protect spawning individuals). Transport documents from each landing are received from the MMO/ salmon farm agent. The data from fishery observer surveys include catch composition by species and	Potting patrols have been undertaken (six per year, as agreed with Natural England) to monitor fishing activity levels for pots and creels within the EMS. The monitoring patrols conducted in 2018 detected no pots on seagrass and patrols in 2019 detected one string of wrasse pots located on the seagrass beds around Drakes Island, and another string of wrasse pots in a similar location in 2020.

	2. Maintain or Restore the structure and function (including typical species) of qualifying natural habitats.		wave action. Additionally, shore crabs *Carcinus maenas* occupy burrows beneath the seagrass rhizomes which, alongside wave action undermine the edge (which can be 10-20cm deep) of the surviving seagrass (Collins *et al.*, 2010). Chains attached to anchors from moored boats leave bare patches, typically 1-4m² (Collins *et al.*, 2010). Impacts from pots would be from the end weights attached to the surface marker. The weights used for pots are thought to have less of an impact than anchors used for mooring, as they do not penetrate into the seabed and dislodge seagrass rhizomes. It is considered that lobster pots consistently set and hauled in a seagrass bed can cause damage by leaf shearing, damaging meristems, uprooting plants and, if left long enough on the bottom can cause damage by smothering and light attenuation (Roberts *et al.*, 2010). However, the traps used to catch wrasse are lightweight (3.7kg) compared to lobster pots. Eno *et al*. (2001) and Coleman *et al.* (2013) undertook studies on the impact of potting on reef feature. They concluded epifaunal assemblages suffered little impact from pots and traps and could be considered generally insensitive to commercial potting. An officer from D&S IFCA was present during a survey with Cornwall IFCA to look at the impacts of potting on seagrass beds. Cameras were attached to a string of six parlour pots using wooden poles. The angle of the cameras gave a frame of view over the potential impact zones of the pot when hauling. These included the front and back of the pot. Once landed, pots were on the seabed for approximately 5 minutes and during this time, there was limited to no movement seen on the seabed until hauling. The front of the pot appeared to cause no physical damage to the seagrass when hauling as the pot lifted directly up	size distribution, and allow for catch per unit effort (CPUE) and landings per unit effort (LPUE) to be determined on a species-by-species basis. CPUE and LPUE data will help inform assessment of stock abundance and highlight changes over time, as outlined in the most recent D&S IFCA report on this fishery (Annex 7), and in Henly *et al.* (2021). Wrasse are also assessed for spawning status when possible to monitor the effectiveness of the closed season. The Minimum and Maximum Conservation Reference Sizes introduced for all species allow for a degree of protection of both young and mature, reproducing individuals, thereby affording protection to the breeding stock. The closed season, timed to account for wrasse spawning seasons, will allow some spawning to occur before harvesting, and allow nests to be protected. . Triggers that would initiate a review of management include:	Records suggest that this string was abandoned in 2020.The 2020 Potting on Seagrass report (Henly, 2021) concluded that "[…] potting on seagrass is rare, however, it is recommended that the minimum of 6 patrols a year and verification of the location of wrasse strings from observer surveys are repeated in 2021 to monitor fishing activity levels in proximity to seagrass within Plymouth Sound EMS. Care should be taken to detect potential abandoned or ghost fishing gear that may risk damage to the seagrass. D&S IFCA Officers will

			from the front, off the seagrass bed. As the pot lifted, the rear-view camera footage showed that the seagrass underneath the pot appeared to be flattened (Davies, pers. obvs.). Sediment could be seen dispersing into the water column from the movement of the pot during hauling. When the seagrass was flattened by the pot, it was seen to lift again. Observations were made from reviewing the footage on the boat. The video showed leaves being removed from the seabed and floating free (Jenkin *et al.*, 2017). Blades of seagrass were caught on an area of skirt of one pot that was sticking out (Jenkin *et al.*, 2017). In addition, an observation was made that the pots glided over the seagrass as it was hauled and not dragged through it (C. Trundle, pers. comms). The survey was carried out as a worst-case scenario, with lobster pots on seagrass (up to 70cm long) near Falmouth. As the survey was conducted in November when the seagrass is dying back and may be more susceptible to becoming detached. Hauling speed was slow and carried out on a large vessel, with the hauler further back from the bow, when compared to fishing vessels. In 2019 D&S IFCA carried out a study to look at the impacts of cuttlepots on seagrass beds as part of the monitoring and control plan for Torbay MCZ. GoPro cameras were attached to cuttlepots. Cameras were attached to a single cuttle pot using wooden poles. The angle of the cameras gave a frame of view over the potential impact zones of the pot when hauling. Once landed the pot was left to fish for 30 minutes and then hauled by hand. The pot was set and hauled a total of six times, over four survey days. The footage of the pot on the seagrass demonstrated that there was very little movement of the pots once they were on the seabed. The hauling of the pots had mixed results due to different people hand hauling the pot. If the pot wasn't hauled smoothly, it appeared to drag	1) Any increase in effort (number of boats). 2) Failure to meet all permit conditions. 3) Failure to adhere to voluntary closed areas. 4) On board surveys identify over half the proportion of the spawning season not protected. 5) A consistent decrease in CPUE or LPUE. 6) A shift in size distribution. Data collected from fishermen, on-board surveys and fishermens conduct will inform the review of the permit conditions. Detailed information on the wrasse fishery can be seen in the PDFs attached at the end of Section 4. There is no literature on the impact of wrasse pots or fish traps on seagrass beds. The traps used to catch wrasse are lightweight (3.7kg), specially designed parlour pots (Figure 1). The maximum depth (below chart datum) of seagrass beds recorded in Plymouth Sound SAC (Curtis, 2012) are: • Drakes Island ~5m • Tomb Rock ~4.5m	liaise with fishers, where possible, if pots are located on seagrass and request that they are moved away from the seagrass beds. Finally, a seagrass restoration project is underway in the Jennycliff area of Plymouth Sound and a Notice to Mariners has been issued by QHM Devonport. D&SIFCA will work alongside the industry to avoid activities and damage in this area." The Potting Permit Byelaw can gauge where any future changes or developments may occur. Changes can be made to the

			through the seagrass and created a plume of sediment. When hauled directly upwards there was little disturbance to the sediment or seagrass. There were two occasions, out of the six hauls, where seagrass was attached to the pot. One leaf was observed on the deck after one haul and bits of leaves on another haul. These leaves were fragments of seagrass and appeared brown or green/brown in colour rather than bright green healthy blades. There were no observations of rhizome or roots attached to the pots. The method of hand hauling is different to how the pots would be hauled in the fishery. The hand hauling resulted in the pots being hauled laterally along the seabed before moving vertically in the water column, causing sediment plumes. Hauling the pots with a pot hauler would result in less contact with the seabed before raising up to the surface. Whilst the limited results indicate that the cuttle pot deployed in this study had some impact on the seagrass beds, with a few leaves being brought to the surface with the pot, it is difficult to say what the degree of impact is from this small-scale study and whether it is significant. It was noted that the leaves, which did come to the surface, were brown or green/brown in colour, meaning they could have been dying off before the pot landed on them. There were no rhizomes or roots attached to the seagrass which came up to the surface (Parkhouse, 2019)	• Cellars Cove ~2m • Red Coves (North & South) ~3m • Jennycliff North ~1m • Jennycliff South ~5.5m • Firestone Bay ~2m Walmsley et al (2015) sensitivity assessments for seagrass are: a high sensitivity to heavy levels of potting activity, medium sensitivity to moderate and low levels of potting, and low sensitivity to single potting usage (Hall *et al.* 2008).	permit conditions, via consultation, if the D&S IFCA deems it to be necessary. The permitting system allows for adaptive management. D&S IFCA has introduced permit conditions under the Potting Permit Byelaw for the management of the Live Wrasse Fishery (see section 4). This system allows for flexible and relatively rapid review of the Potting Permit Conditions.
Estuaries; Large shallow inlets and bays; Mudflats and sandflats; Sandbanks • Subtidal seagrass beds	**Target Attribute:** **3.** Maintain the area of habitat which is likely to support the sub-feature. **Conservation Objective:** **3.** Maintain or restore the extent and distribution of	• Abrasion/ disturbance of the substrate on the surface of the seabed	*Zostera* can colonise a wide variety of sediments. All subtidal seagrass beds within the site are A5.5331 *'Zostera marina/ angustifolia* beds on lower shore or infralittoral clean or muddy sand' (Annex 3, Figure 5). Potting would not alter the extent or area of the habitat that is likely to support subtidal seagrass beds.	Minimal exposure from potting activities	No mitigation necessary

	qualifying natural habitats of the qualifying species.				
Estuaries; Large shallow inlets and bays; Mudflats and sandflats; Sandbanks • Subtidal seagrass beds	**Target Attribute:** **4.** Maintain the presence and spatial distribution of intertidal & subtidal seagrass bed communities **Conservation Objective:** **4.** Maintain or restore the extent and distribution of qualifying natural habitats of the qualifying species. **Target Attribute:** **5.** Maintain the species composition of component communities. **Conservation Objective:** **5.** Maintain or Restore the structure and function (including typical species) of qualifying natural habitats.	• Abrasion/ disturbance of the substrate on the surface of the seabed	Benthic communities are thought to be relatively unaffected by static gear due to the footprint of the gear and the small area of the seabed in direct contact (Eno *et al.*, 2001). All subtidal seagrass beds within the site are A5.5331 *'Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand' (Annex 3, Figure 5). No literature on the specific impacts of pots on seagrass habitats was found. However, studies have been conducted on the impacts of anchoring and mooring on seagrass beds. Collins *et al.* (2010) studied the impacts of anchoring on *Zostera marina* in Studland Bay, Dorset. Sediment cores showed a higher abundance in the seagrass compared to the anchor and mooring scars (total fauna count of seagrass to scar ratio was 1134:339). The diversity of taxa was also higher in seagrass compared to scar areas, with 50 and 38 families/species, respectively, found in their samples. Overall, the infauna was dominated by polychaetes, oligochaetes, bivalves, and amphipods (Collins *et al.*, 2010). Reed and Hovel (2006) investigated how the degree of *Zostera marina* loss influenced the abundance, diversity, and community composition of epifauna within experimental seagrass plots in San Diego Bay, California, USA. Seagrass habitat was removed to replicate scarring and plots were sampled eight weeks after. No correlation was seen between seagrass loss	See above	See above

			and epifaunal species richness, total epifaunal density or epifaunal diversity for small plots (4m²). In large plots (16m²) with 90% habitat removal, there was significantly lower epifaunal species richness and total epifaunal diversity than plots with 0, 10 or 50% habitat removal.		
Estuaries; Large shallow inlets and bays; Mudflats and sandflats; Sandbanks • Subtidal seagrass beds	**Target Attribute:** **6.** Maintain the presence and spatial distribution of intertidal & subtidal seagrass bed communities **Conservation Objective:** **6.** Maintain or Restore the extent and distribution of qualifying natural habitats of the qualifying species. **Target Attribute:** **7.** Maintain the species composition of component communities. **Conservation Objective:** **7.** Maintain or Restore the structure and function (including typical species) of qualifying natural habitats.	• Removal of target species • Removal of non-target species	**<u>Target species:</u>** A direct effect of wrasse potting includes the removal of the target species: ballan (*Labrus bergylta*), goldsinny (*Ctenolabrus rupestris*) and corkwing (*Symphodus melops*). Rock cook (*Centrolabrus exoletus*) have previously been targeted in the District but this is subject to a proposed change to the Potting Permit Conditions to prohibit the removal of rock cook from a fishery by all Potting Permit holders, including those prosecuting the Live Wrasse Fishery, which was confirmed on 18th June 2020. Cuckoo wrasse (*Labrus mixtus*) are not targeted in the District and are returned to the sea alive if caught. The five species of wrasse generally live among rocky and seaweed covered areas inshore and seagrass beds. Their diet mainly consists of molluscs, crustaceans and barnacles. The five species of wrasse have relatively different life history strategies. The two larger species, ballan and cuckoo are protogynous hermaphrodites, which means they are born females and some change their sex to male later in life. Sexual inversion depends on the proportion of the sexes in local populations and most populations tend to have more females than males (Naylor, 2005). In ballan wrasse, a male guards a harem of females (Darwall *et al.*, 1992). Apart from goldsinny which have planktonic eggs, wrasse have sticky benthic eggs deposited in nests guarded by the males (Darwall *et al.*, 1992). In goldsinny and corkwing wrasse, non-territorial, but mature 'sneaker' males which mimic the female phenotype steal	See above	See above

			fertilisation of eggs in territorial male's nests (Darwall *et al.*, 1992). Wrasse stocks and their biology in the UK are poorly understood and whilst there has been some limited research in the past, currently no stock assessment exists. **Biology:** ***Population structure:*** The minimum size for wrasse used in salmon cages is 12cm. The removal of larger (>12cm) fish has the potential to alter population structures (Darwall *et al.*, 1992) in wild populations. Size at maturity is ~10cm in goldsinny and corkwing wrasse, which is smaller than the current minimum conservation reference size in D&S IFCA's District; this may encourage sustainable populations by allowing some individuals to mature and reproduce. Due to the mature individuals being targeted the average size and age at first maturity may be expected to decrease over time (Darwall *et al.*, 1992). For larger species, such as the ballan and cuckoo wrasse, their size at sexual maturity is higher than 12cm (ballan: females 16-18cm, males 28cm; cuckoo: females 16cm and males 24cm) so individuals may be removed before having a chance to spawn. Cuckoo wrasse are not targeted by the fishery, and the change in the ballan wrasse CRS range which was approved by the B&PSC in July 2021 (to 18–26 cm) should overcome this issue: it will not only shift some of the fishing effort away from the smaller, recently mature females (giving this size class a chance to contribute to overall stock recruitment) but is also likely to continue to protect many of the larger, more fecund mature females (>26 cm). In ballan wrasse, two distinct colour patterns (morphotypes) have been reported: spotted and plain.		

			They coexist in sympatry and are not related to sexual dimorphism. These two types have different life history strategies, in growth and maturation (Villegas-Ríos *et al.*, 2013b), which raises the question of whether they represent one or two different taxonomic species. Alamada *et al.* (2016) found analyses of mitochondrial and nuclear markers revealed no genetic differences between the morphotypes in wrasse samples from Norway, North Spain, Portugal and the Azores. However, Quintela *et al.* (2016) used microsatellite markers for a genetic analysis of plain and spotted wrasse in Galicia (northwest Spain) and concluded there was significant genetic heterogeneity within the species, which appears to be highly associated with the two forms, but not completely explained by them. Spotted individuals are under stronger selective pressure from fisheries because they attain larger mean sizes, and as a result have lower reproductive output, and unbalanced sex ratios due to male-biased overexploitation may occur since the ballan wrasse is a protogynous hermaphrodite (Villegas-Ríos *et al.*, 2013b; Almada *et al.*, 2016). As a precautionary measure, it is recommended that plain and spotted morphotypes should be considered two independent management units (Almada *et al.*, 2016). There is some information available regarding wrasse fisheries in other locations. Darwall *et al.* (1992) and Deady *et al.* (1993) looked at the impact of the first two years of a wrasse fishery in Mulroy Bay and Lettercallow Bay, Ireland. Catch Per Unit Effort (CPUE) decreased and was significantly lower in the second year, there was also a lower percentage frequency of larger wrasse and a reduction of corkwing males greater than 13cm in the second year. Halvorsen *et al.* (Halvorsen *et al.*, 2017) found corkwing males attained larger sizes compared to		

			females and sneaker males and there was a higher capture probability for males, resulting in sex-selective harvesting. Additionally, there was a difference in growth between north and southern populations and the minimum size of 12cm in Norway failed to protect any mature nesting males in five out of eight populations (Halvorsen *et al.*, 2017). ***Social structure:*** The fishery could alter social structures through the removal of large males and subsequently change the sex ratios. Wrasse are highly territorial, occupying small spatial areas (Villegas-Ríos *et al.*, 2013a). Wrasse also have dominance hierarchies, and males have been found to grow faster, attain larger sizes and have a higher capture probability (Halvorsen *et al.*, 2016). The removal of large males may alter the social structures and subsequently change sex ratios within the population. There is also an unknown impact the removal of large, territorial males will have on sneaker males; either decrease in numbers due to the removal of social inhibition for dominant status or increase in numbers through increased spawning success (Darwall *et al.*, 1992). ***Spawning season:*** The need for wrasse in salmon production coincides with the spawning season of wrasse (Skiftesvik *et al.*, 2015) which ranges from April through to September depending on the species. The removal of a significant amount of wrasse within this period would reduce spawning and egg production. Once eggs are laid in a nest, they may take up to 16 days to hatch (Potts, 1974) and during this period the male guards the nest. So the removal of nest guarding males may reduce egg survival (Darwall *et al.*, 1992). Assessment of spawning state of wrasse during D&S IFCA's survey work, including fishery-independent surveys, has informed the current closed season of 1st		

			May – 15th July each year. This closed season has been implemented to encourage protection of spawning individuals during this time. ***Genetics:*** Additionally, it is likely that local populations are genetically isolated and removal would affect stock structure (Skiftesvik *et al.*, 2014). Recorded home ranges of wrasse have been 91m² for ballan (Villegas-Ríos *et al.*, 2013a), territories of up to 2m² for goldsinny (Hilldén, 1981) and >15m² for corkwing (Costello, 1991) but they do travel up to 50m away from their nest site (Potts, 1985). Wrasse's territorial behaviour and production of benthic eggs can suggest limited dispersal from nesting areas (D'Arcy *et al.*, 2013). It has been shown that populations of goldsinny wrasse (Sundt and Jørstad, 1998) and corkwing wrasse (Knutsen *et al.*, 2013) are genetically differentiated along the Norwegian coast, and between Atlantic and Scandinavian populations in ballan wrasse (D'Arcy *et al.*, 2013) and corkwing (Robalo *et al.*, 2012). A relatively long planktonic larval stage, 37-49 days in ballan (Ottesen *et al.*, 2012) but only 25 days in corkwing and goldsinny (Darwall *et al.*, 1992) may contribute to lowering genetic differentiation between adjacent areas (D'Arcy *et al.*, 2013). Water currents can vary in inshore waters and may be responsible for larval transportation along the coast (D'Arcy *et al.*, 2013). However, Gonzalez *et al.* (2016) found habitat fragmentation from a long stretch of sand (26km) along the Norwegian coast is the cause of genetic differentiation between western and southern populations of corking. If wrasse populations are spatially fine structured, local populations experiencing high fishing intensity may be overfished. **Ecology and habitat interactions:** ***Cleaning behaviour:***		

			Additionally, a reduction in cleaning behaviour from the removal of wrasse could have significant implications for parasite populations on other species of fish. Symbiotic cleaning behaviour has been recorded for the five species of wrasse, although not necessarily for both sexes or for all life stages (Costello, 1991). Wrasse cleaning behaviour seems to be instinctive, as wrasse that had never been exposed to salmon before were cleaning within minutes (Bjordal, 1988). Their signature swimming manner, which allows them to swim in any direction, may be recognised by host fish (Costello, 1991). Naylor (2005) noted rock cooks and goldsinny act as cleaner fish on the larger wrasse (i.e. Ballan wrasse) and will remove parasites from their flanks, sometimes in small groups. Certain locations, such as the boilers on a shallow-water wreck, act as 'cleaning stations' where this behaviour can regularly be observed (Naylor, 2005). Hillden (1983) observed ballan wrasse enter goldsinny territory and adopt an invitation posture, before being cleaned by the resident goldsinny in Sweden. Hillden (1983) found goldsinny were a facultative cleaner (diet not dependent on cleaning). Galeote and Otero (1998) found rock cook does not establish clear cleaning stations in Tarifa (Gibraltar Strait area) and they were facultative cleaners. Henriques and Almada (1997) watched rock cook, goldsinny and corkwing wrasse cleaning behaviour at Arrabida, west coast of Portugal. Only rock cook was observed to clean and mostly cleaning corkwing and ballan wrasse. Rock cook were found to be a facultative cleaner, with only 7% of observed feeding acts from cleaning. Costello (1991) summarised the evidence of cleaning behaviour by wrasse in northern Europe. Corkwing, goldsinny and rock cook were observed (majority in aquariums) to clean ballan wrasse, plaice, salmon,		

			bream, mackerel, halibut, anglerfish and grey mullet (Costello, 1991). In Portugal, Henriques and Almada (1997) observed rock cook cleaning mullet, ocean sunfish, six wrasse species and four bream species. Observing cleaning activity in the wild is difficult and attempts often disturb the activity (Hilldén, 1983). ***Habitat/ prey interactions:*** Wrasse are adapted for grazing hard animal growths on seaweeds and rocks, and eating shelled animals (crustaceans and molluscs) (Costello, 1991). The removal of a significant amount of wrasse populations could potentially impact their surrounding habitat. There could be a shift in community structure through loss of grazing small invertebrates. For instance, a negative impact may potentially be seen in kelp forests through an increase of epifaunal growth and/ or epifaunal grazing, as wrasse prey upon isopods, gastropods, amphipods and bryozoans (Norderhaug *et al.*, 2005). There is no literature on the impact the removal of wrasse would have on seagrass beds. Wrasse diet consists of a large amount of crustaceans, and particularly decapods, which for ballan and cuckoo wrasse, makes up a significant amount of their diet (Dipper *et al.*, 1977; Deady and Fives, 1995; Figueiredo *et al.*, 2005; Matic-Skoko *et al.*, 2013). Wrasse are found in seagrass beds and may use this habitat for feeding. Shore crabs, *Carcinus maenas* are known to inhabit seagrass beds, by burrowing under the seagrass rhizomes (Collins *et al.*, 2010). These burrows can undermine the edges of seagrass beds which, in some areas, are already subjected to impacts from moorings and anchors (Collins *et al.*, 2010). The importance of wrasse predation on decapods in seagrass beds is unknown. Vanderkift *et al.* (2007) looked at the density of wrasse species occupying seagrass beds with varying distance from rocky reefs and the level of predation on		

			crabs in Jurien Bay and Marmion Lagoon, lower west coast of Australia. The abundances of wrasses varied significantly among distances, they were more abundant at 0m, than at 30m and >300m, indicating that overall abundance of wrasses declined rapidly within a short distance from the reef edge. The level of predation on crabs was not influenced by proximity to reef (Vanderklift *et al.*, 2007). Studies in New Zealand explored the relationship of wrasse predating on small invertebrate grazers on brown seaweeds. Pérez-Matus and Shima (2010) used mesocosms to look at the interaction with the two Labridae, *Notolabrus celidotus* and *N. fucicola* and found they exerted positive indirect effects on giant kelp, *Macrocystis pyrifera,* via consumption or behavioural modification of amphipods. Newcombe and Taylor (2010) also used *N. celidotus* in mesocosms but containing three species of brown seaweed. They found predation on epifaunal species reduced epifaunal grazing on the seaweeds. In mesocosms without fish, seaweed biomass was reduced (with increased damage). Additionally, in mesocosms with reduced epifaunal densities, seaweeds were larger but more heavily fouled than seaweeds with uncontrolled epifaunal densities (Newcombe and Taylor, 2010). These experimental results were not consistent with findings from field survey sites with varying fish density. Figueiredo *et al.* (2005) looked at the diet of ballan wrasse in relation to the predation of sea urchins in the Azores. Ballan wrasse were found to be important predators of sea urchins, and larger fish accounted for most of the predation on sea urchins. They concluded that a reduction in the abundance and mean size of fishes could result in a trophic cascade, with the proliferation of sea urchins, through a decrease in predation (Figueiredo *et al.*, 2005).		

			One of the research projects being undertaken by a PhD student at the University of Exeter seeks to determine the degree of dietary overlap between species of wrasse, in order to assess whether there is a degree of functional redundancy between these species, and what proportion of wrasse diets is composed of parasites. ***Predation:*** The importance of wrasse as prey for predators is not known. However, wrasse are identified as prey for commercial species such as gadoids (Halvorsen, 2017). They are known to be an important food source for marine birds e.g. shags and cormorants (Steven, 1933) and have been identified as prey for marine mammals such as the grey seal (Gosch *et al.*, 2014). **Non-target species:** Repeated pot deployment may lead to changes in community structure. The selectivity of pots results in low by-catch of non-target species which are released back into the sea. Common by-catch recorded in wrasse pots includes spiny starfish, rockling, sea scorpions, velvet swimming crabs and tompot blennies. Other species seen include conger eels, shrimp, brown crab, squat lobsters, common lobster, whelks, cushion starfish, dragonets, goby, blenny and juvenile gadoids (Pers observation). Benthic communities are thought to be relatively unaffected by static gear due to the footprint of the gear and the small area of the seabed in direct contact (Eno *et al.*, 2001). However potential exists for epifauna to be damaged or detached and resistance to this varies with species (Roberts *et al.*, 2010). For impact on seagrass bed communities see target attributes/ conservation objectives 4 & 5.		

7. Conclusion

Potting activities are considered to be generally low impact when compared to demersal towed gear. However, there is potential for impact through gear dropping onto organisms on deployment; the movement of gear on the benthos due to tide, current, and storm activity; and as the gear is retrieved if dragged laterally when lifted. Benthic communities are thought to be relatively unaffected by static gear such as potting due to the footprint of the gear and the small area of the seabed in direct contact (Eno *et al.*, 2001). No literature on the specific impacts of pots on seagrass beds could be found (Walmsley *et al.*, 2015). However, studies have been conducted on the impacts of anchoring and mooring on seagrass beds. These studies were used as a worst case scenario for impacts as pots do not penetrate into the seabed. The wrasse pots used are lightweight and potting for wrasse predominantly occurs on infralittoral rock. There is no exposure for intertidal seagrass beds and a low exposure for subtidal seagrass beds to pressures from wrasse potting activities (as only one string of wrasse pots has been seen to overlap the seagrass beds in the last three years). Ongoing enforcement and compliance patrols, on board surveys and data collection, and the Potting Permit Byelaw can identify if there is a change in the current activity levels and spatial distribution. Evidence suggests there are no adverse effects from the impacts of abrasion from potting, and at the current levels of activity in Plymouth Sound SAC the conservation objectives of the sub-features can be reached. Below, is a final summary of the evidence supporting this conclusion and outline the data collection and adaptive management commitments that will continue to support this conclusion.

Wrasse stocks and their biology in the UK are poorly understood and whilst there has been some limited research in the past, currently no stock assessment exists. The removal of wrasse can affect their population and social structures. In the past wrasse have been treated as a single species by the fishery, however, they exhibit different life history strategies, requiring different management and monitoring measures (Skiftesvik *et al.*, 2015). The impact of the wrasse fishery in Plymouth is largely unknown except through IFCA monitoring and subsequent publications (e.g. (Henly *et al.*, 2021), and the need to collect data on the effort and the potential impacts is recognised. D&S IFCA have introduced management through permit conditions (see section 4) for the Live Wrasse Fishery. Data collection for 2021 onwards will be improved by increased coverage of observer surveys, while the data analysis has been improved by the use of advanced, peer-reviewed statistical methods as presented in Henly *et al.* (2021) and in Annex 7. The requirement for fishers to submit returns forms has been removed for 2021, which will reduce the associated administrative and time cost of monitoring, and allow greater focus on monitoring via observer surveys. The observer surveys provide much richer and more reliable data (which form the basis for all relevant analyses, Annex 7), and are especially efficient when carried out from D&S IFCA's RIB; using the RIB as an observer platform reduces the time taken to conduct each survey, is seen as safer than surveys on board fishing vessels, and can be effectively combined with other patrol and enforcement work.

The fishery is highly restricted, being one of the most regulated and managed fisheries in the country. D&S IFCA has been carrying out observer surveys to collect information about the fishery since 2017. The data collected were reviewed in annual reports produced in November 2017, November 2018, February 2020, and February 2021. The Executive Summary from the most recent report (Review of the Live Wrasse Fishery in Devon and Severn IFCA's District 2017–2020) report summarises the findings:

"A fishery for the live capture of wrasse for use as cleaner fish in Scottish salmon farms developed in the Devon and Severn Inshore Fisheries and Conservation Authority's (D&S IFCA's) District in 2015. Management was introduced in 2017 via the D&S IFCA Potting Permit Byelaw. These management measures have been adapted since their introduction based on evidence from the analysis of data collected during observer surveys in the D&S IFCA District. These previous analyses however, were unable to consider changes in catch per unit effort (CPUE) and landings

per unit effort (LPUE) whilst controlling for variation that comes about as a result of geographical location an environmental variables. This report standardises monitoring data from the fishery observer surveys conducted by D&S IFCA's Environment Officers with fishing locations and environmental data obtained from external sources and identifies the main drivers of variation in CPUE and LPUE. Implications of the results for future management and sustainability of the fishery are discussed.

[…] "

The main drivers of variation in CPUE and LPUE varied between species. There was evidence of a decline in ballan wrasse CPUE and LPUE, particularly on the landward side of the breakwater. This decline is likely driven by the relatively high retention rate of ballan wrasse in combination with specific life history and behavioural characteristics that leave the species vulnerable to overfishing. No negative year effects were seen for the other wrasse species. There was no evidence of a decline in rock cook CPUE or LPUE across the 2017–2020 period, despite evidence of a decline highlighted in last year's report (Curtin *et al.*, 2020) that led to a prohibition on the removal of rock cook wrasse from the fishery. Rock cook CPUE and LPUE showed significant variation across broad-scale fishing areas (significantly lower in the more sheltered areas, which are protected from wind and wave exposure by the breakwater). As the majority of the observer surveys have been conducted in more sheltered locations in the last two years, it is unsurprising that the Three Year Comprehensive Review, which was not able to control for geographical variation in CPUE and LPUE, highlighted a decline in these measures over the 2017–2019 period. Goldsinny wrasse showed seasonal variation in CPUE and LPUE across the survey season (decreasing from July to October) and lower catches were observed in locations closest to the freshwater outputs of the River Tamar. These observations agree with previously reported trends in the literature that suggest goldsinny wrasse are found in their highest densities in the summer months and away from locations that are influenced by freshwater runoff. Finally, there was a significant increase in corkwing wrasse CPUE across the 2017–2020 period, along with evidence of seasonal variation in CPUE and LPUE (increasing throughout the July – October season). The change in CRS limits in 2018 has likely benefitted the species as a lower proportion of corkwing are being landed and mature individuals of each sex are likely being protected. The seasonal variation may reflect the species' spawning season and concurrent activity levels […]"

The report was presented to the D&S IFCA's B&PSC and recommendations for management changes were proposed as outlined on page 11 of this assessment. D&S IFCA has consulted on changes to the permit conditions to change the Conservation Reference Size limits for ballan wrasse from 15–23 cm to 18–26 cm. This change to the conditions was aproved at the B&PSC meeting on July 2021. Through the 2021 consultation, concerns were raised regarding the sustainability and impacts of the fishery. D&S IFCA's Officers have addressed these concerns in a paper submitted to the Byelaw and Permitting Sub-Committee; in the interests of transparency, this paper is included here as Annex 8. Triggers that would initiate a further review of management include: any increase in effort (number of boats above four), failure to meet permit conditions, failure to adhere to voluntary closed areas, on board surveys identify over half the proportion of the spawning season not protected, a significant decrease in CPUE or LPUE, and a shift in size distribution. Data from each year of the fishery (including 2021 and onwards) will continue to be reviewed at the end of each season, in order to inform management in a timely fashion.

D&S IFCA has been able to rapidly respond to evidence gathered from literature reviews, consultation and data from the Live Wrasse Fishery to apply adaptive management to prevent adverse effects of potting for Live Wrasse on attributes of EMS features. Specifically, the D&S IFCA B&PSC recommended the change in CRS limits for ballan wrasse to 18–26 cm and the removal of the requirement for fishers to submit returns forms; these measures are in addition to the initial management measures (2017), the changes to management put in place in 2018 regarding the conservation reference sizes for corkwing and changes to the closed season, and the prohibition on

the removal of rock cook from the fishery by all permit holders put in place in 2020, as outlined on pages 9-12 of this assessment.

D&S IFCA is liaising with a PhD student at the University of Exeter who is studying the wrasse fishery. This assessment will also be reviewed should the PhD research present evidence that the fishery and its current management may be unsustainable.

8. In-combination Assessment

8.1 Other Fishing Activities

The following fishing activities are either occurring or have not been able to have been ruled out as occurring in the Plymouth Sound and Estuaries EMS.

Handworking – There are no records of this activity taking place commercially, but it has not been able to be ruled out. Therefore, no in-combination effect thought to be possible.

Crab tiling – Activity is occurring within Plymouth Sound and Estuaries EMS and has been assessed by D&S IFCA. Crab tiling is not thought to occur on seagrass features, so no in-combination effect thought to be possible.

Digging with forks - Activity is occurring within Plymouth Sound and Estuaries EMS, though this activity is not thought to occur on seagrass features. Therefore, no in-combination effect thought to be possible.

Shrimp push nets - There are no records of this activity taking place, but it has not been able to be ruled out. Therefore, no in-combination effect thought to be possible.

Pots/ creels - Potting occurs on a medium level within Plymouth Sound and Estuaries SAC. Although potting for crustaceans occurs on similar habitats to wrasse pots (circalittoral and infralittoral rock), wrasse pots are not hauled in areas with a depth greater than 12m so predominantly target infralittoral rock. There are a maximum of 480 wrasse pots within D&S IFCA's District at any one time. With the existing level of crustacean pots and at the current level of the wrasse fishery, it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.

Cuttlepots - Activity not occurring, therefore no in-combination effect thought to be possible.

Commercial diving - Activity not believed to be occurring/ occurring at a very low level. Therefore, no in-combination effect thought to be possible.

Beach seine/ ring nets - There are no records of beach seine nets but it has not been able to be ruled out. Therefore, no in-combination effect thought to be possible. Ring nets are occurring in Plymouth Sound with two Plymouth based ring netters and sometimes visiting ring netters. Ring nets do not interact with the sub-features assessed, therefore, no in-combination effect thought to be possible.

Purse seine - There are no records of this activity taking place, but it has not been able to be ruled out. Therefore, no in-combination effect thought to be possible.

Drift, gill, trammel & entangling nets - Drift netting occurring on a medium level, with several small dories drift netting for herring. Fixed nets (gill, trammel and entangling) are known to occur within and close to Plymouth Sound and Estuaries SAC. Due to the low level of both fishing activities

occurring on seagrass it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.

Fyke and stakenets - There are no records of this activity taking place, but it has not been able to be ruled out. Therefore, no in-combination effect thought to be possible.

Longlines - Activity occurs at a very low level, with one long-liner operating around the mouth of the Tamar. Due to the low level of fishing activity it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.

Handlines, Jigging and trolling - There are no records of these activities taking place commercially, but they have not been able to be ruled out. Therefore, no in-combination effect thought to be possible.

Therefore, in light of the above considerations D&S IFCA conclude there is no likelihood of significant adverse effect on the interest features from in-combination effects with other fishing activities addressed within section 8.1.

8.2 Other Activities

Plymouth Sound and Estuaries EMS is a busy site, with other commercial ongoing plans/projects from different sectors where impacts could combine.

Currently there are proposed plans or projects in Plymouth Sound and Estuaries EMS which could theoretically interact with the sub-features addressed. These activities have been included following the informal advice from Natural England.

Description: Maintenance dredging within Western Mill Lake and North Yard at HMNB Devonport which is carried out twice yearly; the current marine license extends to 2028. Includes trailer suction hopper dredging carrying out the majority of maintenance and additional small-scale dredging techniques: plough, grab and submersible pump dredging. A maximum amount of 500,000m³ of silt and 50,000m³ of sand will be removed during the 10 year license period.

Pressures:

- Abrasion/disturbance of the substrate on the surface of the seabed
- Changes in suspended solids (water clarity)
- Habitat structure changes – removal of substratum (extraction)
- Litter
- Organic enrichment
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Removal of target species
- Removal of non-target species
- Siltation rate changes, including smothering
- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Introduction of other substances (solid, liquid or gas)
- Introduction or spread of non-indigenous species
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.

In-combination assessment: At the current level of fishing activity it is thought that no in-combination effects will lead to the conservation objectives not being met for the features assessed.

Description: Previously, D&S IFCA have granted dispensation for annual Marine Biological Association (MBA) scientific survey work on research vessel Sepia within the EMS to fish for scientific purposes. Activity involving 4m beam trawl in West Mud (Tamar) and Yealm Mouth, demersal otter trawl in Bigbury bay, and rectangle dredge in New Ground (Plymouth Sound), Mewstone and Stoke Point. Following further review of this dispensation, the only activity now allowed for the MBA under exemption from D&S IFCA Byelaws is demersal otter trawl in Bigbury Bay, and will require thorough assessments before being granted or declined.

Pressures:

- Abrasion/disturbance of the substrate on the surface of the seabed
- Changes in suspended solids (water clarity)
- Litter
- Organic enrichment
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Removal of target species
- Removal of non-target species
- Siltation rate changes, including smothering
- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Introduction of other substances (solid, liquid or gas)
- Introduction or spread of non-indigenous species
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.

In-combination assessment: Following a separate HRA and MCZ assessment for this activity, D&S IFCA concludes that it is unlikely that in-combination effects will lead to the conservation objectives not being met for the features assessed.

SPA:

Description: Kinterbury Helicopter site includes construction of helicopter landing pad, demolition of three buildings, construction of a new building and modifications of one building.

Pressures:

- Above water noise
- Visual disturbance

In-combination assessment: Potting thought to only occur in the subtidal and not believed to interact with features assessed. Therefore, no in-combination effect thought to be possible.

Description: Trevol Jetty refurbishment, Torpoint.

Pressures:

- Abrasion/disturbance of the substrate on the surface of the seabed
- Litter
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Above water noise
- Visual disturbance

In-combination assessment: Potting thought to only occur in the subtidal and not believed to interact with features assessed. Therefore, no in-combination effect thought to be possible.

Other*:* The impact of future plans or projects will require assessment in their own right, including accounting for any in-combination effects, alongside existing activities.

D&S IFCA conclude there is no likelihood of significant adverse effect on the interest features from in-combination effects with other plans or projects addressed within section 8.2.

9. Summary of consultation with Natural England

The original assessment (version 1) was formally signed off by Natural England on 03/05/2016. The activities (cuttlepots and fishtraps) were not believed to be occurring at that time. A reassessment for fishtraps was sent for informal advice to Natural England in April 2017 (version 2) after new information revealed an emergent Live Wrasse Pot Fishery. Version 3 contained amendments from the informal advice received from Natural England, and updated management measures. Version 4 (August 2020) accounted for the changes that occurred in the two years since version 3 (2018-2020), including the completion of the Comprehensive Review of the Live Wrasse Fishery and changes in management of the fishery implemented over time. This version (version 5; 2021) accounts for recent assessments of the fishery (Henly and Stewart, 2021a, 2021b; Henly *et al.*, 2021), in addition to changes to relevant management measures. Cuttlepots have been assessed in a separate HRA.

10. Integrity test

It can be concluded that the activities assessed in this HRA, fish traps, alone or in-combination, do not adversely affect the sub-features: subtidal seagrass beds and intertidal seagrass beds of the Plymouth Sound and Estuaries SAC and that future activity, at the levels anticipated, will not foreseeably have an adverse effect on these sub-features of the site. Due to the D&S IFCA's Potting Permit Byelaw the number of potters in the District can be monitored. The permitting system allows for adaptive management and changes have been made to the permit conditions, via a consultation.

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Annex 2: Previous HRA and Natural England's consultation advice


NE response to live wrasse potting pern


NE informal advice Plym SAC seagrass v:


NE Informal Advice Fish Traps V.2 Seagr


320633_NE advice to DS IFCA_FishTraps 20:


Plym SAC & SPA Seagrass vs fishtraps

Annex 3: Site Map

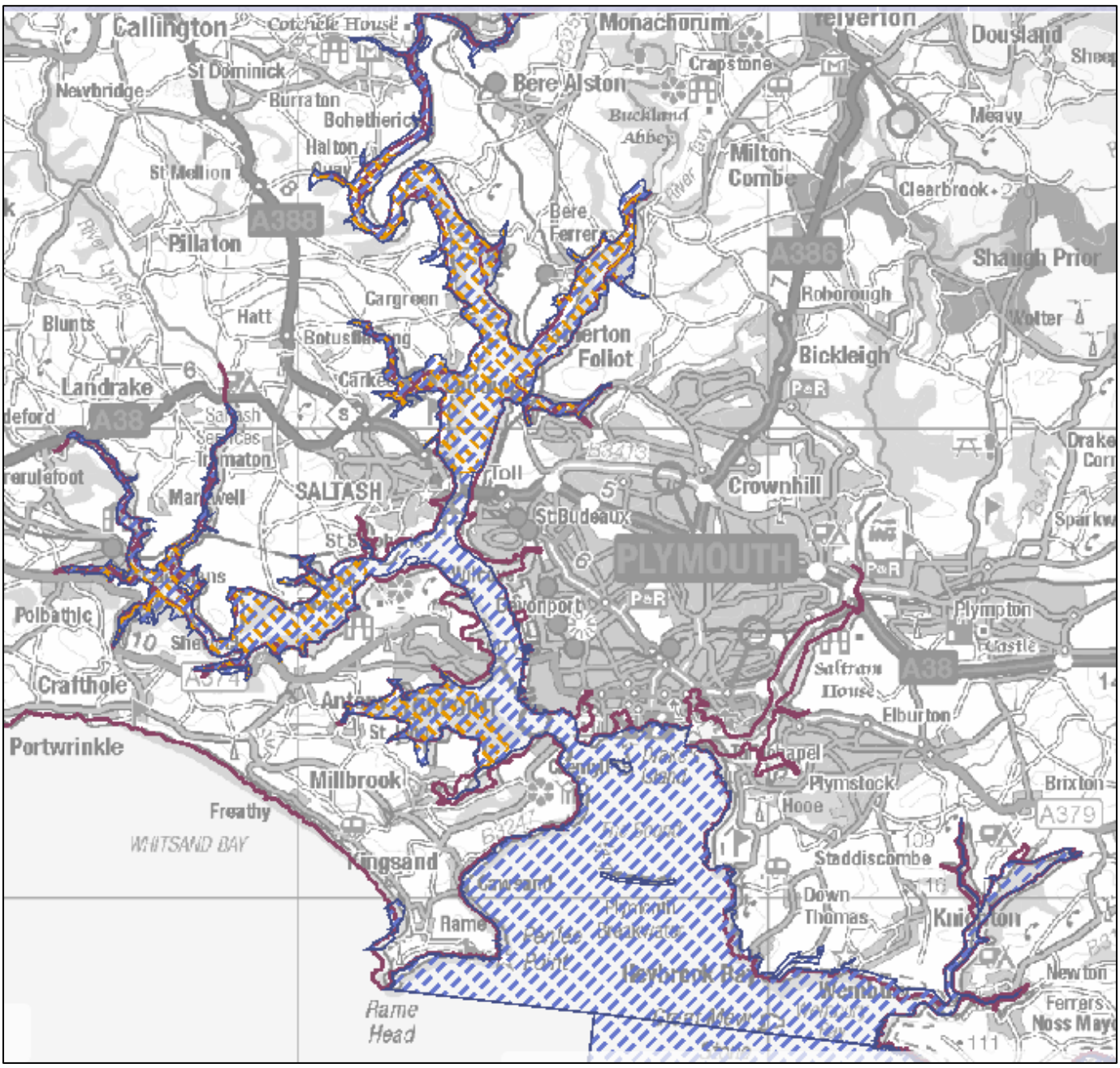


Figure 1 - Area of SAC (blue hatched) and SPA (Orange hatched) (MAGIC, 2015)

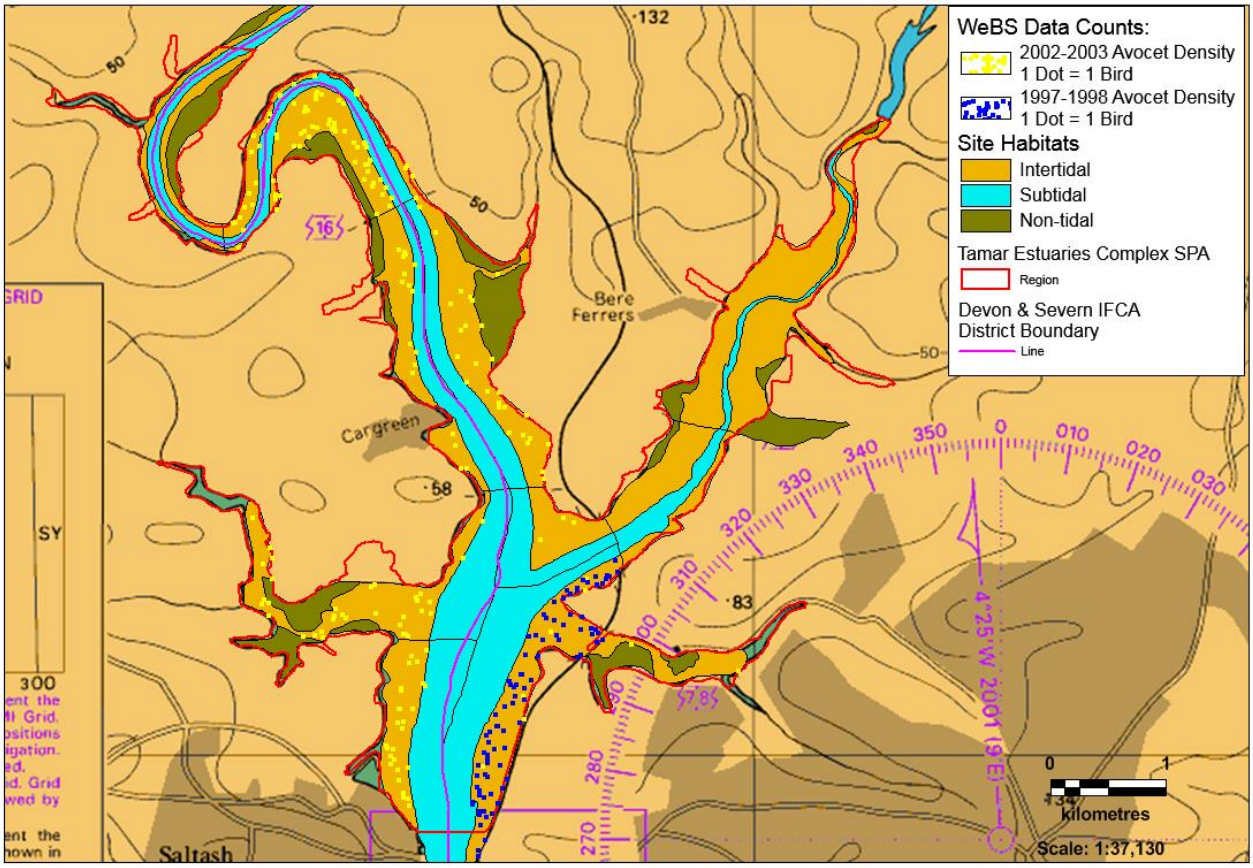


Figure 2 - Tamar Estuaries Complex SPA and WeBS data for Avocet density (in November, December, January and February 1997-1998 & 2002-2003).

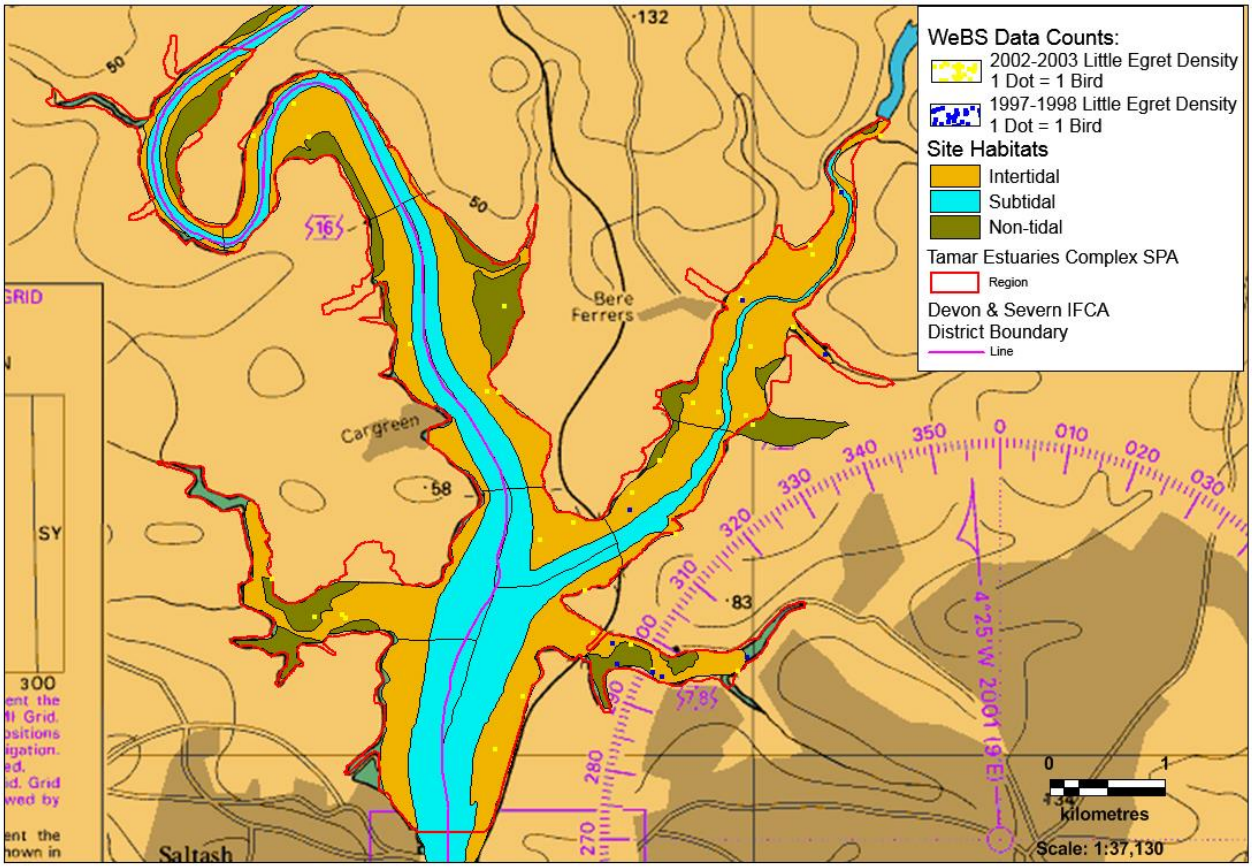


Figure 3 - Tamar Estuaries Complex SPA and WeBS data for Little Egret density (in November, December, January and February 1997-1998 & 2002-2003).

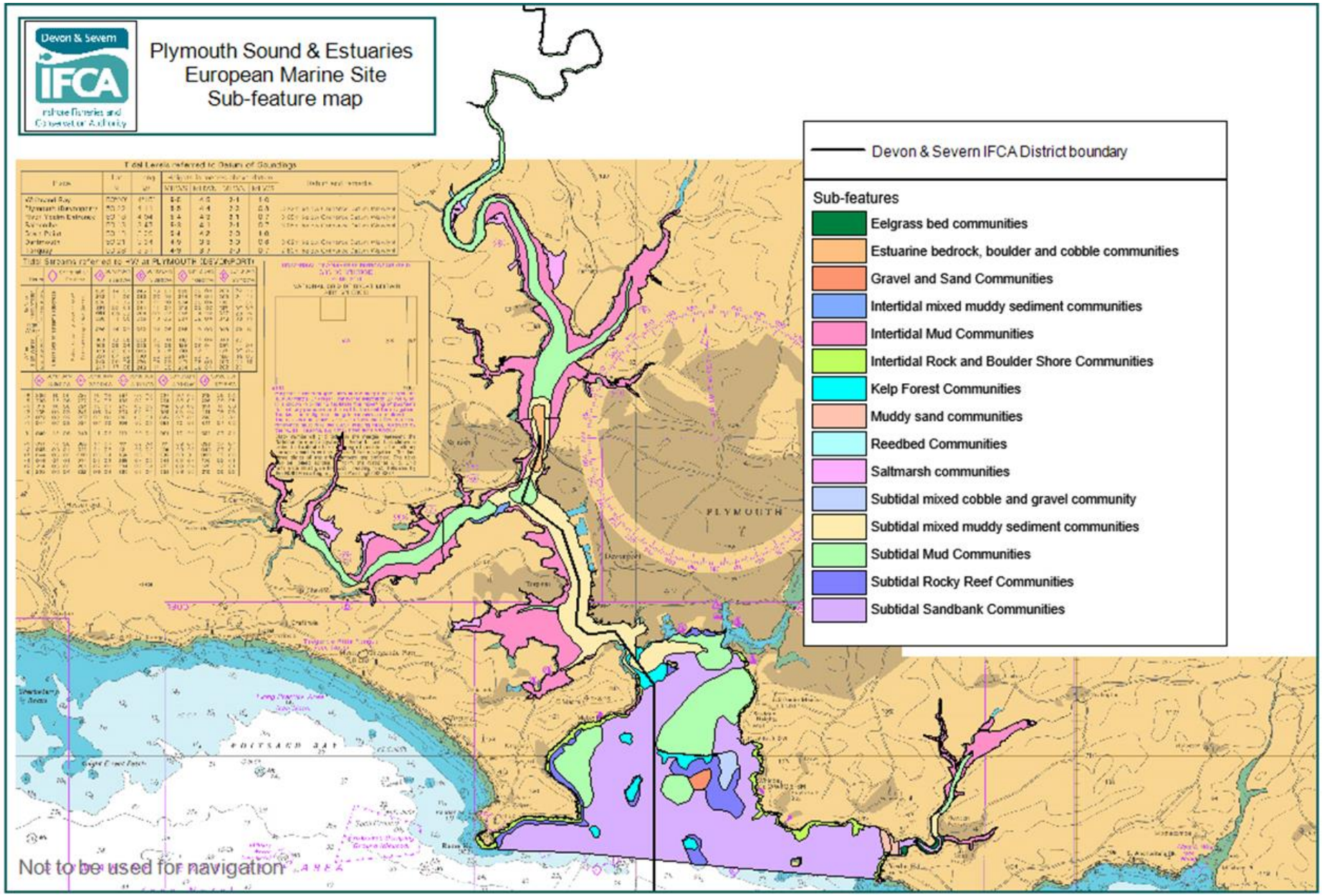


Figure 4 - Plymouth Sound & Estuaries EMS sub-features Annex 4: Fishing activity maps

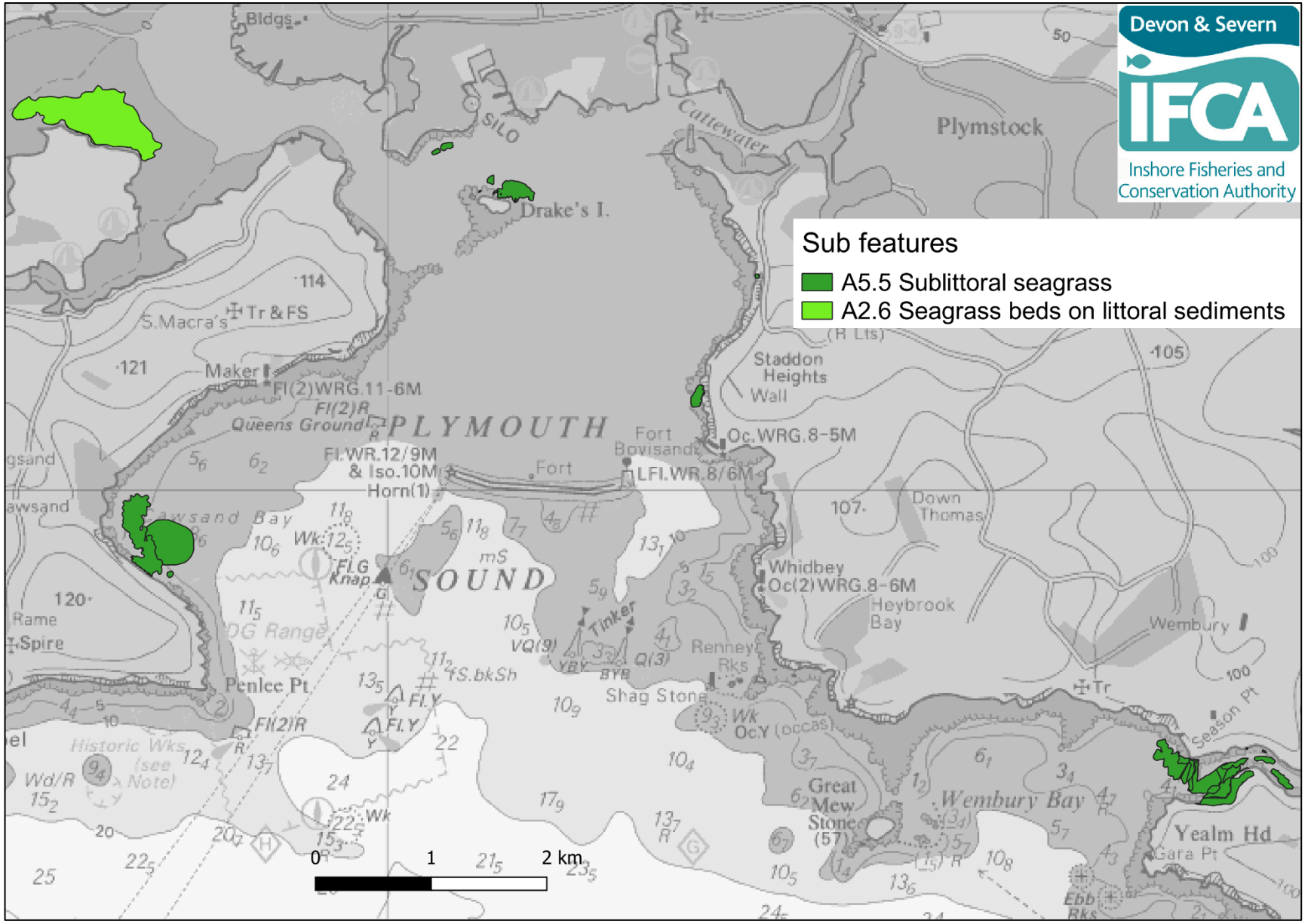


Figure 5 – Plymouth Sound and Estuaries seagrass features

Annex 4: Fishing activity maps

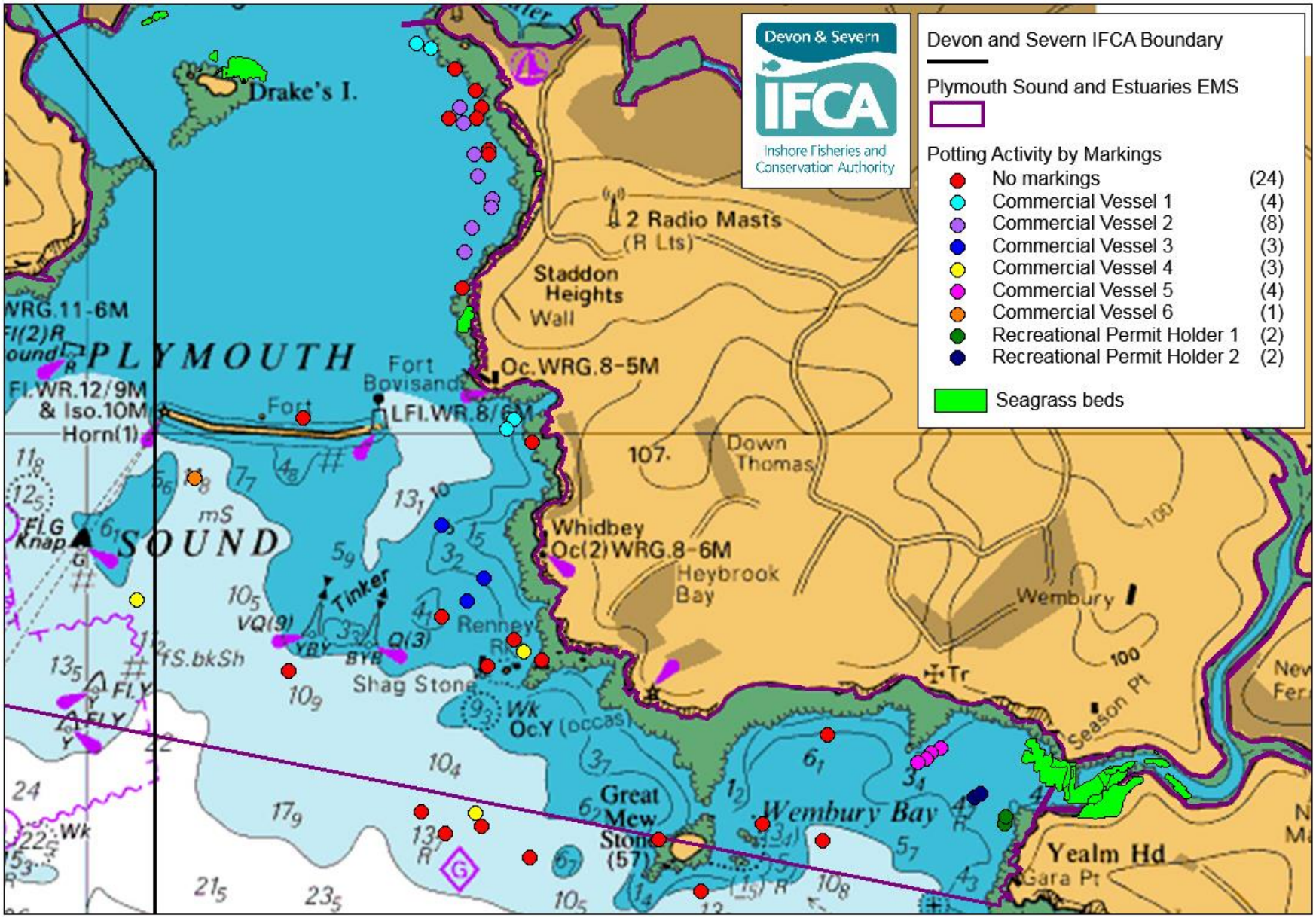


Figure 1 - Potting activity (markings on buoys) recorded within and near Plymouth Sound and Estuaries EMS in May 2016.

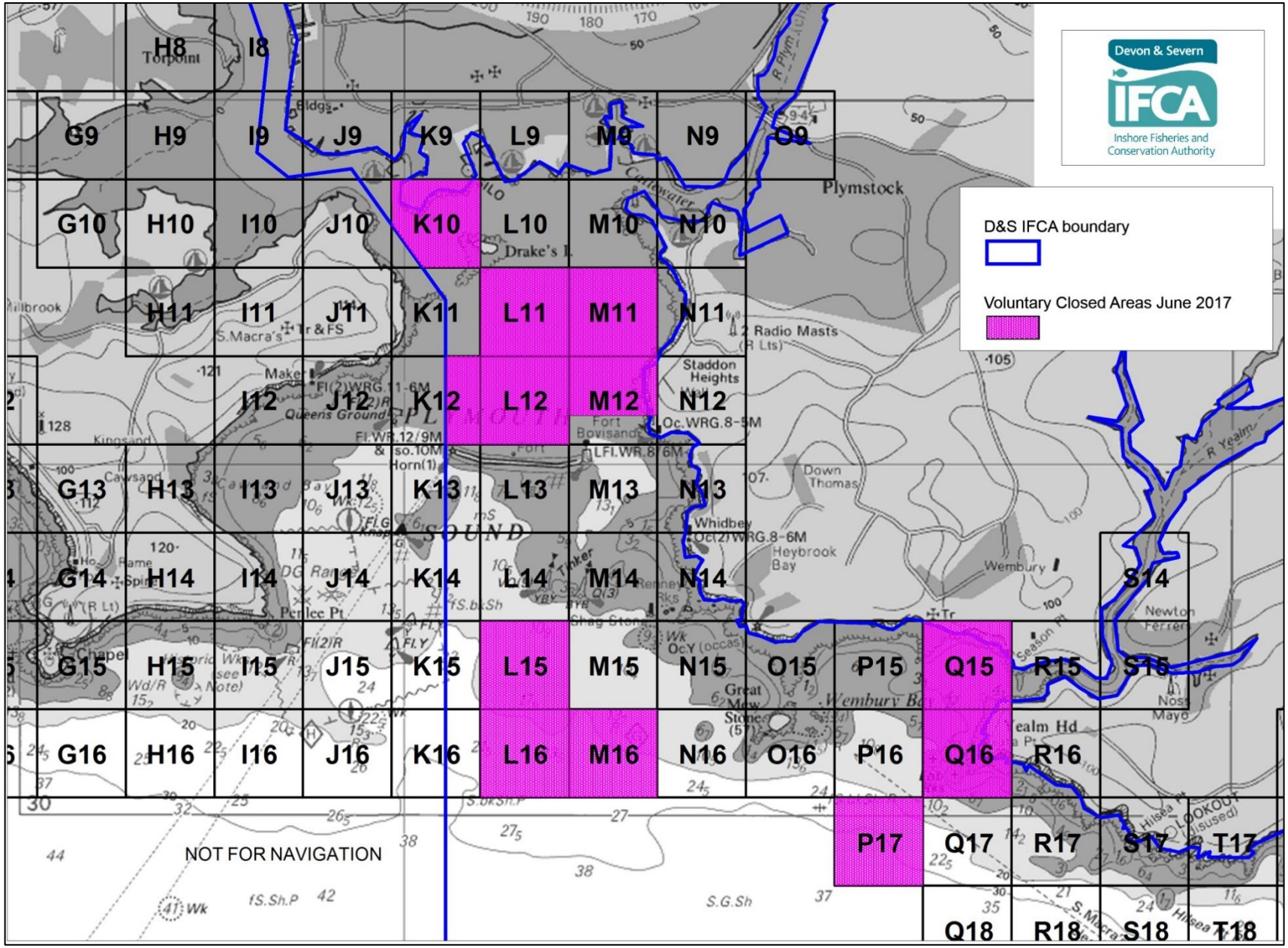


Figure 2 - Voluntary closed areas to the Live Wrasse Fishery (implemented end of June 2017)

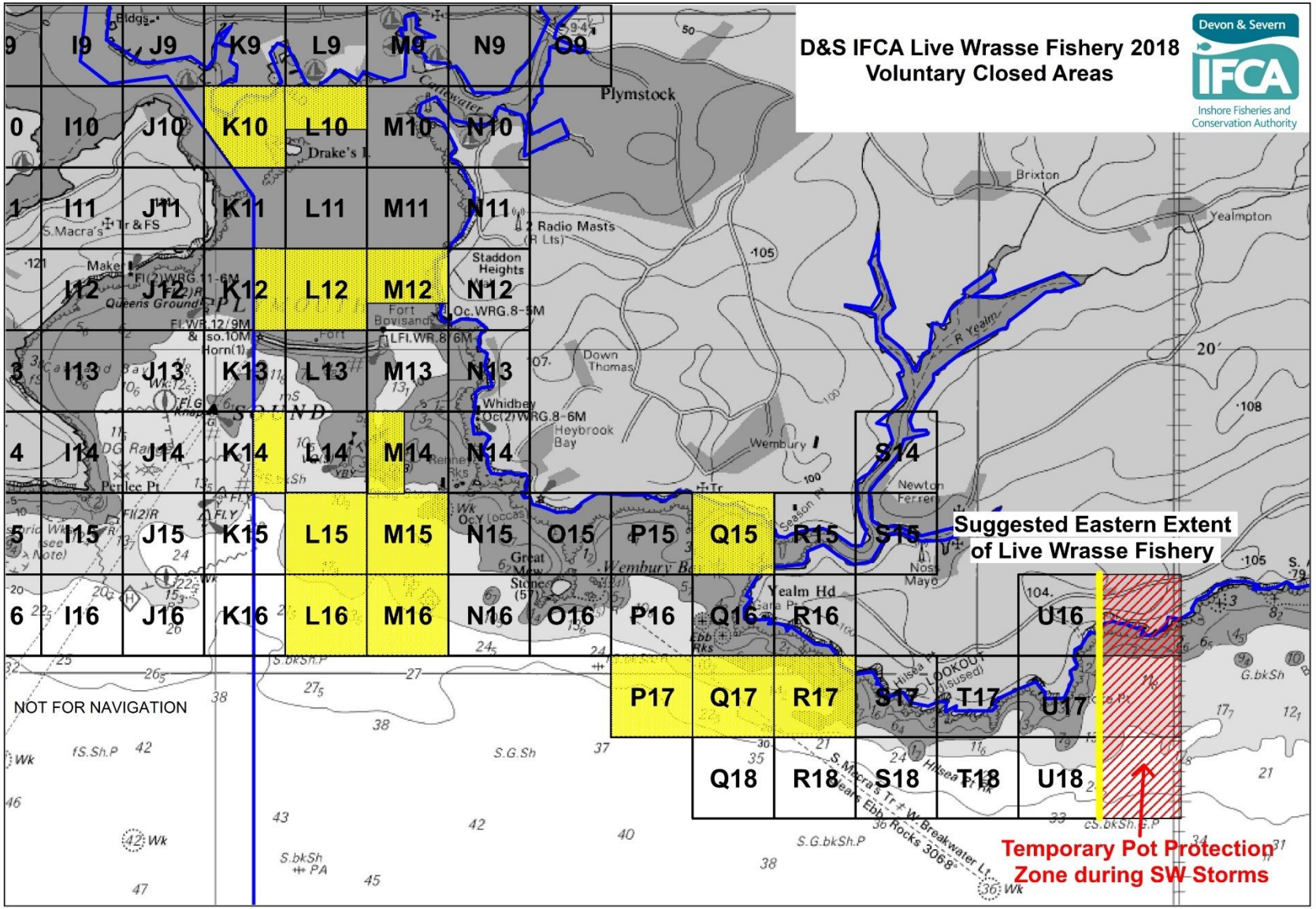
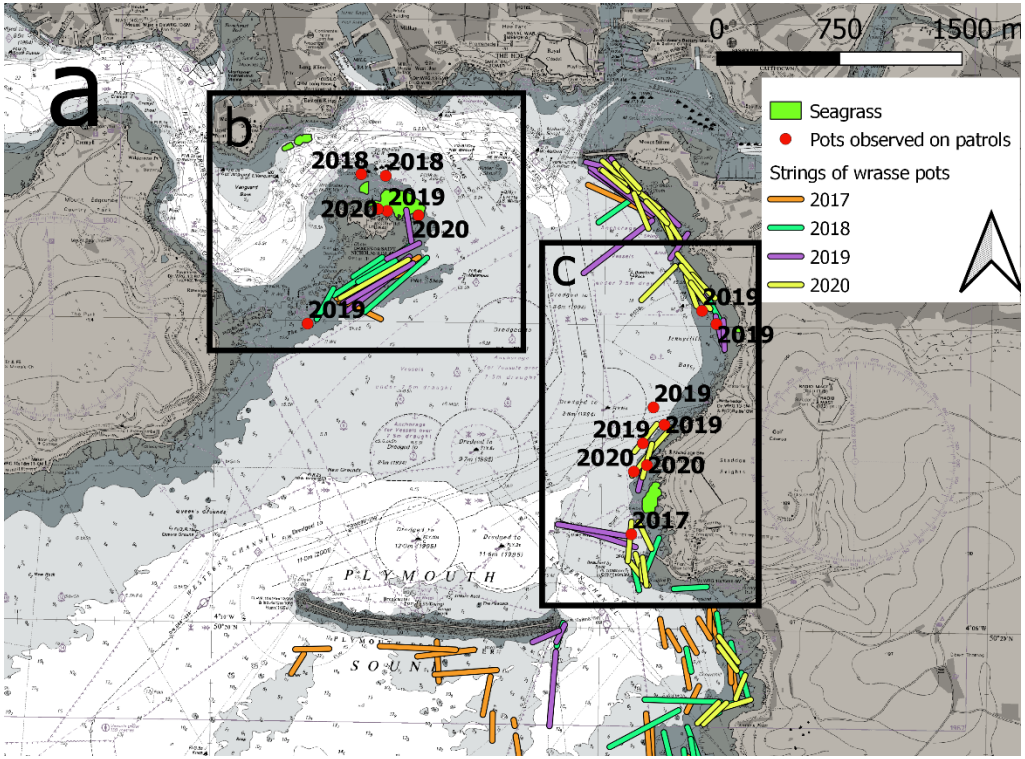
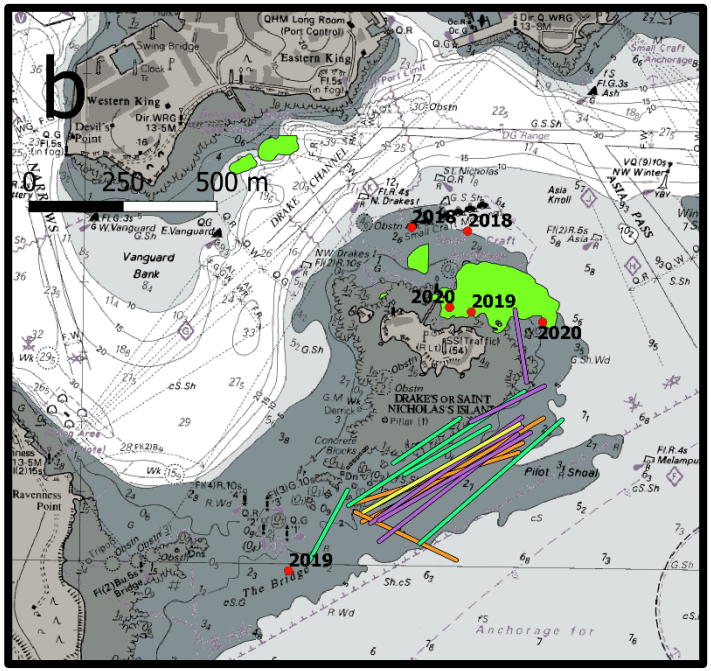


Figure 3 - Voluntary closed areas (yellow boxes) to the Live Wrasse Fishery (implemented 2018, superseding previous closed areas)


a
b
c
0
750
1500 m
Seagrass
Pots observed on patrols
Strings of wrasse pots
2017
2018
2019
2020
PLYMOUTH
SOUND


b
0
250
500 m
Vanguard Bank
DRAKES OR SAINT NICHOLAS'S ISLAND
Pilot Shoal
Anchorage for

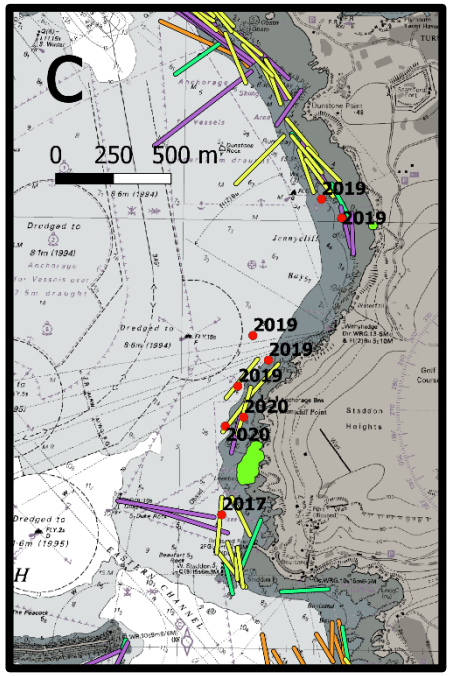
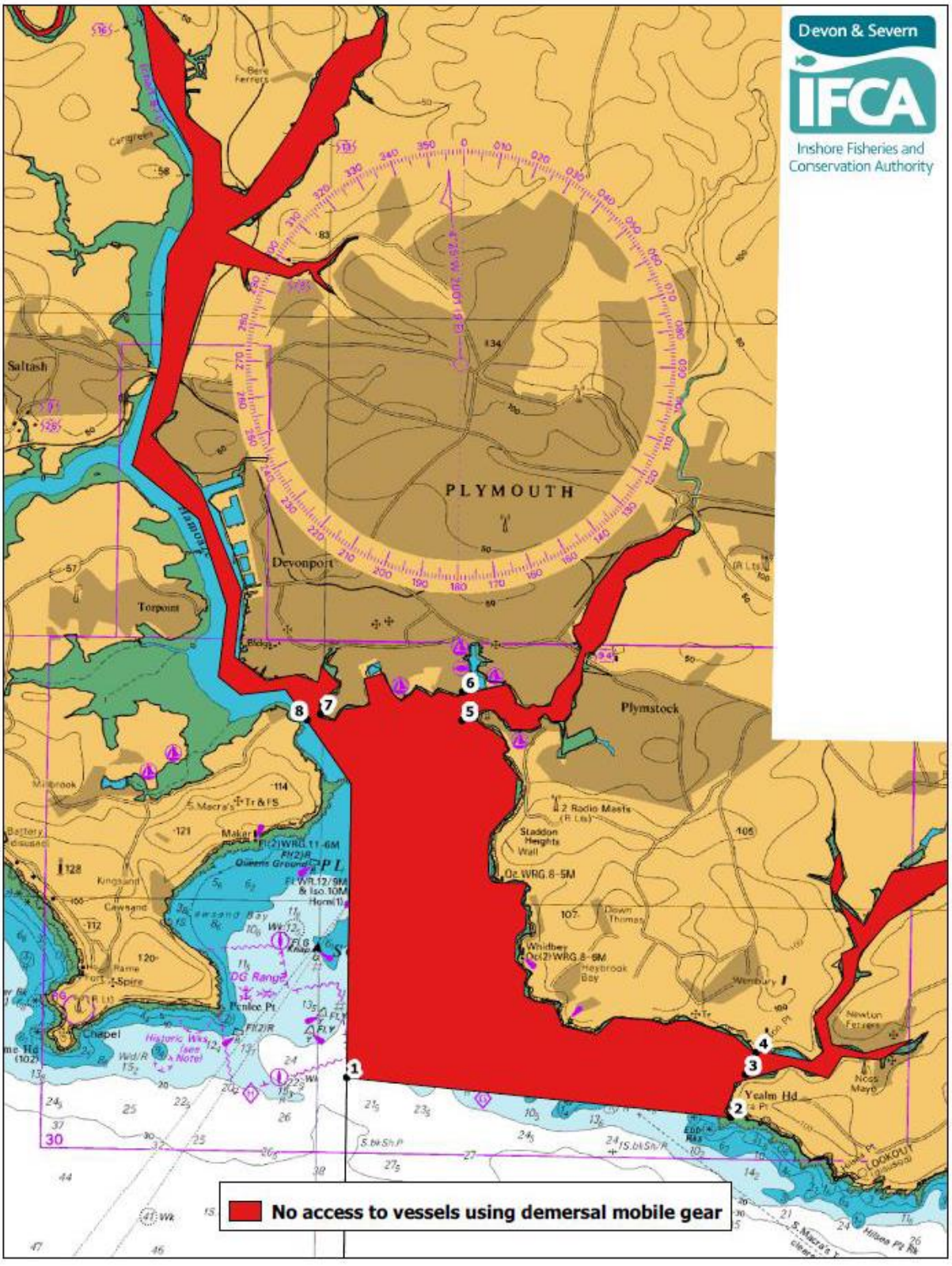

c
0
250
500 m

Figure 4 - Strings of wrasse pots surveyed during on board wrasse surveys during 2017–2020, and pots of all types noted on potting patrols during 2017–2020, superimposed on seagrass sub-features of Plymouth Sound and Estuaries SAC

Annex 5: Mobile Fishing Permit Byelaw map

(Annex 4 of D&S IFCA's Mobile Fishing Permit Conditions 2020)

Annex 4 Plymouth Sound and Estuaries - No access to vessels using demersal mobile gear



Latitude and Longitude positions marked on Figure 1 (Annex 5) above:

Point Number	Latitude			Longitude		
1	50°	18.484’	N	004°	09.600’	W
2	50°	18.192’	N	004°	04.458’	W

Landward boundary follows mean high water to Yealm Estuary Closing Line

Point number	Latitude			Longitude		
3	50°	18.560’	N	004°	4.268’	W
4	50°	18.749’	N	004°	4.133’	W

Landward boundary follows mean high water to Plym Estuary Closing Line

Point number	Latitude			Longitude		
5	50°	21.556’	N	004°	8.130’	W
6	50°	21.801’	N	004°	8.130’	W

Landward boundary follows mean high water to Tamar Estuary Closing Line

Point number	Latitude			Longitude		
7	50°	21.592’	N	004°	10.026’	W
8	50°	21.540’	N	004°	10.206’	W

Point 8 returning to point 1 is the Western District boundary.

Annex 6: Pressures Audit Trail

Traps Pressure(s)	SAC Sub-feature(s)		Screening Justification
	Intertidal seagrass	Subtidal seagrass	
Abrasion/disturbance of the substrate on the surface of the seabed	S	S	**IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Genetic modification & translocation of indigenous species	S	S	**OUT** – the fleet operates in local area only so risk considered extremely low
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	NS	NS	**OUT** - Insufficient activity levels to pose risk of large scale pollution event
Introduction of other substances (solid, liquid or gas)	IE	IE	**OUT** - Insufficient activity levels to pose risk of large scale pollution event
Introduction or spread of non-indigenous species	S	S	**OUT** - Fleet operates in local area only so risk considered extremely low
Litter	IE	IE	**OUT** - Insufficient activity levels to pose risk at level of concern
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	S	S	**OUT** – Penetration of the substrate from anchoring when potting, occurs on such an infrequent basis that the impact would be minimal.

Removal of non-target species	S	S	**IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Removal of target species	NS	NS	**IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	NS	NS	**OUT** - Insufficient activity levels to pose risk of large scale pollution event
Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	NS	NS	**OUT** - Insufficient activity levels to pose risk of large scale pollution event

Pressure(s): No advice on operations for traps so anchored nets/lines used instead.	Bird features & Screening Justification		SPA Supporting habitat(s) & Screening Justification
	Avocet	Little egret	Intertidal seagrass
Above water noise	**Sensitivity: S**	**Sensitivity: S**	
	IN – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure		
Abrasion/disturbance of the substrate on the surface of the seabed			**Sensitivity: S** **IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Barrier to species movement	**Sensitivity: S**	**Sensitivity: S**	
	OUT – Insufficient activity levels to pose risk at level of concern		
Collision ABOVE water with static or moving objects not naturally found in the marine environment	**Sensitivity: S**	**Sensitivity: S**	
	OUT – Insufficient activity levels to pose risk of large scale pollution event		
Genetic modification & translocation of indigenous species			**Sensitivity: S** **OUT** – the fleet operates in local area only so risk considered extremely low
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	**Sensitivity: IE**	**Sensitivity: IE**	**Sensitivity: NS** **OUT** - Insufficient activity levels to pose risk of large scale pollution event
	OUT – Insufficient activity levels to pose risk of large scale pollution event		
Introduction of other substances (solid, liquid or gas)	**Sensitivity: IE**	**Sensitivity: IE**	**Sensitivity: IE** **OUT** - Insufficient activity levels to pose risk of large scale pollution event
	OUT – Insufficient activity levels to pose risk of large scale pollution event		
Introduction or spread of non-indigenous species	**Sensitivity: NS**	**Sensitivity: NS**	**Sensitivity: S** **OUT** - Fleet operates in local area only so risk considered extremely low
	OUT – Fleet operates in local area only so risk considered extremely low		
Litter	**Sensitivity: IE**	**Sensitivity: IE**	**Sensitivity: IE** **OUT** - Insufficient activity levels to pose risk at level of concern
	OUT – Insufficient activity levels to pose risk at level of concern		
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			**Sensitivity: S** **OUT** – Penetration of the substrate from anchoring when potting, occurs on such an infrequent basis that the impact would be minimal.
Removal of non-target species	**Sensitivity: S**	**Sensitivity: S**	**Sensitivity: S** **IN** – Pot selectivity results in very low incidental by-catch and mortality
	OUT – Pot selectivity results in very low incidental by-catch		
Removal of target species			**Sensitivity: NS** **IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure

<table>
<tr><td rowspan="2">Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.</td><td>Sensitivity: IE</td><td>Sensitivity: IE</td><td rowspan="2">Sensitivity: NS
OUT - Insufficient activity levels to pose risk of large scale pollution event</td></tr>
<tr><td colspan="2">OUT - Insufficient activity levels to pose risk of large scale pollution event</td></tr>
<tr><td rowspan="2">Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.</td><td>Sensitivity: S</td><td>Sensitivity: S</td><td rowspan="2">Sensitivity: NS
OUT - Insufficient activity levels to pose risk of large scale pollution event</td></tr>
<tr><td colspan="2">OUT - Insufficient activity levels to pose risk of large scale pollution event</td></tr>
<tr><td rowspan="2">Visual disturbance</td><td>Sensitivity: S</td><td>Sensitivity: S</td><td rowspan="2"></td></tr>
<tr><td colspan="2">IN - Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure</td></tr>
</table>

Annex 7: Review of the Live Wrasse Fishery in Devon and Severn IFCA's District 2017–2020


The Live Wrasse Fishery 2017-2020 v1


SummaryReport_WrasseReview2017-202

Annex 8: Paper provided to D&S IFCA's Byelaw and Permitting Sub-Committee, addressing concerns raised in the 2021 consultation on Amendments to the Permit Conditions to Manage the Live Wrasse Pot Fishery

B&PSC Wrasse &
Potting Formal Cons