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)
HRA_UK0013111_W23	Fishtraps	Intertidal rock
HRA_UK0013111_Z23		Circalittoral rock
HRA_UK0013111_AC23		Infralittoral rock

(V.3 Updated August 2017)

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 management measures are required in order to ensure that fishing activity or activities will have no adverse effect on the integrity of the site. If measures are required, the revised approach requires these to be implemented by 2016.

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 rock', 'circalittoral rock' and 'infralittoral rock' 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.

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)
- 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)

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

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 Devon & Severn 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. An emergent 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 four known vessels which currently fish for wrasse in D&S IFCA's District. The fishery operates between March and November. The parlour pots used are specifically designed to catch wrasse (Figure 1). They are lightweight (3.7kg) and fitted with wrasse escape gaps. They measure 72Lx40Wx28H.

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 range from 5m to up to 8m and work to depths of 12m maximum. They mostly work within Plymouth Sound, south of the breakwater and along the shore from Mount Batten Breakwater down to the Mew Stone (see Figure 6 to Figure 9 for areas fished per vessel). Three of these vessels also fish within Cornwall IFCA District from Fort Picklecombe to Rame Head. A fifth vessel began fishing this summer (2017) but it is only working on the Cornish side. Detailed information on the wrasse fishery can be seen in the PDF attached at the end of Section 4 (Page 9).

Devon & Severn 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 potting activity occurring (Annex 4,

Figure 4). 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 (Annex 4, Figure 6) 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. The sub-committee considered options for monument of the Live Wrasse Pot Fishery and on 24th February 2017 Devon and Severn IFCA went out to consultation on a review of the Potting Permit Byelaw permit conditions to include management of the Live Wrasse Fishery within the IFCA district.

A review of wrasse ecology and fisherie

4.1 Management

Five initial management measures were considered and consulted on, these are listed below:

1. **Fully Documented Fishery**
   Under Paragraph 17 of the Potting Permit Byelaw, those permit holders who wish to engage in the Live Wrasse Pot Fishery will be required to provide relevant fishery information to the Authority. This information will be provided in two formats:
   a. Permit holders will provide fisheries data through daily logbooks, to include the following information:
      a. Date and time of deployment and recovery of each string
      b. Start and end latitude and longitude of each string of pots hauled
      c. Number of strings fished
      d. Number of pots per string
      e. Number of times per day pots are hauled
      f. Number of each species of wrasse retained on board
      g. Number of live wrasse supplied direct to Salmon Farm Industry/Agent
   b. D&S IFCA officers will undertake on board catch surveys on a regular basis to observe the total catches. Fishermen will enable this data collection by allowing D&S IFCA officer on board their vessels.

2. **Pot Limitations**
   A limit on the number of pots per vessel should be set at 60 pots

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 the letter ‘W’ 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 31st July will be closed to the Live Wrasse Pot Fishery.

5. **Minimum and maximum conservation reference sizes**

Species of Wrasse	Minimum Conservation Reference Size mm	Maximum Conservation Reference Size mm
Rock Cook	120	230
Goldsinny	120	230
Corkwing	120	230
Ballan	150	230
Cuckoo	150	230

The deadline for responses was 7th April 2017. IFCA officers collated responses and produced an impact assessment on the proposed management measures. The Byelaw and Permitting Sub-Committee met on 15th May 2017 and recommended that the Full Authority consider and agree the revised proposals. The Full Authority approved the recommendations on 15th June 2017 and these were introduced to the Live Wrasse Pot Fishery for the remainder of the 2017 season, through changes to the Potting Permit conditions**.** Amended permits were circulated in July 2017. The new conditions are as follows:

4.2 Revised Management Measures

- To have a fully documented Live Wrasse Fishery
- To limit the number of pots used by each vessel in the Live Wrasse Fishery to 120 pot limit per permit holder
- To mark all strings of pots used in the Live Wrasse Fishery with 'WRA' and Vessel's PLN
- To mark each pot used in the Live Wrasse Fishery with a tag supplied by D&S IFCA
- To have a closed season from 1st April to 30th June
- To introduce minimum and maximum conservation reference sizes for five species of wrasse:
    - Ballan and cuckoo wrasse less than 150mm or greater than 230mm
    - Corkwing, rock cook and goldsinny wrasse less than 120mm or greater than 230mm

Under Paragraph 17 of the Potting Permit Byelaw, D&S IFCA can request relevant information to discharge its duties. In order to manage the Live Wrasse Fishery and as part of the fully documented fishery 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.

Other requirements:

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

Management Review Process:

- The Authority has 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 has decided that a review of the management of the Live Wrasse Fishery will be undertaken in November 2017. Data collected from fishermen and on-board surveys will inform the review of the permit conditions for the Live Wrasse Fishery, and may lead to changes to these conditions.
- 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.

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. Figure 5 (Annex 4) shows the areas closed to the Live Wrasse Fishery.
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.

4.3 Data Analysis

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 Byelaw and Permitting Sub-Committee on 13th November 2017. At this meeting, the Byelaw and Permitting Sub-Committee recommended proposed changes to management measures for the Live Wrasse Fishery. D&S IFCA is going out to consultation to amend the current permit conditions. The recommended changes are:

- **to amend the slot size for corkwing to 140mm to 180mm**
- **to change the closed season to May 1st to 15th July.**

Live Wrasse Fishery Data Analysis Novem

The Byelaw and Permitting Sub-committee suggested further monitoring of the areas where the fishermen are shooting and hauling their pots to demonstrate adherence to the voluntary closed areas. This may involve putting GPS locators on the vessels to monitor the vessel movements. This will be discussed as a voluntary measure with the fishermen involved in the fishery.

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)

5.1 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)	• Abrasion/disturbance of the substrate on the surface of the seabed • Removal of target species • Removal of non-target species **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?	Four commercial vessels are known to pot for wrasse within the SAC. 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). Fish traps are not believed to be set on intertidal rock due to the level of access by boat.	
5. Is the potential scale or magnitude of any effect likely to be significant?	**Alone**	**Unsure,** an interaction is present between fishtraps and the reef feature/sub-features of Plymouth Sound SAC. Fishtraps have the potential to impact infralittoral and circalittoral rock. It is unknown what impact the removal of wrasse will have on the reef habitat.
	In-combination	**See section 8 for more information**
6. Have NE been consulted on this LSE test? If yes, what was NE's advice?	**No,** not at this stage	

6. Appropriate Assessment

6.1 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 (such as abrasion, disturbance) exerted by gear type(s)**	**Potential ecological impacts of pressure exerted by the activity/activities on the feature** *(reference to conservation objectives)*	**Level of exposure of feature to pressure**	**Mitigation measures**
Reefs; Large shallow inlets and bays • Circalittoral rock • Infralittoral rock	**Target Attribute:** Maintain the total extent, spatial distribution and types of reef (and each of its sub-features) subject to natural variation in sediment veneer. **Conservation Objective:** Maintain or restore the extent and distribution of qualifying natural habitats and habitats of the	Abrasion/ disturbance of the substrate on the surface of the seabed.	The distribution of reef feature can be seen in Annex 5. The use of fish traps would not have an effect on the extent or distribution of the circalittoral and infralittoral rock.	No exposure	No mitigation necessary

	qualifying species.				
Reefs; Large shallow inlets and bays • Circalittoral rock • Infralittoral rock	**Target Attribute:** Maintain the presence and spatial distribution of reef (infralittoral & circalittoral rock) communities **Conservation Objective:** Maintain or restore the extent and distribution of qualifying natural habitats and habitats of the qualifying species. **Target Attribute:** Maintain the species composition of component communities. **Conservation Objective:** Maintain or Restore the structure and	Abrasion/ disturbance of the substrate on the surface of the seabed.	Disturbance and abrasion of the substrate could occur from gear landing on the seabed, the movement of the gear from tide, current and storm activity and the subsequent recovery of gear from the pots dragging along the sea floor when unable to lift vertically (Eno *et al.* 2001, Coleman *et al.* 2013). Long-lived, sessile fauna are considered to be at most risk from potting. Vulnerable species include the pink sea fan (*Eunicella verrucosa*, dead man's fingers (*Alcyonium digitatum*) ross coral, (*Pentapora fascialis*) and various erect branching sponges (*e.g. Axinella* spp., *Raspalia* spp.) (Coleman *et al.* 2013). The component communities of Plymouth Sound SAC are red algae communities for infralittoral rock, dominated by A3.214 *'Laminaria hyperborea* and foliose red seaweeds on moderately exposed infralittoral rock' (Natural England, 2015a). Faunal communities for circalittoral rock include; on the open coast a range of circalittoral biotopes within A4.13 'Mixed faunal turf communities' occur, often dominated by bryozoans, anemones or sponges. Typical communities characterising circalittoral rock within Plymouth Sound include the biotope A4.2511 'Cushion sponges, hydroids and ascidians on turbid tideswept sheltered circa-littoral rock', which is found at Firestone Bay and Devil's Point from 10m to below 20m below chart datum. The diversity of geology at outer sound sites is key to rich assemblages that can be characterised by dead man's fingers *Alcyonium digitatum* (Natural England, 2015a). Eno *et al.* (2001) studied the effects of lobster and crab pots in Lyme Bay and west Wales. The rocky habitats and communities appeared to have little or no immediate effect by the fishing activity (equivalent to around 1,000,000 pot hauls per km² per year). Immediate effects of hauling pots showed evidence of *E. verrucosa* bending under the weights of pots as and returned upright once passed, although some detachment of ascidians and sponges were noted and individual *P. fascialis* colonies were damaged (Eno *et al.* 2001). However, long term damage from on-going activities was not accounted for in this study, in	Four commercial vessels are known to pot for wrasse within the SAC in D&S IFCA District (Figure 6 to Figure 10). Wrasse are generally targeted on the infralittoral rock sub-feature. The fishery usually operates between March and November (except in bad weather). D&S IFCA have implemented a closed spawning season between 1st April and 30th June. A fully documented fishery will allow the IFCA to understand the level of effort and exact location of where the potting for wrasse occurs throughout the year. Weekly returns are received from the fishermen and transport documents from each landing. The data from logs books and on board surveys include catch	Activity levels need to be monitored and alongside patrols, the Potting Permit Byelaw can gauge where any future changes or developments may occur. Changes can be made to the 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).

	function (including typical species) of qualifying natural habitats.		which potting occurred over one month. Other than the damage caused to individual ross corals this study concluded that short-term impacts of potting were insignificant and that habitats and their communities appear unaffected by potting, however it could not be determined as to how repeated “hits” would affect more resilient species and communities as a whole in the long term. Other limitations of the study include no control sites that had not previously been subject to fishing activities. A four year study by Coleman *et al.* (2013) in Lundy Island No Take Zone (NTZ) compared benthic assemblages inside the NTZ with areas nearby still subject to potting (equivalent to approximately 2,000 pots per km² per year) by scuba divers. Potting had no detectable effect on reef epifauna over the timescale of the experiment and can be considered to have limited impact (Coleman *et al.* 2013). Limitations of this study include the experimental pots were set for five days in June and July every year for four years, which is not a good representation of fishermen’s effort intensity. There were natural environmental differences between the control (west of Lundy) and NTZ sites (east of Lundy) of depth, wave exposure and rock type. Additionally, the results were based on the hypothesis of detectable effect after four years and recovery could take a lot longer. D&S IFCA commissioned a PhD, part of which looked at the impact of inkwells and parlour pots on reef features within the Start Point to Plymouth Sound and Eddystone SAC. The effects of pots landing, movement, rope scour and hauling were monitored using video cameras. Only the rims of the pot come into contact with the seabed (not the whole base) and took on average 3.5 seconds to settle (Gall, 2016). The study found that the pots are fairly stationary during the time they are on the seabed (for 25 minutes), with 86% of soaks showing no movement and 8% of soaks with some occasional movement which were very sporadic and small. Only one pot made large movements throughout the soak. When hauling, the pots do not drag for long distances on the seabed. Pots took 41 seconds to haul and the total time that the pots came into contact with the	composition by species, size distribution and determine size at sexual maturity and allow for catch per unit effort (CPUE) to be determined. This together with landings PUE will help inform assessment of stock abundance and highlight changes over time. The introduction of a slot size (min. & max. conservation reference sizes) for all five species will allow the larger fish (namely for ballan) to remain in the population so affording protection to the breeding stock. The minimum size will allow most individuals to spawn before being removed. The closed spawning season will allow species to spawn a least once before being harvested and allow nests to be protected. Triggers that would initiate a review of management are likely to include: 1) Any increase in effort (number of boats). 2) Failure to meet all	

			seabed was approximately half the time (20.7 seconds). Rope movement was minimal, only moving slightly by the tide and no scour or species impacts were observed for 46% of the time. In instances where movement and impact occurred abrasion was found on A. digitatum and E. verrucosa, although no individuals were removed. However, during hauling, five instances occurred where damage caused abrasion and removal of two A. digitatum. The assumed haul corridor (area that could be impacted during hauling) was 6.7m² and the length of the realised haul corridor (area actually impacted) was 3.2m² (Gall, 2016). Of the 22 taxa identified, 14 suffered damaged from pot impacts, including all five indicator taxa, and individuals of six were removed from the reef, including one indicator taxa. Pots for wrasse have to have limited/ to no movement on the seabed otherwise wrasse will not enter the pot (Cornwall IFCA 2016, pers. comms.). Walmsley *et al.* (2015) reviewed literature and the evidence indicated no significant impacts from potting have been found on benthic species and communities of reefs, although there are site-specific considerations. Wrasse are found among rocky and seaweed covered areas inshore and in seagrass beds, and therefore these are the habitats the fishermen target for wrasse. Algal communities associated with infralittoral rock should be less sensitive to disturbance from potting because of their annual life-cycles and relatively fast growth rates (Coleman *et al.* 2013) when compared to circalittoral rock which can have more slow growing and fragile species. Walmsley *et al.* (2015) reviewed literature of potting impacts and found no primary literature on the impacts on potting on kelp communities. An unpublished master's thesis assessed the impact of potting on chalk reef communities in Flamborough Head EMS (Young, 2013: reviewed by Walmsley *et al.* 2015). A statistically significant difference in community assemblage was identified between NTZ and fished sites. A higher abundance of	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 significant decrease in CPUE. 6) A shift in size distribution. Data collected from fishermen and on-board surveys will inform the review of the permit conditions. Detailed information on the wrasse fishery can be seen in the PDF attached at the end of Section 4 (Page 9). There is no literature on the impact of wrasse pots or fish traps on infralittoral or circalittoral rock. The traps used to catch wrasse are lightweight (3.7kg), specially designed parlour pots (Figure 1). Benthic communities are thought to be relatively unaffected by static gear due to the footprint of the	

			benthic taxa, namely Mollusca, Hydrozoa and Rhodophyta was identified inside the NTZ. A higher abundance of kelp *Sacharinna latissimi* was observed in the fished site compared to the NTZ. This was inconsistent with other taxonomic groups observed. However, there are limitations of the results due to adverse weather which scoured the seafloor in both sites and surveys were conducted at different states of tide which affected visibility in the fished site.	gear and the small area of the seabed in direct contact (Eno *et al.* 2001).	
Reefs; Large shallow inlets and bays • Circalittoral rock • Infralittoral rock	**Target Attribute:** Maintain the presence and spatial distribution of reef (infralittoral & circalittoral rock) communities **Conservation Objective:** Maintain or restore the extent and distribution of qualifying natural habitats and habitats of the qualifying species. **Target Attribute:** Maintain the species composition of component communities.	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*), corkwing (*Symphodus melops*) and rock cook (*Centrolabrus exoletus*). 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 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:***	See row above (page12) for more information.	See row above (page 12).

	Conservation Objective: Maintain or Restore the structure and function (including typical species) of qualifying natural habitats.		The minimum size for use in salmon cages is 12cm so the removal of larger (>12cm) fish can alter population structures (Darwall *et al.* 1992). For goldsinny and corkwing, the population may be ensured due to enabling some spawning before removal as <12cm fish are returned, and size at maturity is ~10cm. However, due to the mature species being targeted the average size and age at first maturity would 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 are removed before having a chance to spawn. The industry requires certain sizes of the different species related to their efficiency in cleaning. In the beginning of the fishery, there were industry led voluntary size limits such as >22cm as larger species tend to become too aggressive in cages (Cornwall IFCA 2016, pers. comms.). 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-Rios *et al.* 2013a), 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 (Almada *et al.* 2016;		

			Villegas-Rios *et al.* 2013a). 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.* (2016b) 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.* 2016b). ***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-Rios *et al.* 2013b). 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*. 2016c). 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). ***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-Rios *et al.* 2013b), territories of up to 2m² for goldsinny (Hillden, 1981) and >15m² for corkwing (Costello *et al.* 1995) 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 Jorstad, 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.* 2011). 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 might 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). Hilldan (1983) observed ballan wrasse enter goldsinny territory and adopt an invitation posture, before being cleaned by the resident goldsinny in Sweden. Hilldan (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. Corking, goldsinny and rock cook were observed (majority in aquariums) to clean ballan wrasse, plaice, black bream, mackerel, salmon, halibut, anglerfish and grey mullet (Costello, 1991). Henriques and Almada (1997) observed rock cook cleaning mullet, an ocean sunfish, six species of wrasse and four species of sea bream in Portugal. Observations of cleaning activity in the wild are difficult and attempts often disturb the activity (Hilldan, 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). Studies have been carried out in New Zealand exploring the relationship of wrasse predating on small invertebrate grazers living 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 the giant kelp, *Macrocystis pyrifera,* via the 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).		

			Algae forms part of the diet of all five wrasse species, but corkwing wrasse also utilise multiple algae species to make complex nests (Potts, 1985). Corkwing wrasse are highly selective of which species are used in the formation of the nests. ***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 *et al*. 2016a). They are known to be an important food source for marine birds such as shags and cormorants (Steven, 1933) and have been identified as prey for marine mammals such as the grey seal (Gosch *et al.* 2014). **<u>Non-target species:</u>** 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 benthic sessile fauna, Eno *et al.* (2001) found some detachment of ascidians and sponges, and individual *P. fascialis* colonies were damaged by potting activity (Eno *et al.* 2001). See row above (page 9) for more information on changes to abundance and community assemblage from potting.		

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). Studies by Coleman et al. (2013) and Eno *et al.* (2001), both found epifaunal assemblages suffered little impact from pots and traps and could be considered generally insensitive to commercial potting. Walmsley *et al.* (2015) reviewed existing evidence and on-going studies to provide conclusions of whether potting could compromise the achievement of conservation objectives. The review concluded there was low to no sensitivity/impact on reef features from potting, and the wrasse pots used are lightweight and therefore may have less of an impact. 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.

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 may 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 new wrasse fishery in Plymouth is largely unknown, and the need to collect data on the effort and the potential impacts is recognised. Devon and Severn IFCA has introduced management through permit conditions (see section 4) for the Live Wrasse Fishery. The fishery is highly restricted being one of the most regulated and managed fisheries in the country. D&S IFCA has been carrying out on-board surveys to collect information about the fishery. The data collected were reviewed in a report produced in November 2017, which is embedded in this assessment on page 9. The Executive Summary from this report summarises the findings:

'Executive Summary

Wrasse are being targeted in Plymouth Sound for use as a cleaner fish. A fully documented fishery was implemented into the permit conditions of Devon and Severn IFCA Potting Permit Byelaw, to include an intensive data collection program. This report presents the results of the data collection from the first full season of the Live Wrasse Fishery. The two main types of data presented are from landings data recorded by fishers from April to October 2017 and 20 on-board observed surveys carried out by IFCA Officers. On-board survey effort equated to 7.5% observer coverage of boats surveyed, or 5.5% of the entire fleet.

There was no consistent decline in Catch per Unit Effort (CPUE) or Landings per Unit Effort (LPUE). There were observed seasonal fluctuations in CPUE and LPUE and these could be attributed to spatial movements of fishers and their pots, fish behaviour or environmental changes. Continued data collection in the future is vital to determine changes in LPUE and CPUE over time and space.

Spatial fishing effort varied over time across the Plymouth Sound area. Goldsinny and rock cook represented the majority of catch for all vessels. The proportion of species varied considerably spatially and this can be attributed to species preference for exposure and depth, for example, corkwing were found in more sheltered, inshore areas. The majority of observed spawning took place between May to mid-July. The data indicated the current closed season from 1st April to 30th June covers the majority of the spawning season for goldsinny and rock cook.

The size frequency histograms illustrated the importance of Minimum (Min) and Maximum (Max) Conservation Reference Sizes (CRS) for wrasse. The Min CRS (12cm) for goldsinny and rock cook allows a significant proportion of the catch to be returned to sea and to spawn. The introduction of the Min and Max CRS (15-23cm) for ballan demonstrated an increased proportion

of the catch returned to the sea from 4% to 28%, protecting both juveniles and mature adults. However, the current Min and Max CRS (12-23cm) for corkwing is allowing over 90% of the fish caught to be landed. Due to the complex life history of corkwing, and the results of the data analysis, amendments to the slot sizes would be recommended to allow a proportion of immature and mature fish to return to sea.
The results presented in this report highlight the importance of a fully documented fishery and the need to continue data collection to monitor the live-capture fishery for wrasse'.

The report was presented to the D&S IFCA Byelaw and Permitting Sub-committee and recommendations for management changes were proposed and outlined on P.9 of this assessment. D&S IFCA will be consulting on changes to the permit conditions in January 2018. Triggers that would initiate a further review of management are likely to include: any increase in effort (number of boats), 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, and a shift in size distribution.

Further research to look at pot saturation is being considered to inform assessment of the populations in the areas fished. D&S IFCA will liaise with CIFCA and SIFCA to discuss data gathering and research opportunities.

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. Crab tiling has not yet been assessed by D&S IFCA, however, due to pots not occurring in the intertidal, no in-combination effect thought to be possible.

Digging with forks - Activity is occurring within Plymouth Sound and Estuaries EMS. Digging with forks has not yet been assessed by D&S IFCA, however, due to pots not occurring in the intertidal, 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 pots within D&S IFCA 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 permanent 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.

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. Static nets are rarely set directly on reef, 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.

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.

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 on an annual basis. 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 63,448m³ of predominantly silt from the dredge areas will be removed over 14-month 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: 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.

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: 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.

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. However, new information has revealed an emergent fishery for wrasse using fish traps and has therefore prompted a re-assessment of the fishing activity. Cuttlepots have been assessed in a separate

HRA. A re-assessment for fishtraps was sent for informal advice to Natural England in April 2017 (version 2) and this assessment (version 3) contains amendments from the advice received and updated management measures. The informal advice has been inserted in Annex 2

10. Integrity Test

It can be concluded that fish trap activities, alone or in-combination, within Plymouth Sound SAC do not adversely affect the sub features assessed and that the conservation objects can be met. Due to the D&S IFCA Potting Permit Byelaw the number of wrasse fishermen in the District can be monitored. The permitting system allows for adaptive management and changes are being made to the permit conditions, via a consultation.

Conclusion of adverse effect/non-adverse effect either alone or in-combination. This will be reliant on the consideration of mitigation measure(s) documented in the AA and summarised here in conclusion.

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Annex 2: Natural England's Consultation Advice

NE response to live wrasse potting perm

RE Informal Advice Fish Traps V.2 Rock.

Annex 3: Site Map

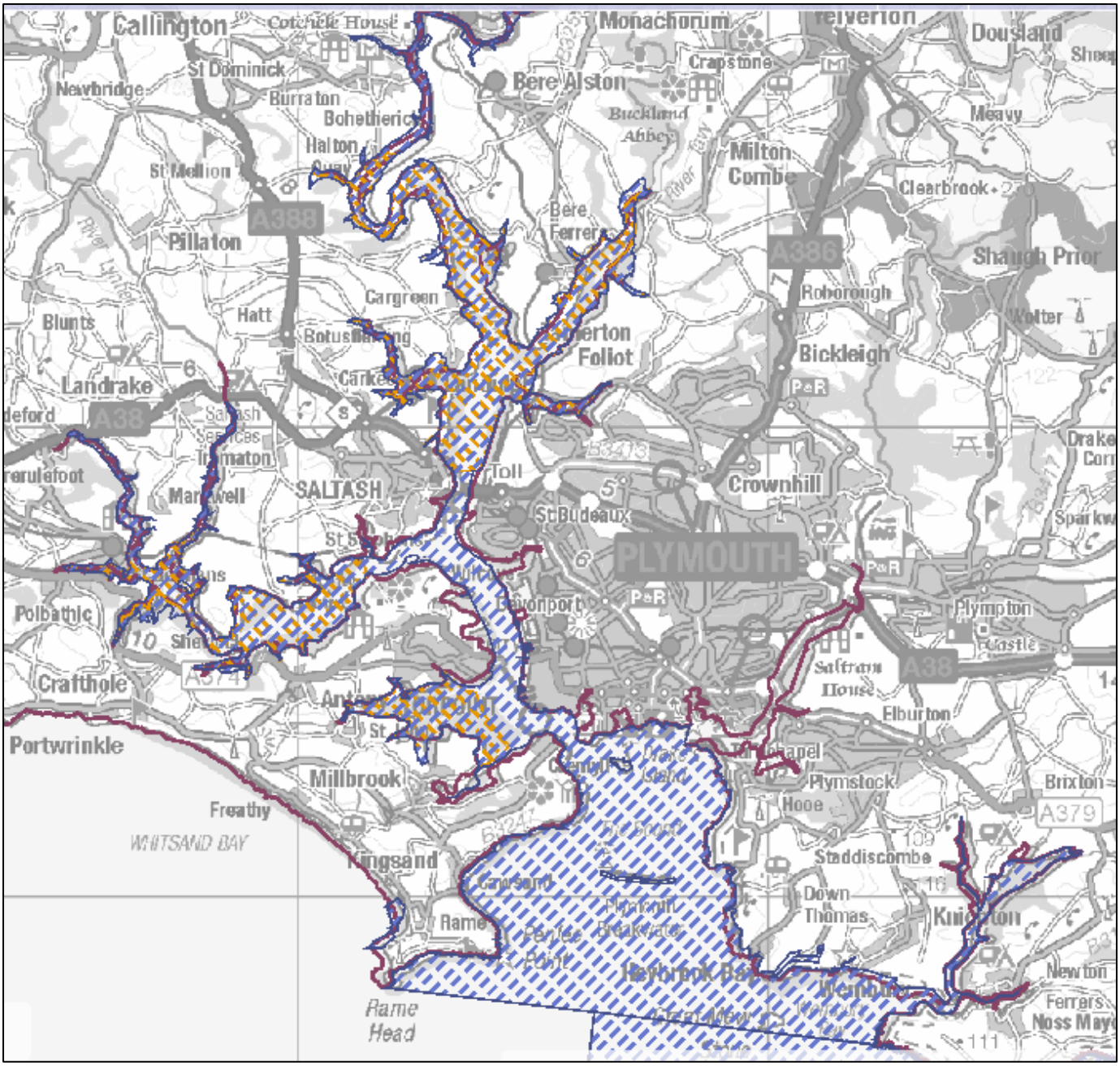


Figure 2 - Area of SAC (blue hatched) and SPA (Orange hatched) (MAGIC, 2015)

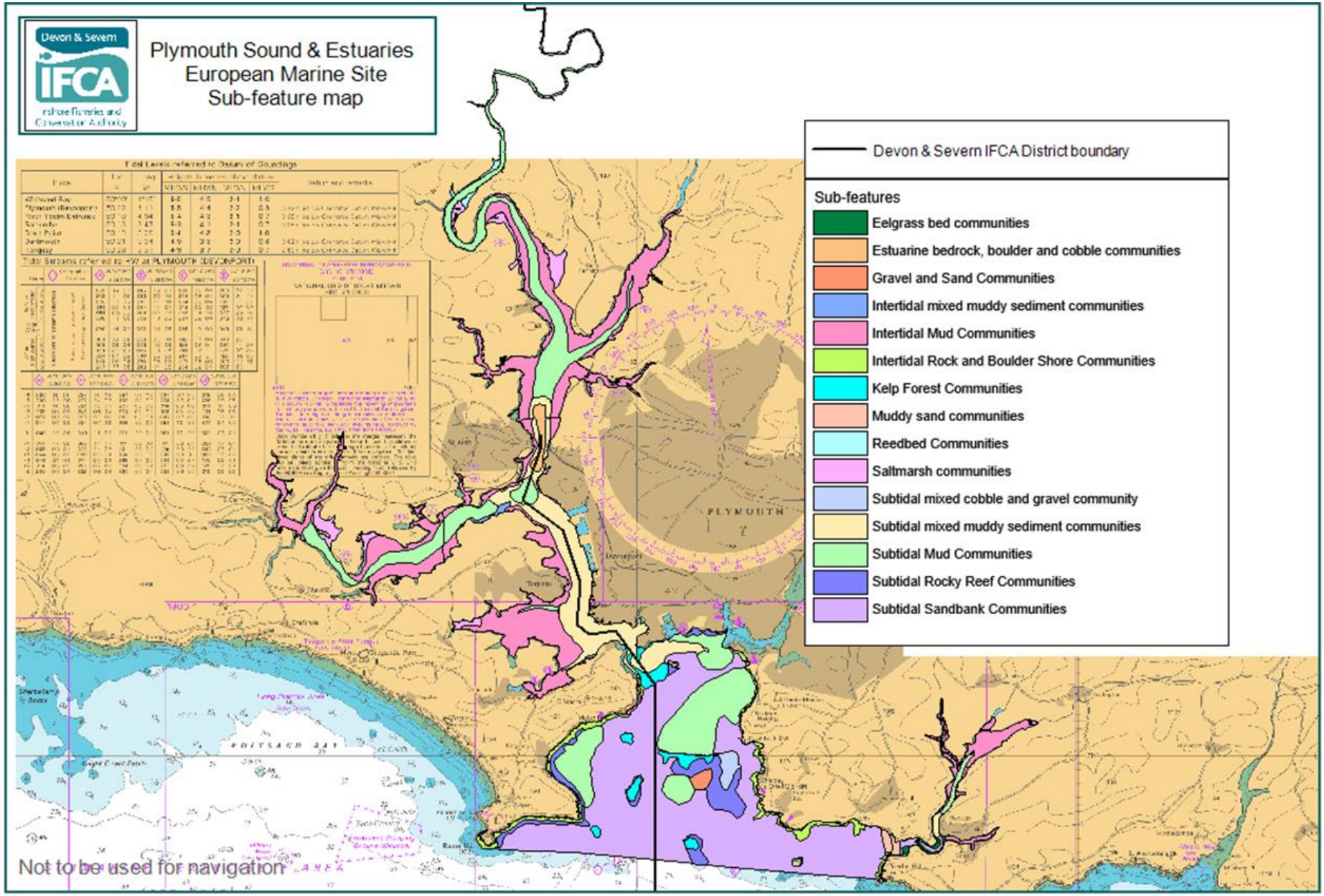


Figure 3 - Plymouth Sound & Estuaries EMS sub-features

Annex 4: Fishing activity maps

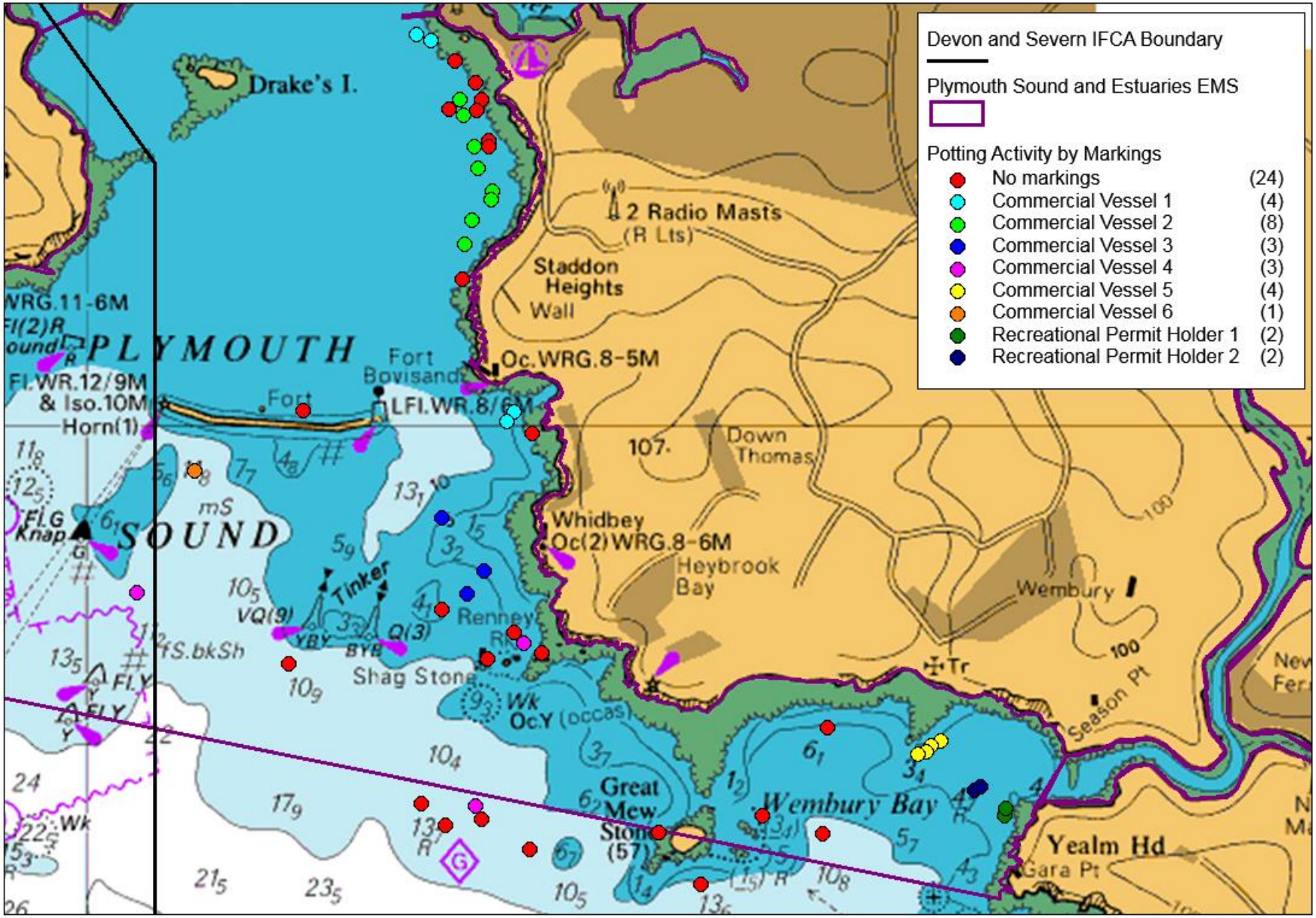


Figure 4 - Potting activity (markings on buoys) recorded within and near Plymouth Sound and Estuaries EMS in May 2016.

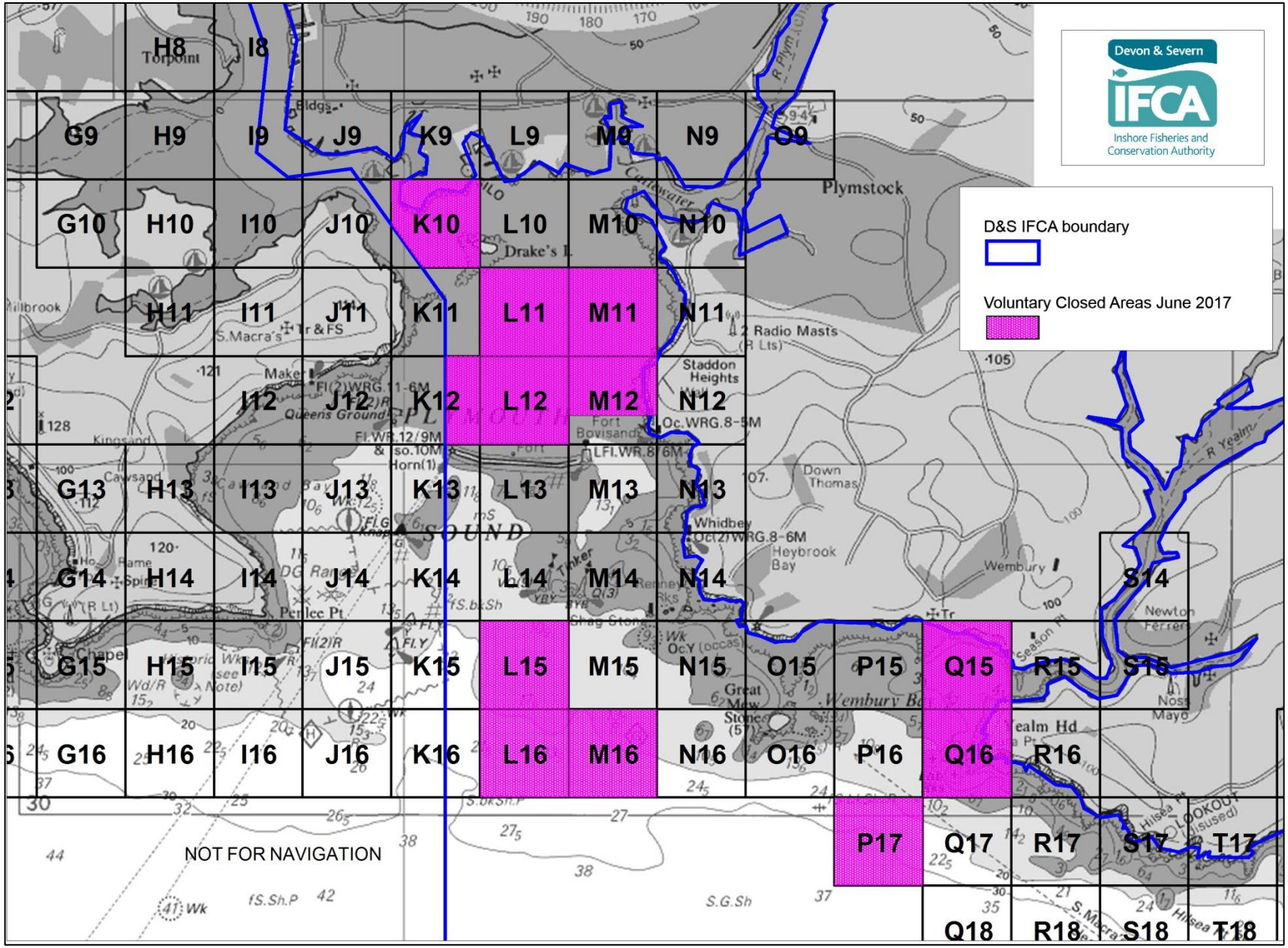


Figure 5 - Voluntary closed areas to the Live Wrasse Fishery (implemented end of June 2017)

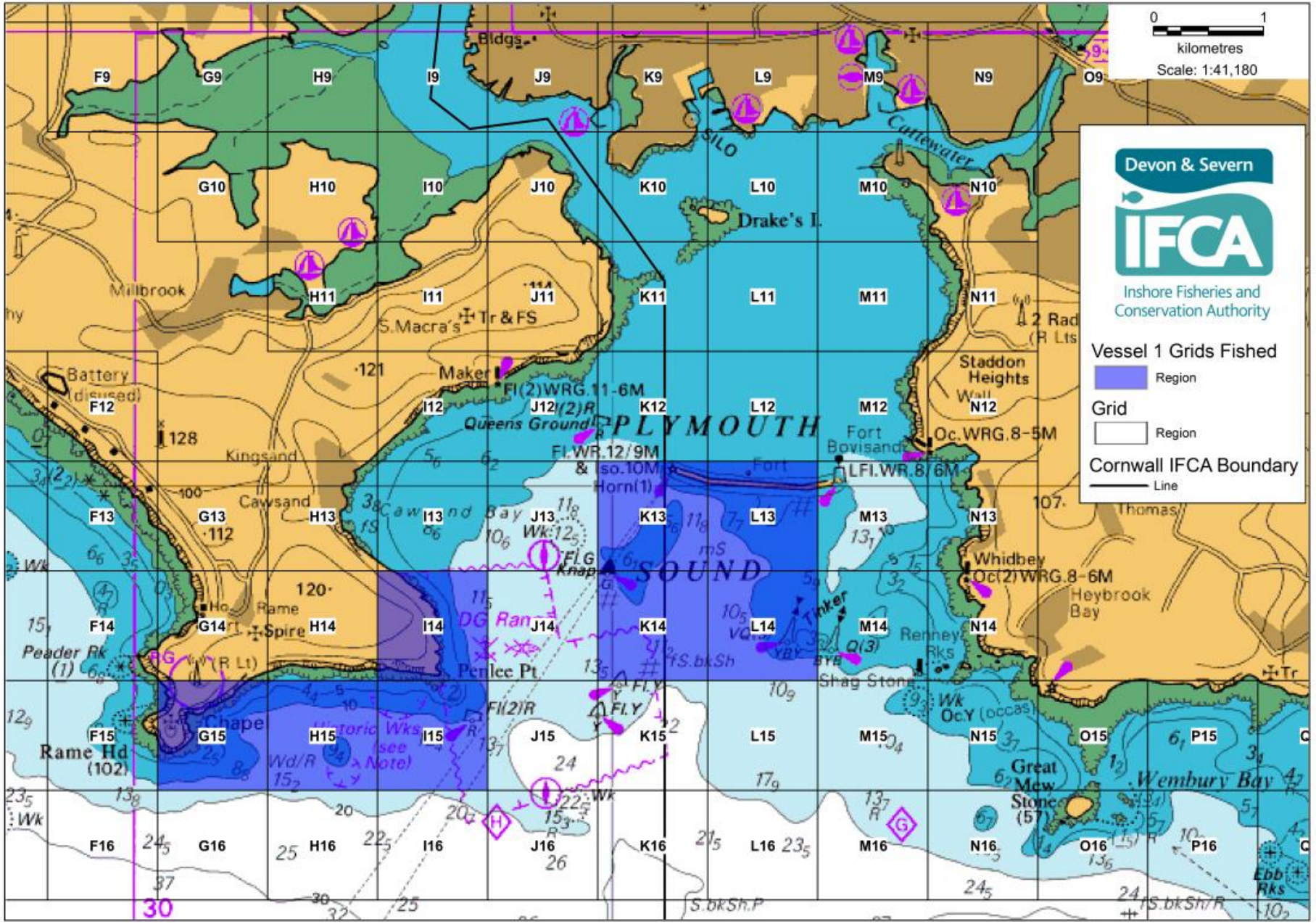


Figure 6 - Vessel 1 areas fished (April 2017 to August 2017)

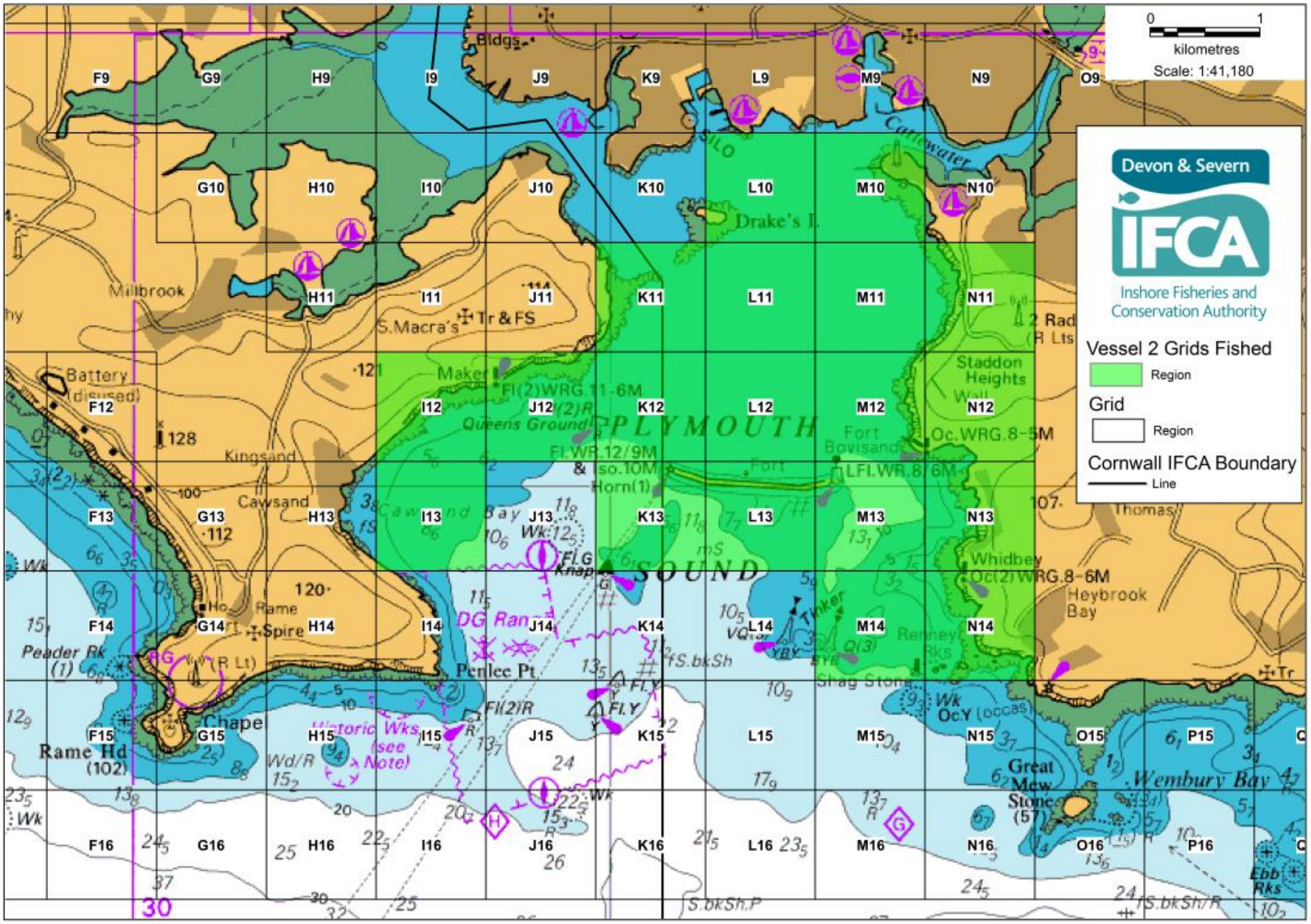


Figure 7 - Vessel 2 areas fished (May 2017 to August 2017)

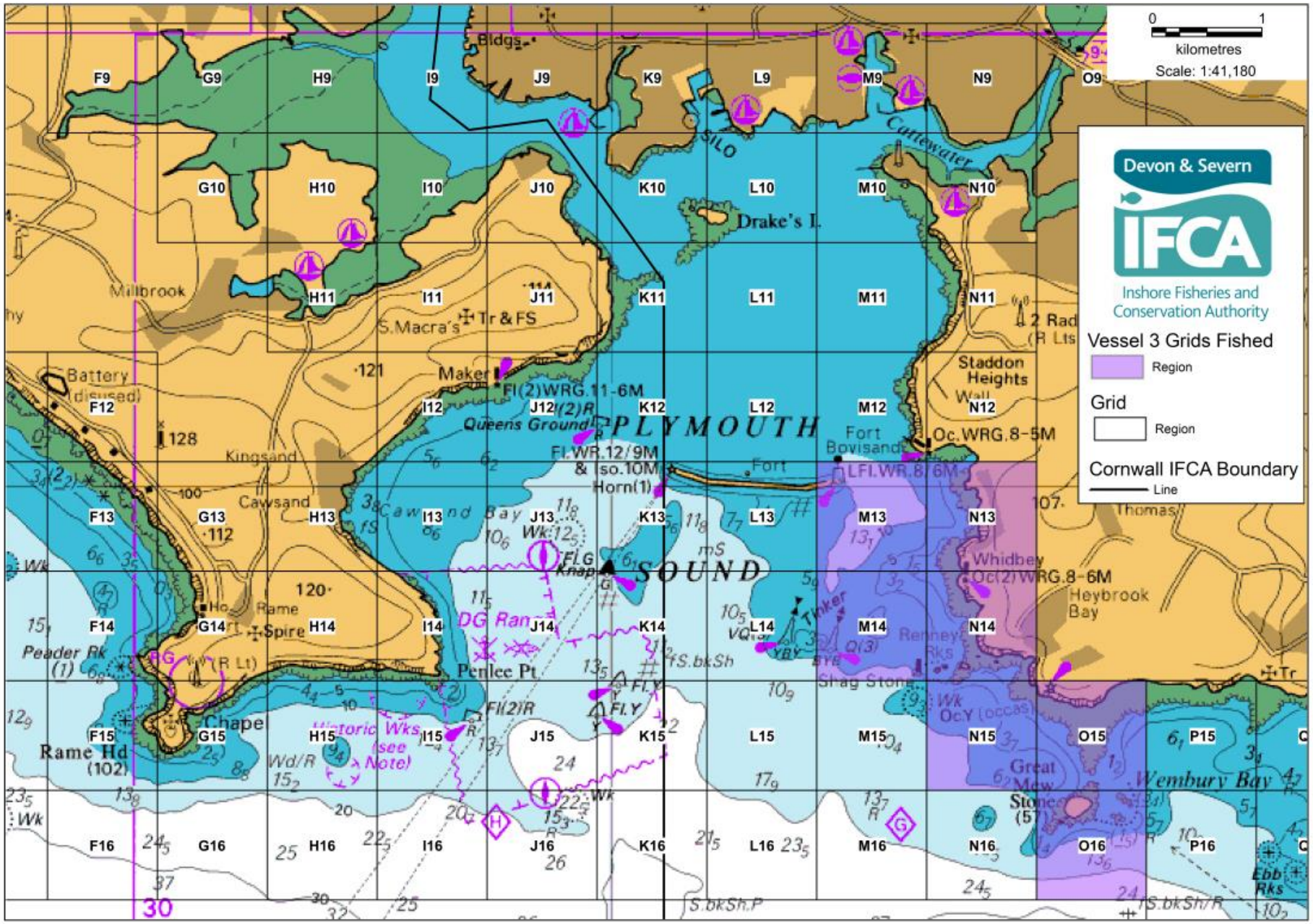


Figure 8 - Vessel 3 areas fished (April 2017 to August 2017)

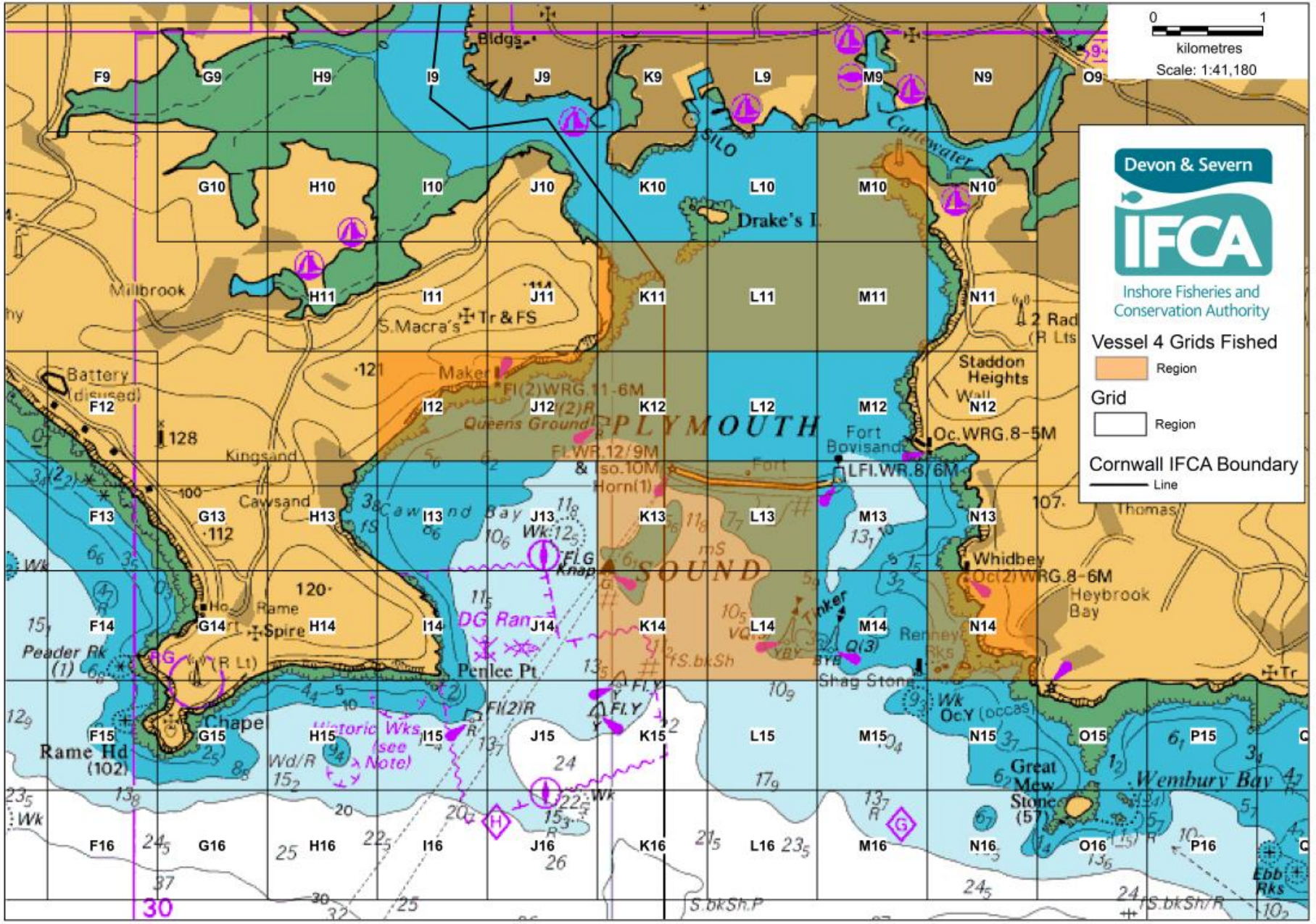


Figure 9 - Vessel 4 areas fished (June 2017 to August 2017)

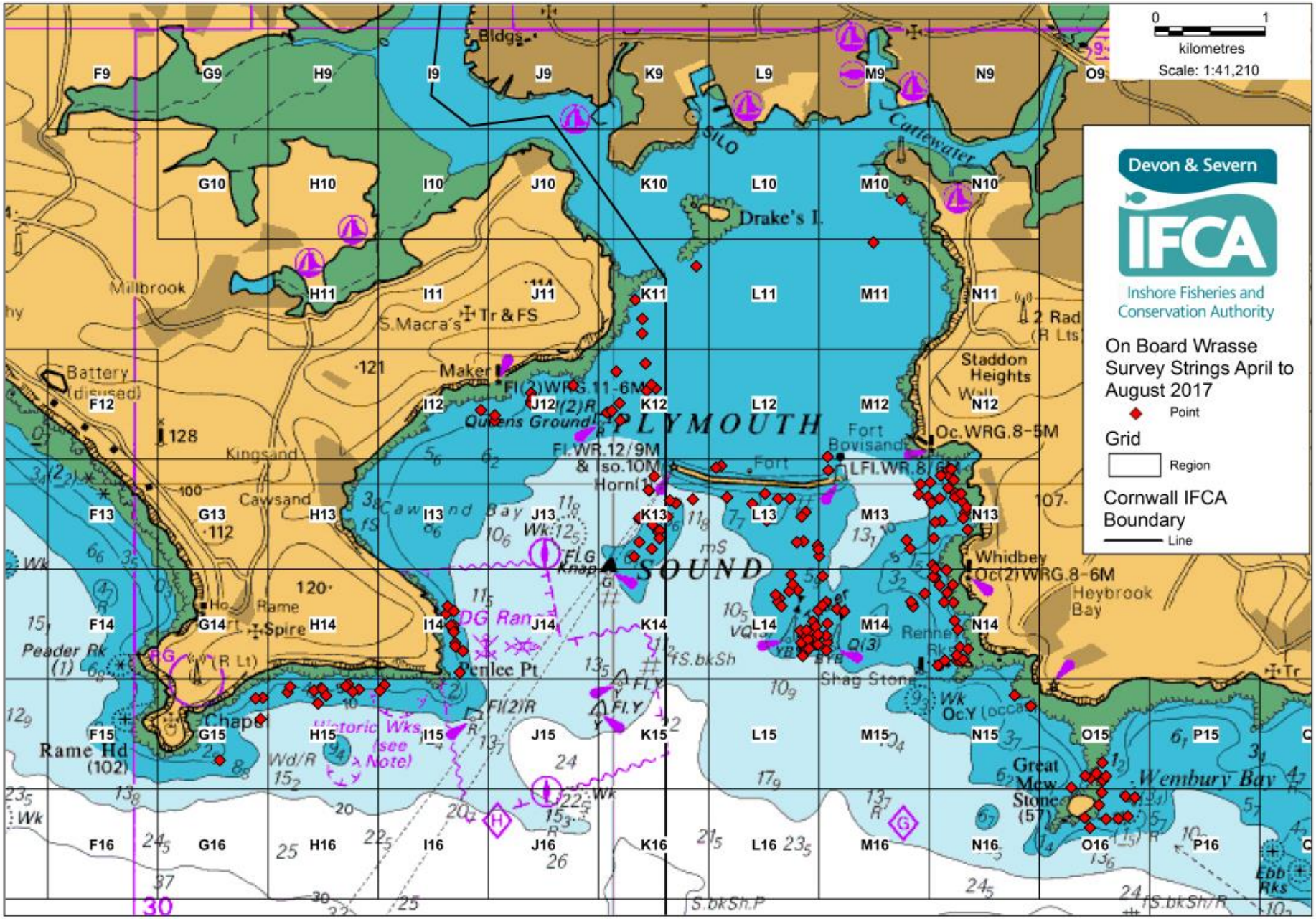
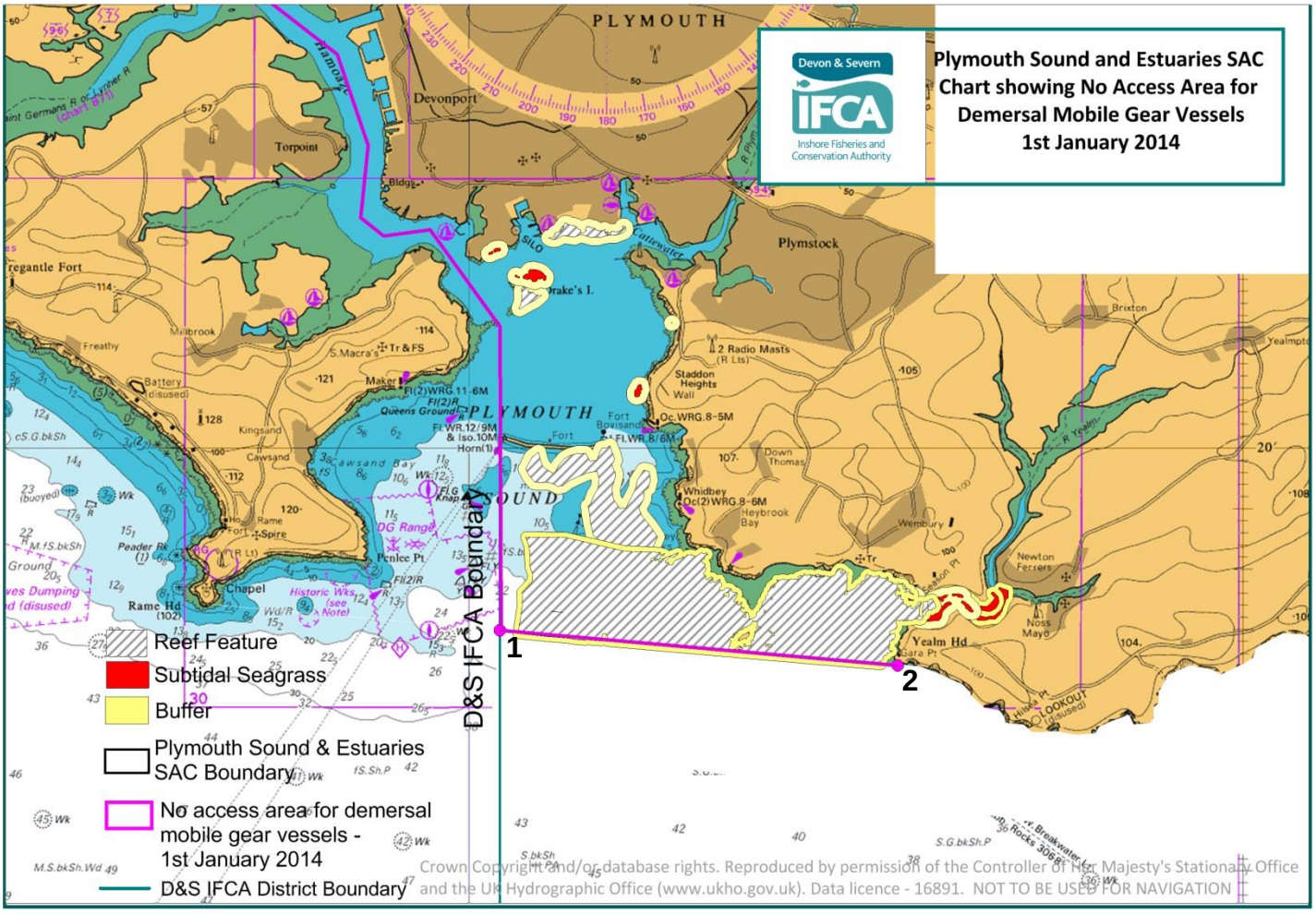


Figure 10 - Strings surveyed during on board wrasse surveys April to August 2017

Annex 5: Mobile Fishing Permit Byelaw map

No demersal mobile gear is permitted landward (up to High Water Mark) of a line following the western extent of the Devon and Severn IFCA district boundary and drawn between points 1 and 2 across Plymouth Sound.

Point Number	Latitude			Longitude		
1	50^0	18.484'	N	004^0	09.600'	W
2	50^0	18.192'	N	004^0	04.458'	W



Annex 6: Pressures Audit Trail

Traps Pressure(s)	Sub-feature		Screening Justification
	Infralittoral rock	Circalittoral rock	
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	**IE**	**IE**	**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**	**IE**	**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 significant risk 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 target species	**Revised pressure – no sensitivity currently available**		**IN** – Need to consider spatial scale/intensity of activity to determine likely magnitude of pressure
Removal of non-target species	**S**	**S**	**IN** – Mortality from very low incidental by-catch
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	**NS**	**IE**	**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**	**IE**	**OUT** - Insufficient activity levels to pose risk of large scale pollution event