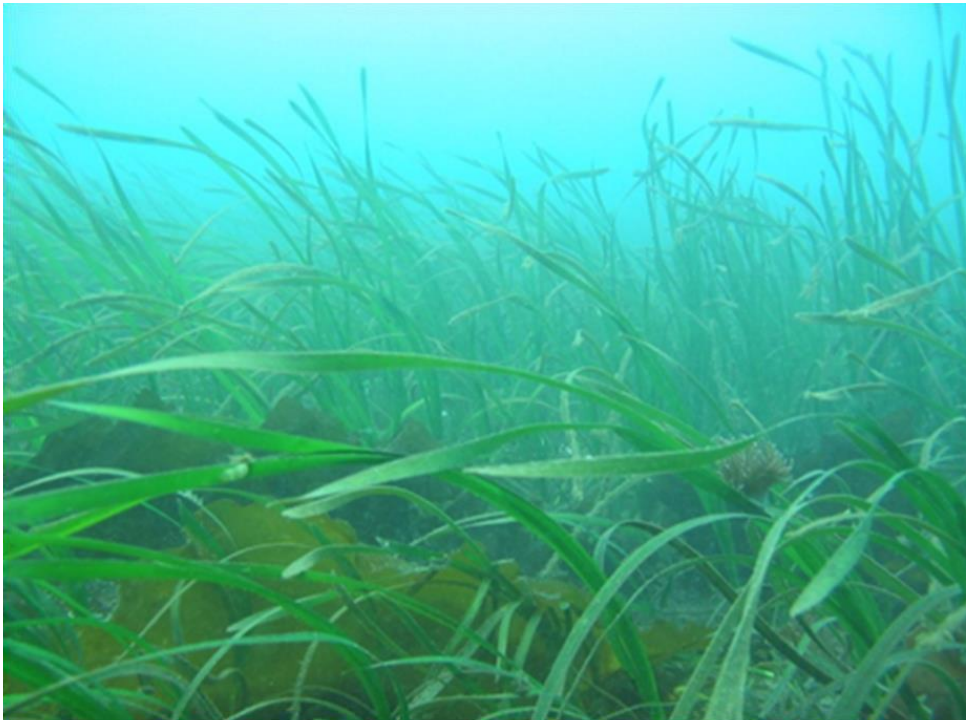




Monitoring Potting on Seagrass in Plymouth Sound and Estuaries SAC

2020-2021



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1. Introduction

The Plymouth Sound and Estuaries European Marine Site (EMS) is made up of the Plymouth Sound and Estuaries SAC and the Tamar Estuaries Complex SPA (Annex 1). 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 due to their wide variety of salinity conditions, sedimentary and reef habitats, wave exposure and water depth. The high diversity of habitats and conditions gives rise to communities both representative of ria systems and some unusual features, including abundant southern Mediterranean-Atlantic species rarely found in Britain.

Six different habitats were designated as protected features of the EMS. A sub-feature of four of these habitats in Plymouth Sound, and one of the reasons for the SAC designation, are seagrass (*Zostera marina*) beds. Seagrass beds provide important food for wildfowl, and nutrients to support animal communities on the seabed. Their rhizomes (roots) catch and trap sediments, reducing coastal erosion. Submerged seagrass beds are also used as nursery areas, protecting young fish and shellfish and provide a sheltered home for many other animals, such as pipefish and seahorses (JNCC, 2020). The conservation objectives, which apply to the SAC is 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.

In 2012 the Department for Environment, Food and Rural Affairs (DEFRA) announced a revised approach to the management of commercial fisheries within an EMS. The objective of the revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with Article 7 of the Habitats Directive. As a result, D&S IFCA completed a Habitats Regulation Assessment (HRA) in 2018 to determine whether management measures were required in order to ensure that fishing activity, specifically pots and creels, had no adverse effects on the integrity of the site. It was concluded that the level of activity occurring at the time would result in no adverse effects from potting and the conservation objectives of the sub-feature could be reached. However, it was recommended that ongoing patrols (6 per year) be carried out in order to detect any changes in exposure, which was agreed by Natural England.

This report therefore details the outcome of the monitoring carried out between 2018 and 2020 and discusses the results. Observer surveys for the Live Wrasse Pot Fishery are also undertaken annually in the D&S IFCA district. The survey locations of these strings of pots have been included in this year's report to monitor their location in relation to seagrass.

2. Methodology

Patrols were carried out within Plymouth Sound and Estuaries EMS on the RIB David Rowe. The patrols cover the whole of the Plymouth Sound but were primarily focussed around the areas of Drakes Island, Jennycliff Bay, Firestone Bay, Leekbed Bay, and the mouth of the River Yealm, however it was often not possible to survey the mouth of the Yealm due to adverse weather conditions. The GPS coordinates of any buoys/buoys in these locations were

recorded. Fishing gear in close proximity to the seagrass was hauled when possible in order to confirm whether it was pots. Locations of fishery observer surveys for the Live Wrasse Pot Fishery in Plymouth Sound were also recorded. These surveys are completed during a sample of routine fishing operations. For each survey, the date, time and precise fishing locations (start and end points of each string hauled) are recorded using a GPS unit.

Maps were produced in QGIS v3.1 to visualise the spatial distribution of both the pots seen on patrols and those surveyed during observer surveys.

3. Results

D&S IFCA has a Potting Permit Byelaw in place and currently 22 permits are issued for commercial potting vessels with the base port within Plymouth Sound (increased from 12 and 16 in 2018 and 2019, respectively). There are currently two potting permits with the base port listed as the River Yealm (increased from one in 2019).

Monitoring patrols were carried out in 2018, 2019 and 2020. In 2018 three patrols were completed, whereas seven patrols were carried out in 2019 and six in 2020. Wrasse observer surveys were undertaken in 2017, 2018, 2019 and 2020, with 111, 56, 40 and 41 strings surveyed in each year, respectively (Figure 1a). No pots were detected on the seagrass during patrols in 2018, whereas in 2019 and 2020 one string of wrasse pots was found on the seagrass north east of Drake's Island (Figure 1b). The same string of wrasse pots was detected in the same location on three consecutive patrols in 2020 (6th, 12th and 13th August 2020, start and end location of the string shown on Figure 1b). Out of the strings of wrasse pots that were surveyed during the observer surveys, only the end of one string in 2019 was recorded on the seagrass patch located north east of Drake's Island. No pots were recorded on the seagrass patches around Jennycliffe Bay and Leekbed Bay to the east of Plymouth Sound, although there was some potting activity surrounding those areas (Figure 1c). No pots were detected in the mouth of the Yealm.

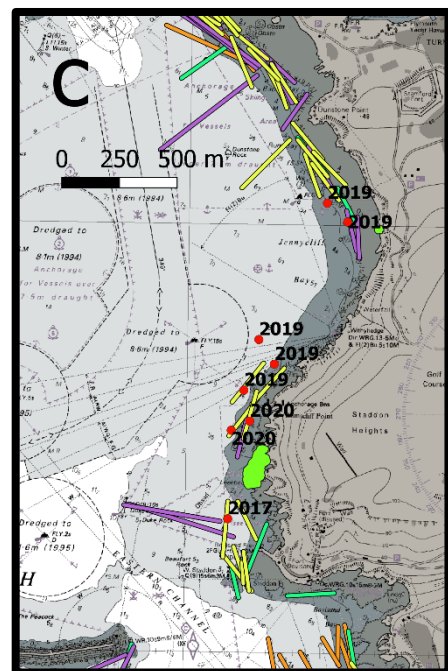
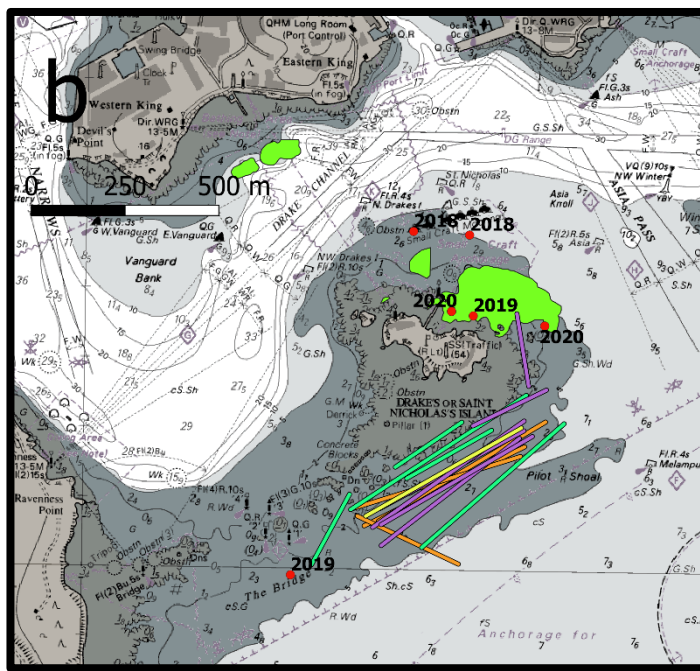
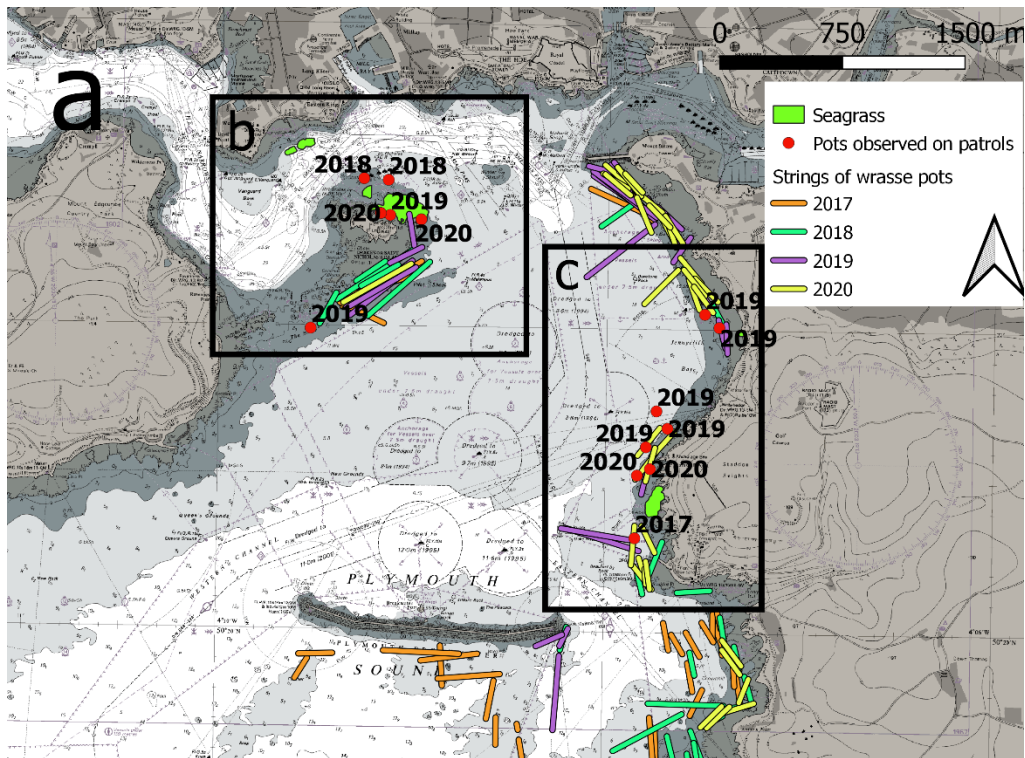


Figure 1: Locations of pots detected close to seagrass on potting patrols (red dots) in 2018, 2019 and 2020, and locations of all strings surveyed during observer surveys of the live wrasse pot fishery (coloured lines) between 2017–2020. The two points from 2020 recorded on the seagrass in figure 1b are the start and end locations of a string of wrasse pots detected in the same location on three consecutive patrols in 2020 (6th, 12th and 13th August 2020).

4. Discussion/Recommendations

Potting is a fishing activity which often occurs where seagrass is found. Although potting activities are considered to be generally low impact when compared to demersal towed gear, there is potential for this activity to damage the seagrass, which is not physically robust (D'Avack *et al.*, 2019). There is limited evidence on the impact of potting on seagrass, although based on the physical characteristics of pots, it is considered that if consistently set and hauled in seagrass meadows, pots have the potential to cause damage by leaf shearing, damaging meristems (reducing growth) (Marba *et al.*, 2004), uprooting plants and cause damage by smothering and light attenuation if soak times are particularly long (Roberts *et al.*, 2010). Previous studies have shown that potting can also cause surface abrasion which damages or removes the rhizomes, leaves and stems of the seagrass plant which are above the surface and damages the roots which are only shallowly buried (Morgan and Chuenpagdee, 2003; D'Avack *et al.*, 2019). Damage can be caused during the setting of pots, movement of gear on the benthos due to tide, current and storm activity and as the gear is hauled if dragged laterally when lifted (Walmsley *et al.*, 2015).

The number of commercial potting permits has increased since the HRA was completed from 12 in 2018 to 22 permits in 2020. Patrols of Plymouth Sound detected one string of wrasse pots on the seagrass beds around Drake's Island in 2019, and another string of wrasse pots in a similar location in 2020. The end of one string of wrasse pots surveyed during the on-board observer surveys was also recorded to be set on the same patch of seagrass in 2019. Hall *et al.* (2008) reported that seagrass beds have a medium sensitivity to moderate and low levels of potting (pots lifted daily, less than 4 pots per ha). Wrasse pots are generally left to soak for 24 hours, therefore soak times are usual minimal and would not result in any smothering or light attenuation effects. However, the string observed on seagrass in 2020 was detected in the same location on three consecutive patrols in (6th, 12th and 13th August 2020). Records show that the string of pots belongs to a fisher that was not actively fishing for wrasse during those dates. This suggests the string may have been abandoned. If there were particularly strong currents, tides or storm activity during that time, it is possible that damage could have been caused due to the movement of the gear on the benthos. In the case of suspected abandoned or ghost fishing gear, markings on the gear should be used to contact the appropriate fisher to determine whether action should be taken to remove the gear.

Strings of wrasse pots are generally set and hauled daily, but fishers usually move their pots after each haul reducing the potential impact caused from continuous setting and hauling in the same location. Wrasse pots are also very light, weighing only 3.7kg each, which would reduce likely impacts of this type of pots that are set on seagrass. In addition, Eno *et al.* (2001) and Coleman *et al.* (2013) undertook studies on the impact of potting on reef features. They concluded epifaunal assemblages suffered little impact from pots and traps and could be considered generally insensitive to commercial potting.

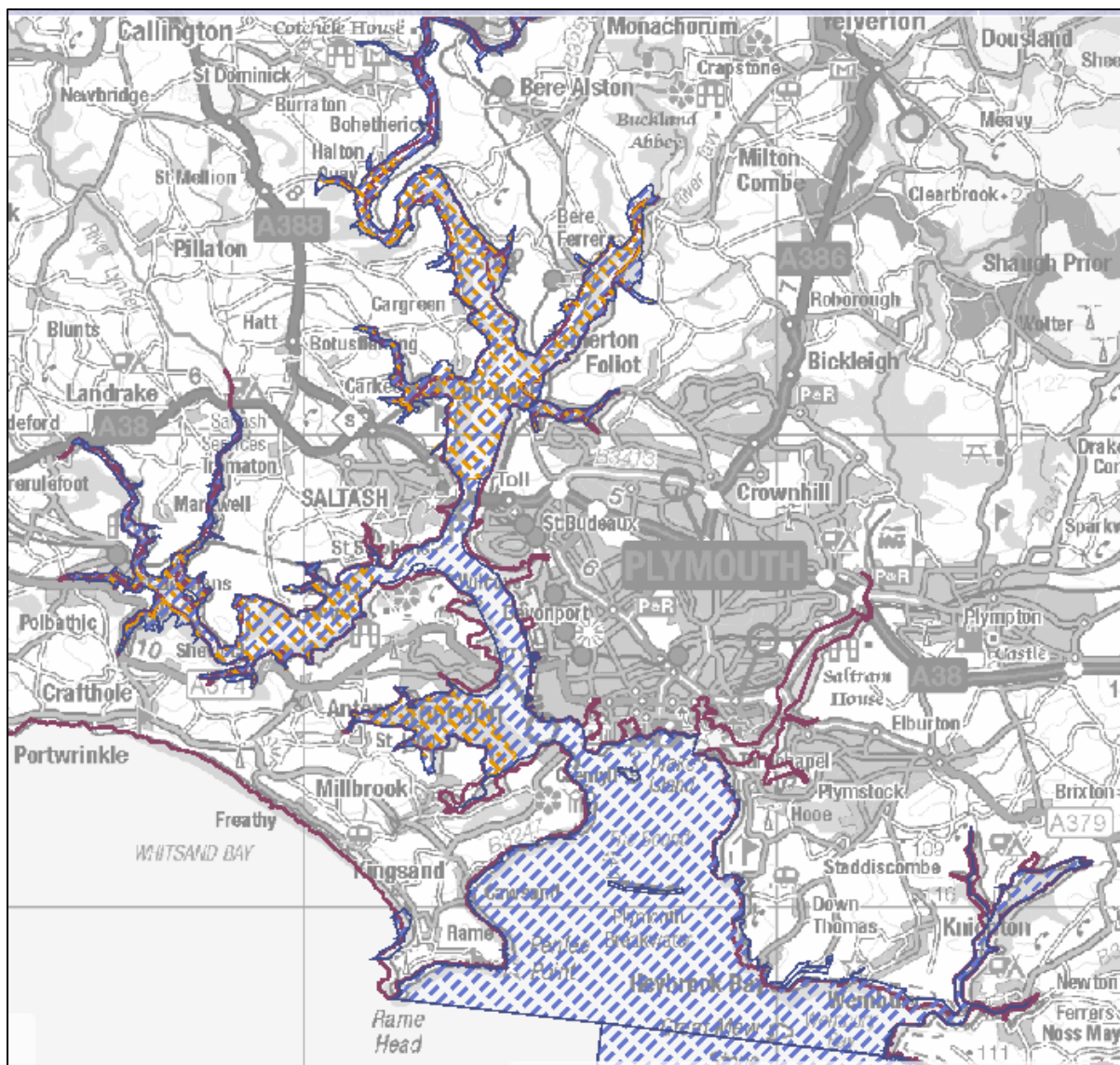
The use of pots is not the only vector for impact on seagrass, other factors such as anchoring will also have an effect. An anchor landing on a patch of seagrass can bend, damage and break shoots (Montefalcone *et al.*, 2008). When an anchor and chain is pulled up and dragged over the bottom following the movement of the boat it cuts seagrass leaves and pulls the rhizomes from the seabed, forming an anchor scar and damage is further elevated by wave action. 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.

The monitoring patrols and locations of wrasse strings between the 2018–2020 period suggests 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 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 planned for an area of Plymouth Sound and D&SIFCA will work alongside the industry to avoid activities and damage in this area. The location and size of the restoration area are being finalised and will be accounted for as appropriate in future reports.

5. References

- Coleman, R. A., Hoskin, M. G., von Carlshausen, E., and Davis, C. M. 2013. Using a no-take zone to assess the impacts of fishing: Sessile epifauna appear insensitive to environmental disturbances from commercial potting. *Journal of Experimental Marine Biology and Ecology*, 440: 100–107.
- Collins, K. J., Suonpää, A. M., and Mallinson, J. J. 2010. The impacts of anchoring and mooring in seagrass, Studland Bay, Dorset, UK. *Underwater Technology: The International Journal of the Society for Underwater*, 29: 117–123.
- D’Avack, E., Tyler-Walters, H., and Wilding, C. 2019. *Zostera (Zostera) marina* beds on lower shore or infralittoral clean or muddy sand: In Tyler-Walters H. and Hiscock K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. MarLIN - Marine Life Information Network, Plymouth: Marine Biological Association of the United Kingdom. http://www.marlin.ac.uk/assets/pdf/habitats/marlin_habitat_257_2019-03-21.pdf (Accessed 1 March 2021).
- Eno, C., Macdonald, D., Kinnear, J., Amos, S., Chapman, C., Clark, R., St, F., *et al.* 2001. Effects of crustacean traps on benthic fauna. *ICES Journal of Marine Science – ICES Journal of Marine Science Aberdeen AB9 8DB*, 58: 11–20.
- Hall, K., Paramout, O., Robinson, L., Winrow-Griffin, A., Frid, C., Eno, N., Dernie, K., *et al.* 2008. Mapping the sensitivity of benthic habitats to fishing in Welsh waters - development of a protocol CCW (Policy Research). 8/12.
- JNCC. 2020. What is protected in MPAs? | JNCC - Adviser to Government on Nature Conservation. <https://jncc.gov.uk/our-work/what-is-protected-in-mpas/> (Accessed 1 March 2021).
- Marba, N., Duarte, C., Alexandre, A., and Cabaço, S. 2004. How do seagrasses grow and spread ?
- Montefalcone, M., Chiantore, M., Lanzone, A., Morri, C., Albertelli, G., and Nike Bianchi, C. 2008. BACI design reveals the decline of the seagrass *Posidonia oceanica* induced by anchoring. *Marine Pollution Bulletin*, 56: 1637–1645.
- Morgan, L., and Chuenpagdee, R. 2003. Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters. *Front. Ecol. Environ.*, 1.
- Roberts, C., Großbritannien, and Environment Agency. 2010. Evidence review of existing approaches to evaluate marine habitat vulnerability to commercial fishing activities. Almondsbury, Bristol. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291018/scho1110bteq-e-e.pdf (Accessed 1 March 2021).
- Walmsley, S., Bowles, A., Eno, N., and West, N. 2015. Evidence for Management of Potting Impacts on Designated Features. Defra.

Annex 1 – Area of SAC



SAC=Blue Hatched and SPA=Orange Hatched